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Test Booklet Series

C

TEST BOOKLET

GENERAL STUDIES (P) 2026 – Test – 6312

Time Allowed: Two Hours **Maximum Marks: 200**

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BBOOKLET DOES **NOT** HAVE ANY UNPRINTED OR TURN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **Do NOT** write anything else on the Test Booklet.

4. This Test Booklet contains **100** items (Questions). Each item is printed in **English.** Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response with you consider the best. In any case, choose **ONLY ONE** response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See direction in the answers sheet.

6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **1/3rd of the allotted marks** will be deducted.

7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per instruction sent to you with your Admission Certificate.

8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.

9. Sheet for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. With reference to the Sudan Virus Disease (SVD), consider the following statements:

1. Sudan Virus belongs to the same family as Ebola Virus.
2. SVD spreads when an infected person breathes out droplets and very small particles that contain the virus.
3. No effective antiviral and vaccine are available for SVD.

How many of the statements given above are correct?

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

2. Consider the following pairs:

Desert	**Continent**
1. Atacama Desert	: Africa
2. Great Victoria Desert	: Australia
3. Sonoran Desert	: North America

How many of the above pairs are correctly matched?

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

3. Consider the following statements:

1. Convectional rainfall occurs primarily in polar regions.
2. Orographic rainfall is caused by mountains forcing moist air to rise.

Which of the above statements is/are correct?

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

4. Consider the following:

1. Sirocco
2. Mistral
3. Bora

How many of the above are cold local winds in the Mediterranean region?

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

5. Consider the following statements regarding temperature inversion:

1. It occurs when cooler air is trapped below warmer air.
2. It is most commonly observed during winter nights with clear skies.
3. It facilitates the dispersion of pollutants in urban areas.

How many of the statements given above are correct?

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

6. Which of the following layers of the atmosphere is responsible for radio signal transmission?

(a) Troposphere
(b) Stratosphere
(c) Mesosphere
(d) Ionosphere

7. Primarily, which of the following oceanic phenomena influence the movement of ocean currents?

1. Upwelling
2. Thermohaline circulation
3. Tsunamis

Select the correct answer using the code below.

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

8. With reference to cyclones, consider the following statements:

1. Tropical cyclones originate over warm oceans.
2. Extratropical cyclones are associated with the westerlies.
3. The eye of a cyclone has low pressure and high wind speed.

Which of the statements given above is/are correct?

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

9. Consider the following statements regarding global pressure belts:

1. The equatorial low-pressure belt is also known as the doldrums.
2. The subtropical high-pressure belts are associated with descending air and calm conditions.

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 factors influence the distribution of temperature on Earth?

1. Latitude
2. Altitude
3. Ocean currents
4. Human activities

Select the correct answer using the code given below.

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

11. Which of the following cities is closest to the Prime Meridian (0° Longitude)?

(a) London
(b) Paris
(c) Madrid
(d) Rome

12. These landforms are created in glacial regions when a valley glacier moves downhill. The glacier deepens, widens, and straightens pre-existing river valleys into U-shaped valleys. When the glacier retreats, these valleys may be filled with seawater, forming deep inlets commonly found in Norway, Canada, and New Zealand.

Which of the following landforms is being described in the passage above?

(a) Cirque
(b) Arete
(c) Moraine
(d) Fjord

13. The 'NAMASTE Scheme' is sometimes mentioned in the news with reference to which one of the following?

(a) A skill development initiative for artisans and traditional craftsmen.

(b) A scheme for mechanizing sewer cleaning and rehabilitation of sanitation workers.

(c) A financial assistance program for micro and small enterprises.

(d) A government initiative to promote urban waste-to-energy projects.

14. Consider the following pairs:

Bilateral Exercise		**Participating country with India**
1. Ekuverin	:	Japan
2. Komodo	:	Indonesia
3. Dharma Guardian	:	France

How many of the above pairs are correctly matched?

(a) Only one

(b) Only two

(c) All three

(d) None

15. The term "Ovoid Cells" is often mentioned in news in the context of:

(a) A type of stem cell found in human embryos that aids in tissue regeneration

(b) Egg-shaped bacterial cells that exhibit unique antibiotic resistance properties

(c) A classification of certain fungal spores that contribute to plant diseases

(d) A specialized cell structure found in the nervous system plays a fundamental role in recognition memory

16. In India, the term "ESG (Environmental, Social, and Governance) Framework" is used in the context of

(a) Securities and Exchange Board of India

(b) Reserve Bank of India

(c) Ministry of New and Renewable Energy

(d) Ministry of Housing and Urban Affairs

17. Consider the following statements regarding the Matsya-6000:

1. The Matsya 6000 is a two-person submersible that will be able to go 6,000 metres under the sea.
2. It is being designed and developed by National Institute of Ocean Technology under Ministry of Earth Science.
3. It is India's first human mission for deep-sea exploration.

Which of the statements given above is/are correct?

(a) 2 only

(b) 2 and 3 only

(c) 1 and 2 only

(d) 1, 2 and 3

18. Consider the following statements regarding the White-winged Duck:

1. The White-winged Duck is classified as 'Endangered' under the IUCN Red List.
2. It is widely distributed across the entire Indian subcontinent specially the Western Ghats.
3. It is a nocturnal bird that is active mainly during the night.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

19. The term 'Accretion Disk' is sometimes mentioned in news in the context of which one of the following?

(a) The formation of planetary systems from interstellar dust and gas.

(b) The accumulation of marine sediments along tectonic plate boundaries.

(c) The process of formation of sludge bar in coastal regions.

(d) The phenomenon of soil erosion and sedimentation in river deltas.

20. Consider the following statements regarding Dokra Artwork:

1. Dokra is an ancient non-ferrous metal casting technique using lost-wax process.
2. West Bengal, Jharkhand, and Odisha are major centers of Dokra production.

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. The terms "MAYA, AMOGH, and ADAMYA" are often mentioned in news in the context of:

(a) Genetically modified crop plants

(b) Artificial intelligence - based cyber security

(c) Indigenous robotic demining and bomb disposal systems

(d) Advanced underwater Vehicles

22. What is "TRUST Initiative" which is recently seen in news?

(a) It is a bilateral engagement aimed at ensuring transparency, resilience, and security in emerging technologies such as AI and quantum computing.

(b) It is an international treaty focused on regulating cross-border data privacy and ethical AI deployment.

(c) It is a UN-backed initiative designed to monitor and prevent cyber threats targeting critical infrastructure worldwide.

(d) It is a multi-stakeholder alliance for promoting financial transparency and tackling illicit trade networks across major economies.

23. Consider the following statements:

1. The atmosphere is primarily composed of nitrogen, oxygen, and argon.
2. The ozone layer is primarily found in the troposphere.

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

24. Consider the following statements with reference to Tropic of Cancer:

1. Mahi River is the only river in India that cuts the Tropic of Cancer twice.
2. Udaipur in Rajasthan is the city nearest to the Tropic of Cancer.

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:

1. Gujarat
2. Chhattisgarh
3. Tripura
4. Manipur
5. Rajasthan

The Tropic of Cancer passes through how many States of India?

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

26. Which of the following statements regarding the laterite soils of India are correct?

1. They are well-developed in areas with high temperature and low rainfall.
2. They are rich in organic matter and humus.
3. They are widely cut as bricks for use in house construction.

Select the correct answer using the code given below.

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

27. Which of the following statements is/are correct with reference to the Western Disturbances?

1. They are shallow cyclonic depressions originating over the eastern Mediterranean Sea.
2. It is highly beneficial for rabi crops in Northern India.
3. An increase in the prevailing night temperature generally indicates an advance in the arrival of these cyclone disturbances.

Select the correct answer using the code given below.

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

28. Consider the following statements regarding the Himalayan Range:

1. The part of the Himalayas lying between river Indus and Satluj are known as Punjab Himalaya.
2. The part of the Himalayas lying between the Satluj and Kali rivers is known as Nepal Himalayas.
3. The part of the Himalayas lying between the Tista and Dihang rivers is known as Assam Himalayas.

Which of the statements given above is/are correct?

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

29. Consider the following statements about Eastern coastal plain:

1. The Eastern coastal plain is an example of an emergent coast.
2. Eastern coastal plains provide ideal conditions for the development of ports and harbors.

Which of the following statements is/are ***not*** correct?

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

30. Consider the following statements regarding the Indian Monsoon:

1. Unlike the trade winds, monsoon winds are seasonal and exhibit a pulsating nature influenced by various atmospheric conditions.
2. Monsoon rainfall generally decreases as one moves inland, away from the coastal regions.
3. The distribution and intensity of monsoonal rainfall in India are significantly influenced by geographical features such as mountains and plateaus.
4. The onset of the monsoon is gradual, whereas its withdrawal is abrupt and takes a shorter duration.

Which of the statements given above are correct?

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

31. Consider the following statements regarding air masses and fronts:

1. An air mass is a large body of air that extends over a vast area and exhibits uniform temperature and humidity characteristics.
2. Air masses remain stationary and do not interact with other air masses.
3. When two contrasting warm and cold air masses meet, they form a front.

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

32. Consider the following statements regarding Anticyclones:

1. Anticyclones are associated with stable weather conditions, clear skies, and dry air.
2. In the Northern Hemisphere, winds in an anticyclone rotate clockwise, while in the Southern Hemisphere, they rotate counterclockwise.

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. Consider the following statements regarding Extratropical Cyclones:

1. Extratropical cyclones can form over both land and ocean.
2. They generally move from west to east under the influence of westerly winds.
3. In the Northern Hemisphere, extratropical cyclones rotate in an anti-clockwise direction.

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

34. Consider the following pairs with respect to Climatic Regions of India according to Koeppen's Classification:

Climatic Region		*Area*
1. Tropical Monsoon (Am)	:	Western Ghats
2. Tropical Savannah (Aw)	:	Chhattisgarh Plains
3. Cold Humid Climate (Dfb)	:	Arunachal Pradesh

Which of the pairs given above are correctly matched?

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

35. In the context of Ganga river system, Vishnuprayag is located on the confluence of which one of the following rivers?

(a) Bhagirathi and Alaknanda
(b) Dhauliganga and Alaknanda
(c) Pindar and Alaknanda
(d) Mandakini and Alaknanda

36. Consider the following statements:

Statement I: Soils in cold climates have very low humus content.

Statement II: In cold climates, bacterial activity is high, leading to rapid decomposition of organic matter and low accumulation of humus.

Which one of the following is correct in respect of the above statements?

(a) Both Statement I and Statement II are correct, and Statement II is the correct explanation for Statement I.
(b) Both Statement I and Statement II are correct, but Statement II is not the correct explanation for Statement I.
(c) Statement I is correct, but Statement II is incorrect.
(d) Statement I is incorrect, but Statement II is correct.

37. With reference to the Himalayan and the Peninsular Rivers, consider the following statements:

1. Himalayan rivers are perennial while Peninsular Rivers are seasonal in nature.
2. Peninsular rivers generally follow straight courses whereas in the Himalayan Rivers meandering by rivers is very prominent.
3. Himalayan rivers flow through deep V–shaped valleys whereas Peninsular rivers flow in comparatively shallow valleys.

How many of the above statements are correct?

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

38. Consider the following statements with respect to Indian monsoon:

1. The Indian monsoon, unlike the trade winds, are not steady but are pulsating in nature.
2. The monsoon rainfall has a declining trend with increasing distance from the sea.
3. Monsoonal rainfall is largely governed by relief or topography.

How many of the statements given above are correct?

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

39. Which of the following are the components under Jal Jeevan Mission?

1. Greywater management
2. Skill development & employment generation
3. Bottom-up planning
4. Women empowerment

Select the correct answer using the code given below.

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

40. Consider the following statements regarding Sovereign Green Bonds:

1. SGBs are debt securities issued by a state government to fund projects that have positive environmental benefits.
2. The proceeds from these bonds are exclusively allocated to renewable energy projects.
3. The Union Budget 2024-25 announced the first issuance of Sovereign Green Bonds.

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 the Andaman and Nicobar Islands:

1. Andaman Islands and Nicobar Islands are separated by the Ten-degree channel.
2. These islands are an elevated portion of submarine mountains.
3. The Andaman and Nicobar Islands lie in the South-east direction to the mainland of India.
4. Barren Island, the only active volcano in India, is situated in the Andaman Sea.

Which of the statements given above is/are correct?

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

42. Which of the following is ***not*** correct about the Lakshadweep?

(a) The entire island group is built of coral deposits.
(b) Kavaratti capital of Lakshadweep is part of the Cannanore group of islands.
(c) The maritime boundary between the Maldives and India (Lakshadweep) runs through the Eight-degree channel.
(d) Saddle Peak is the highest peak in the Lakshadweep Islands.

43. Consider the following pairs:

Waterfall		***State***
1. Dhuandhar	:	Maharashtra
2. Hundru	:	Jharkhand
3. Chuliya	:	Madhya Pradesh
4. Dudhsagar	:	Rajasthan

How many of the above given pairs are correctly matched?

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

44. Consider the following statements:

1. Some rivers of the northern plain show a dendritic river pattern.
2. Rivers originating from the Amarkantak Range show centripetal drainage patterns.

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

45. These soils develop in areas with low rainfall, primarily in western and central India. They contain a high percentage of clay and swell when wet but develop deep cracks when dry, aiding in self-aeration. These soils are rich in calcium carbonate, magnesium, potash, and lime but poor in phosphorus. They are suitable for growing cotton, pulses, and oilseeds.

Which of the following soils is best described in the passage above?

(a) Alluvial Soils
(b) Laterite Soils
(c) Regur Soils
(d) Peaty Soils

46. Recently Global Electricity Review (GER) 2024 report, released by global energy think tank Ember, highlighted about the solar power generation in the world. According to this report, arrange the following countries on the basis of largest surge or increase in solar generation in 2023 (descending order)?

1. India
2. US
3. China
4. Brazil

Select the correct answer using the code given below.

(a) 1-4-2-3
(b) 4-2-1-3
(c) 3-2-4-1
(d) 1-3-2-4

47. Consider the following statements:

Statement I: The temperature of ocean water decreases at a uniform rate with increasing depth.

Statement II: The rate of change in temperature with depth varies due to factors like latitude, ocean currents, and seasonal variations.

Which one of the following is correct in respect of the above statements?

(a) Both Statement I and Statement II are correct, and Statement II is the correct explanation for Statement I.
(b) Both Statement I and Statement II are correct, but Statement II is not the correct explanation for Statement I.
(c) Statement I is correct, but Statement II is incorrect.
(d) Statement I is incorrect, but Statement II is correct.

48. The term "Autonomous Systems Industry Alliance (ASIA)" recently seen in the news is

(a) a global consortium of nations working towards regulating artificial intelligence in autonomous military systems.
(b) an international organization focused on setting safety and interoperability standards for autonomous vehicles and robotics.
(c) a partnership among major technology countries to boost co-development and co-production of maritime drones and counter-drone systems.
(d) a policy framework developed by the European Union to regulate data privacy and ethical concerns in self-operating machines.

49. "It is a sedimentary rock formed out of deposits of glaciers. The Gondawana system of sediments from India is known to have its counter parts in six different landmasses of the Southern Hemisphere. It provides unambiguous evidence of palaeoclimates and also of drifting of continents."

Which of the following rocks is best described in the above given passage?

(a) Pumice
(b) Tillite
(c) Marble
(d) Quartzite

50. Consider the following statements:

1. The point where the energy is released during an earthquake is called the epicenter.
2. Tsunami would occur only if the epicenter of the tremor is below oceanic waters.

Which of the statements given above is/are ***not*** correct?

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

51. Which of the following discontinuities separates the core and the mantle of the Earth?

(a) Gutenberg discontinuity
(b) Mohorovicic discontinuity
(c) Conrad discontinuity
(d) Lehmann discontinuity

52. Consider the following:

1. Earthquakes
2. Volcanic eruption
3. Rocks obtained from mines
4. Gravitation

How many of the above given are direct sources of information about the Earth's interior?

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

53. Consider the following conditions:

1. Steep and vertical slope
2. Presence of unconsolidated material on the upper surface
3. Intermittent supply of sufficient water
4. Absence of vegetation

How many of the above given conditions promote mudflow?

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

54. Consider the following pairs:

Process		***Description***
1. Illuviation	:	Accumulation of dissolved soil materials in lower levels
2. Eluviation	:	Downward transportation of soil components by water
3. Desilication	:	Removal of silica from the soil

Which of the pairs given above is/are correctly matched?

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

55. Consider the following pairs:

Igneous intrusion		***Shape***
1. Laccolith	:	Lens-shaped
2. Lopolith	:	Saucer-shaped
3. Phacolith	:	Dome-shaped

How many of the pairs given above are correctly matched?

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

56. Consider the following statements regarding Longitudes:

1. Longitude is an angular distance, measured in degrees north or south of the equator.
2. Longitudes are used to determine local time in relation to International Date Line.

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

57. Consider the following landforms:

1. Corris
2. Hanging valleys
3. Aretes

How many of the above given landforms are glacial landforms?

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

58. Consider the following differences between P-waves and S-waves:

1. S-waves vibrate parallel to the direction of the wave.
2. Unlike P-waves, the S-waves can travel through gaseous, liquid, and solid materials.

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. *These regions have isolated residual hills rising abruptly from the level ground. They are characterized by their very steep slopes and rather rounded tops. They are often composed of granite or gneiss and are probably the relics of an original plateau that has been almost entirely eroded away. They are typical of many desert and semi-arid landscapes in old age e.g. those of northern Nigeria, Western Australia, and the Kalahari Desert.*

Which of the following regions is being referred to in the passage given above?

(a) Karst region
(b) Zeugen region
(c) Inselberg region
(d) Coombes Region

60. With reference to the gorges, consider the following statements:

1. Gorges are formed during the youthful stage of the fluvial cycle of erosion
2. Gorges are also formed due to the recession of waterfalls.
3. Canyons are an extended form of gorges.

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

61. Consider the following difference between the terrestrial and the Jovian planets:

1. Unlike terrestrial planets, the Jovian planets have lots of gas and dust in the atmosphere.
2. Terrestrial planets are warmer than Jovian planets.

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. Along which of the following plate boundaries, the crust is either destroyed or created?

1. Convergent Boundary
2. Divergent Boundary
3. Transform Boundary

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

63. Consider the following:

1. Solifluction
2. Earth flow
3. Slump

How many of the above given movements can be categorized as slow mass movements?

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

64. Consider the following statements:

1. Stalagmites rise up from the floor of the caves.
2. The stalactites are formed as hanging from the ceilings.

Which of the statements given above is/are ***not*** correct?

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

65. Consider the following statements regarding tides:

1. Two high tides and two low tides occur during every 24-hour period.
2. They are caused by the earth-moon-sun positions.
3. They help in removing of polluted water from estuaries.

How many of the statements given above are correct?

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

66. Which of the following best describes the process of "lithification"?

(a) It is process of formation of rocks through compaction of sediments.
(b) It is the process of erosion of rocks and their deposition in deltaic plains.
(c) It refers to the cooling of magma to form lava plains.
(d) It refers to the metamorphosis of rocks under heat and pressure.

67. This is an erosional plain carved by the agents of erosion. Rivers, rain, ice, and wind help to smooth out the irregularities of the earth's surface. They are amost plain hence called as

(a) Peneplain
(b) Pediplain
(c) Structural plain
(d) Coastal plain

68. Consider the following statements:

1. Potholes are cylindrical depressions over the rocky beds of hill streams.
2. Potholes are generally formed in sandstones and granites.
3. Plunge pools are formed at the base of waterfalls.

How many of the statements given above are correct?

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

69. Which of the following is/are the causes of changes in the seasons?

1. Revolution of the earth
2. Rotation of the earth
3. Earth's tilted axis

Select the correct answer using the code given below.

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

70. Consider the following statements:

1. Mercury is the only planet without a satellite.
2. All planets in the solar system rotate around their own axis from East to West.
3. The asteroid belt in the Solar System is located roughly between the orbits of the planets Jupiter and Saturn.

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:

1. Spherical shape of other planetary bodies.
2. Different time of sunrise and sunset at different places.
3. Shadow of earth on moon during lunar eclipse.

How many of the statements given above provide an evidence for Earth's sphericity?

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

72. Consider the following statements regarding Alluvial soils of India:

1. They are depositional soils, transported and deposited by rivers and streams.
2. The sand content in these soils decreases from the west to east of the country.
3. They are generally poor in potash and phosphorus.

Which of the statements given above is/are correct?

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

73. Consider the following:

"These forests are found in the Andaman, the Western Ghats, the Northeastern region, Bengal, and Orissa. The average annual rainfall in these forests ranges from 200 cm to 250 cm. Orchids, Kadam, Hillocks are the main species of these forests".

Which of the following types of forest of India is best described in the above passage?

(a) Tropical thorn forest
(b) Tropical deciduous forests
(c) Littoral and Swamp forests
(d) Semi-evergreen forests

74. For the first time, an ecosystem group has been assessed entirely using the IUCN Red List of Ecosystems (RLE). According to this, which of the Indian Mangroves is/are Critically Endangered?

1. Andaman and Bay of Bengal
2. South India Mangroves
3. West India Mangroves

Select the correct answer using the code given below.

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

75. Consider the following statements regarding the International Big Cat Alliance (IBCA):

1. The International Big Cat Alliance was launched by India to protect and conserve big cat species globally.
2. The alliance focuses on the conservation of all big cat species globally.
3. The IBCA is headquartered in New Delhi.

Which of the statements given above is/are correct?

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

76. In the context of the Zero Debris Charter, consider the following statements:

1. It is an initiative led by the NASA Space Agency to prevent space debris.
2. It is a world-leading effort to become debris-neutral in space by 2030.
3. India was one of the founding members of the Zero Debris Charter initiative.

How many of the above statements are correct?

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

77. With reference to Jhumur Dance, consider the following statements:

1. It is the dance of traditional 'tea-tribes of Sikkim.
2. The dance is closely associated with agricultural celebrations and seasonal festivals.
3. This dance has been performed exclusively by women's in rural communities.

Which of the statements given above is/are correct?

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

78. Consider the following statements regarding the PM Surya Ghar: Muft Bijli Yojana:

1. It is the world's largest domestic rooftop solar initiative for transforming India's energy landscape.
2. The scheme is implemented by the Ministry of Power.
3. The scheme offers a collateral Free Loans for installing all rooftop solar systems by a household.

How many of the statements given above are correct?

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

79. Consider the following statements regarding the United Nations Human Settlements Programme (UN-Habitat):

1. UN-Habitat is the UN agency responsible for promoting sustainable urban development.
2. Its member states are elected by the UN General Assembly for a four-year term.
3. African region had more seats than other regions in the Governing Council of the UN-Habitat.

Which of the statements given above is/are correct?

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

80. Consider the following statements:

1. Price Support Scheme
2. Crop insurance Scheme
3. Price Deficiency Payment Scheme
4. Modified Interest Subvention Scheme
5. Private Procurement & Stockist Scheme.

Which of the above are the components of PM-AASHA Scheme?

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

81. The term "TrailGuard AI" is often seen in the news in the context of:

(a) AI-based cyber threat detection system
(b) AI-powered surveillance technology for wildlife conservation
(c) Satellite-based disaster monitoring system
(d) Unmanned aerial surveillance for border security

82. Recently, Organization of the Petroleum Exporting Countries Plus (OPEC +) has approved a country to be its member countries. Which of the following is the country?

(a) UAE
(b) Brazil
(c) Venezuela
(d) Nigeria

83. The 'Project Waterworth', sometimes mentioned in the news, is related to:

(a) A global initiative aimed at improving groundwater recharge and conservation.
(b) A technology-driven project for real-time water quality monitoring and assessment.
(c) A sustainable desalination project for providing potable water in coastal regions.
(d) A subsea cable network to strengthen the scale and reliability of the world's digital highways.

84. Consider the following theories:

1. Big Bang Theory
2. Hoyle's Steady State Theory
3. The Big Splat Theory

How many of the above given theories are related to the origin of universe?

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

85. Rani told her friends that last month she went boating in four different rivers of India namely, Gomti, Jhelum and Kaveri. Which of the following cities did she visit?

(a) Lucknow, Srinagar and Kodagu
(b) Lucknow, Srinagar and Madurai
(c) Ayodhya, Srinagar and Madurai
(d) Ayodhya, Srinagar and Kodagu

86. Consider the following statements:

Statement I: Black soils retain moisture for a very long time.

Statement II: Black soils are rich in lime, iron, magnesia and alumina.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
(c) Statement-I is correct but Statement-II is incorrect
(d) Statement-I is incorrect but Statement-II is correct

87. Which one of the following statements about Satluj river is ***not*** correct?

(a) It originates from 'Raksas tal' near Mansarovar lake in Tibet.
(b) It passes through the Mana pass.
(c) River Beas meets the Satluj near Harike.
(d) River Satluj feeds the canal system of the Bhakra Nangal project.

88. Which among the following passes of India lies in Zaskar range and connects the Lahaul district in Himachal Pradesh to Leh district in Ladakh?

(a) Zoji La pass
(b) Rohtang Pass
(c) Baralacha La
(d) Jelep La

89. Consider the following peninsular rivers:

1. Vamsadhara
2. Sharavati
3. Vaigai
4. Penner

How many of the above are ***not*** east flowing rivers of India?

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

90. Consider the following statements with reference to the Eastern Ghats and the Western Ghats:

1. The highest peak of the Western Ghats is Dodabetta whereas the highest peak of the Eastern Ghats is Mahendragiri.
2. The Western Ghats are comparatively higher in elevation and more continuous than the Eastern Ghats.

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

91. Consider the following statements regarding Tropical Deciduous Forests:

1. These are the most widespread forests of India.
2. They spread over the region receiving rainfall between 70 cm to 200 cm.
3. Greenheart, Cabinet woods, and Mahogany trees are primarily found in these forests.

Which of the statements given above is/are correct?

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

92. Consider the following statements with respect to the season of retreating monsoon:

1. The low-pressure trough of the Ganga plain starts moving southward during the season.
2. The combination of clear skies, high temperature, and moist land brings October heat in northern 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

93. Ravi is planning to visit all the Biosphere reserves of India which are included under UNESCO's World Network of Biosphere Reserves. He will be visiting

(a) Gulf of Mannar, Nilgiri, Nokrek, Cold Desert
(b) Dibru Saikhowa, Simlipal, Pachmarhi, Achanakmar-Amarkantak
(c) Seshachalam, Sundarbans Nanda Devi, Cold Desert
(d) Achanakmar-Amarkantak, Agasthyamalai, Kangchendzonga and Panna

94. Consider the following pairs:

Dam/ Reservoir		**River**
1. Gandhi Sagar	:	Narmada
2. Maithon Dam	:	Kaveri
3. Tehri Dam	:	Baghirathi
4. Nagarjuna Sagar	:	Krishna

How many of the given pairs are correctly matched?

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

95. Which of the following best describes the term “Gravity Anomaly”?

(a) It refers to regions on Earth’s surface where the value of gravity is zero
(b) It refers to the declining value of gravity on approaching the center of the Earth.
(c) It refers to the increasing value of gravity on approaching the center of the Earth.
(d) It refers to the difference between the observed value of gravity and the expected value of gravity.

96. They are strong, dry, and extremely hot winds that blow during the afternoon over parts of north and central India in the summer months. These winds originate due to intense heating of the land and are particularly common in May and June. Exposure to these winds can cause heat strokes and dehydration.

Which of the following is being described in the passage above?

(a) Mistral
(b) Loo
(c) Nor'wester
(d) Harmattan

97. Consider the following differences between terrestrial planets and Jovian planets:

1. Terrestrial planets have a solid, rocky surface, whereas Jovian planets are mostly composed of gases with no well-defined solid surface.
2. The density of terrestrial planets is higher than that of Jovian planets.
3. Jovian planets have stronger gravity compared to terrestrial planets due to their larger mass.

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

98. Consider the following statements regarding incoming solar radiation (insolation):

1. The insolation received by the Earth is more at perihelion than at aphelion.
2. The distribution of insolation over the Earth's surface is influenced by latitude, atmospheric composition, and the angle of incidence of sunlight.

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 a particular climatic region:

1. Summers are hot and dry, while winters are mild and wet.
2. Vegetation consists of drought-resistant shrubs, small broad-leaved trees, and scattered grasslands.
3. This region is known for the cultivation of olives, citrus fruits, and vineyards, making agriculture an important economic activity.

Which of the following climatic regions best reflects the above-mentioned characteristics?

(a) Tropical Monsoon Climate
(b) Mediterranean Climate
(c) Steppe Climate
(d) Tundra Climate

100. Consider the following regions of India:

1. Konkan Coast
2. Western Rajasthan
3. Western Ghats

Arrange the above regions in increasing order of variability of rainfall.

(a) 1 - 3 - 2
(b) 3 - 2 - 1
(c) 2 - 1 - 3
(d) 2 - 3 - 1

ANSWERS & EXPLANATIONS
GENERAL STUDIES (P) TEST – 6312 (2026)

Q 1.B

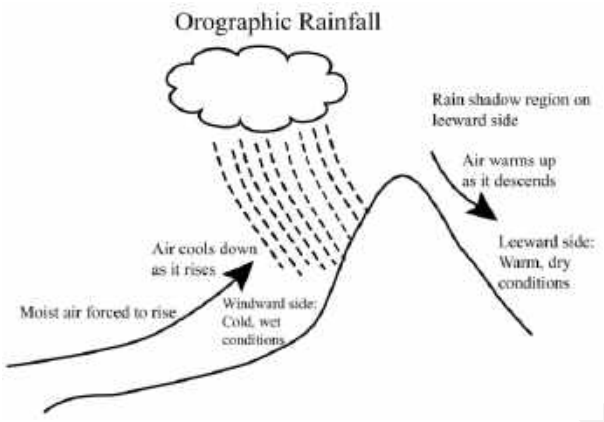
- **Context: Recently, the Ugandan Government and the WHO confirmed an outbreak of Sudan virus disease.**
  - Sudan virus disease is a viral hemorrhagic fever disease, belonging to the same family as Ebola virus disease. It is caused by Sudan virus (SUDV). It is a severe disease with high case fatality. It is typically characterized by acute onset of fever with non-specific symptoms/signs (e.g., abdominal pain, anorexia, fatigue, malaise, myalgia, sore throat) usually followed several days later by nausea, vomiting, diarrhoea, and occasionally a variable rash. **Hence statement 1 is correct.**
  - Person-to-person transmission occurs by direct contact with blood, other bodily fluids, organs, or contaminated surfaces and materials with risk beginning at the onset of clinical signs and increasing with disease severity. Family members, healthcare providers, and participants in burial ceremonies with direct contact with the deceased are at particular risk. The incubation period ranges from 2 to 21 days, but typically is 7–11 days. **Hence statement 2 is not correct.**
  - Unlike Ebola virus disease, no effective antiviral and vaccine is available for SVD. The outbreak was declared over after 115 days, with 142 confirmed cases and case fatality rate of 39%, before any dose of candidate vaccine could be used on contacts. **Hence statement 3 is correct.**

Q 2.A

- Deserts are regions of scanty rainfall which may be hot deserts of Saharan type; or temperate as are the mid-latitude deserts like the Gobi. The aridity of the hot deserts is mainly due to the effects of off-shore Trade Winds, hence, they are also called Trade Wind Deserts. The temperate deserts are rainless because of their interior location in the temperate latitudes, well away from the rain-bearing winds.
- **Atacama Desert**
  - **The Atacama Desert is located in South America, not Africa. It is primarily in Chile and extends slightly into Peru. Hence, pair 1 is not correctly matched.**
  - It is one of the driest places on Earth, receiving very little or no rainfall for years.
  - The presence of the Humboldt Current and the Andes mountains creates a rain shadow effect, preventing moist air from reaching the desert.
  - The Atacama has been used for space research because of its Mars-like terrain.
- **Great Victoria Desert**
  - **The Great Victoria Desert is the largest desert in Australia, spanning parts of Western Australia and South Australia. Hence, pair 2 is correctly matched.**
  - It consists of sand dunes, salt lakes, and rocky terrain.
  - Despite its arid climate, it supports unique wildlife, including perentie lizards, spinifex grasses, and marsupials.
  - The desert is home to some indigenous Australian communities that have lived there for thousands of years.
- **Sonoran Desert**
  - **The Sonoran Desert is located in North America, covering parts of the southwestern United States (Arizona, California) and northwestern Mexico (Sonora, Baja California). Hence, pair 3 is correctly matched.**
  - It is known for its iconic saguaro cactus, which can grow up to 40 feet tall.
  - Unlike many deserts, the Sonoran receives bimodal rainfall (rain in summer and winter), making it one of the most biodiverse deserts in the world. It is home to unique species like Gila monsters, roadrunners, and desert tortoises.

Q 3.B

- **Convectional rainfall occurs mainly in equatorial and tropical regions, not in polar regions.**
  - It is caused by intense solar heating, which makes warm, moist air rise rapidly. As the air ascends, it cools and condenses, leading to heavy rainfall, usually in the afternoon.
  - Polar regions receive very little solar radiation, making convectional rainfall nearly impossible. **Hence, statement 1 is not correct.**
- **Orographic rainfall (also known as relief rainfall) occurs when moist air is forced to ascend over a mountain range.**
  - As the air rises, it cools, and the moisture condenses to form clouds, leading to precipitation.
  - This type of rainfall is common in areas with significant elevation changes, such as the Western Ghats in India, the Andes in South America, and the Rocky Mountains in North America. **Hence, statement 2 is correct.**

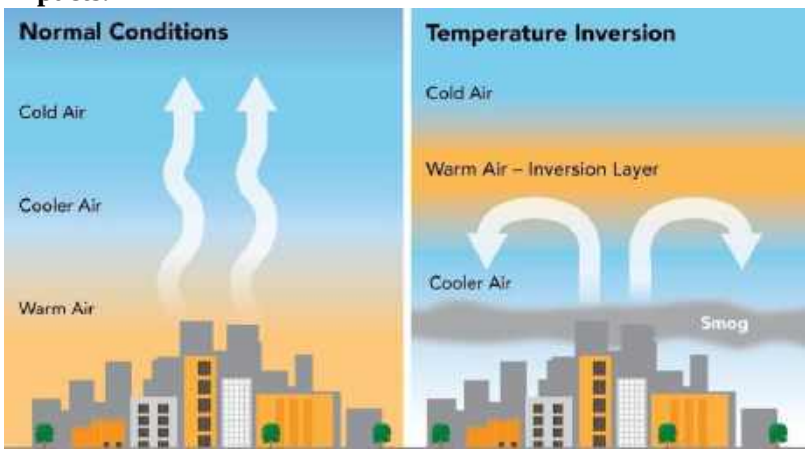


Q 4.B

- Many local winds, some hot, others cold, are common around the Mediterranean Sea. The causes are many and varied. The topography of the region with the high Alps in the north, the Sahara desert in the south, continental interiors in the east, and the open Atlantic on the west give rise to great differences in temperature, pressure, and precipitation.
- The passing cyclones from the Atlantic, the anticyclones from the north, and the cold air masses from the continental interiors are often interrupted or channeled by relief features, resulting in the birth of local winds around the Mediterranean. These winds, varying in strength, direction and duration, affect the lives, crops, and activities of the people there.
- **Sirocco**
  - **This is a hot, dry, dusty wind that originates in the Sahara Desert**. Though it may occur at any time of the year, it is most frequent in spring and normally lasts for only a few days. The Sirocco blows outwards in a southerly direction from the desert interiors into the cooler Mediterranean Sea. It is usually associated with depressions from the Atlantic passing from the coast eastward inland.
- **Mistral**
  - **Mistral is a cold wind from the north of Mediterranean sea , rushing down the Rhone valley in violent gusts between 40 and 80 miles per hour. The velocity of the Mistral is intensified by the funnelling effect in the valley between the Alps and the Central Massif, and in extreme cases, trains may be derailed and trees uprooted.**
- **A similar type of cold north-easterly wind experienced along the Adriatic coast is called the Bora.** Like the Mistral, it is caused by a difference in pressure between continental Europe and the Mediterranean. This usually occurs in winter, when the atmospheric pressure over continental Europe is higher than that of the Mediterranean Sea.
- In West Africa, the North- East Trades blow offshore from the Sahara Desert and reach the Guinea coast as a dry, dust -laden wind, **called locally the Harmattan, meaning The Doctor Wind.**
  - It is so dry that its relative humidity seldom exceeds 30 percent. The doctor wind provides a welcome relief from the damp air of the Guinea lands by increasing the rate of evaporation with resultant cooling effects, but it is such a dry, dusty wind that, besides ruining the crops, it also stirs up a thick, dusty haze and impedes inland river navigation.
- **Hence, option (b) is the correct answer.**

Q 5.B

- **Temperature inversion is a meteorological phenomenon where the normal lapse rate (temperature decreasing with altitude) is reversed, meaning that cooler air gets trapped beneath a layer of warmer air. This creates a stable atmospheric condition that can have significant environmental impacts.**



- **It occurs when cooler air is trapped below warmer air.**
  - Under normal conditions, air closer to the surface is warmer than the air above, allowing heat to rise and mix with the upper atmosphere.
  - During temperature inversion, this natural mixing does not happen because a layer of warmer air traps cooler air below, preventing it from rising.
  - This situation leads to stagnant air conditions. **Hence, statement 1 is correct.**
- **It is most commonly observed during winter nights with clear skies.**
  - Winter conditions favor temperature inversion due to longer nights and cooler temperatures.
  - Clear skies and calm winds allow the Earth's surface to lose heat rapidly, cooling the air near the ground while the upper layers remain warmer. **Hence, statement 2 is correct.**
  - This effect is more prominent in valleys and low-lying areas.
- **Temperature inversion worsens air pollution because it prevents pollutants (such as smoke, dust, and smog) from dispersing into the upper atmosphere.**
  - This leads to higher pollution levels, as seen in cities like Delhi and Beijing during winter.
  - **Instead of facilitating dispersion, inversion traps pollutants close to the surface. Hence, statement 3 is not correct.**

Q 6.D

- **Ionosphere and Radio Signal Transmission:**
  - The ionosphere is a region of the Earth's upper atmosphere beyond the mesosphere.
  - It is composed of ionized gases (plasma), created by solar radiation and cosmic rays.
  - **This ionization allows the ionosphere to reflect and refract radio waves, making long-distance radio communication possible. Hence, option (d) is the correct answer.**
  - Shortwave radio signals (used in AM radio, international broadcasting, and military communication) rely on the ionosphere to bounce back to Earth.
- **Analysis of other options:**
- **Troposphere (0-18 km):**
  - This is the lowest layer of the atmosphere.
  - It contains weather phenomena (clouds, storms, etc.) but does not significantly affect radio wave propagation.
- **Stratosphere (18-50 km):**
  - The stratosphere contains the ozone layer, which absorbs UV radiation.
  - It does not play a major role in radio signal transmission.
- **Mesosphere (50-80 km):**
  - The mesosphere is the coldest atmospheric layer.
  - It is too thin and lacks ionized particles, making it ineffective for radio signal transmission.

Q 7.A

- **Upwelling is the process where cold, nutrient-rich water rises to the surface from deep ocean layers.**
  - This occurs when winds push surface waters away, allowing deeper water to rise.
  - Upwelling affects ocean currents by altering surface water movement and influencing marine ecosystems.
  - It is particularly significant along the west coasts of continents (e.g., Peru, California, West Africa).
  - **Hence, statement 1 is correct.**
- **Thermohaline circulation is a global ocean circulation system driven by differences in temperature (thermo) and salinity (haline).**
  - Cold, dense, salty water sinks at high latitudes, while warm, less dense water rises, creating a global conveyor belt of ocean currents.
  - This process plays a crucial role in regulating the global climate by distributing heat across the planet.
  - Example: The Atlantic Meridional Overturning Circulation (AMOC), which includes the Gulf Stream.
  - **Hence, statement 2 is correct.**
- **Tsunamis are large ocean waves caused by underwater earthquakes, volcanic eruptions, or landslides.**
  - Unlike ocean currents, tsunamis do not involve continuous water movement but instead consist of wave energy propagation.
  - Once a tsunami wave reaches land, it dissipates and does not contribute to long-term oceanic circulation.
  - Tsunamis are temporary disturbances rather than sustained ocean currents.
  - **Hence, statement 3 is not correct.**

Q 8.A

- **Tropical cyclones originate over warm oceans**
  - Tropical cyclones (also called hurricanes, typhoons, or cyclones depending on the region) form over warm ocean waters (typically above 26.5°C) in tropical and subtropical regions. **Hence, statement 1 is correct.**
  - The warm water heats the air above it, causing it to rise, creating low pressure.
  - As the warm, moist air rises, it cools and condenses, releasing latent heat, which further intensifies the storm.
- **Extratropical cyclones are associated with the westerlies**
  - Extratropical cyclones (also called mid-latitude cyclones or temperate cyclones) form between 30° and 60° latitudes in both hemispheres.
  - They develop along the polar front due to the interaction of cold polar air and warm tropical air.
  - These cyclones are driven by westerly winds, moving from west to east. **Hence, statement 2 is correct.**
  - They are commonly seen in North America, Europe, and the Southern Hemisphere's storm tracks.
- The eye of a cyclone has low pressure but not high wind speed.
  - The eye of a cyclone is a calm, clear, and cloud-free region at the center of the storm.
  - It has low pressure but low wind speed (not high). **Hence, statement 3 is not correct.**
  - The strongest winds occur in the eye wall, which surrounds the eye.
  - Inside the eye, air sinks rather than rising, leading to clear skies and relatively calm conditions.

Q 9.C

- **The Equatorial Low-Pressure Belt (Doldrums)**
  - This belt is located between 5°N and 5°S of the equator.
  - It is characterized by intense solar heating, causing the air to rise and create low pressure.
  - Due to weak pressure gradients, winds are light and variable, leading to calm conditions.
  - This zone is called the "Doldrums" because of the lack of steady winds, which historically caused sailing ships to be trapped for long periods.
  - Example: The region around the equator, where trade winds converge, is also called the Intertropical Convergence Zone (ITCZ).
  - **Hence, statement 1 is correct.**
- **The Subtropical High-Pressure Belts (Horse Latitudes)**
  - These belts are located around 30°N and 30°S latitude in both hemispheres.
  - The air that rises at the equator cools and descends at these latitudes, creating high pressure.
  - **Subsiding (sinking) air prevents cloud formation, leading to dry and stable conditions.**

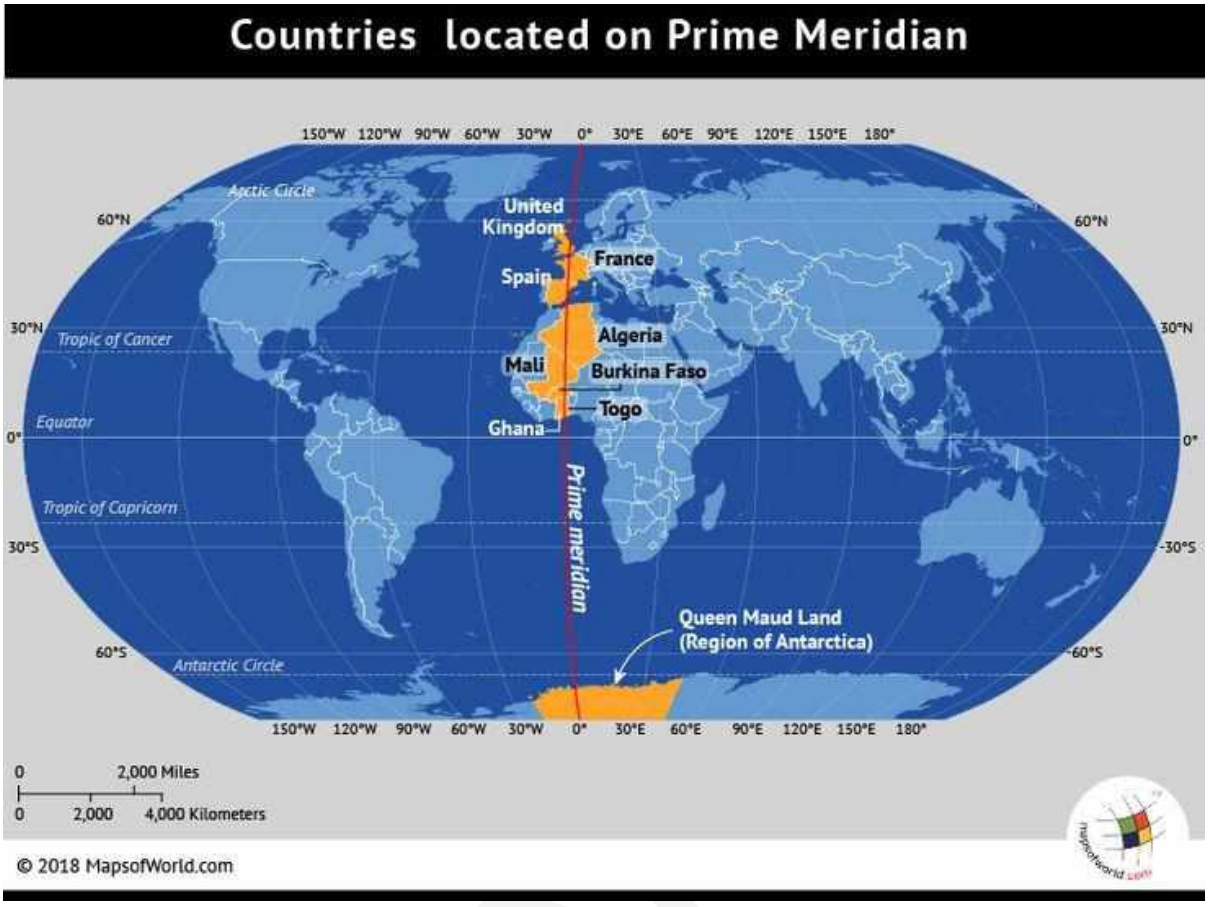
- **This region is associated with calm weather, weak winds, and dry conditions, so most of the world's deserts (e.g., Sahara, Kalahari, and Australian deserts) are found here. Hence, statement 2 is correct.**
- These are called Horse Latitudes because, historically, ships stuck in these calm areas threw horses overboard to conserve water.

Q 10.C

- **The distribution of temperature on Earth is influenced by both natural and human-induced factors.**
- **Latitude**
  - The most significant factor affecting temperature distribution.
  - Lower latitudes (near the equator) receive direct sunlight, leading to higher temperatures.
  - Higher latitudes (towards the poles) receive slanting sun rays, spreading heat over a larger area, resulting in lower temperatures.
  - Example: Equatorial regions (hot), Polar regions (cold).
- **Altitude**
  - Temperature decreases with increasing altitude (height above sea level).
  - Reason: Air pressure decreases at higher altitudes, causing the air to expand and cool.
  - Lapse Rate: On average, temperature drops 6.5°C per 1,000 meters in the troposphere.
  - Example: Shimla (higher altitude) is cooler than Delhi (lower altitude).
- **Ocean Currents**
  - Ocean currents transfer heat across different regions, influencing coastal temperatures.
  - Warm currents (e.g., Gulf Stream, Kuroshio Current) increase temperatures of coastal regions.
  - Cold currents (e.g., Peru Current, Labrador Current) decrease temperatures of coastal regions.
  - Example: Western Europe has a milder climate due to the warm Gulf Stream.
- **Human Activities**
  - Urbanization & Industrialization → Heat generated from factories, vehicles, buildings, and ACs increases temperatures (Urban Heat Island Effect).
  - Deforestation → Less tree cover reduces transpiration and cooling, leading to higher temperatures.
  - Greenhouse Gas Emissions → Burning fossil fuels releases CO_2, CH_4, and other gases, trapping heat and causing global warming.
  - Example: Cities like Delhi and Mumbai experience higher temperatures than surrounding rural areas.
- Hence, All four factors (Latitude, Altitude, Ocean Currents, and Human Activities) influence the distribution of temperature on Earth.

Q 11.A

- **The Prime Meridian (0° Longitude) is the imaginary line that divides the Earth into the Eastern and Western Hemispheres. It runs through the Royal Observatory in Greenwich, London (United Kingdom). Hence, option (a) is the correct answer.**
  - This meridian was established as the official global reference for longitude at the International Meridian Conference in 1884.
- **Paris (France)**
  - Paris is located east of the Prime Meridian at approximately 2.35°E longitude. Although relatively close, it is not the closest city to 0° Longitude.
- **Madrid (Spain)**
  - Madrid is located at 3.70°W longitude. It is west of the Prime Meridian, making it farther from 0° Longitude compared to London.
- **Rome (Italy)**
  - Rome is located at 12.50°E longitude. It is much farther east from the Prime Meridian.



Q 12.D

- Fjords are deep, glacially carved U-shaped valleys that are later flooded by seawater when glaciers retreat. They are typically narrow, steep-sided inlets and are commonly found in Norway, Canada, and New Zealand.
- Fjords form when glaciers erode deep valleys below sea level, and after the glacier melts, the ocean floods the valley, creating a long and narrow inlet. **Hence, option (d) is the correct answer.**
- **Cirque**
  - A bowl-shaped depression found at the head of a glacial valley.
  - Cirques are not deep inlets but rather the birthplace of glaciers.
- **Moraine**
  - A pile of glacial debris (rocks, sediments) deposited by glaciers.
  - Moraines are not valleys or inlets, but rather accumulated rock debris left behind by glaciers.
- **Arete**
  - A narrow, sharp ridge between two glacial valleys
  - Aretes are mountain ridges and not U-shaped valleys flooded by seawater.
- **Examples of Famous Fjords:**
  - Sognefjord (Norway) – The longest fjord in Norway.
  - Milford Sound (New Zealand) – A stunning fjord in Fiordland National Park.
  - Howe Sound (Canada) – A famous fjord in British Columbia.

Q 13.B

- **Recent Context: Union Minister for Social Justice and Empowerment distributes PPE Kits and Ayushman Cards to Sewer and Septic Tank Workers under NAMASTE Scheme.The National Action for Mechanized Sanitation Ecosystem or the NAMASTE Scheme is a testament to the Government's human-centric approach where no sanitation workers have to manually engage in the hazardous task of sewer and septic tank cleaning operations.** Jointly initiated by the Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs, the NAMASTE scheme will be implemented by the National Safai Karamcharis Finance and Development Corporation (NSKFDC) for a period of three years from FY 2023-24 to FY 2025-26, with a budget allocation of 349.73 crores.

- The scheme has a range of entitlements for Sewer and septic tank workers or the SSWs. The SSW will be profiled through a digital application and will be provided with PPE kits, access to safety devices, occupational safety training, health insurance coverage and livelihood opportunities in the sanitation sector through subsidized sanitation-related vehicles/machinery. Through proper capacity building they will be encouraged to take up their own sanitation enterprise (sanipreneur). Over a lakh SSWs will be profiled across 4800 Urban Local Bodies in India.
- The components of the scheme include:
  - Profiling of SSWs in ULBs through digital tools (~ 1 lakh SSW to be identified).
  - Health Insurance of SSW under PM-JAY.
  - Occupational safety training of SSWs and Sanitation Response Units for NAMASTE.
  - Capital Subsidy up to Rs. 5.00 lakh for procurement of Sanitation Related Vehicles/ Equipment.
  - Distribution of PPE to SSWs.
  - Distribution of safety devices to Emergency Response Sanitation Unit (ERSU).
  - IEC Campaign for awareness on SSW safety and dignity.
- **Hence option (b) is the correct answer.**

Q 14.A

- **Context: The 6th edition of the India-Japan joint military exercise, Dharma Guardian, commenced on February 24, 2025, at Japan's East Fuji Training Area.**
  - Exercise Ekuverin: The 13th edition of joint military exercise 'Ekuverin' between the Indian Army and the Maldives National Defence Force has commenced in Maldives. It is a bilateral annual exercise conducted alternatively in India and Maldives. Ekuverin means ‘Friends' in Dhivehi language spoken in Maldives. It aims to enhance interoperability in counter insurgency and counter terrorism operations, and carry out joint humanitarian assistance and disaster relief operations. **Hence Pair 1 is not correctly matched.**
  - Exercise Komodo: Multilateral naval exercise Komodo started in Bali, Indonesia. It aimed at enhancing maritime interoperability and regional security cooperation. INS Shardul and Long-Range Maritime Surveillance P8I aircraft will participate in it. First launched in 2014, it is a non-combat military exercise organized by Indonesian Navy to foster maritime cooperation among friendly nations. **Hence Pair 2 is correctly matched.**
  - Dharma Guardian: The 6th edition of the India-Japan joint military exercise, Dharma Guardian, commenced on February 24, 2025, at Japan's East Fuji Training Area. Conducted at an expanded scale, it focuses on joint urban warfare and counter-terrorism under a UN mandate. **Hence Pair 3 is not correctly matched.**

Q 15.D

- **Context: Researchers have discovered a new type of brain cells, named Ovoid cells.**
- **About Ovoid cells**
  - Type of neuron that plays a fundamental role in recognition memory — the process by which the brain differentiates between new and familiar objects and forms long-term memories.
  - Ovoid cells, named for their distinct egg-like shape, are present within the hippocampus of humans, mice, and other animals.
  - These cells activate whenever we encounter something new, triggering a process that stores objects in memory.
  - Finding could aid in the treatment of brain conditions related to object recognition, such as Alzheimer’s disease, autism spectrum disorder, and Epilepsy.
- **Hence option (d) is the correct answer.**

Q 16.A

- **Context: The Securities and Exchange Board of India (SEBI) proposed new measures to strengthen the regulatory framework for ESG Rating Providers (ERPs).**
- **ESG (Environment, Social and Governance) Framework**
  - An ESG (Environmental, Social, and Governance) framework is a set of standards and metrics used to evaluate a company's performance across environmental, social, and governance factors, essentially assessing its sustainability and ethical impact on society and the environment, including how transparent and accountable it is in its operations; it is often used by investors to make informed investment decisions based on a company's broader societal impact beyond just financial returns.

- It includes three dimensions:
  - Environmental: Examines company's performance as a steward of the planet.
  - Social: Examines how a company manages relationships with employees, suppliers, customers, and communities involved.
  - Governance: Defines rules, best practices, and processes for managing and controlling an organisation.
  - Significance: Used to screen investments, encourages companies to act responsibly
- **Hence option (a) is the correct answer.**

Q 17.B

- **Context: Wet testing of the 4th Generation deep-ocean human scientific submersible 'Matsya-6000' successfully completed.**
  - Deep Ocean Mission has been launched w.e.f. 07.09.2021, as a Central Sector Scheme of Ministry of Earth Sciences with the approval of the Cabinet. Samudrayaan is a project under the Deep Ocean Mission. Under the Samudrayaan project of Deep Ocean Mission, MATSYA 6000 manned submersible design has been completed so far. **The mission is aimed at sending three personnel to 6000-metre depth in a vehicle called 'MATSYA 6000' for the exploration of deep-sea resources like minerals. Hence statement 1 is not correct.**
  - **'MATSYA 6000' vehicle is being designed and developed by National Institute of Ocean Technology (NIOT),** Chennai under Ministry of Earth Science. It is designed with the capability of operating in the deep sea for 12 hours while in case of emergency, it can also operate up to 96 hours with all the necessary measures for human safety. **Hence statement 2 is correct.**
  - **Samudrayaan is India's first attempt at human deep-sea exploration** and aims to place India among the few nations (like the US, Russia, China, Japan, and France) that have developed manned submersibles for deep-sea research. **Hence statement 3 is correct.**

Q 18.A

- **Context: A rare pair of the White-winged duck was spotted in the Dihing Patkai National Park (Assam).**
  - The White-winged Duck primarily feeds on aquatic plants, seeds, insects, and small fish. Their diet is quite diverse, allowing them to adapt to various wetland environments. They forage mostly at dawn and dusk, using their bills to sift through water and mud to find food.
  - It was once distributed widely across north-east India and south-east Asia. But now, only about 800 survive in the wild of which about 450 are present in India, Bangladesh and Myanmar. In India, the duck is limited to Assam and Arunachal Pradesh. Due to its ghostly call, it is called 'Deo Hans' or Spirit Duck in Assamese. **Hence statement 2 is not correct.**
  - It mostly resides in dense tropical evergreen forest and is known to prefer inaccessible swampy areas formed by numerous rivers, streams, etc. The duck is generally found in pairs or in small parties of four to six, though parties of more than 10 are also recorded. It loves shade and spends most of the day in secluded jungle pools, occasionally perching on the trees during the day.
- Feature:
  - Secretive Birds: They are shy and hard to spot in the wild.
  - Tree Nesters: They nest in tree cavities near water.
  - **Nocturnal: They are mostly active at night. Hence statement 3 is correct.**
  - Diverse Diet: They eat plants, seeds, insects, and small fish.
  - Others: it's a State bird of Assam and called 'Deo Hanh' (spirit duck) in Assamese.
  - **Protection: Schedule I under Wildlife (Protection) Act, 1972; White-winged Duck Conservation Strategy and Action Plan 2022, formulated by the Assam government and Wildlife Trust of India; IUCN Red List: Critically Endangered. Hence statement 1 is not correct.**

Q 19.A

- **Recent Context: NASA's James Webb Space Telescope observed a constant flickering of light from the Accretion Disk.**
- **An accretion disk is a flattened, circular or elliptical structure that is formed when material falls towards a strong gravitational force, such as a star or a black hole.**
- Accretion disks are found surrounding a variety of celestial bodies, from relatively small regions of a few thousand kilometres around white dwarfs and neutron stars, to protoplanetary disks around very young stars.

- The biggest accretion disks, on the scale of the Solar System, are found surrounding the centres of active galaxies.
- The fact that accretion disks exist over a huge range of scales and in apparently very different types of systems suggests some common physics behind their formation.
- A 'centripetal force' – an inward-directed force on an orbiting body – then spreads the material out (sideways) to create the broad disk structure, while tidal forces pull it into an equatorial location.
- The combination of these two forces makes the shape of the disk wide, flat and thin.
- Within the accretion disk, colliding particles convert kinetic energy (the energy of motion) into heat and move inwards.
- As these particles move towards the central source, collisions occur more frequently due to the increased density of particles. As a result, they heat up and release X-rays.
- This radiation is an important tool for astronomers, as black holes can't be observed directly – not even light can escape the strength of their gravitational pull. The X-rays released from accretion disks can be observed and used to locate black holes.
- **Hence option (a) is the correct answer.**

Q 20.C

- **Context: Recently, Indian Prime Minister gifted Dokra art pieces to French President.**
- **Dhokra is a form of ancient bell metal craft practiced by the Ojha metal smiths living in states like Jharkhand, Chhattisgarh, Odisha, West Bengal and Telangana. However, the style and also the workmanship of this artisan community varies in different states. Dhokra or Dokra, is also known as bell metal craft. Hence both statements 1 and 2 are correct.**
- The process - There are two main processes of lost wax casting: solid casting and hollow casting.
  - While the former is predominant in the south of India the later is more common in Central and Eastern India. Solid casting does not use a clay core but instead a solid piece of wax to create the mould; hollow casting is the more traditional method and uses the clay core.
  - This art is said to be the first of its kind to use a non-ferrous metal like copper and its alloys – brass (a mix of zinc and copper) or bronze (tin and copper) which do not contain iron.
- The Dokra artifacts are made in brass and are unique in that the pieces do not have any joints. The method is combining metallurgical skills with wax techniques employing the lost wax technique, a unique form where mould is used only once and broken, making **this art the only one-of-its-kind in the world.**

Q 21.D

- **Context: Autonomous Systems Industry Alliance (ASIA), announced during Indian Prime Minister's recent visit to USA, aims to scale industry partnerships and production in the Indo-Pacific.**
  - Unmanned Underwater Vehicles (UUV), sometimes known as underwater drones, are underwater vehicles that can operate without human assistance or intervention. These robots can be categorised as remotely operated underwater vehicles (ROUVs) or autonomous underwater vehicles (AUVs). Autonomous Underwater Vehicles (AUVs) are highly automated and operate independently, whilst Remotely Operated Underwater Vehicles (ROUVs) are remotely operated by a human operator. Frequently, vehicles in the second group are classified as unmanned vehicles.
  - "MAYA, AMOGH, and ADAMYA" refer to three autonomous underwater vehicles (AUVs) developed by Larsen & Toubro (L&T) in India, designed for underwater surveillance and reconnaissance missions, with "ADAMYA" being particularly capable of launching from both surface ships and submarines; all three were showcased at the DefExpo 2020 event.
- **Hence option (d) is the correct answer.**

Q 22.A

- **Context: India-US TRUST (Transforming the Relationship Utilizing Strategic Technology) initiative launched.**
  - The TRUST initiative follows India's induction into the US-led Minerals Security Finance Network in September last year. India joined the Minerals Security Partnership (MSP) in 2023.
  - Unlike previous multilateral partnerships, however, the TRUST initiative will build on bilateral engagement. It also positions India and the US to accelerate existing efforts, and counter China's dominance in critical minerals supply chains.

- This initiative will catalyse collaboration among governments, academia and the private sector to drive innovation in defence, artificial intelligence, semiconductors, quantum computing, biotechnology, energy and space.
- The TRUST initiative's effort to create robust supply chains for pharma could focus on active pharmaceutical ingredients (APIs), many of which depend on critical minerals like lithium, magnesium, zinc, and selenium. India is the world's second largest manufacturer of APIs after China.
- Pharma products made up the largest share (21.9%) of the $20 billion worth of final consumer goods that India exported to the US in 2023. The pharma sector is vulnerable to tariffs that the Trump administration may decide to impose.
- The India-US collaboration in critical minerals and advanced materials comes after the two countries announced major national programmes over the past few years to boost this sector – from exploration and recycling to research and development (R&D) in processing technologies.
- In 2020, the US Energy Act authorised $675 million for the Critical Minerals and Materials (CMM) programme to diversify and expand supply chains and build a circular economy.

- **Hence option (a) is the correct answer.**

Q 23.A

- The atmosphere is primarily composed of nitrogen (78%), oxygen (21%), and other gases, including argon. **Hence, statement 1 is correct.**

Permanent Gases of the Atmosphere

Constituent	*Formula*	*Percentage by Volume*
Nitrogen	N_2	78.08
Oxygen	O_2	20.95
Argon	Ar	0.93
Carbon dioxide	CO_2	0.036
Neon	Ne	0.002
Helium	He	0.0005
Krypto	Kr	0.001
Xenon	Xe	0.00009
Hydrogen	H_2	0.00005

- **The ozone layer is mainly found in the stratosphere (between 15 to 35 km altitude, with the highest concentration around 20-25 km). Hence, statement 2 is not correct.**
- The troposphere is the lowest layer of the atmosphere (0-12 km) where most weather phenomena occur.
- While some ozone does exist in the troposphere (as a pollutant in smog), the protective ozone layer is in the stratosphere.

Q 24.A

- **Tropic of Cancer** is an imaginary line, at an angle of 23.50 degrees North from the Equator, that passes through roughly the middle of India. If you run this imaginary line around Earth, it passes through 17 countries, India being one of them.
- **The Tropic of Cancer passes through eight states in India:**
  - Gujarat (Jasdan),
  - **Rajasthan (Kalinjarh),**
  - Madhya Pradesh (Shajapur),
  - Chhattisgarh (Sonhat),
  - Jharkhand (Lohardaga),
  - West Bengal (Krishnanagar),
  - Tripura (Udaipur) and
  - Mizoram (Champhai)
- **Mahi River is the only river in India that cuts the Tropic of Cancer twice,** first in Madhya Pradesh from where it flows towards Rajasthan and enters Gujarat where it cuts for the second time. **Udaipur in Tripura is the city nearest to the Tropic of Cancer**. **Hence statement 1 is correct and statement 2 is not correct.**

Q 25.C

- **Tropic of Cancer** is an imaginary line, at an angle of 23.50 degrees North from the Equator, that passes through roughly the middle of India. If you run this imaginary line around Earth**, it passes through 17 countries, India being one of them.**
- The Tropic of Cancer passes through eight states in India: **Gujarat (Jasdan), Rajasthan (Kalinjarh), Madhya Pradesh (Shajapur), Chhattisgarh (Sonhat), Jharkhand (Lohardaga), West Bengal (Krishnanagar),Tripura (Udaipur) and Mizoram (Champhai) in that order. Hence option (c) is the correct answe**r.
- Mahi River is the only river in India that cuts the Tropic of Cancer twice, first in Madhya Pradesh from where it flows towards Rajasthan and enters Gujarat where it cuts for the second time. Udaipur in Tripura is the city nearest to the Tropic of Cancer.

Q 26.D

- The laterite soils develop in **areas with high temperatures and high rainfall.** These are the results of intense leaching due to tropical rains. **Hence statement 1 is not correct.**
- **With rain, lime and silica are leached away,** and soils rich in iron oxide and aluminium compounds are left behind. Because of their high iron oxide content, nearly all laterites are rusty-red in color.
- The humus content of the soil is quickly removed by bacteria that thrive well at high temperatures. These **soils are poor in organic matter, nitrogen, phosphate, and calcium, while iron oxide and potash are in excess**. **Hence statement 2 is not correct.**
- Laterites are not suitable for cultivation; however, the application of manures and fertilisers is required to make the soils fertile for cultivation. Red laterite soils in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for tree crops like cashewnut. **Laterite soils are widely cut as bricks for use in house construction. Hence statement 3 is correct.**
- The laterite soils are commonly found in Karnataka, Kerala, Tamil Nadu, Madhya Pradesh and the hilly areas of Odisha and Assam.

Q 27.C

- **Western Disturbances:**
  - They are **shallow cyclonic depressions (weak temperate cyclones) originating over the eastern Mediterranean Sea** and travelling eastwards across West Asia, Iran, Afghanistan and Pakistan before they reach the northwestern parts of India. **Hence, statement 1 is correct.**
  - On their way, the moisture content gets augmented from the Caspian Sea in the north and the Persian Gulf in the south. Although the **amount of rainfall caused by them is meagre, it is highly beneficial for rabi crops**. **Hence, statement 2 is correct.**
  - They are **steered in India by Westerly Jet Streams.**
  - **An increase in the prevailing night temperature** generally indicates an advance in the **arrival of these cyclones disturbances. Hence, statement 3 is correct.**
  - It sustains the flow of water in the Himalayan rivers during the summer months.

Q 28.A

- Besides the longitudinal divisions, the Himalayas have been divided on the basis of regions from west to east. These divisions have been demarcated by river valleys.
- For example, the part of the **Himalayas lying between the Indus and Satluj has been traditionally known as Punjab Himalayas** but it is also known regionally as Kashmir and Himachal Himalaya from west to east respectively. **Hence, statement 1 is correct.**
- **The part of the Himalayas lying between the Satluj and Kali rivers is known as Kumaon Himalayas**. **Hence, statement 2 is not correct.**
- The Kali and Tista rivers demarcate the Nepal Himalayas and the **part lying between Tista and Dihang rivers is known as Assam Himalayas. Hence, statement 3 is correct.**

Q 29.B

- As compared to the western coastal plain**, the eastern coastal plain is broader and is an example of an emergent coast**. **Hence, statement 1 is correct.**
- **Eastern coastal plains have well-developed deltas,** formed by the rivers flowing eastward into the Bay of Bengal. These include the deltas of the Mahanadi, the Godavari, the Krishna, and the Kaveri.
- **Because of its emergent nature, it has fewer ports and harbors**. The continental shelf extends up to 500 km into the sea, which makes it difficult to develop good ports and harbors. **Hence, statement 2 is not correct.**

Q 30.A

- The climate of India is strongly influenced by monsoon winds. It is traditionally a seasonal reversing wind accompanied by corresponding changes in precipitation. The monsoons are experienced in the tropical area roughly between 20° N and 20° S. Monsoons are affected by various factors like
  - the differential heating and cooling of land and water;
  - the shift of the position of Inter-Tropical Convergence Zone (ITCZ);
  - the presence of the high-pressure area, east of Madagascar,
  - the intensity and position of this high-pressure area affects the Indian Monsoon,
  - the heating of the Tibetan plateau during summer
- **Characteristics of Monsoonal Rainfall:**
- **Unlike the trade winds, monsoon winds are seasonal and exhibit a pulsating nature influenced by various atmospheric conditions.**
  - Trade winds are steady, but monsoon winds are not.
  - The Indian Monsoon is influenced by multiple factors, such as differential heating and cooling of land and sea, the movement of the ITCZ (Inter-Tropical Convergence Zone), and the presence of the Tibetan Plateau.
  - The monsoon also has breaks and fluctuations due to Madden-Julian Oscillations (MJO), depressions, and cyclonic disturbances. **Hence, statement 1 is correct.**
- **Monsoon rainfall generally decreases as one moves inland, away from the coastal regions.**
  - The Western Ghats and the Himalayan foothills receive high rainfall as they are the first barriers to the monsoon winds.
  - As winds travel inland, they lose moisture, resulting in less rainfall in interior regions like Rajasthan, Punjab, and central India. **Hence, statement 2 is correct.**
- **The distribution and intensity of monsoonal rainfall in India are significantly influenced by geographical features such as mountains and plateaus.**
  - The Western Ghats receive heavy rainfall due to the orographic effect, while the Deccan Plateau remains drier as it lies in the rain shadow area.
  - The Himalayas block the monsoon winds, causing heavy rains in northeastern states. **Hence, statement 3 is correct.**
- The onset of the monsoon happens quickly with sudden heavy rains, especially along the Kerala coast in early June.
  - The retreat of the monsoon is a slow and gradual process, starting in northwestern India in September and fully withdrawing by December in southern regions.
  - Hence, the withdrawal is not abrupt but gradual, making this statement incorrect. **Hence, statement 4 is not correct.**

Q 31.C

- A body of air covering a relatively wide area, exhibiting approximately uniform properties such as temperature, moisture, etc is called airmass. In an air mass, there is very little horizontal variation in temperature and moisture.
- **An air mass is a large body of air that extends over a vast area and exhibits uniform temperature and humidity characteristics.**
  - Air masses cover hundreds or thousands of kilometers and have relatively homogeneous (similar) temperature and moisture content.
  - They form over source regions such as oceans, deserts, or polar regions. **Hence, statement 1 is correct.**
- **Air masses move due to wind patterns and interact with other air masses, leading to weather changes. Hence, statement 2 is not correct.**
- **When a warm air mass meets a cold air mass, a boundary known as a front is formed, leading to changes in weather conditions.**
  - The boundary between two contrasting air masses is called a front.
  - **Cold Front:** A cold air mass pushes under a warm air mass, often leading to storms and heavy rain.
  - **Warm Front:** A warm air mass gradually rises over a cold air mass, bringing light rain or drizzle followed by warmer temperatures.
  - **Hence, statement 3 is correct.**
- When two different air masses meet, the boundary zone between them is called a front. The process of formation of the fronts is known as frontogenesis. There are four types of fronts:
  - Cold
  - Warm
  - Stationary
  - Occluded

Q 32.C

- Anticyclones are the opposite of cyclones, with high pressure in the centre and the isobars far apart. The pressure gradient is gentle and winds are light.
- **Anticyclones are associated with stable weather conditions, clear skies, and dry air. Hence, statement 1 is correct.**
  - Anticyclones are high-pressure systems where air descends (sinks down), leading to stable weather.
  - As the air sinks, it warms up, preventing cloud formation, which results in clear skies and dry conditions.
  - This is why deserts often form under persistent high-pressure zones (e.g., the Sahara Desert and Kalahari Desert).
- **In the Northern Hemisphere, winds in an anticyclone rotate clockwise, while in the Southern Hemisphere, they rotate counterclockwise. Hence, statement 2 is correct.**
  - Due to the Coriolis effect, winds in high-pressure systems (anticyclones) move in different directions in both hemispheres:
  - Clockwise in the Northern Hemisphere
  - Counterclockwise in the Southern Hemisphere
  - This is opposite to cyclones, where winds rotate counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

Q 33.D

- The low-pressure storm systems developing in the mid and high latitudes (35° latitude and 65° latitude in both hemispheres), beyond the tropics, are called the middle latitude or extratropical cyclones, or frontal cyclones. The passage of the front causes abrupt changes in the weather conditions over the area in the middle and high latitudes. Extratropical cyclones form along the polar front. Initially, the front is stationary. In the northern hemisphere, warm air blows from the south and cold air from the north of the front. When the pressure drops along the front, the warm air moves northwards, and the cold air moves towards the south, setting in motion an anticlockwise cyclonic circulation. The cyclonic circulation leads to a well-developed extratropical cyclone, with a warm front and a cold front.
- **Extratropical cyclones can form over both land and ocean**
  - Unlike tropical cyclones, which form only over warm ocean waters, extratropical cyclones can develop over both land and sea.
  - They are commonly found in mid-latitudes (30°–60° N/S), where cold and warm air masses interact.
  - Example: The Nor'easters in the USA and European windstorms. **Hence, statement 1 is correct.**
- **They generally move from west to east under the influence of westerly winds**
  - Extratropical cyclones are steered by the prevailing westerlies (winds blowing from west to east).
  - This movement is opposite to tropical cyclones, which usually move westward due to trade winds. **Hence, statement 2 is correct.**
- **In the Northern Hemisphere, extratropical cyclones rotate in an anti-clockwise direction.**
  - Due to the Coriolis effect, winds in an extratropical cyclone rotate anti-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
  - This is similar to tropical cyclones but with different formation mechanisms.
  - **Hence, statement 3 is correct.**

Q 34.A

- The whole of India has a monsoon type of climate. But the combination of elements of the weather, however, reveals many regional variations. These variations represent the **sub-types of the monsoon climate**. There are different schemes of classification of the climate of which Koeppen's scheme of classification is a major one.
- Koeppen based his scheme of Climatic classification on monthly values of temperature and precipitation. He identified five major climatic types, namely:
  - Tropical climates
  - Dry climates, where precipitation is very low in comparison to temperature, and hence, dry. If dryness is less, it is semi-arid (S); if it is more, the climate is arid(W).
  - Warm temperate climates
  - Cool temperate climates
  - Ice climates
- Koeppen used letter symbols to denote climatic types as given above. Each type is further sub-divided into sub-types on the basis of seasonal variations in the distributional pattern of rainfall and temperature

- **Tropical Monsoon (Am) - Western Ghats**
  - **The Tropical Monsoon (Am) climate is characterized by heavy seasonal rainfall, mainly due to the southwest monsoon.**
  - **Found along the Western Ghats, parts of northeastern India, and coastal Odisha. Hence, pair 1 is correctly matched.**
- **Tropical Savannah (Aw) - Chhattisgarh Plains**
  - **The tropical Savannah (Aw) climate experiences distinct wet and dry seasons, with pronounced winter drought.**
  - **Found in central and peninsular India, including Chhattisgarh, Madhya Pradesh, and Maharashtra. Hence, pair 2 is correctly matched.**
- **Cold Humid Climate (Dfb)**
  - **The Dfb (Humid Continental) climate is NOT found in India.**
  - **Arunachal Pradesh has a Subarctic or Highland Climate (H) with cold winters and moderate precipitation. Hence, pair 3 is not correctly matched.**

Q 35.B

- The Alaknanda has its source in the Satopanth glacier above Badrinath. **The Alaknanda consists of the Dhauli Ganga and the Vishnu Ganga, which meet at Joshimath or Vishnuprayag. Hence, option (b) is the correct answer.**
- **At Devprayag, the Bhagirathi meets the Alaknanda**; hereafter, it is known as the Ganga.
- The other tributaries of Alaknanda such as the **Pindar joins it at Karnaprayag while Mandakini or Kali Ganga meets it at Rudraprayag.**
- The **Mandakini and Alaknanda rivers meet at Rudraprayag.**
- **The Ganga enters the plains at Haridwar. From there, it flows first to the south, then to the south-east and** east before splitting into two distributaries, namely the Bhagirathi and the Padma before emptying into the Bay of Bengal.

Q 36.C

- In cold climates (such as tundra and boreal forests), decomposition of organic matter is very slow due to low temperatures.
  - This leads to low humus content in the soil, as organic material does not break down quickly. **Hence, statement 1 is correct.**
- Bacterial activity is very low in cold climates due to extremely low temperatures. Decomposition of organic matter is slow, and as a result, humus accumulates very slowly rather than being rapidly decomposed. **Hence, statement II is not correct.**
- **Hence, option (c) is the correct answer.**

Q 37.C

- **Comparison between the Himalayan and the Peninsular River:**
  - Himalayan rivers originate from the lofty Himalayan ranges while Peninsular Rivers originate in the Peninsular Plateau. Himalayan rivers have large basins and catchment areas while Peninsular rivers have small basins and catchment areas.
  - **Himalayan rivers flow through deep V–shaped valleys called gorges.** These gorges have been carved out by downcutting carried on side by side with the uplift of the Himalayas. **While the Peninsular rivers flow in comparatively shallow valleys.** These are more or less completely graded valleys. **Hence, statement 3 is correct.**
  - **The Himalayan rivers are perennial in nature,** i.e., water flows throughout the year in these rivers. These rivers receive water both from the monsoons and snow melt. **While the Peninsular rivers receive water only from rainfall and water flows in these rivers in the rainy season only.** Therefore, these rivers are seasonal or **non-perennial. Hence, statement 1 is correct.**
  - When **Himalayan rivers enter the plains,** there is a sudden reduction in the speed of flow of water which **forms meanders and shifts their beds.** While, in the case of **Peninsular rivers,** the hard rock surface and non-alluvial character of the plateau permit little scope for the formation of meanders. **As such, the rivers of the Peninsular Plateau follow more or less straight courses. Hence, statement 2 is correct.**

Q 38.C

- **The climate of India is strongly influenced by monsoon winds.** It is traditionally a seasonal reversing wind accompanied by corresponding changes in precipitation. The monsoons are experienced in the tropical area roughly between 20° N and 20° S.
- **Characteristics of Monsoonal Rainfall:**
- **The Monsoon, unlike the trades, are not steady winds but are pulsating in nature,** affected by different atmospheric conditions encountered by it, on its way over the warm tropical seas. Around the time of its arrival, the normal rainfall increases suddenly and continues constantly for several days. This is known as the 'burst' of the monsoon. **Hence statement 1 is correct.**
- **Monsoonal rainfall is largely governed by relief or topography.** The heavy rainfall in the northeastern states can be attributed to their hill ranges and the Eastern Himalayas. **Hence statement 3 is correct.**
- **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. **Hence statement 2 is correct.**

Q 39.D

- **Recent Context: Launched in 2019, JJM was aimed at providing functional household tap connections (FHTC) to provide 55 litres per capita per day drinking water to all rural households in country by 2024.**
- The Jal Jeevan Mission (JJM) was launched by Prime Minister Narendra Modi on August 15, 2019, with the ambitious goal of providing tap water supply to every rural household by 2024. At the time of its inception, only 3.23 crore (17%) of rural households had tap water connections.
  - The mission aims to bridge this gap by providing nearly 16 crore additional households with tap water by 2024, ensuring the functionality of existing water supply systems, and directly benefiting over 19 crore rural families.
  - This initiative is intended to reduce the rural-urban divide and enhance public health.
  - As of August 12, 2024, Jal Jeevan Mission has successfully provided tap water connections to 11.82 crore additional rural households, bringing the total coverage to more than 15.07 crore households, which accounts for 77.98% of all rural households in India. The mission has reached a significant milestone, profoundly impacting the lives of rural people by providing them with reliable access to potable water in their homes.
- **Components of Jal Jeevan Mission**
  - Water Quality: Ensure safe drinking water to reduce water-borne ailments
  - Source sustainability: Promote groundwater re-charge & water conservation
  - **Greywater management: Reuse and recycle waste water for source sustenance Hence point 1 is correct.**
  - **Skill development & employment generation: Local people are skilled for building and maintaining water Hence point 2 is correct.**
  - Tap water supply: Tap water connection to 19.25 Crore rural households of the country by 2024
- **Bottom-up planning: Community engagement in planning, implementation and Operation & Maintenance (O&M) Hence point 3 is correct.**
- **Women empowerment: Involvement of women in planning, decision-making, implementation, monitoring and O&M. Hence point 4 is correct.**
- Focus on future generation Provision of tap water supply to schools, tribal hostels and Anganwadi (day-care) centres

Q 40.A

- **Recent Context: Recently, Sovereign Green Bonds (SGrBs) are seeing limited investor interest due to lower yields.**
  - **Sovereign Green Bonds (SGBs) are issued by the central government, not state governmen**ts. These bonds are a type of debt instrument used to raise funds exclusively for environmentally sustainable projects. **State governments can issue State Development Loans (SDLs) for green projects, but SGBs are issued at the national level by the Government of India. Hence statement 1 is correct.**
  - **Sovereign Green Bonds ensure that the funds raised are used only for projects that promote environmental sustainability. Eligible projects include renewable energy, clean transportation, energy efficiency, pollution prevention, and climate adaptation.** Essentially, these bonds are a way for governments to raise capital while promoting environmental sustainability. **Hence statement 2 is not correct.**

- **The Union Budget 2022-23 first announced the issuance of Sovereign Green Bonds as part of India's commitment to sustainable financing.** In 2023-24, the government issued SGBs in tranches, and the Reserve Bank of India (RBI) managed their issuance. **Hence statement 3 is not correct.**

Q 41.D

- **Two major island groups in India are present in the Bay of Bengal and the other in the Arabian Sea.** The Bay of Bengal island groups consist of about 572 islands/islets. These are situated roughly between 6°N 14°N and 92°E -94°E. The two principal groups of islets include the Ritchie's archipelago and the Labyrinth island.
- The Andaman and Nicobar Islands **lie in the South-east direction to the mainland of India.** Among these, the Andamans are situated in the north and the Nicobar in the south. **Hence statement 3 is correct.**
- Both Andaman and Nicobar are **separated by a waterbody which is called the Ten Degree channel. Hence statement 1 is correct.**
- **These islands are an elevated portion of submarine mountains. Hence statement 2 is correct.**
- Some smaller islands are volcanic in origin. **Barren Island, the only active volcano in India is situated in the Andaman Sea.** It is a historically active volcano along the N-S-trending volcanic arc extending between Sumatra and Burma. **Hence statement 4 is correct.**

Q 42.D

- The islands of the Arabian Sea include Lakshadweep and Minicoy.
- **The entire island group is built of coral deposits.**
- These are scattered between 8°N-12°N and 71°E -74°E longitude.
- These islands are located at a distance of 280 km-480 km off the Kerala coast.
- **The maritime boundary between the Maldives and India(Lakshadweep) runs through the Eight degree channel, locally known as Addigiri Kandu.**
- **Saddle Peak or Saddle Hill is located on North Andaman Island** in India's Andaman and the Nicobar Islands. **Hence, option (d) is the correct answer.**
- **Kavaratti capital of Lakshadweep is part of the Cannanore group of islands.**

Q 43.B

- A waterfall is any point in a river or stream where water flows over a vertical drop or a series of steep drops**. Some important waterfalls in India:**

Waterfall	**River**	Location
1. **Dudhsagar**	Mandovi	Karnataka and Goa
2. **Hundru**	Subarnarekha	Ranchi district, Jharkhand
3. **Chuliya**	Chambal	Madhya Pradesh
4. **Dhuandhar**	Narmada	Jabalpur, Madhya Pradesh
5. Jog Falls	Sharavati	Shimoga district, Karnataka
6. Kunchikal	Varahi	Shimoga district, Karnataka

- **Hence, option (b) is the correct answer.**

Q 44.A

- **Rivers of the northern plain Show a Dendritic river pattern. The drainage pattern resembling the branches of a tree is known as "dendritic".**The pattern develops in areas where the rock beneath the stream has no particular structure and can be eroded equally easily in all directions. **Hence statement 1 is correct.**
- **When the rivers originate from a hill and flow in all directions**, the drainage pattern is **known as 'radial'. The rivers originating from the Amarkantak range present a good example of it**. **Hence, statement 2 is not correct.**
- Centripetal' drainage pattern is when the rivers discharge their waters from all directions in a lake or depression. It is the opposite of a radial drainage pattern.

Q 45.C

- **Regur Solis (Black Soils)**
  - These soils are formed from the weathering of basaltic rocks found in the Deccan Plateau.
  - **Distribution:** Found in Maharashtra, Madhya Pradesh, Gujarat, Karnataka, Andhra Pradesh, and Tamil Nadu.
  - **Properties:** Clayey in nature, retains moisture well, making it suitable for crops like cotton.
  - Self-aerating, develops deep cracks during dry seasons, helping in natural soil aeration.
  - Rich in minerals, contains calcium carbonate, magnesium, potash, and lime.
  - Deficient in phosphorus and nitrogen, requiring fertilization for better yield.
  - **Crops Grown:** Cotton, pulses, oilseeds, wheat, jowar, and millets.
  - **Hence, option (c) is the correct answer.**
- **Alluvial Soils are found in river valleys and plains**, not in low rainfall regions. These are mostly sandy or clayey but do not develop cracks like black soil.
- **Laterite Soils are found in high rainfall and tropical regions** (e.g., Kerala, Karnataka, Assam). These are poor in nutrients due to leaching, not suitable for cotton cultivation.
- **Peaty Soils are formed in waterlogged and marshy areas** (e.g., Kerala, West Bengal). Rich in organic matter but not in minerals, making them different from black soil.

Q 46.C

- **Context: This was highlighted in Global Electricity Review (GER) 2024 report, released by global energy think tank Ember.**
- **Key finding of the report**
  - Renewables provided 30% of global electricity for the first time.
  - Solar was the main supplier of electricity growth in 2023.
  - **India saw the world's fourth-largest surge in solar generation in 2023 behind China, the US and Brazil. Hence option (c) is the correct answer.**
  - India provided 5.9% of global growth in solar generation in 2023.
  - India's per capita emissions from the power sector are just over half the global average and even further below the average in Asia.
- **Growth in Solar Sector**
  - India's solar power sector has witnessed an extraordinary 3450 % increase in capacity over the past decade, rising from 2.82 GW in 2014 to 100 GW in 2025. As of January 31, 2025, India's total solar capacity installed stands at 100.33 GW, with 84.10 GW under implementation and an additional 47.49 GW under tendering.
  - The country's hybrid and round-the-clock (RTC) renewable energy projects are also advancing rapidly, with 64.67 GW under implementation and tendered, bringing the grand total of solar and hybrid projects to 296.59 GW.

Q 47.D

- **The temperature of ocean water does not decrease at a uniform rate with depth.**
  - Instead, ocean temperature follows a three-layered structure:
  - Surface Layer (Epipelagic Zone): The warmest layer, affected by solar heating.
  - Thermocline Layer (Mesopelagic Zone): A zone of rapid temperature decline (not uniform).
  - Deep Layer (Bathypelagic Zone and below): Cold and stable, with little temperature variation.
  - **Hence, statement I is not correct.**
- **The rate of temperature change with depth varies due to several factors:**
- **Latitude:**
  - Tropical regions have a steep thermocline due to high surface temperatures.
  - Polar regions have a weaker thermocline as surface and deep waters are similarly cold.
- **Ocean Currents:**
  - **Warm currents (e.g., Gulf Stream) raise temperatures, affecting depth variation.**
  - **Cold currents (e.g., Labrador Current) cool surface waters, altering the thermocline.**
- **Seasonal Variations:**
  - **In summer, the surface layer is warmer, steepening the thermocline.**
  - **In winter, surface cooling reduces the rate of temperature change with depth.**
  - **Hence, statement II is correct.**

Q 48.C

- **Recent Context: Autonomous Systems Industry Alliance (ASIA), announced during Indian Prime Minister's recent visit to USA, aims to scale industry partnerships and production in the Indo-Pacific.**
- **Autonomous Systems Industry Alliance (ASIA)**
- This initiative, named the Autonomous Systems Industry Alliance (ASIA), aims to forge robust industry partnerships between the two nations, focusing on the co-production of cutting-edge drone technologies. The systems developed under this alliance will not only bolster the defence capabilities of India and the US but also hold the potential for export to friendly nations, enhancing security in the strategically vital Indo-Pacific region.
- The ASIA initiative builds on the U.S.-India Roadmap for Défense Industrial Cooperation, reflecting the growing importance of autonomous systems in modern warfare and maritime security. The pact, formalized during the Modi-Trump summit, underscores a shared commitment to counter regional challenges, particularly in the Indo-Pacific, where tensions with China have heightened the need for advanced surveillance and defence technologies.
- This initiative fall under the "US-India COMPACT for the 21st Century," an agreement introduced by Prime Minister Modi and President Trump to advance military partnerships, commerce, and technological collaboration between the two nations.
- **Technologies Involved –**
  - Unmanned Underwater Vehicles (UUVs): Includes Remotely Operated UUVs and Autonomous UVs equipped with sophisticated sensors and cameras.
  - India developed UUVs like MAYA, AMOGH, and ADAMYA
  - Acoustic Surveillance: Sonar systems, Sonobuoys, Sea Picket autonomous surveillance system.
  - Light Detection and Ranging (LIDAR): Bathymetric LIDAR uses water-penetrating green light to measure seafloor and riverbed elevations.
- **Hence option (c) is the correct answer.**

Q 49.B

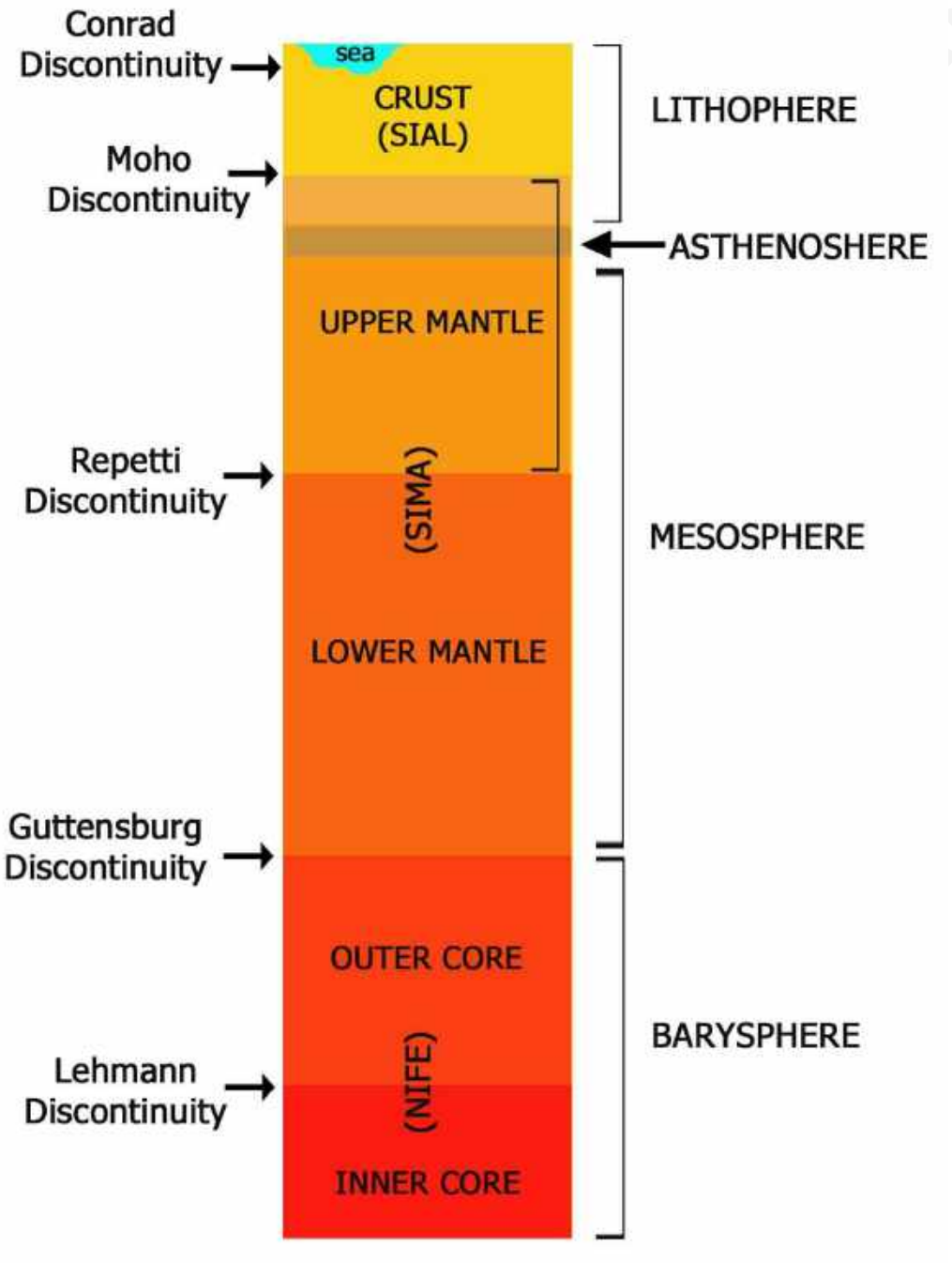
- **Tillite** is the sedimentary rock formed out of deposits of glaciers. The Gondwana system of sediments from India is known to have its counterparts in six different landmasses of the Southern Hemisphere. At the base, the system has thick tillite indicating extensive and prolonged glaciation. Counterparts of this succession are found in Africa, Falkland Island Madagascar, Antarctica and Australia besides India.
- The overall resemblance of the Gondwana-type sediments clearly demonstrates that these landmasses had remarkably similar histories. The glacial tillite provides unambiguous evidence of palaeoclimates and also of drifting of continents. **Hence option (b) is the correct answer.**
- **Pumice** is a very light and porous volcanic rock formed when a gas-rich froth of glassy lava solidifies rapidly. Hence, it is an igneous rock. Marble is a metamorphic rock composed of recrystallized carbonate minerals, most commonly calcite or dolomite. Quartzite is a metamorphic rock formed when quartz-rich sandstone or chert has been exposed to high temperatures and pressures.

Q 50.A

- An earthquake in simple words is the shaking of the earth. It is a natural event. It is caused due to release of energy, which generates waves that travel in all directions.
- **The point where the energy is released is called the focus of an earthquake, alternatively, it is called the hypocentre. The energy waves traveling in different directions reach the surface. Hence, statement 1 is not correct.**
- The point on the surface, nearest to the focus, is called the epicenter. It is the first one to experience the waves. It is a point directly above the focus.
- Tsunamis are waves generated by tremors and are not a type of earthquake. The effect of the **tsunami would occur only if the epicenter of the tremor is below oceanic waters and the magnitude is sufficiently high. Hence, statement 2 is correct.**

Q 51.A

- In geology, the word "discontinuity" is used for a surface at which seismic waves change velocity. One of these surfaces exists at an average depth of 8 kilometers beneath the ocean basin and at an average depth of about 32 kilometers beneath the continents. At this discontinuity, seismic waves accelerate. This surface is known as the Mohorovicic Discontinuity or often simply referred to as the "Moho." The Mohorovicic Discontinuity, or "Moho," is the boundary between the crust and the mantle.
- **The Mohorovicic Discontinuity** marks the lower limit of Earth's crust. As stated above, it occurs at an average depth of about 8 kilometers beneath the ocean basins and 32 kilometers beneath continental surfaces.
- **Gutenberg discontinuity:** The Gutenberg Discontinuity is situated inside the earth at a depth of about 2900 kilometers below the surface. The Gutenberg discontinuity separates the core and the mantle of the earth. **Hence option (a) is the correct answer.**
- **Conrad discontinuity:** The Conrad discontinuity (named after the seismologist Victor Conrad) is considered to be the border between the upper continental crust and the lower one.
- **Lehmann discontinuity:** The boundary between the inner and outer core, which occurs at a depth of roughly 5,100 km (about 3,200 miles), is known as the Lehmann discontinuity.



Q 52.B

- The sources of information about the interior of the earth are divided into direct sources and indirect sources:
  - **Direct Sources:**
    - The most easily available solid earth material is surface rock or the rocks we get from mining areas. **Gold mines** in South Africa are as deep as 3 - 4 km.
    - **Volcanic eruption** forms another source of obtaining direct information. As and when the molten material (magma) is thrown onto the surface of the earth, during volcanic eruption it becomes available for laboratory analysis.
  - **Indirect Sources:**
    - Mining activity provides us with information about temperature and pressure which increases with the increasing distance from the surface towards the interior in deeper depths.
    - Another source of information is the meteors that at times reach the earth. However, it may be noted that the material that becomes available for analysis from meteors, is not from the interior of the earth. The material and the structure observed in the meteors are similar to that of the earth.
    - The other indirect sources include **gravitation,** magnetic field, and **seismic activity (earthquakes).** Seismic activity helps us in analysing the composition of the interior of the earth based on the seismic waves. **Hence option (b) is the correct answer.**

Q 53.D

- **Earth flow:** It is promoted by excessive water received mostly through rainfall so that the materials are oversaturated.
- **Mudflow:** It differs from earth flow in that former may be noticed by the observer while the latter cannot be noticed because earth flow is not very common. The water content is more in mud flow than in debris low and earth flow. Mudflow is most common along valley sides of alluvial rivers and the debris (mud) so produced is transported by the rivers. The necessary conditions which promote mudflow include:
  - steep and vertical slope,
  - presence of unconsolidated materials on the upper surface so that these, when mixed with water,
  - become viscous fluid and slippery,
  - intermittent supply of sufficient water as a lubricant, and
  - absence of vegetation. **Hence option (d) is the correct answer.**

Q 54.C

- Precipitation gives soil its moisture content which makes the chemical and biological activities possible. Excess water helps in the downward transportation of soil components through the soil and deposits the same down below.
- In soil science, **eluviation is the transport of soil material from upper layers of soil to lower levels by downward precipitation of water** across soil horizons, and **accumulation of this material (illuvial deposit) in lower levels is called illuviation. Hence pairs 1 and 2 are correctly matched**
- In climates like wet equatorial rainy areas with high rainfall, not only calcium, sodium, magnesium, potassium, etc. but also a major part of silica is removed from the soil. **Removal of silica from the soil is known as desilication. Hence only pair 3 is correctly matched.**

Q 55.A

- **Intrusive volcanic landforms:** The intrusive igneous rocks or plutonic rocks are formed when the Magma cools within the earth's crust and does not erupt to the surface. Various forms of intrusive igneous rocks are formed due to the intrusive activity of volcanoes.
- **Laccoliths:** These are large dome-shaped intrusive bodies connected by a pipe-like conduit from below. These are basically intrusive counterparts of an exposed domelike batholith. Example: The laccoliths of Henry mountains in Utah, USA.
- **Lopolith:** As and when the lava moves upwards, a portion of the same may tend to move in a horizontal direction wherever it finds a weak plane. In case it develops into a saucer shape, concave to the sky body, it is called Lopolith. Example: The Bushveld lopolith of Transvaal, South Africa.
- **Phacolith:** A Phacolith is a lens-shaped mass of igneous rocks occupying the crest of an anticline or the bottom of a syncline and being fed by a conduit from beneath. Example: Corndon Hill in Shropshire, England.

- **Batholiths:** These are a huge mass of igneous rocks, usually of granite, formed due to cooling down and solidification of hot magma inside the earth. They appear on the surface only after the denudation processes remove the overlying materials and may be exposed on the surface after erosion. Example: Wicklow mountains of Ireland; the uplands of Brittany, France. **Hence option (a) is the correct answer.**

Q 56.D

- **Longitude is an angular distance, measured in degrees along the equator east or west of the Prime (or First) Meridian.** On the globe, longitude is shown as a series of semi-circles that run from pole to pole passing through the equator. Such lines are also called meridians. **Hence, statement 1 is not correct.**
- Unlike the equator which is centrally placed between the poles, any meridian could have been taken to begin the numbering of longitude. It was finally decided in 1884, by international agreement, to choose as the zero meridians the one which passes through the Royal Astronomical Observatory at Greenwich, near London. This is the Prime Meridian (0°) from which all other meridians radiate eastwards and westwards up to 180°.
- As the parallels of latitude become shorter poleward, so the meridians of longitude, which converge at the poles, enclose a narrower space. **They have one very important function, they determine local time in relation to G.M.T. or Greenwich Mean Time, which is sometimes referred to as World Time. Hence, statement 2 is not correct.**

Q 57.C

- **Erosional landforms due to Glaciers:**
- **Cirque or Corris:**
  - They are deep, long, and wide troughs or basins with very steep concave to vertically dropping high walls at its head as well as sides.
  - They are simply bowl-shaped depression formed due to the erosional activity of glaciers.
  - When these depressions are filled with water, they are called Cirque lake or Corrie Lake, or Tarn Lakes.
- **Hanging Valleys or U-shaped Valleys, Fjords/fiords:**
  - The Glacier doesn't create a new valley like a river does but deepens and widens a pre-existing valley by smoothening away the irregularities.
  - These valleys, which are formed by the glacial erosions assume the shape of the letter 'U' and hence are called U-shaped Valleys or Hanging Valleys.
  - A fjord is a very deep glacial trough filled with seawater and making up shorelines.
  - A fjord is formed when a glacier cuts a U-shaped valley by ice segregation and abrasion of the surrounding bedrock and this valley gradually gets filled with seawater (formed in mountains nearby sea).
- **Horns and Aretes:**
  - Horns are sharp-pointed and steep-sided peaks.
  - They are formed by headward erosion of the cirque wall.
  - When the divide between two cirque walls gets narrow because of progressive erosions, it results in the formation of a saw-toothed ridge called Arete.
- **Hence, option (c) is the correct answer.**

Q 58.D

- Earthquake waves are basically of two types - body waves and surface waves. Body waves are generated due to the release of energy at the focus and move in all directions traveling through the body of the earth. There are two types of body waves. They are called P and S-waves.
- **P-waves are also called primary waves. These move faster and are the first to arrive at the surface. On the other hand, S-waves (called secondary waves) arrive at the surface with some time lag.**
- The P-waves are similar to sound waves. While they travel through gaseous, liquid, and solid materials, S-waves can travel only through solid materials.
- **P-waves vibrate parallel to the direction of the wave.** This exerts pressure on the material in the direction of the propagation. As a result, it creates density differences in the material leading to stretching and squeezing of the material. **Whereas S-waves vibrate perpendicular to the wave direction in the vertical plane**. Hence, they create troughs and crests in the material through which they pass. Hence, these waves are more destructive. They cause the displacement of rocks, and hence, the collapse of structures occurs. **Hence, option (d) is the correct answer.**

Q 59.C

- **Karst regions** have a bleak landscape, occasionally broken by precipitous slopes. There is a general absence of surface drainage as most of the surface water has gone underground. Streams rising on other rocks only flow over limestone for a short distance and then disappear underground. For the greater part of their course, they cut their way along the joints and fissures of the rock wearing out a system of underground channels. The surface valleys are therefore dry. When the water penetrates to the base of the limestone and meets non-porous rocks it re-emerges onto the surface as a spring or resurgence. **Hence option (a) is not correct.**
- **Zeugen region:** These are tabular masses that have a layer of soft rocks lying beneath a surface layer of more resistant rocks. The sculpting effects of wind abrasion wear them into a weird-looking 'ridge and furrow landscape. Mechanical weathering initiates their formation by opening up joints of the surface rocks. Wind abrasion further 'eats' into the underlying softer layer so that deep furrows are developed. The hard rocks then stand above the furrows as ridges or Zeugen. **Hence option (b) is not correct.**
- **Inselberg region:** This is a German word meaning island mountain. They have isolated residual hills rising abruptly from the level ground. They are characterized by their very steep slopes and rather rounded tops. They are often composed of granite or gneiss and are probably the relics of an original plateau that has been almost entirely eroded away. Inselbergs are typical of many desert and semi-arid landscapes in old age e.g. those of northern Nigeria, Western Australia, and the Kalahari Desert. **Hence option (c) is the correct answer.**
- **Coombes region:** The landforms of chalk are rather different from those of other limestones. There is little or no surface drainage and valleys that once contained rivers are now dry. These are often called coombes. **Hence option (d) is not correct.**

Q 60.D

- **Gorges and Canyons:**
  - Gorges and canyons represent very deep and narrow valleys having very steep valley side slopes say wall-like steep valley sides. It is difficult to draw a line of distinction between these two types of valleys. Normally, a very deep and narrow valley is called a gorge and an extended form of the gorge is called a canyon.
  - Gorges are formed due to active downcutting of the valleys through the mechanism of pothole drilling during the juvenile (youth) stage of the fluvial cycle of erosion. **Hence, statement 1 is correct.**
  - Gorges are also formed due to the recession of waterfalls. The waterfall flows over resistant hard/cap rock. A deep plunge pool is formed at the base of the waterfall due to erosion. The hard rock above is undercut by erosion of the underlying soft rock. Eventually, the overhang collapses. This collapse causes the waterfall to retreat upstream leaving steep cliffs instead of river banks. A gorge of recession is formed. Most of the Himalayan rivers have carved out deep and narrow gorges. **Hence, statement 2 is correct.**
  - Canyons are an extended form of gorges. Canyons represent very deep, narrow but long valleys. **Hence, statement 3 is correct.**

Q 61.C

- Out of the eight planets, Mercury, Venus, Earth, and Mars are called the inner planets as they lie between the sun and the belt of asteroids the other four planets (**Jupiter, Saturn, Uranus, and Neptune**) are called the outer planets.
- Alternatively, the first four are called Terrestrial, meaning earth-like as they are made up of rock and metals, and have relatively high densities. The rest four are called Jovian or Gas Giant planets. Jovian means Jupiter-like.
- Most of them are much larger than the terrestrial planets and have a thick atmosphere, mostly of helium and hydrogen. All the planets were formed in the same period sometime about 4.6 billion years ago.
- The difference between terrestrial and jovian planets can be attributed to the following conditions:
  - The terrestrial planets were formed in the close vicinity of the parent star where it was too warm for gases to condense to solid particles. Jovian planets were formed at quite a distant location. **Hence, terrestrial planets are warmer than Jovian planets.**
  - The solar wind was most intense nearer the sun; so, it blew off lots of gas and dust from the terrestrial planets. The solar winds were not all that intense to cause similar removal of gases from the Jovian planets. **Therefore, Jovian planets have lots of gas and dust.**
  - The terrestrial planets are smaller than the Jovian planets. Therefore, **they have low gravity (as gravity is directly proportional to mass)** and their lower gravity could not hold the escaping gases.
- **Hence, option (c) is the correct answer.**

Q 62.A

- **Option 1 is correct.** A convergent boundary is where the crust is destroyed as one plate dives under another. The location where the sinking of a plate occurs is called a subduction zone. There are three ways in which convergence can occur. These are: (i) between an oceanic and continental plate; (ii) between two oceanic plates; and (iii) between two continental plates.
- **Option 2 is correct.** A divergent boundary is where a new crust is created (generated) as the plates pull away from each other. The sites where the plates move away from each other are called spreading sites.
- **Option 3 is not correct.** A transform boundary is where the crust is neither produced nor destroyed as the plates slide horizontally past each other. Transform faults are the planes of separation generally perpendicular to the mid-oceanic ridges.

Q 63.A

- **Option 1 is correct:** Solifluction involves slow downslope flowing soil mass or fine grained rock debris saturated or lubricated with water.
- **Option 2 is not correct:** Earthflow is a rapid movement of water-saturated clayey or silty earth materials down low-angle terraces or hillsides.
- **Option 3 is not correct:** Slump is a type of landslide which is relatively rapid and perceptible movement. The materials involved are relatively dry. It is slipping of one or several units of rock debris with a backward rotation with respect to the slope over which the movement takes place.

Q 64.D

- **Stalactites hang as icicles of different diameters (from the ceiling of underground caves).** Normally they are broad at their bases and taper towards the free ends showing up in a variety of forms.
- **Stalagmites rise up from the floor of the caves.** Stalagmites form due to dripping water from the surface or through the thin pipe, of the stalactite, immediately below it. Stalagmites may take the shape of a column, a disc, with either a smooth, rounded bulging end or a miniature crater-like depression.
- The stalagmite and stalactites eventually fuse to give rise to columns and pillars of different diameters. **Hence both the statements are correct.**

Q 65.C

- **Since tides are caused by the earth-moon-sun positions which are known accurately,** the tides can be predicted well in advance. This helps the navigators and fishermen plan their activities. Tidal flows are of great importance in navigation.
- Importance of tides:
  - Fish may concentrate during ebb tides. Commercial fishermen follow the tides and learn to fish during levels of highest concentration to improve their economic investment and to make more efficient use of their time.
  - Tides affect other aspects of oceanic life, including the reproductive activities of fish and ocean plants. Floating plants and animals ride the tidal currents between the breeding areas and deeper waters. The **tides help remove pollutants and circulate nutrients ocean plants and animals need to survive.**
  - Crabs, mussels, snails, seaweed, and other edible sea life inhabit the tidal zone. Small tide pools may also contain small fish and sea vegetables. The sea life found in these regions are often harvested for food. Without the regular washing of the tides, these complex and abundant creatures would die and food resources would diminish.
  - Tides affect the depth and currents in and around coastal areas. Ships may need to navigate the waters during high tide in some areas or risk running aground. Pilots take into consideration the water level, width of channels and direction of the water flow to determine the best time to travel.
  - **Two high tides and two low tides occur during every 24-hour period.** The predictability of the tides, fast movement of water during the inflow and outflow can provide a source of renewable energy to communities living along the coast.
- **Hence option (c) is the correct answer.**

Q 66.A

- The word 'sedimentary' is derived from the Latin word sediment, which means settling. Rocks (igneous, sedimentary and metamorphic) of the earth's surface are exposed to denudational agents and are broken up into various sizes of fragments. Such fragments are transported by different exogenous agencies and deposited. **These deposits through compaction turn into rocks. This process is called lithification.**
- In many sedimentary rocks, the layers of deposits retain their characteristics even after lithification. Hence, we see a number of layers of varying thickness in sedimentary rocks like sandstone, shale etc.
- **Hence option (a) is the correct answer.**

Q 67.A

- **Peneplain** is an erosional plain carved by the agents of erosion. Rivers, rain, ice, and wind help to smooth out the irregularities of the earth's surface. They are almost plain hence called a peneplain. **Hence option (a) is the correct answer.**
- **Pediplain:** It is also an erosional plain. Mechanical weathering in arid and semi-arid areas wears back the mountain slopes to leave gently sloping pediments or pediplains, but some steep hills remain which are called inselbergs.
- **Structural plains:** These are structurally depressed areas of the world that make up some of the most extensive natural lowlands on the earth's surface. They are formed by horizontally bedded rocks, relatively undisturbed by the crustal movements of the earth. They include such great plains as the Russian Platform, the Great plains of the U.S.A., and the central lowlands of Australia.
- **Coastal plains:** These are depositional plains. In coastal regions, waves and winds often drive beach materials, mud, sand, or shingle landwards and deposit them on the coastal plain to form marine swamps, mud-flats, tidal and estuarine lowlands

Q 68.C

- **Potholes and Plunge Pools:**
  - Over the rocky beds of hill-streams more or less circular depressions called potholes to form because of stream erosion aided by the abrasion of rock fragments. The kettle-like small depressions in the rocky beds of the river valleys are called potholes which are usually cylindrical in shape. **Hence, statement 1 is correct.**
  - Potholes are generally formed in coarse-grained rocks such as sandstones and granites. **Hence, statement 2 is correct.**
  - The diameter of potholes ranges from a few centimeters to several meters. The depth of potholes is far more than their diameters. Potholes of much bigger size are called plunge pools. In fact, plunge pools are formed at the base of waterfalls due to the pounding of rocks by gushing water from the falls (waterfalls). **Hence, statement 3 is correct.**
  - The Once a small and waterfalls also, large potholes, quite deep and wide, form because of the sheer impact of water and rotation of boulders. Such large and deep holes at the base of waterfalls are called plunge pools.

Q 69.C

- The earth moves in space in two ways: it rotates on (or about) its axis and revolves around the earth.
  - **Earth rotates along its axis from west to east.** It takes approximately 24 hrs to complete on rotation. Days
  - and nights occur due to the rotation of the earth. (does not contribute to seasonal changes)
- Earth rotates on a tilted axis. Earth's rotational axis makes an angle of 23.5° with the normal i.e. it makes an angle of 66.5° with the orbital plane. The orbital plane is the plane of earth's orbit around the Sun.
- Throughout the year, different parts of Earth receive the Sun's most direct rays. So, when the North Pole tilts toward the Sun, it's summer in the Northern Hemisphere. And when the South Pole tilts toward the Sun, it is winter in the Northern Hemisphere.
- The second motion of the earth around the sun in its orbit is called revolution. It takes 365¼ days (one year) to revolve around the sun. Six hours saved every year are added to make one day (24 hours) over a span of four years. **Changes in the seasons occur because of the revolution of the earth.**
- The Revolution of the earth on a tilted axis is the cause of variation of seasons. **Hence, option (c) is the correct answer.**

Q 70.D

- Our solar system is made up of a star, eight planets, and countless smaller bodies such as dwarf planets, asteroids, and comets. Our solar system orbits the center of the Milky Way Galaxy.
- The planets of our solar system—and even some asteroids—hold more than 150 moons in their orbits. **Mercury and Venus are the two planets that do not have any satellites.**
- **Every planet in our solar system except for Venus and Uranus rotates counter-clockwise as seen from above the North Pole;** that is to say, from west to east. This is the same direction in which all the remaining planets orbit the sun.
- The asteroid belt is a torus-shaped region in the Solar System, **located roughly between the orbits of the planets Jupiter and Mars,** that is occupied by a great many solid, irregularly shaped bodies, of many sizes but much smaller than planets, called asteroids or minor planets. **Hence option (d) is the correct answer.**

Q 71.C

- All observations from telescopes reveal that the planetary bodies, the Sun, Moon, satellites and stars have circular outlines from whichever angle they are seen. They are strictly spheres. Earth, by analogy, cannot be the only exception. **Hence, statement 1 is correct.**
- The distant horizon viewed from the deck of a ship at sea, or from a cliff on land always and everywhere is circular in shape. This circular horizon widens with increasing altitude and could only be seen on a spherical body.
- The sun sets and rises at different times at different places. As the earth rotates from west to east, places in east see the sun earlier than those in the west. If the earth were flat, the whole world would have sunrise and sunset at the same time. **Hence, statement 2 is correct.**
- During the lunar eclipse, the shadow cast by the earth on the moon is always circular. It takes the outline of an arc of a circle. Only an sphere can cast such a circular shadow. **Hence, statement 3 is correct.**

Q 72.B

- Alluvial soils are widespread in the northern plains and the river valleys. These **soils cover about 40 percent of the total area of the country.**
  - They are **depositional soils, transported and deposited by rivers and streams**. **Hence, statement 1 is correct.**
  - Through a narrow corridor in Rajasthan, they extend into the plains of Gujarat. In the Peninsular region, they are found in deltas of the east coast and in the river valleys.
  - The alluvial soils **vary in nature from sandy loam to clay**.
  - They are **generally rich in potash but poor in phosphorous**. **Hence, statement 3 is not correct.**
  - These soils are more loamy and clayey in the lower and middle Ganga plain and the Brahmaputra valley.
  - **The sand content decreases from the west to east. Hence, statement 2 is correct.**
  - The colour of the alluvial soils varies from the light grey to ash grey. Its shades depend on the depth of the deposition, the texture of the materials, and the time taken for attaining maturity. Alluvial soils are intensively cultivated.

Q 73.D

- The **semi-evergreen forests** of India have a **mixture of evergreen and moist deciduous trees**. The undergrowing climbers provide an evergreen character to these forests.
  - **They exists in the Andaman and the Western Ghats** just north of Bombay near Goa and south of Cochin and also developed in the moderately heavy to heavy rainfall areas of the **northeastern region and Bengal,** extending down the east coast of the **peninsula to Puri in Orissa.**
  - **The annual rainfall in these forests is between 200- 250 cm,** rarely less but frequently more.
  - The **main species** found in these forests are **White cedar, Orchids, Rosewood, Indian chestnut, Kadam, Laurel, Hillock, and Kail**. **Hence option (d) is the correct answer.**

Q 74.A

- **Recent Context: For the first time, an ecosystem group has been assessed entirely using the IUCN Red List of Ecosystems (RLE).**
- **IUCN's RLE is a global standard for measuring the health of ecosystems, assess threat levels and identifying most effective management pathways.**

- **Key Findings of the assessment**
  - 50% of mangrove ecosystems assessed are at risk of collapse with nearly 20% at high risk (classed as either Endangered or Critically Endangered).
  - Threats to mangroves: Climate change, deforestation, development, pollution, dam construction and climate change.
  - Climate change threatens one third (33%) of assessed mangrove ecosystems.
  - Due to sea-level rise, 25% of global mangrove area is predicted to be submerged in the next 50 Years.
  - Without significant changes by 2050, climate change and sea level rise will result in loss of around 1.8 billion tonnes of carbon stored and exposure of 2.1 million lives to coastal flooding.
  - **Status of Indian Mangroves: Andaman and Bay of Bengal (Least Concern), South India (Critically Endangered) Hence only point 2 is correct, West India (Vulnerable).**
- **Hence option (a) is the correct answer.**

Q 75.D

- **Recent Context: The IBCA officially comes into force as a full-fledged Treaty based Inter-governmental International Organization and international legal entity.**
- **International Big Cat Alliance (IBCA)**
- IBCA is a multi-country, multi-agency coalition comprising of 95 big cat range countries and non-range countries with an interest in big cat conservation. I**BCA was launched by the Prime Minister of India in, 2023 during the event 'Commemorating 50 years of Project Tiger'. Hence statement 1 is correct.**
- **The 7 Big cats are the large-bodied felids that belong to the subfamily Pantherinae.** They are: lion, tiger, jaguar, leopard, snow leopard, clouded leopard, and Sunda clouded leopard. It aims to conserve seven big cats - Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma. **Hence statement 2 is correct.**
- Primary Objective: To facilitate collaboration & synergy among stakeholders, consolidating successful conservation practices and expertise to achieve a common goal of conservation of big cats at global level.
- **IBCA governance consists of an assembly of members, a standing committee, and a secretariat with its headquarters in Delhi in India. Nicaragua, Eswatini, India, Somalia and Liberia have signed the Framework Agreement to formally become members of the IBCA. Hence statement 3 is correct.**

Q 76.A

- **Recent Context: Zero Debris Charter was signed at the 11th ESA/EU Space Council, which was first established in 2004 under the framework agreement between ESA and European Union (EU).**
  About Zero Debris Charter
  - **The Zero Debris approach is ESA's** ambitious revision of its internal space debris mitigation requirements that builds on more than a decade of ESA-wide collaborative work and will drive the development of technologies required to become debris-neutral by 2030. **Hence statement 1 is not correct.**
  - **It is a world-leading effort to become debris-neutral in space by 2030. It contains both high-level guiding principles and am**bitious, jointly defined targets to achieve Zero Debris goal. **Hence statement 2 is correct.**
  - **Signatory countries include Austria, Belgium, Cyprus, Estonia, Germany, Lithuania, Poland, Portugal, Romania, Slovakia, Sweden and United Kingdom. Hence statement 3 is not correct.**
- **Space Debris**
  - It refers to all non-functional, man-made objects in Earth orbit or re-entering into Earth atmosphere.
  - It includes decommissioned satellites, spent rocket bodies, fragments from spacecraft breakups or collisions, debris from anti-satellite weapon tests, etc.
  - There are currently more than one million pieces of space debris larger than one cm in Earth's orbit.

Q 77.A

- **Recent Context: The Prime Minister Shri Narendra Modi participated in the Jhumoir Binandini 2025, a Mega Jhumoir programme in Guwahati, Assam today.**
- Jhumur is the folk dance of the Sadan ethnolinguistic group, who trace their origins to the Chotanagpur region. Today it occupies a central place in what are known as "tea garden festivals" or festivals celebrated by tea garden workers in Assam. **Hence statement 1 is not correct.**
- Jhumur is performed during the harvest season. It plays a central role in "tea garden festivals" celebrated by tea garden workers in Assam. Other major tea garden festivals include Tushu Puja and Karam Puja, both of which celebrate the harvest. **Hence statement 2 is correct.**

- Women are main dancers and singers, while men play traditional instruments like madal, dhol, or dhak (drums), cymbals, flutes, and shehnai. Attire worn varies from community to community, although red and white sarees are particularly popular among women. **Hence statement 3 is not correct.**
- Dancers stand shoulder-to-shoulder and move in coordinated patterns with precise footwork while singing couplets in their native languages — Nagpuri, Khortha and Kurmali. These have evolved in Assam to borrow heavily from Assamese.

Q 78.A

- Recent Context: PM Surya Ghar Muft Bijli Yojana launched in 2024, is the world's largest domestic rooftop solar initiative, transforming India's energy landscape.
- **The PM Surya Ghar: Muft Bijli Yojana was launched on February 29, 2024, to provide free electricity to residential households by promoting solar rooftop installations. It is implemented by the Ministry of New and Renewable Energy, not the Ministry of Power. Hence statement 1 is correct and statement 2 is not correct.**
- The scheme has an outlay of Rs 75,021 crore and is to be implemented till FY 2026-27. It has objective to Install rooftop solar (RTS) & providing free electricity for up to 300 monthly units for 1 Crore households.
- The scheme provides for a subsidy of 60% of the solar unit cost for systems up to 2kW capacity and 40 percent of additional system cost for systems between 2 to 3kW capacity. The subsidy has been capped at 3kW capacity.
- At current benchmark prices, this will mean Rs 30,000 subsidy for 1kW system, Rs 60,000 for 2kW systems and Rs 78,000 for 3kW systems or higher.
- **Subsidy is provided based on the household's average monthly electricity consumption and the corresponding suitable rooftop solar plant capacity. Households will have access to collateral-free, low-interest loans at around 7% interest for installing RTS systems up to 3 kW. Hence statement 3 is not correct.**

Q 79.D

- **Recent Context: C40 Cities & UN-Habitat have announced a landmark partnership to transform urban planning. It will launch an Urban Planning Accelerator to cut city emissions by 25% by 2050 while promoting safer, fairer, & inclusive urban spaces.**
- **The United Nations Human Settlements Programme (UN-Habitat) is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities**. UN-Habitat is the focal point for all urbanization and human settlement matters within the UN system. **Hence statement 1 is correct.**
- UN-Habitat works with partners to build inclusive, safe, resilient and sustainable cities and communities. UN-Habitat promotes urbanization as a positive transformative force for people and communities, reducing inequality, discrimination and poverty.
- The United Nations Human Settlements Programme (UN-Habitat) has 58 member states in its Governing Council. **These member states are elected by the UN's Economic and Social Council (ECOSOC) for a four-year term. Hence statement 2 is not correct.**
- The Governing Council, which previously oversaw UN-Habitat, was composed of 58 member states elected by the Economic and Social Council (ECOSOC) for four-year terms. The regional distribution was as follows: 16 seats for African States, 13 for Asian and Pacific States, 6 for Eastern European States, 10 for Latin American and Caribbean States, and 13 for Western European and other States.**The African region had more seats than some regions. Hence statement 3 is correct.**

Q 80.B

- **Recent Context: The integrated PM-AASHA Scheme, launched in 2018, is administered to bring-in more effectiveness in the implementation of procurement operations.**
- **PM-AASHA Scheme**
- The scheme was launched in 2018 as an umbrella scheme to ensure Minimum Support Price (MSP) to farmers, particularly for pulses, oilseeds, and copra. It aims to ensure remunerative prices for farmers and price stability in the agricultural sector.
- **Components of PM-AASHA**
- **Price Support Scheme (PSS): The government procures pulses, oilseeds, and copra at MSP. Hence Point 1 is correct.**
  - **The Central Nodal Agencies (CNAs) conduct procurement in collaboration with state agencies.**
  - **Only produce meeting Fair Average Quality (FAQ) standards is procured.**

- P**rice Deficiency Payment Scheme (PDPS): It directs compensation payments to pre-registered farmers for the difference between MSP and the market price. Hence Point 3 is correct.**
  - There is no physical procurement of produce.
  - It applies to oilseeds and requires transactions through a transparent auction process in notified market yards.
- **Private Procurement & Stockist Scheme (PPSS) (Pilot Basis): It allows states to involve private stockists for oilseed procurement. Hence Point 5 is correct.**
  - **It is implemented in selected Agricultural Produce Market Committees (APMCs) or districts.**
- **Hence option (b) is the correct answer.**

Q 81.B

- **Recent Context: TrailGuard AI has aided in reducing poaching in Simlipal Tiger Reserve in Odisha.**
- **About TrailGuard AI:** It is an end-to-end, camera-based alert system designed for enhancing wildlife conservation and promoting human-wildlife coexistence in remote areas.
- **Advantages**
  - Autonomous detection of target objects. E.g. poachers, wildlife entering agricultural lands etc.
  - Real-time alert transmission: via GSM, Long-Range Radio, or satellite, promoting rapid-response.
  - Its small size prevents vandalism and theft
- **Hence option (b) is the correct answer.**

Q 82.B

- **Recent Context: Recently, Brazil approved entry into OPEC+.**
- **About OPEC**
  - It is a permanent intergovernmental organization of 12 oil-exporting developing nations.
  - India is not a member.
  - Genesis: It was created at the Baghdad Conference in 1960, by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.
  - Objective: To co-ordinate and unify petroleum policies among Member Countries, in order to secure fair and stable prices for petroleum producers.
  - HQ: Vienna (Austria)
  - OPEC+: In response to falling oil prices driven by significant increase in U.S. shale oil output, OPEC signed an agreement with 10 other oil-producing countries in 2016 to create OPEC+.

Q 83.D

- **Recent Context: Meta has introduced its world's longest undersea cable system - Project Waterworth.**
- **About Project Waterworth**
  - Subsea cables projects, such as Project Waterworth, are the backbone of global digital infrastructure, accounting for more than 95% of intercontinental traffic across the world's oceans to seamlessly enable digital communication, video experiences, online transactions, and more. Project Waterworth will be a multi-billion-dollar, multi-year investment to strengthen the scale and reliability of the world's digital highways by opening three new oceanic corridors with the abundant, high-speed connectivity needed to drive AI innovation around the world.
  - Project Waterworth will bring industry-leading connectivity to the U.S., India, Brazil, South Africa, and other key regions. This project will enable greater economic cooperation, facilitate digital inclusion, and open opportunities for technological development in these regions. For example, in India, where we've already seen significant growth and investment in digital infrastructure, Waterworth will help accelerate this progress and support the country's ambitious plans for its digital economy.
- **Significance**:
  - Strengthen scale and reliability of world's digital highways by opening three new oceanic corridors with high-speed connectivity.
  - Facilitate greater economic cooperation, digital inclusion etc.
- **Hence option (d) is the correct answer.**

Q 84.B

- Big Bang Theory or the expanding earth theory given by Edwin Hubble. According to it, in the beginning, all matters forming the universe existed in one place in form of a "tiny ball" with an unimaginable small volume, infinite temperature and infinite density. At the Big Bang, that took place 13.7 billion years before the present, the "tiny ball" exploded and thereafter the universe continues to expand. This is the most widely accepted theory. **Hence, option 1 is correct.**
- The Steady-state theory was first put forward in 1948 by British scientists Sir Hermann Bondi, Thomas Gold, and Sir Fred Hoyle as an alternative to the big-bang hypothesis. According to it, the universe is always expanding but maintaining a constant average density, with matter being continuously created to form new stars and galaxies at the same rate that old ones become unobservable as a consequence of their increasing distance and velocity of recession. A steady-state universe has no beginning or end in time, and from any point within it the view on the grand scale—i.e., the average density and arrangement of galaxies—is the same. Galaxies of all possible ages are intermingled. **Hence, option 2 is correct.**
- The Big Splat Theory: It is related to the formation of Moon as a satellite to earth. According to it, a body of the size one to three times that of Mars collided into the Earth sometimes shortly after earth was formed. It blasted a large part of the earth into space. This continued to orbit around the earth and eventually formed the present moon around 4.44 billion years ago. **Hence, option 3 is not correct.**

Q 85.A

- **Srinagar lies in the Kashmir Valley along the banks of the Jhelum River,** and the shores of Dal Lake and Anchar Lakes, between the Hari Parbat and Shankaracharya hills. The Jhelum originates at Verinag. It is a tributary of the Chenab River and Flows through Wular Lake.
- **The Gomti, Gumti or Gomati River is a tributary of the Ganges. Lucknow is located on the Gomti River.**
- **The Cauvery** (also spelt as 'Kaveri'), known as 'Ponni' in Tamil, is the fourth-largest river in south India. **Originating in the Western Ghats at Talakaveri in Karnataka's Kodagu district**, it passes through Tamil Nadu. **Hence, option (a) is the correct answer.**
  - Ayodhya is situated on the banks of the Sarayu River in the Indian state of Uttar Pradesh.
  - Madurai Is situated on the Vaigai River (Not on Kaveri).

Q 86.B

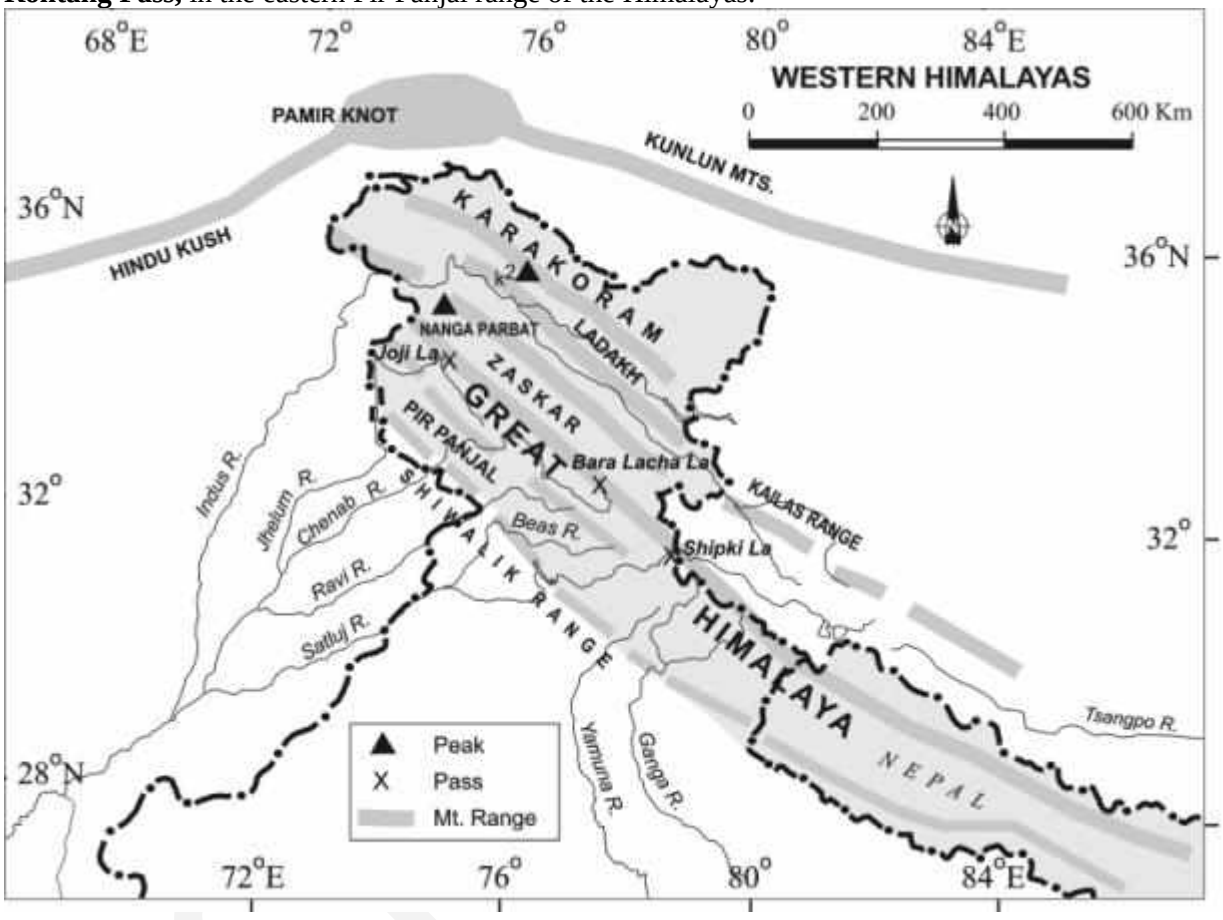
- Black soils are also known as the '**Regur Soil' or the 'Black Cotton Soil'.**
  - The black soils are generally clayey, deep, and impermeable.
  - They swell and become sticky when wet and shrink when dried. So, during the dry season, this soil develops wide cracks. Thus, there occurs a kind of 'self ploughing**'. Because of this character of slow absorption and loss of moisture, the black soil retains the moisture for a very long time. Hence option (b) is correct.**
  - **Though they are rich in lime, iron, magnesia, and alumina.**
  - They also contain potash. But they lack phosphorous, nitrogen, and organic matter. The color of the soil ranges from deep black to grey.
  - Black soil covers **most of the Deccan Plateau which includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, and some parts of Tamil Nadu.**

Q 87.B

- **Satluj River:**
  - **The Satluj rises from the Manasarovar-Rakas Lakes in western Tibet at** a height of 4,570m within 80 km of the source of the Indus.
  - It is an antecedent river. Hence It takes a north-westerly course up to the Shipki La on the Tibet Himachal Pradesh boundary.
  - It cuts deep gorges where it pierced the Great Himalayas and the other Himalayan ranges. Before entering the Punjab plain, **it cuts a gorge in Naina Devi Dhar, where the famous Bhakra dam has been constructed.**
  - After entering the plain at Rupnagar (Ropar), it turns westwards and **is joined by the Beas at Harike.** From near Ferozepur to Fazilka it forms the boundary between India and Pakistan for nearly 120 km. **It passes through the Shipki La pass.**
  - During its onward journey, it receives the collective drainage of the Ravi, Chenab and Jhelum rivers.
  - It **joins the Indus a few kilometers above Mithankot**.
  - Out of its total length of 1,450 km, it flows for 1,050 km in Indian territory. **Hence option (b) is the correct answer.**

Q 88.C

- **Baralacha La pass** is a high **mountain pass in the Zanskar range** connecting **Lahaul district in Himachal Pradesh to Leh district in Ladakh, situated along the Leh–Manali Highway. Hence, option (c) is the correct answer.**
- **Zoji La pass** is a high mountain pass on the Great Himalayas that runs through Kashmir Valley to Ladakh at an altitude of 3528m above sea level.
- **Jelep La** is a high-altitude mountain pass at 13,999 feet linking Lhasa to India. It nestles between India and Tibet in the eastern part of the Sikkim in India. The word Jelep La is of Tibetan origin and it means "the lovely level pass".
- **Rohtang Pass,** in the eastern Pir Panjal range of the Himalayas.



Q 89.A

- The Western Ghats, which run close to the western coast, serve as a water divide between the major Peninsular rivers, which discharge their water into the Bay of Bengal, and the small rivulets joining the Arabian Sea.
- Most of the major Peninsular rivers except Narmada and Tapi flow from west to east. The rivers flowing towards the Arabian Sea have short courses.
- The **Sharavati** is one such river, which originates in the Shimoga district of Karnataka and drains a catchment area of 2,209 sq. km. The total length of the river is around 128 km, and **it joins the Arabian Sea at Honnavar in Uttara Kannada district.** On its way, the Sharavati forms the Jog Falls, where the river falls from a height of 253 metres. **Hence option (a) is correct answer.**
- There are a number of small rivers that join the Bay of Bengal. The Subarnrekha, the Baitarni, the Brahmani, **the Vamsadhara, the Penner,** the Palar, and the **Vaigai are important east flowing rivers.**

Q 90.B

- Western Ghats are locally known by different names such as Sahyadri in Maharashtra, Nilgiri hills in Karnataka and Tamil Nadu, and Anaimalai hills and Cardamom hills in Kerala.
- **The Western Ghats are comparatively higher in elevation and more continuous than the Eastern Ghats.** Eastern Ghats comprising the discontinuous and low hills are highly eroded by rivers such as the Mahanadi, the Godavari, the Krishna, the Kaveri, etc. **Hence statement 2 is correct.**
- Average elevation of Western Ghats is about 1,500 m with the height increasing from north to south. **Anaimudi' (2,695 m), the highest peak of the Western Ghats is located on the Anaimalai hills** of the

Western Ghats followed by Dodabetta (2,637 m) on the Nilgiri hills. **The Mahendragiri is the highest peak of the eastern ghats. Hence statement 1 is not correct.**

- The Eastern and the Western Ghats meet each other at the Nilgiri hills.

Q 91.B

- **Tropical Deciduous Forests are the most widespread forests of India**. They are also called the monsoon forests and **spread over the region receiving rainfall between 200 cm and 70 cm.** Trees of this forest type shed their leaves for about six to eight weeks in dry summer. **Hence, statement 1 and 2 are correct.**
  - Forests based on water availability are categorized into moist and dry deciduous types. **Moist deciduous forests thrive in regions receiving rainfall ranging from 200 to 100 cm**.
  - These forests are predominantly found in the eastern part of the country, including northeastern states, along the Himalayan foothills, Jharkhand, West Odisha, Chhattisgarh, and on the eastern slopes of the Western Ghats.
  - **Teak** stands out as the most dominant species within moist deciduous forests. Other commercially significant **species found in these forests include bamboo, sal, Shisham, sandalwood, khair, Kusum, Arjun, and mulberry.**
  - **Greenheart, Cabinet woods, and Mahogany trees are primarily found in tropical rain forests. Hence, statement 3 is not correct.**

Q 92.C

- The months of October and November are known for **retreating monsoons, also known as North-East Monsoons.** By the end of September, **the southwest monsoon becomes weak as the low-pressure trough of the Ganga plain starts moving southward in response to the southward march of the sun**. The monsoon retreats from the western Rajasthan by the first week of September. It withdraws from Rajasthan, Gujarat, Western Ganga plain, and the Central Highlands by the end of the month. **Hence statement 1 is correct.**
- **The retreating southwest monsoon season is marked by clear skies and a rise in temperature.** The land is still moist. Owing to the conditions of high temperature and humidity, the weather becomes rather oppressive. **This is commonly known as the 'October heat'**. The diurnal range of temperature increases due to a lack of cloud cover. In the second half of October, the mercury begins to fall rapidly, particularly in northern India. The **weather in the retreating monsoon is dry in north India** but it is associated with rain in the eastern part of the Peninsula. **Hence statement 2 is correct.**

Q 93.D

- **A biosphere reserve** is a designated area that aims to conserve biodiversity while promoting sustainable development through scientific research, monitoring, education, and community involvement. These reserves encompass three interconnected zones: a core, a buffer zone surrounding the core area where limited human activity is allowed to facilitate ecosystem protection, and a transition zone.
- **Eighteen biosphere reserves have been set up** in the country to protect flora and fauna. Twelve of the eighteen biosphere reserves are a part of the World Network of Biosphere Reserves, based on the **UNESCO Man and the Biosphere (MAB) Programme, the Sundarbans Nanda Devi, the Gulf of Mannar, the Nilgiri, Nokrek, Great Nicobar, Simlipal, Pachmarhi, Achanakmar-Amarkantak, Agasthyamalai, Kangchendzonga and Panna.**
- **Dibru Saikhowa, Seshachalam, Kachchh, Cold Desert, Dihang-Dibang, Manas are not part of the World Network of Biosphere Reserves.**
- **Hence option (d) is the correct answer.**

Q 94.B

- The **Gandhi Sagar Dam** is one of the four major dams built on India's **Chambal River.** The dam is located in the Mandsaur, districts of the state of Madhya Pradesh. **Hence, pair 1 is not correctly matched. .**
- **Maithon Dam** is located in Jharkhand Constructed on the **Barakar River** (a tributary of Damodar River) for the main purpose of Flood control. Not on the Kaveri River. **Hence, pair 2 is not correctly matched.**
- **Tehri Dam** is a multi-purpose rock and earth-fill embankment dam built on the **Bhagirathi River (Garhwal district)** in Uttarakhand. It is the tallest dam in India. **Hence, pair 3 is correctly matched.** .
- **Nagarjuna Sagar Dam** is a masonry dam across the **Krishna River** at the border between Palnadu district in Andhra Pradesh and Nalgonda district in Telangana. **Hence, pair 4 is correctly matched**.

Q 95.D

- The gravitation force (g) is not the same at different latitudes on the surface. It is greater near the poles and less at the equator. This is because of the distance from the centre at the equator being greater than that at the poles.
- The gravity values also differ according to the mass of material. The uneven distribution of mass of material within the earth influences this value. The reading of the gravity at different places is influenced by many other factors. These readings differ from the expected values. Such a difference is called gravity anomaly. **Hence, option (d) is the correct answer.**

Q 96.B

- The passage describes a strong, dry, and hot wind that blows during summer afternoons over North and Central India.
  - This type of wind is caused by intense land heating, which leads to extremely high daytime temperatures (often above 45°C).
  - Prolonged exposure can result in heat strokes and dehydration.
  - **These characteristics point toward Loo, a well-known summer wind in India. Hence, option (b) is the correct answer.**
- **Mistral:**
  - A cold and dry wind that blows in southern France, especially in winter.
- **Loo:**
  - A hot, dry wind blowing in North and Central India during summer.
- **Nor'wester:**
  - A thunderstorm-associated wind common in eastern India and Bangladesh during pre-monsoon months.
- **Harmattan:**
  - A dry, dusty wind blowing over West Africa during winter.

Q 97.D

- The terrestrial planets include Mercury, Venus, Earth, and Mars. They are small, dense, and have rocky surfaces.
- The Jovian planets (also called gas giants) include Jupiter, Saturn, Uranus, and Neptune. They are massive, have thick gaseous atmospheres, and lack a well-defined solid surface.
- Terrestrial planets have a solid, rocky surface, whereas Jovian planets are mostly composed of gases with no well-defined solid surface.
- Terrestrial planets are composed mainly of rock and metal, while Jovian planets consist of hydrogen, helium, and other gases with a possible small solid core. **Hence, statement 1 is correct.**
- Terrestrial planets have an average density of 3-5 g/cm^3, while Jovian planets have a lower density (e.g., Saturn's density is even lower than water). **Hence, statement 2 is correct.**
- Despite having lower density, Jovian planets have much greater mass, leading to stronger gravitational pull. **Hence, statement 3 is correct.**

Q 98.C

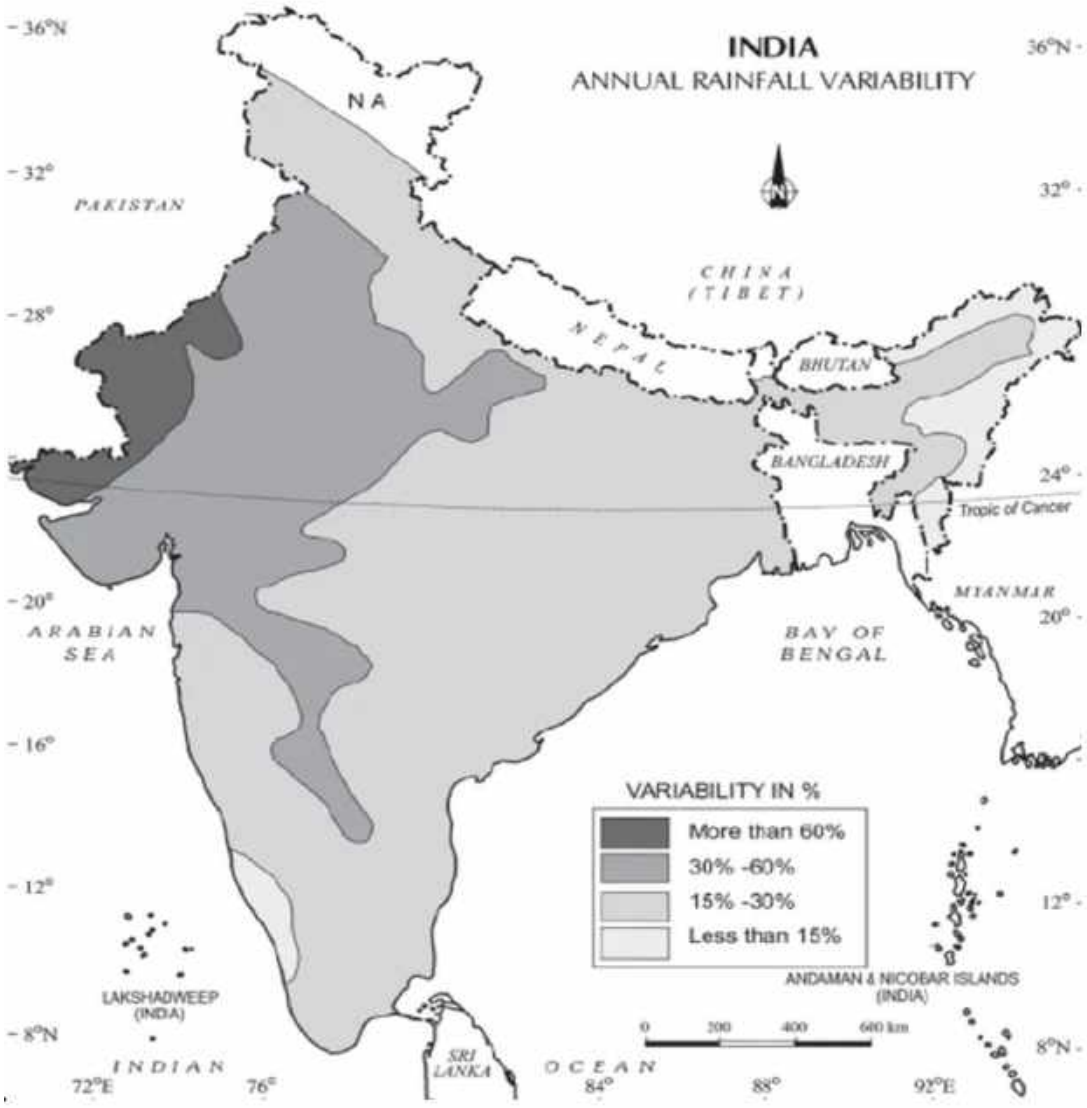
- Insolation refers to the amount of solar energy received per unit area on the Earth's surface. It varies based on latitude, Earth's orbit, axial tilt, and atmospheric conditions.
- **The insolation received by the Earth is more at perihelion than at aphelion.**
  - Perihelion (closest to the Sun) occurs around January 3, when Earth is about 147 million km from the Sun.
  - Aphelion (farthest from the Sun) occurs around July 4, when Earth is about 152 million km away.
  - Since solar radiation follows the inverse-square law, Earth receives about 7% more insolation at perihelion than at aphelion. **Hence, statement 1 is correct.**
- **The distribution of insolation over the Earth's surface is influenced by latitude, atmospheric composition, and the angle of incidence of sunlight.**
  - Latitude determines the angle of sunlight and duration of daylight.
  - Atmospheric composition (like clouds, aerosols, and greenhouse gases) affects how much radiation reaches the surface.
  - The angle of incidence is higher at the equator and tropics, resulting in more concentrated solar energy. **Hence, statement 2 is correct.**

Q 99.B

- Different climatic regions have distinct seasonal variations in temperature, precipitation, and vegetation.
- **Summers are hot and dry, while winters are mild and wet.**
  - This is a defining characteristic of the Mediterranean Climate, where warm, dry summers result from subtropical high-pressure systems, and wet winters occur due to mid-latitude westerly winds.
  - Vegetation consists of drought-resistant shrubs, small broad-leaved trees, and scattered grasslands.
  - Mediterranean vegetation includes hardy, drought-resistant plants like olive trees, cork oaks, and shrubs such as chaparral and maquis. The sparse vegetation and widely spaced trees result in limited shade.
  - This region is known for the cultivation of olives, citrus fruits, and vineyards, making agriculture an important economic activity.
  - The Mediterranean climate is ideal for viticulture (grape-growing for wine production), along with the cultivation of citrus fruits, figs, and almonds. **Hence, option (b) is the correct answer.**
- **Other options:**
- **Tropical Monsoon Climate:** Characterized by high summer rainfall and dry winters, which is the opposite of Mediterranean conditions.
- **Steppe Climate:** A semi-arid climate with grasslands and low rainfall, unsuitable for citrus fruit or vineyard cultivation.
- **Tundra Climate:** This climate is characterized by extremely cold temperatures and permafrost, with almost no trees or agriculture.

Q 100.A

- A characteristic feature of rainfall in India is its variability. The variability of rainfall is computed with the help of the following formula:
  - Coefficient of Variation = (Standard Deviation / Mean) × 100
  - The values of the coefficient of variation show the change from the mean values of rainfall. The actual rainfall in some places deviates from 20-50 percent. The values of coefficient of variation show variability of rainfall in India. A variability of less than 25 percent exists on the western coasts (Malabar coast), Western Ghats, northeastern Peninsula, eastern plains of the Ganga, northeastern India, Uttaranchal, and Himachal Pradesh, and south-western part of Jammu and Kashmir. These areas have an annual rainfall of over 100 cm.
  - A variability of over 50 percent exists in the western part of Rajasthan, the northern part of Jammu and Kashmir, and the interior parts of the Deccan plateau. These areas have an annual rainfall of less than 50 cm.
  - Rest of India (including the Chota Nagpur plateau) have a variability of 25-50 percent and these areas receive an annual rainfall between 50 -100 cm.
  - Regions with high rainfall tend to have lower variability, while arid regions show greater variability due to inconsistent monsoon patterns.
- **Konkan Coast (Maharashtra-Goa region) → Low variability.**
  - Receives heavy monsoonal rainfall (2500-4000 mm annually).
  - Stable monsoon winds ensure consistent rainfall each year.
- **Western Ghats → Moderate variability**
  - Western slopes get very high orographic rainfall but eastern slopes are drier, leading to some variability.
  - Some areas experience orographic shadow effects (rainfall drops sharply beyond the Ghats).
- **Western Rajasthan → High variability**
  - Extremely arid region with an average rainfall of 100-250 mm annually.
  - Highly erratic monsoon patterns lead to drought years followed by occasional heavy rainfall.
  - Final Order (Increasing Order of Variability):
  - Konkan Coast (Least variable) → Western Ghats → Western Rajasthan (Most variable).
- **Hence, option (a) is the correct answer.**


INDIA
ANNUAL RAINFALL VARIABILITY
NA
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
Tropic of Cancer
MYANMAR
ARABIAN SEA
BAY OF BENGAL
VARIABILITY IN %
More than 60%
30% -60%
15% -30%
Less than 15%
LAKSHADWEEP (INDIA)
ANDAMAN & NICOBAR ISLANDS (INDIA)
SRI LANKA
INDIAN OCEAN
0 200 400 600 km
36°N
32°
28°
24°
20°
16°
12°
8°N
72°E
76°
84°
88°
92°E