

VISIONIAS

www.visionias.in

ANSWERS & EXPLANATIONS
GENERAL STUDIES (P) TEST – 4152 (2024)

Q 1.C

- **High-power microwave (HPM) weaponry sends out a short, extremely high-voltage burst of electromagnetic energy capable of disrupting computer systems for a fraction of a second.** Although the disruption is short, the burst causes computers to reset, and if the computers operate something as sensitive as the control and navigation systems of a jet in mid-flight, the result could be lethal. **Hence statement 1 is correct.**
- The concept of HPM weapons has been under development for several decades. The US Navy has been working on HPM weapons using microwave generators and waveguides to create beams of microwave energy. Additionally, other countries such as China and Russia have also been working on the development of HPM weapons for both offensive and defensive purposes **Hence statement 2 is correct.**
- HPM weapons are different from conventional microwaves, as they are used primarily for military purposes, such as electromagnetic warfare or directed-energy warfare. They are becoming an increasingly important part of modern military technology, as **they have the potential to neutralize enemy electronics without the need for physical contact.**
- **Hence option (c) is the correct answer.**

Q 2.C

- In each House of Parliament, there is the ‘Leader of the Opposition’. The leader of the opposition in the houses of Indian parliament is a statutory post. This post is **defined in the Salaries and Allowances of Leaders of Opposition in Parliament Act, 1977** as simply the leader of the numerically biggest party in opposition to the government and recognized as such by the speaker/chairman. **The Original Constitution never spoke about the Leader of the opposition.** In 1977, the Leaders of Opposition of the Lok Sabha and the Rajya Sabha received statutory backing. **Hence statement II is not correct.**
- The procedure for recognizing the leader of the opposition is well laid down. On a request being made by the numerically largest party in the opposition that its designated leader be recognized as the leader of the opposition, the speaker, after the request is examined by her or his secretariat, accords recognition to that person.
- Way back in the **1950s**, the speaker started the practice of recognizing parliamentary parties as ‘parties’ and ‘groups’ for the limited purpose of allotting seats in the house, time for participating in the debates, rooms in Parliament House, etc.
- Directions 120 and 121 issued under Rule 389 of the “Rules of Procedure and Conduct of Business in the House of People” provide for the Recognition of the Party or Group and conditions for such recognition. The said directions were issued by the first speaker of Lok Sabha G.V. Mavalankar and has been famously known as **Mavalankar’s rule.**
- Amongst various conditions laid down by the directions, **direction 121(1)(c) requires a party to have at least a strength equal to the quorum fixed to constitute a sitting of the house i.e. one-tenth of the total number of members of the house.** Hence statement I is correct.

Q 3.A

- **Recent Context:** India leads in climate targets and sustainable cooling, says Environment Secy at COP 28.
- India is one of the first countries in the world to develop such a comprehensive Cooling Action Plan which has a long-term vision to address the cooling requirement across sectors and list out actions which can help reduce the cooling demand. This will also help in reducing both direct and indirect emissions. The thrust of the India Cooling Action Plan (ICAP) is to look for synergies in actions for securing both environmental and socioeconomic benefits.

- Keeping this in view the objectives of the ICAP, *inter alia*, are
 - Assessment of cooling requirements across sectors in the next 20 years and the associated refrigerant demand and energy use.
 - Mapping the technologies available to cater to the cooling requirement including passive interventions, refrigerant-based technologies, and alternative technologies such as not-in-kind technologies.
 - Suggest interventions in each sector to provide sustainable cooling and thermal comfort for all.
 - Highlighting focus on skilling of Refrigeration and Air Conditioning (RAC) service technicians and development of an R&D innovation ecosystem for indigenous development of alternative technologies.
- The overarching goal of ICAP is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for society. **The following goals emerge from the interventions proposed in the ICAP:**
 - Recognition of "cooling and related areas" as a thrust area of research under the national science and technology programme to support the development of technological solutions and encourage innovation challenges.
 - **Reduction of cooling demand across sectors by 20% to 25 % by year 2037-38. Hence option 1 is correct.**
 - Reduction of refrigerant demand by 25% to 30% by year 2037-38. **Hence option 2 is not correct.**
 - Reduction of cooling energy requirements by 25% to 40% by year 2037-38. **Hence option 3 is not correct.**
 - Training and certification of 100,000 servicing sector technicians by the year 2022-23, synergizing with Skill India Mission. **Hence option 4 is not correct.**

Q 4.B

- **Treaty of Wadgaon:**
 - The Treaty of Wadgaon was signed in 1779 between the Marathas and the British East India Company during the First Anglo-Maratha War. **Hence pair 1 is correctly matched.**
 - The Marathas, under Mahadji Shinde, defeated the British forces led by Colonel Cockburn.
 - The treaty was favorable to the Marathas, forcing the British to surrender several territories.
- **Treaty of Bassein:**
 - The **Treaty of Bassein was actually signed in 1802 between the British East India Company and the Marathas**, not the Sikhs. **Hence pair 2 is not correctly matched.**
 - It marked the end of the Second Anglo-Maratha War and resulted in the cession of Salsette Island, parts of Gujarat, and other territories to the British.
- **Treaty of Seringapatam:**
 - The Treaty of Seringapatnam was signed in 1792 between the British East India Company and Tipu Sultan of the Kingdom of Mysore, ending the Third Anglo-Mysore War. **Hence pair 3 is correctly matched.**
 - Tipu Sultan ceded half of his kingdom to the British and agreed to pay a large sum in war indemnity.

Q 5.B

- **Karachi Session of Congress in 1931:**
 - The historical Karachi Session of Congress in 1931 was presided by Sardar Vallabhbhai Patel. The Karachi session is memorable for a resolution on Fundamental Rights and the National Economic Programme. **Hence pair 1 is correctly matched and pair 2 is not correctly matched.**
 - **Resolution on Fundamental Rights:**
 - The resolution guaranteed basic civil and political rights to the people.
 - **Resolution on National Economic Programme:**
 - It provided for the nationalization of key industries and transport, better conditions for the workers, agrarian reform, and free and compulsory primary education, it also assured that “the culture, language and script of the minorities and of the different linguistic areas shall be protected.
- **Haripura Session of Congress in 1938:**
 - The Haripura session was presided over by Subhas Chandra Bose. The session witnessed an intense debate on the issue of the princely states. Finally, Congress announced its aim to attain complete independence for the whole of India, including the princely states.
 - **Resolution on National Planning Committee:**
 - Subhash Chandra Bose established the National Planning Committee in 1938 under the chairmanship of Jawaharlal Nehru with the goal of setting up an economic plan with the

core goal of ensuring a sufficient standard of living for the masses. Hence pair 3 is correctly matched.

Q 6.B

- Recently, on the occasion of the Good Governance Day, the Government has increased 3 new features on the Mission Karmayogi platform.
- The National Programme for Civil Services Capacity Building (NPCSCB) - Mission Karmayogi aims to create a professional, well-trained, and future-looking civil service, that is imbued with a shared understanding of India's developmental aspirations, national programs, and priorities. The NPCSCB will cover all civil servants (including contractual employees) across different ministries, department organizations, and agencies of the Union government. Hence statement 1 is correct.
- The exercise for defining the Framework for Roles, Activities, and Competencies including skills (FRACs) will be carried out by each Ministry/ Department/ Organisation of the Union Government and integrated with the iGOT-Karmayogi Platform.
- The NPSCB will have the following Institutional Framework:
 - **Prime Minister's Public Human Resource Council (hereinafter referred to as 'PMHRC')**: A Council comprising eminent public HR practitioners, thinkers, global thought leaders, and representatives of the Indian political leadership under the Chair of the Prime Minister of India, is conceived to be the apex body for driving and providing strategic direction to civil services reforms and capacity building. It will identify areas for policy intervention and approve the National Capacity Building Plan.
 - **Capacity Building Commission** - The Civil Service Capacity Building Commission is at the heart of the NPCSCB. It will coordinate the preparation of annual capacity-building plans, monitor and evaluate their implementation, and functionally supervise the training institutions (CM's, etc.) to create of shared resources ecosystem. The Secretariat of the Commission will be headed by an officer in the grade of Joint (Designated as Secretary to the Commission) to the Government of India.
 - **A Programme Management Unit (PMU) under the Department of Personnel, Public Grievances, and Pensions to interface with support agencies**. It will provide program management and support services to the department for rolling out and managing different aspects of NPCSCB. Hence statement 2 is not correct.
 - **Special Purpose Vehicle (SPV) – Karmayogi Bharat** - A not-for-profit company, under the administrative control of DoPT incorporated as a 100% government-owned entity for owning, managing, maintaining, and improving the digital assets i.e., iGoT Karmayogi the digital e-learning platform, including the IPR of all software, content, process etc on behalf of Government. The SPV will have the responsibility to create and operationalize the content marketplace and continuously evaluate utilization. Hence statement 3 is correct.

Q 7.D

- A Hyderabad-based robotics firm has unveiled a state-of-the-art autonomous anti-drone system, powered by artificial intelligence. This advanced full-spectrum drone security system capability was demonstrated live on the outskirts of Hyderabad by Grene Robotics, a deep-tech company that specialises in providing AI-powered security solutions for defence, enterprise, and government sectors. The system can protect not just vital installations like nuclear installations and oil rigs, but also a wide area encompassing even an entire city, from multiple drones of any kind.
- Named Indrajaal, this is the first time such a system has been developed in India. It is said to be the world's only wide-area Counter-Unmanned Aircraft System (C-UAS). It can provide a comprehensive and integrated security mechanism against moving threats that cannot be tackled with static defence systems. The system provides 360-degree protection, with the ability to detect, identify, classify, track, and neutralise threats in real-time. The threat lifetime can be as short as 30 seconds to a few minutes. Indrajaal is designed to defend against all classes and levels of autonomous drones over an area of 4,000 square kilometres.
- Hence option (d) is the correct answer.

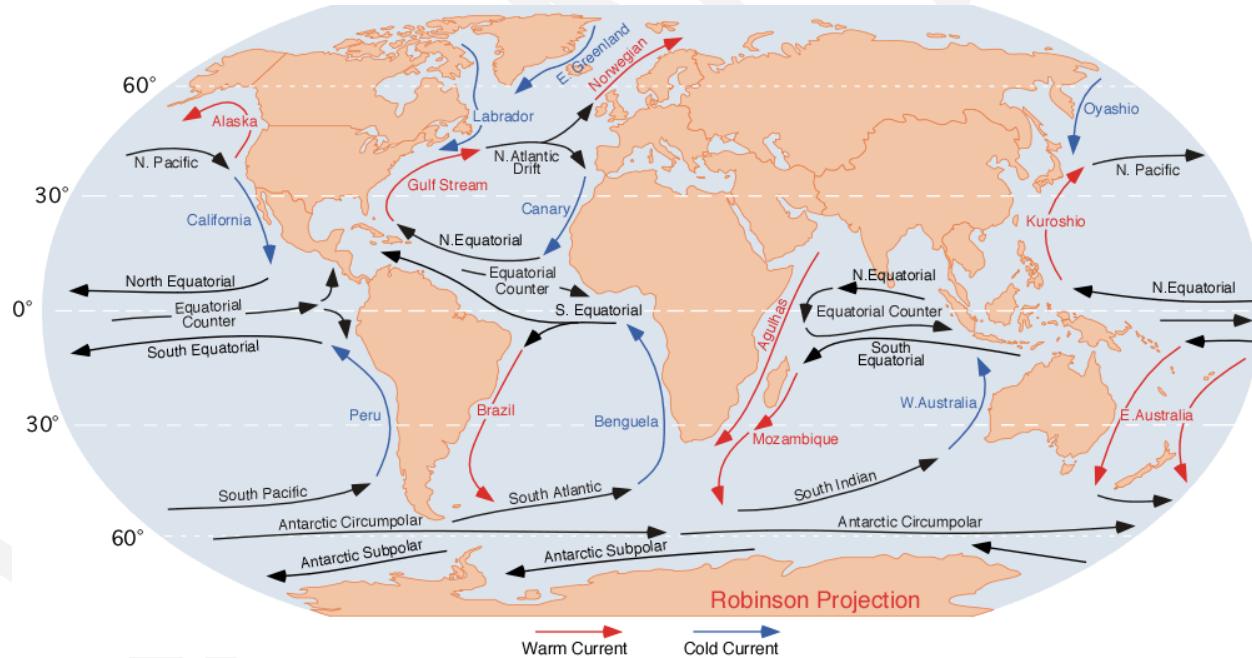
Q 8.C

- Lord Cornwallis introduced the Permanent Settlement of 1793.
 - Under this arrangement, property rights in land were conferred upon the landed aristocracy, subject to the punctual payment of revenue to the government at a fixed rate.
 - The landlords, in their turn, were entrusted with the responsibility of collecting rent from the cultivators. Thus the zamindars were used to act as intermediaries between the cultivators and the state.

- The government demanded ten-eleventh of the total payments collected from tenants and the remainder, i.e., one-eleventh, was left to the zamindars as their remuneration.
- To mitigate the risk of revenue defaults, zamindars adopted a strategy of leasing their estates to numerous sub-landlords, who further sublet the lands to intermediaries such as patnidars and dur patnidars.
- **Patni** tenures represent a form of subinfeudation, entailing the establishment of intermediary land tenures between the zamindars and the actual cultivators or peasants. These tenures introduced multiple layers of intermediaries, complicating the relationship between the zamindar and the cultivators. Consequently, this intricate system often resulted in heightened financial burdens on the peasants, as each intermediary sought to extract rents from those tilling the land. The implementation of Patni tenures correlated with the deterioration of conditions for the actual cultivators, as they bore the brunt of escalating rents and illicit levies. **Hence, statement 1 is not correct.**
- In the context of the Permanent Settlement, "abwabs" refer to extralegal charges or additional fees collected from peasants by zamindars (landlords) beyond the customary rates for cultivation. The imposition of abwabs led to an unclear and arbitrary assessment of revenue, complicating the revenue collection process. **Hence, statement 2 is not correct.**

Q 9.B

- Ocean currents are continuous, directed movements of seawater generated by various factors such as wind, temperature, salinity, and the Earth's rotation.
- **The Humboldt Current, also known as the Peru Current, is a cold ocean current that flows northward along the western coast of South America.** It originates from the southern tip of Chile and flows northward, influenced by the cold waters of the Antarctic Circumpolar Current.
 - Peru and Chile are washed by the Humboldt Current.
 - Bolivia is a landlocked country and does not have a coastline, so its coastal area is not washed by the Humboldt Current.



- Hence option (b) is the correct answer.

Q 10.B

- The Vellore mutiny took place on 10 July 1806 in the Vellore city (Presently in Tamil Nadu). The earlier rebellions were those of the native rulers. The Vellore Mutiny was organized by the sepoys. **Hence, statement 1 is not correct.**
- Palaiyakkars, or Poligar, Palegara in Andhra, Karnataka and Tamil Nadu refers to the holder of a small kingdom as a feudatory to a greater sovereign. Under this system, palayam was given for valuable military services rendered by any individual. The word pālayam means domain, a military camp, or a small kingdom. This type of Palayakkars system was in practice during the rule of Pratapa Rudhra of Warangal in the Kakatiya kingdom.
- Causes of Revolt:
 - The Indian sepoys were introduced to new uniforms, and new weapons and strict discipline was enforced.

- The sepoys were asked to shave their facial hairs which affected the religious sentiments of the Muslims.
- The Hindu sepoys were forbidden from wearing any religious marks on the forehead during the service. Even the use of earrings was banned.
- In the fourth Anglo-Mysore war, Tipu Sultan was killed and his family and soldiers were sent in exile to Vellore city. The people hated the way the British treated the erstwhile ruler's son.
- **Course of struggle:** Sepoys attacked the barracks of the British soldiers and killed over 14 British officials and 115 Englishmen of the 69th regiment. The British flag in the Vellore fort was replaced by the tiger-striped flag of Tipu Sultan and the Indian soldiers proclaimed Tipu's elder son Fettah Hyder as their ruler. **On the eve of the Mutiny at Vellore Fettah Hyder, the first son of Tipu, tried to ally against the English and sought the help of the Marathas and the French. Hence, statement 2 is correct.**
- **Outcome: Vellore Mutiny failed. There was no proper leadership.** The rebellion was also not well organized. But it is the starting point of a new era of the resistance of the sepoys to British rule. **V.D. Savarkar calls the Vellore Mutiny of 1806 the prelude to the first War of Indian Independence in 1857. Hence, statement 3 is correct.**

Q 11.B

- Anomic pressure groups are those which appear for a short span of time for specific objectives and purpose. Their behaviour is unpredictable and can turn violent. **Hence option (b) is the correct answer.**
- Almond and Powell observed: "By anomic pressure groups we mean more or less a spontaneous breakthrough into the political system from the society such as riots, demonstrations, assassinations and the like. The Indian Government and bureaucratic elite, overwhelmed by the problem of economic development and scarcity of resources available to them, inevitably acquires a technocratic and anti-political frame of mind, particularistic demands of whatever kinds are denied legitimacy.

Q 12.A

- The **common components** of photochemical smog are
 - Ozone
 - Nitric oxide
 - Acrolein
 - Formaldehyde
 - Peroxyacetyl nitrate (PAN)
- Photochemical smog causes **serious health problems**. Both ozone and PAN act as powerful eye irritants. Ozone and nitric oxide irritate the nose and throat and their high concentration causes a headache, chest pain, dryness of the throat, cough, and difficulty in breathing.
- Photochemical smog leads to cracking of rubber and extensive damage to plant life. It also causes corrosion of **metals, stones, building materials, rubber, and painted surfaces**. **Hence option (a) is the correct answer.**

Q 13.C

- **Permafrost** is permanently frozen soil and occurs mostly in high latitudes. Permafrost comprises 24% of the land in the Northern Hemisphere and stores a massive amount of carbon. As a result of climate change, permafrost is at risk of melting, releasing stored carbon in the form of carbon dioxide and methane.
- Thawing of permafrost will lead to an increase in greenhouse gas emissions as trap CO₂ is released. **Hence statement 1 is correct.**
- The pathogens are activated because at very low temperatures they lie in a dormant state. **Hence statement 2 is correct.**
- Damages to infrastructure can happen due to the inundation of low-lying areas due to an increase in sea level. **Hence statement 3 is correct.**
- **Additional Information:**
 - Permafrost is made of a combination of soil, rocks, and sand that are held together by ice. The soil and ice in permafrost stay frozen all year long.
 - Near the surface, permafrost soils also contain large quantities of organic carbon—a material leftover from dead plants that couldn't decompose, or rot away, due to the cold. Lower permafrost layers contain soils made mostly of minerals.
 - A layer of soil on top of permafrost does not stay frozen all year. This layer, called the active layer, thaws during the warm summer months and freezes again in the fall. In colder regions, the ground

rarely thaws—even in the summer. There, the active layer is very thin—only 4 to 6 inches (10 to 15 centimeters). In warmer permafrost regions, the active layer can be several meters thick.

Q 14.C

- **Personal income means all a household's earnings in a given year.** It involves different revenue sources such as salaries, investments, wages, dividends, contributions by an employer towards any pension plan, and similar things.
 - $PI = NI + \text{Income Earned but not Received} + \text{Income Received but not Earned}$ or
 - $PI = \text{Salaries/Wages Received} + \text{Interest Received} + \text{Rent Received} + \text{Dividends Received} + \text{Any Transfer Payments}$
- **Income Earned but not Received:**
 - The three major incomes earned but not received are undistributed profits, taxes on social security, and corporate taxes. The social security taxes are the contribution being made by laborers; undistributed profits are the business's share of earnings for future business opportunities. Finally, the corporations pay corporate taxes on the business's profits. Hence options 1, 2 and 4 are correct.
- **Income Received but not Earned:**
 - The three major sources of income received but not earned are social security benefits, unemployment benefits, and welfare payments. The household members receive these three incomes from the government. Social security benefits are paid to elder citizens, disabled people, and retired citizens. Unemployment compensation is being paid to the unemployed members of the household by the government to maintain the normal standard of living. Lastly, welfare benefits are being paid by the government to the poor sections of families. Hence option 3 is not correct .

Q 15.A

- **Kalaripayattu, also known simply as Kalari, is an Indian martial art that originated in modern-day Kerala,** a state on the southwestern coast of India. Hence, statement 1 is not correct.
- Sports Ministry inducted four indigenous martial art forms — Kalaripayattu of Kerala, Mallakhamb of Central India, Gatka of Punjab, Thang-ta of Manipur and Silambam of Tamil Nadu — into the Khelo India Youth Games (KIYG). Hence, statement 2 is correct.
- Kalaripayattu is known for its long-standing history in Indian martial arts. It is believed to be the oldest surviving martial art in India, with a history spanning over 3,000 years.
- A Kalaripayattu demonstration includes physical exercises and mock duels - armed and unarmed combat. It is not accompanied by any music or drumming, it is a silent combat, where style matters the most. Hence, statement 3 is not correct.
- Kalaripayattu's most important aspect is the footwork. It also includes kick strikes and weapon-based practice. Even women practice this art.
- Kalaripayattu includes several techniques. Some of them are:
 - Uzhichil or the massage with the Gingli oil chill.
 - Maippayattu or Body exercises.
 - Koltharipayattu or the use of wooden weapons for fight.
 - Anga Thari or Weapons of various metals are used in training and combat sessions.
 - Fighting with Otta (an s-shaped stick).
- **Silambam, a kind of staff fencing, is a modern and scientific martial art of Tamil Nadu.**

Q 16.A

- National Integration Conference was convened by Jawaharlal Nehru in 1961 to find ways and means to combat the evils of communalism, casteism, regionalism, linguism, and narrow-mindedness, and to formulate definite conclusions to give a lead to the country. Hence statement 1 is not correct.
- This Conference decided to set up a National Integration Council (NIC) to review all matters about national integration and to make recommendations thereon. The NIC was constituted accordingly and held its first meeting in 1962.
- NIC is not a statutory body and it does not have a permanent secretariat. The revival of NIC depends on the discretion of the Government. There is no constitutional or legal obligations on the Government to constitute it every 5 years. The National Integration Council has held more than 15 meetings so far. The last meeting of the NIC was held in 2013. Hence statement 2 is correct and statement 3 is not correct.

Q 17.B

- The Index of Industrial Production (IIP) is a measure of the volume of production of goods and services by Indian factories. It is compiled and published by the National Statistical Office, Ministry of

Statistics and Programme Implementation (MoSPI). The IIP is a monthly indicator of industrial activity and is considered a leading indicator of economic growth. **Hence statement 1 is correct.**

- **The base year for the IIP is 2011-12. Hence statement 2 is not correct.**
- The manufacturing sector has the maximum number of items in the IIP, with 809. The mining sector has 29 items, and the electricity sector has 1 item.
 - **The manufacturing sector is the largest contributor to the IIP, accounting for around 77.63% of the total weight. Hence statement 3 is correct.**
 - The mining sector accounts for around 14.37% of the total weight, and the electricity sector accounts for around 7.99% of the total weight.

Q 18.D

- **The Cantillon effect refers to the idea that changes in the money supply in an economy causes redistribution of purchasing power among people,** disturbs the relative prices of goods and services, and leads to the misallocation of scarce resources. The Cantillon effect is named after the 18th century French economist Richard Cantillon who published his ideas in the 1755 book *Essay on the Nature of Trade in General*.
- It is generally accepted by economists today that an increase in the overall money supply in an economy causes a proportionate rise in the prices of goods and services over the long-run. This is in line with the quantity theory of money, according to which the total amount of money in an economy plays a crucial role in determining the general price level. So, if the money supply in an economy doubles this should lead to a rough doubling of prices across the economy. In other words, money has largely been considered to be “neutral,” in the sense that changes in its supply have no real effect on the economy.
- **Hence option (d) is the correct answer**

Q 19.D

- **Trophic state is defined as the total weight of the biomass in a water body at a specific location and time.**
 - The trophic state is the **biological response to nutrient additions to the water bodies**.
 - The amount of nitrogen, phosphorus, and other biological useful nutrients dissolved in the waters determines the lake's trophic state.
 - The water trophic is used to estimate its biological condition.
- The lake's trophic state is classified into **Oligotrophic, Mesotrophic, and Eutrophic Lakes**. When the lake has higher trophic indices, it may be considered as hyper-oligotrophic or hypereutrophic.
- **Oligotrophic lake:**
 - **An oligotrophic lake has a relatively low productivity due to the low nutrient content in the lake. They are rich in oxygen throughout and have good water clarity.**
 - The waters of these lakes are usually quite clear due to the limited growth of algae in the lake. The waters of such lakes are of high drinking quality.
 - Such lakes support aquatic species that require well-oxygenated, cold waters such as lake trout. Oligotrophic lakes are usually found in the cold regions of the world where the mixing of nutrients is rare and slow due to the low temperatures of the lake waters.
 - **They have a high number of plant and animal species in comparison to eutrophic lakes.**
- **Hence option (d) is the correct answer.**

Q 20.B

- **Ocean acidification is the worldwide reduction in the pH of seawater** as a consequence of the absorption of large amounts of carbon dioxide (CO₂) by the oceans. **Hence statement 1 is not correct.**
- Since the beginning of the Industrial Revolution about 1750, roughly one-third to one-half of the CO₂ released into Earth's atmosphere by human activities has been absorbed by the oceans. During that period, scientists have estimated, the average pH of seawater declined from 8.19 to 8.05, which corresponds to a 30 percent increase in acidity.
- The current increased rate of dissolution of atmospheric CO₂ into the ocean results in an imbalance in the **carbonate compensation depth (CCD)**, the depth at which all carbonate is dissolved. **As the pH of the ocean falls, it results in a shallowing of the lysocline and the CCD**, thus exposing more of the shells trapped in the sediments to undersaturated conditions causing them to dissolve. **Hence statement 2 is correct.**
- Most of the sulphur in the atmosphere is emitted from the ocean, often in the form of **dimethylsulfide (DMS)** produced by phytoplankton. Some of the DMS produced by phytoplankton enters the atmosphere and reacts to make sulphuric acid, which clumps into aerosols, or microscopic airborne particles. Aerosols

seed the formation of clouds, which help cool the Earth by reflecting sunlight. **But, in acidified ocean water, phytoplankton produces less DMS. This reduction of sulphur may lead to decreased cloud formation, raising global temperatures.** Hence statement 3 is correct.

Q 21.C

- **MSP is the minimum price at which the government procures crops from farmers.** The actual amount depended on the method used to calculate cost to production (CoP).
- **The National Commission of Farmers/Swaminathan Commission recommended that the MSP should at least be 50 per cent more than the weighted average CoP, which it refers to as the C2 cost.** The government maintains that the MSP was fixed at a level of at least 1.5 times of the all-India weighted average CoP, but it calculates this cost as 1.5 times of A2+FL. However farmers from time to time demanded to implement Swaminathan Method of C2 instead of present methodology of A2+FL.
- Components under these methodology are:
 - **A2:** Costs incurred by the farmer in production of a particular crop. It includes several inputs such as expenditure on seeds, fertilisers, pesticides, leased-in land, hired labour, machinery and fuel
 - **A2+FL:** Costs incurred by the farmer and the value of family labour
 - **C2:** A comprehensive cost, which is A2+FL cost plus imputed rental value of owned land plus interest on fixed capital, rent paid for leased-in land.
- **Hence option (c) is the correct answer.**

Q 22.C

- **The reign of Muhammad bin Tughlaq:** Muhammad bin Tughlaq ruled the **Delhi Sultanate from 1325 to 1351**. His reign is known for its ambitious but often impractical policies, including the attempted shift of the capital from Delhi to Daulatabad.
- **Founding of the Sufi Chishti Order by Khwaja Moinuddin Chishti :** Khwaja Moinuddin Chishti, a Sufi saint, founded the Chishti Order in the 12th century. His teachings and the Chishti Sufi order had a significant impact on the socio-religious fabric of medieval India.
- **Establishment of the Maratha Confederacy:** The Maratha Confederacy was established in the 17th century, gaining strength during the reign of Shivaji and later expanding under the leadership of the Peshwas. This period witnessed the emergence of Marathas as a significant political power.
- **Battle of Haldighati:** The Battle of Haldighati was fought in 1576 between the Mughal forces led by Akbar's general Man Singh and the Rajput forces led by Rana Pratap Singh of Mewar. The battle had significant consequences for the region and marked the resilience of Rajput resistance against Mughal expansion.
- **Thus, the correct chronological order is 1-3-2-4**
- **Hence option (c) is the correct answer.**

Q 23.A

- **Introduction of Dyarchy at Provincial Government through Montford Reforms Act,1919:**
 - The Act introduced dyarchy for the executive at the level of the provincial government.
 - Dyarchy, i.e., the rule of two—executive councilors and popular ministers—was introduced. The governor was to be the executive head of the province.
 - Subjects were divided into two lists:
 - **'Reserved' subjects:** Subjects such as law and order, finance, land revenue, irrigation, etc. **Hence option 1 is correct.**
 - **'Transferred' subjects:** Such as education, health, local government, industry, agriculture, excise, etc. **Hence options 2 and 3 are not correct.**
 - **The reserved subjects were to be administered by the governor through his executive council of bureaucrats, and the transferred subjects were to be administered by ministers nominated from among the elected members of the legislative council.**

Q 24.D

- The Punjab government has decided to provide 'digitized form J' in real time to farmers. 'J-form' is the sale receipt of a farmer's agricultural produce in mandis (grain market) which acts as an income proof for a farmer who sells his crop. **Hence option (d) is the correct answer.**
 - Earlier issued manually by arthiyas (commission agents), the J-Forms act as a record of land under cultivation for wheat and paddy crops. It can be used for raising finance, IT waivers, subsidy claims, farmers' insurance etc. It will also provide an advantage to government in the form of proper record of the land under cultivation and policymaking for crop diversification.

- The 'digital J' form will have QR code, watermark and a unique number.
 - It can be stored in DigiLocker.
- National Agriculture Market (e- NAM) is a pan India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities. Its aim is to promote uniformity in agriculture marketing by streamlining of procedures across the integrated markets, removing information asymmetry and promoting real-time price discovery based on actual demand and supply.
- AgriStack is Government of India initiative consists of various databases, registries, data standards, policies and a regulator that facilitated the delivery of digital agriculture services. It is an effort to bring together high quality data and to make this data easily available to the stakeholders than need it so that they can create new services using the data.
- Electronic Negotiable Warehouse Receipt (e-NWR) is an electronic negotiable receipt issued by warehouse for agricultural produce stored by farmers in warehouse. It helps the farmer to seek loans from bank against eNWR. It also enables farmers to avoid distress sales of agricultural produce during the peak marketing season and to avoid the Post harvest storage loss.

Q 25.B

- Jezero Crater serves as the landing site for NASA's Perseverance rover. The rover landed here as part of the Mars 2020 mission, with the goal of exploring this specific region of Mars for scientific research and astrobiology studies. NASA's Perseverance rover has been actively exploring Jezero Crater, collecting data, and taking images to decipher the ancient history of the region. These efforts are essential in advancing our understanding of Mars' geological and environmental history. Hence statement 1 is not correct.
- Jezero Crater is of particular interest because it is believed to have once held a lake. The presence of a delta in the crater suggests that water flowed into it, making it an ideal location to search for signs of ancient microbial life. Ground-penetrating radar has confirmed the existence of this ancient lake, further building excitement for the potential discovery of evidence of past life. Hence statement 2 is correct.
- Hence option (b) is the correct answer.

Q 26.A

- As per the IUCN definition, a HOPE SPOTS is an area of an ocean that needs special protection because of its wildlife and significant underwater habitats.
- Hope Spot Network is a joint initiative of Mission Blue and the International Union Of Conservation of Nature (IUCN).
- The Andaman and Nicobar and the Lakshadweep islands in India have been designated as 'Hope Spots' by the IUCN.
- Hence option (a) is the correct answer.

Q 27.D

- The term "environmental refugees" is one of the many phrases that are used to describe people who move due to changes in the environment around them. The relationship between the environment and human movement is complex, and for that reason, there are a number of different phrases and definitions. "Environmental refugees" is one such phrase. However, it is also worth noting that the term "environmental refugees" does not have any kind of official recognition. None of the international agencies that work with migrants and refugees give the phrase any official status. While some government officials may have used it, the phrase is not codified in any national or international laws. Hence statement 1 is not correct.
- The 1951 Refugee Convention states a set of very clearly defined reasons that can be the cause of someone's displacement. Environmental forces are not among these stated reasons. So while the phrase might be evocative or useful in communication, it doesn't mean that "environmental refugees" have the same rights as other refugees. Hence statement 2 is not correct.
- The Global Compact on Safe, Orderly and Regular Migration, adopted by the UN in 2018, clearly states that one of the factors causing large-scale movements of people is "the adverse impacts of climate change and environmental degradation," which includes natural disasters, desertification, land degradation, drought, and rising sea levels. For migrants who are forced to leave their countries of origin due to environmental degradation, the compact clearly states that governments should work to protect climate refugees in the countries of their arrival by devising planned relocation and visa options if adaptation and return is not possible in their countries of origin. Hence statement 3 is correct.

Q 28.D

- The Directorate of Enforcement or the ED is a multi-disciplinary organization mandated with investigation of economic crimes and violations of foreign exchange laws.
- The origin of this Directorate goes back to 1st May 1956, when an ‘Enforcement Unit’ was formed in the Department of Economic Affairs for handling Exchange Control law violations under the Foreign Exchange Regulation Act, 1947 (FERA ’47). This Unit with Delhi as Headquarters was headed by a Legal Service Officer, as Director of Enforcement, assisted by an Officer drawn on deputation from the Reserve Bank of India (RBI) and 03 Inspectors of Special Police Establishment. There were 02 branches – at Bombay and Calcutta. Thus its creation or establishment was not provided for under any Act. **Hence statement I is not correct.**
- The statutory functions of the Directorate include the enforcement of the following Acts:
 - **The Prevention of Money Laundering Act, 2002 (PMLA):** It is a criminal law enacted to prevent money laundering and to provide for confiscation of property derived from, or involved in, money laundering and for matters connected therewith or incidental thereto. ED has been given the responsibility to enforce the provisions of the PMLA by investigating to trace the assets derived from proceeds of crime, provisionally attaching the property, and ensuring prosecution of the offenders and confiscation of the property by the Special court.
 - **The Foreign Exchange Management Act, 1999 (FEMA):** It is a civil law enacted to consolidate and amend the laws relating to facilitating external trade and payments and to promote the orderly development and maintenance of the foreign exchange market in India. ED has been given the responsibility to conduct an investigation into suspected contraventions of foreign exchange laws and regulations and to adjudicate and impose penalties on those adjudged to have contravened the law. **Hence statement-II is correct.**
 - **The Fugitive Economic Offenders Act, 2018 (FEOA):** This law was enacted to deter economic offenders from evading the process of Indian law by remaining outside the jurisdiction of Indian courts. It is a law whereby the Directorate is mandated to attach the properties of fugitive economic offenders who have escaped from India warranting arrest and provide for the confiscation of their properties to the Central Government.
- **Hence option (d) is the correct answer.**

Q 29.A

- Buddhism, founded by Siddhartha Gautama, known as the Buddha, in the 6th century BCE, is a profound and influential religious and philosophical tradition. Originating in ancient India, Buddhism has spread across Asia and beyond, leaving an indelible mark on the spiritual, cultural, and intellectual landscape. Guided by the Four Noble Truths and the Eightfold Path, Buddhism offers a path to liberation from suffering and the cycle of rebirth. Buddhism has various sects that have developed over time. Some of the major sects include
 - **Theravada Buddhism:**
 - Theravada Buddhism is **older and the more conservative** of the divisions of Buddhism and is **often referred to as the ‘traditions of the elders’**.
 - Many Theravada Buddhists follow the teachings of the Buddha exactly, and many of them are monks or nuns.
 - **Theravada Buddhists strive to be arhats. Hence statement 1 is correct.**
 - **Arhats are perfected people who have gained true insight into the nature of reality.** This means they have followed the Noble Eightfold Path to ‘blow out’ the three fires of greed, hatred and ignorance and have become enlightened.
 - In Buddhism, enlightenment leads to nibbana (or nirvana), which means freedom from the cycle of rebirth (samsara). **Consequently, they will no longer be reborn through samsara. Hence statement 2 is not correct.**
 - **Mahayana Buddhism:**
 - Mahayana Buddhists believe they can achieve enlightenment through following the teachings of the Buddha.
 - **The goal of a Mahayana Buddhist may be to become a Bodhisattva** and this is achieved through the Six Perfections.
 - **Compassion is very important in Mahayana Buddhism.**
 - Therefore, **Bodhisattvas choose to stay in the cycle of samsara to help others to achieve enlightenment** as well as themselves.

- This is a key difference between Theravada and Mahayana Buddhists. Whereas Theravada Buddhists strive to become Arhats and gain freedom from the cycle of samsara, Mahayana Buddhists may choose to stay in the cycle of samsara out of compassion for others.
 - Vajrayana Buddhism: Known as the "Diamond Vehicle," Vajrayana is a form of Buddhism prominent in Tibet and incorporates esoteric rituals and practices.

Q 30.C

- A kilonova explosion is a rare and powerful cosmic event that has the potential to eradicate life on Earth for thousands of years. It occurs when two neutron stars or a neutron star and a black hole collide and merge, producing a blast of gamma rays that lasts only a matter of seconds. While not as violent as a supernova, a kilonova can still have devastating consequences for our planet if it were to occur within a relatively close proximity, around 36 light-years from Earth. The resulting radiation from such an event could cause an extinction-level event, emitting lethal particles that would decimate Earth's ozone layer and expose us to deadly ultraviolet radiation for a staggering 1,000 years.
- A kilonova explosion could end life on Earth through the emission of lethal particles and radiation. The collision of neutron stars would generate an expanding bubble of cosmic rays, which would engulf everything in its path and shower Earth with highly energetic charged particles.
- Hence option (c) is the correct answer.

Q 31.A

- Recent Context: The primary objective of the special session (held in September 2023) of the Parliament was to honor the Parliament's 75-year history and to complete the transition of proceedings to a new building. The session skipped Question Hour and private members' business, according to the secretariats of the Lok Sabha and Rajya Sabha
- As per Article 85(1) of the Indian Constitution, "The President shall from time to time summon each House of Parliament to meet at such time and place as he/she thinks fit, but six months shall not intervene between its last sitting in one session and the date appointed for its first sitting in the next session." Hence, statement 1 is correct and statement 2 is not correct.
- From time to time, India has witnessed a series of special sessions, including:
 - August 14 and 15, 1947, was the first-ever special session of the Parliament to commemorate India's independence.
 - The next was at the time of the 1962 India-China War.
 - Many other special sessions have been held to honor notable holidays or landmarks.

Q 32.B

- Locus Standi means the ability of a party to demonstrate to the court sufficient connection to and harm from the law or action challenged to support that party's participation in the case. It covers three cases
 - The party is directly subject to an adverse effect by the statute or action in question.
 - The party is not directly harmed by the conditions by which they are petitioning the court for relief but asks for it because the harm involved has some reasonable relation to their situation, and the continued existence of the harm may affect others who might not be able to ask a court for relief.
 - The party is granted automatic standing by act of law (In cases about environmental issues etc)
- Article 32 deals with the right to move the Supreme Court for the enforcement of fundamental rights. Locus Standi is mandatory for most of the provisions under Article 32 while in a few cases, Locus Standi is not necessary.
- Statement 1 is not correct: Before the 1980s, only the affected parties had the locus standi (standing required in law) to file a case and continue the litigation and the non-affected persons had no locus standi to do so. As a result, there was hardly any link between the rights guaranteed by the Constitution of India and the laws made by the legislature on the one hand and the vast majority of illiterate citizens on the other. So after the 1980s, many reformers like Justice P N Bhagwati made it accessible to all.
- Thereafter, the traditional rule of locus standi was liberalized to give way to Public Interest Litigation (PIL). Through PIL, the Court widened the concept of 'person aggrieved' to include any public-spirited individual or association, provided they act for the proper cause of justice and are not actuated by political motives or other forces. Now, a third-party appeal can be made to seek justice on violations of rights and it should be noted that only the concept of the aggrieved party has been enlarged, not the basic part i.e. the writ can only be issued by supreme court in case of violation of FUNDAMENTAL RIGHT.

- **Statement 2 is correct:** A PIL cannot be filed for matters dealing with petitions for early hearing of cases in High Courts and Subordinate Courts.
- Other cases that cannot be entertained through PIL are:
 - Landlord-tenant matters.
 - Service matters and those related to pension and gratuity
 - Admission to medical and other educational institutions
- **Statement 3 is correct:** The Court should *prima facie* verify the credentials of the petitioner before entertaining the PIL. The Court shall be *prima facie* satisfied regarding the correctness of the contents of the petition before entertaining the PIL.

Q 33.A

- The Western Ghats, also known as the Sahyadri Mountains, are a mountain range that runs parallel to the western coast of India, stretching from the state of Gujarat in the north to the southern tip of the Indian peninsula in Tamil Nadu and Kerala.
 - The Western Ghats are one of the world's ten "Hottest biodiversity hotspots" and a UNESCO World Heritage Site
- **Five highest peaks in the Western Ghats**

1	Anamudi	2,695 m	Eravikulam National Park	Kerala
2	Meesapulimala	2,640 m	Idukki	Kerala
3	Doddabetta	2,637 m	Nilgiris	Kerala
4	Kolaribetta	2,629 m	Mukurthi National Park	Tamil Nadu
5	Kadikkadu Peak	2,554 m	Mukurthi National Park	Tamil Nadu

- The Himalayas stretch over 2,400 kilometers (1,500 miles) from west to east and are bordered by the Indo-Gangetic Plain to the south and the Tibetan Plateau to the north. The range is home to some of the world's highest peaks, including Mount Everest, the highest point on Earth at 8,848 meters (29,029 feet) above sea level.
 - The Himalayas consists of four parallel mountain ranges from south to north: the Sivalik Hills on the south; the Lower Himalayan Range; the Great Himalayas, which is the highest and central range; and the Tibetan Himalayas on the north. The Karakoram are generally considered separate from the Himalayas.

Top Himalayan peaks and their elevation in metres

1. Everest - (Sagarmatha/Qomolangma) - 8850 - Nepal-Tibet
2. K2 - (Godwin Austen) - 8611 - (Pak./China occupied Kashmir)
3. Kanchenjunga - 8598 - Nepal-India
4. Lhotse - 8501 - Nepal/Tibet
5. Makalu - 8463 - Nepal/Tibet
6. Cho Oyu - 8201 - Nepal/Tibet
7. Dhaulagiri - 8167 - Nepal
8. Manaslu - 8163 - Nepal
9. Nanga Parbat - 8125 - Pak. occupied Kashmir
10. Annapurna - 8091 - Nepal
11. Gasherbrum I - 8068 - Pak./China occupied Kashmir
12. Broad Peak - 8047 - Pak./China occupied Kashmir
13. Shisha Pangma - (Xixabangma Feng/Gosainthan) - 8046 - Nepal/Tibet
14. Gasherbrum II - 8035 - Pak./China occupied Kashmir

- Kamet is the second-highest mountain in the Garhwal region of Uttarakhand, India, after Nanda Devi. It lies in the Chamoli District of Uttarakhand. Its appearance resembles a giant pyramid topped by a flat summit area with two peaks
- Hence option (a) is the correct answer.

Q 34.A

- Currency swaps, which are also referred to as cross-currency swaps, are agreements under which two parties with different domestic currencies agree to swap the principal amounts and interest rates of loans.
 - Each party will take out a loan in their own currency and then swap the amount they have borrowed plus the interest that is owed for an equivalent amount in a foreign currency along with the attached interest rate for that amount.
- Currency swaps have always been very convenient in finance. They allow for the redenomination of loans or other payments from one currency to the other. This comes with various advantages for both individuals and companies. There is the flexibility to hedge the risk associated with other currencies as well as the benefit of locking in fixed exchange rates for a longer period of time. Hence both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- In the past, currency swaps were done to circumvent exchange controls, but nowadays, they are done as part of a hedging strategy against forex fluctuations. They are also used to reduce the interest rate exposure of the parties involved or to simply obtain cheaper debt.

Q 35.B

- Two rivers flowing at different levels in the same region i.e. on the ground surface and below the ground surface but following the same direction and gradient may be called twin-river system. Such river system is an example of geological unusual instance. Such twin-river system formed by the Amazon river and subterranean river just below the Amazon, named the Hamza river, has been recently discovered in the year 2011 in Brazil.
- Valiya Mannathal Hamza, the Indian born scientist of National Observatory of Rio (Rio de Janeiro), Brazil, discovered the largest underground river below the Amazon river in Brazil in 2011. This subterranean river has been named after V.M. Hamza as Hamza river. Thus, such river system is called twin-river system.
- The following are the characteristic features of the Hamza and the Amazon twin-river system: > The subterranean Hamza river flows for a total distance of 6000 km at a depth of about 4 km from the bed of the Amazon river and follows the same flow direction of the Amazon.
- The Hamza river runs all the way from the foot hills region of the Andes Mountain to the Atlantic Ocean in a west-east direction. It drains into the Atlantic Ocean as does the Amazon river but at different levels.

- The average speed of water in the surface river Amazon is 5 m/s whereas it is less than one millimeter per second in the subterrean Hamza river. Thus, the Hamza is exceedingly sluggish in flow velocity.
- The primary source of water of the Hamza river is infiltration of surface water through permeable sedimentary rocks. In fact, there are west-east trending faults which act as conduits for water to sink to greater depth and form subterranean stream (Hamza).
- **Hence option (b) is the correct answer.**

Q 36.D

- **The Neolithic Age**, also known as the **New Stone Age**, was a significant period in human prehistory characterized by the development of agriculture and the transition from a nomadic, hunter-gatherer lifestyle to settled communities. It is generally dated from around **8000–6000 BCE.**, although the timeline varied in different regions, at some **places in south and eastern India, it is as late as 1000 BCE.** Its significance in prehistory can be gauged by the fact that V. Gordon Childe termed the Neolithic phase as **Neolithic Revolution**.
- Key developments during the Neolithic Age are **Agriculture, Settlements, Domestication of Animals and Tool Advances.**
- The Indian subcontinent has several Neolithic sites that have provided valuable insights into the early agricultural practices and lifestyles of ancient communities. Some notable **Neolithic sites in the Indian subcontinent include:**
 - **Chirand (Bihar, India)**, Chirand is an archaeological site in Bihar, India, dating back to the Neolithic period. It has provided evidence of early agriculture and pottery.
 - **Burzahom** (unique rectangular chopper, domestic dogs buried with their masters in graves) and **Gufkraal in Jammu and Kashmir** (famous for pit dwelling, stone tools, and graveyards located within households).
 - **Maski, Brahmagiri, Piklihal** (proof of cattle herding), Budihal (community food preparation and feasting), and Tekkalakota in Karnataka.
 - **Paiyampalli** in Tamil Nadu and Utnur in Andhra Pradesh. Garo Hills in Meghalaya.
 - **Koldihwa (Madhya Pradesh, India)**: Koldihwa is a Neolithic site located in the central part of India, with evidence of agriculture and domestication of plants around 7000 BCE.
 - **Saraikhola, near Taxila on Potwar plateau**, Amri, Kotdiji and Mehrgarh (the earliest Neolithic site known as the Breadbasket of Balochistan, a province of Pakistan).
 - **Chopani – Mando, Belan valley** (earliest evidence of use of pottery). **Belan Valley**, on the northern spurs of the Vindhya range, and the middle part of the Narmada valley (evidence of all the three phases of Paleolithic settlement, followed by Mesolithic and Neolithic settlements)
- **Hence, option (d) is the correct answer.**

Q 37.D

- Some organisms are able to maintain homeostasis by physiological (sometimes behavioral also) means which ensures constant body temperature, constant osmotic concentration, etc. All birds and mammals, and a very few lower vertebrate and invertebrate species are indeed capable of such regulation (thermoregulation and osmoregulation). Evolutionary biologists believe that the ‘success’ of mammals is largely due to their ability to maintain a constant body temperature and thrive whether they live in Antarctica or in the Sahara desert. **Hence pair 1 is correctly matched.**
- An overwhelming majority (99 percent) of animals and nearly all plants cannot maintain a constant internal environment. Their body temperature changes with the ambient temperature. In aquatic animals, the osmotic concentration of the body fluids changes with that of the ambient air, and water osmotic concentration. These animals and plants are simply conformers. **Hence pair 2 is correctly matched.**
- The organism can move away temporarily from the stressful habitat to a more hospitable area and return when the stressful period is over. In human analogy, this strategy is like a person moving from Delhi to Shimla for the duration of summer. Many animals, particularly birds, during winter, undertake long-distance migrations to more hospitable areas. **Hence pair 3 is correctly matched.**
- In animals, the organism, if unable to migrate, might avoid the stress by escaping in time which is known as suspension. The familiar case of bears going into hibernation during winter is an example of escape in time. Some snails and fish go into aestivation to avoid summer-related problems and desiccation. Under unfavourable conditions, many zooplankton species in lakes and ponds are known to enter diapause, a stage of suspended development. **Hence pair 4 is correctly matched.**
- **Hence option (d) is the correct answer.**

Q 38.A

- The Law Commission of India is a non-statutory body and is constituted by a notification of the Government of India, Ministry of Law & Justice, Department of Legal Affairs with definite terms of reference to carry out research in the field of law and the Commission makes recommendations to the Government (in the form of Reports) as per its terms of reference. Hence statement 1 is not correct.
- The Commission works on projects based on the references received from the Central Government and/or from the Supreme Court and High Courts. At times, keeping in view the importance of the subject matter, the Commission initiates study on specific subjects,suo moto. Hence statement 2 is correct.
- The Reports of the Law Commission are laid in Parliament from time to time by the Department of Legal Affairs, Ministry of Law and Justice and forwarded to the concerned administrative Departments/Ministries for implementation. They are acted upon by concerned Departments/ Ministries depending on the Government's decision. Hence statement 3 is not correct.

Q 39.C

- The UN Statistical Commission, established in 1947, is the highest body of the global statistical system bringing together the Chief Statisticians from member states from around the world. The Statistical Commission oversees the work of the United Nations Statistics Division (UNSD), and it is a Functional Commission of the UN Economic and Social Council. Hence statement 1 is correct.
- It is the highest decision-making body for international statistical activities, responsible for setting statistical standards and the development of concepts and methods, including their implementation at the national and international levels. The Commission consists of 24 member countries of the United Nations elected by the United Nations Economic and Social Council on the basis of equitable geographical distribution. Hence statement 2 is not correct.
- India was elected by the UN Economic and Social Council (ECOSOC) as a member of the UN Statistical Commission, the Commission on Narcotic Drugs, and the Programme Coordinating Board of the Joint UN Programme on HIV/AIDS (UNAIDS). India's 4-year term begins on January 1, 2024. Hence statement 3 is correct.

Q 40.D

- Earthquakes are natural phenomena that occur when there is a sudden release of energy in the Earth's crust, resulting in the shaking or trembling of the ground.
- Earthquakes are primarily caused by the movement of tectonic plates beneath the Earth's surface. The Earth's lithosphere is divided into several large and small tectonic plates that float on the semi-fluid asthenosphere beneath them.
 - When these plates move past, collide with, or slide past each other, they generate stress along faults or fractures in the Earth's crust. When the stress exceeds the strength of the rocks, it is suddenly released, leading to an earthquake.
- Seismic gaps are segments along a fault line where significant seismic activity has not occurred for an extended period, despite the surrounding areas experiencing frequent earthquakes.
 - These regions are considered to be overdue for a major earthquake, as the accumulated stress along the fault has not been released through seismic activity.
 - Identifying seismic gaps is important for assessing earthquake hazards and understanding the seismic behavior of a tectonically active region.
- Hence option (d) is the correct answer.

Q 41.C

- Siddhamatrika is an ancient script, known from the 6th century CE; also known as Kutila.
- In the late 6th century, Gupta Brahmi evolved into a script known as Siddhamatrika or Kutila, which had sharp angles at the lower right-hand corner of each letter. Its references can also be found in the writings of Al-Biruni.
- The modern north Indian scripts evolved from Siddhamatrika. By around 1000 CE, Nagari or Devanagari became standardized, while an eastern script, proto-Bengali or Gaudi, took form between the 10th and 14th centuries. In Kashmir and nearby regions, the Sarada script emerged from Siddhamatrka around the eighth century CE. Hence, option (c) is the correct answer.

Q 42.C

- **The Information Fusion Centre – Indian Ocean Region (IFC-IOR), hosted by the Indian Navy,** was established by the Government of India at Gurugram on 22 Dec'18 to address this need to promote collaboration for maritime safety and security.
- The Centre **aims to strengthen maritime security in the region** by building a common coherent maritime situation picture and acting as a **maritime security information sharing hub**. Since its inception, the Centre has established 67 linkages in 25 countries.
- To enable better correlation, compressed information cycles and timely inputs, the **Centre also hosts International Liaison Officers (ILOs) from partner nations.** The Centre hosts ILOs from 12 partner nations viz., Australia, France, Italy, Japan, Maldives, Mauritius, Myanmar, Sri Lanka, Seychelles, Singapore, United Kingdom and United States of America, and more countries have evinced interest to position resident ILOs in the near future.
- The Centre **monitors the Indian Ocean and adjoining seas** to understand each region and generates various periodic reports viz., Weekly Maritime Security Updates (WMSU), Monthly Maritime Security Updates (MMSU), Half Yearly Overviews and Annual Reports.
- **Hence option (c) is the correct answer.**

Q 43.D

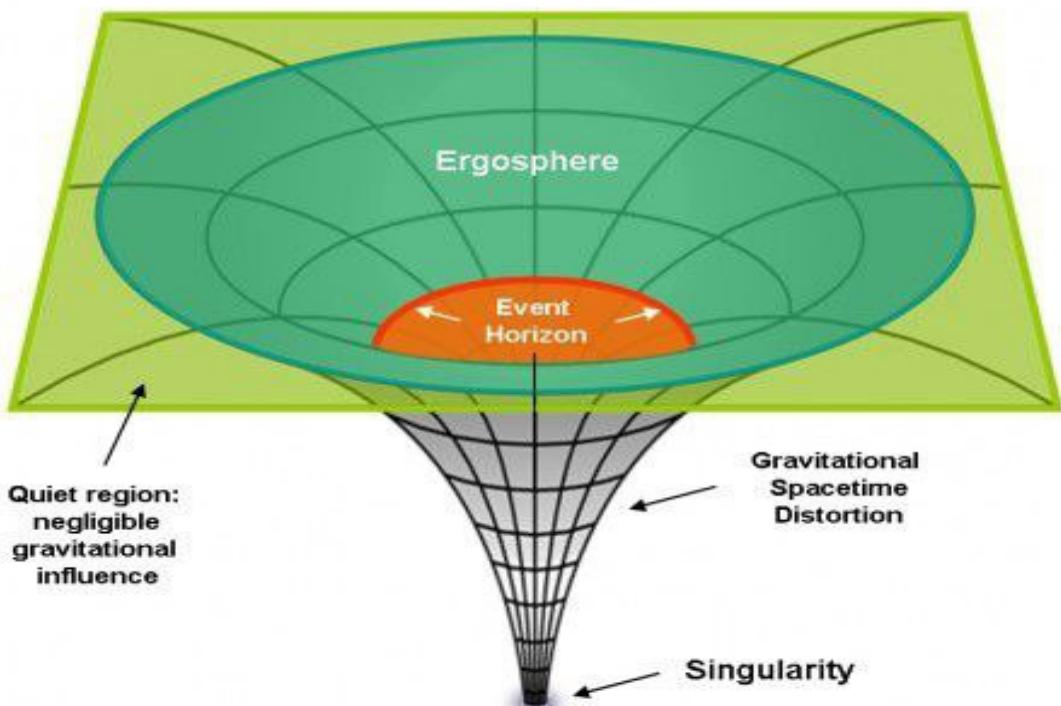
- Avian influenza or bird flu refers to the disease caused by infection with avian (bird) influenza (flu) Type A viruses. **These viruses naturally spread among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species.** Bird flu viruses do not normally infect humans. However, sporadic human infections with bird flu viruses have occurred. **Hence statement 1 is not correct.**
- **For avian influenza viruses, the primary risk factor for human infection appears to be exposure to infected live or dead poultry or contaminated environments, such as live bird markets.** Human infections with avian and other zoonotic influenza viruses, though rare, have been reported sporadically. Direct or indirect contact with infected animals represent a risk for human infection. **Current zoonotic influenza viruses have not demonstrated sustained person-to-person transmission.** Hence statement 2 is not correct.
- **Hence option (d) is the correct answer.**

Q 44.C

- The Reserve Bank of India (RBI) was set up on April 1, 1935, in accordance with the provisions of the RBI Act, 1934 in Calcutta. It was shifted to Bombay in 1937. It is the central bank of India. As per the changing needs of time, the RBI Nationalisation Act of 1949 has been amended several times by the Government and its functions broadened. The functions of RBI are discussed below.
- **Banker of the Governments and Banks:** The RBI performs the Merchant Banking functions for the central and state governments; acts as their Bankers; and maintains banking accounts of the scheduled commercial banks. The broad objectives are enabling governments and the banks to mobilise enough liquidity for their functioning under which it lends or manages borrowing plans of the governments and provides short term and long-term loans to the banks (as Lender of Last Resort). **Hence options 3 and 5 are correct.**
- **Monetary Authority:** The RBI formulates, implements and monitors the monetary policy. The broad objective is maintaining price stability keeping in mind the objective of growth. **Hence option 4 is correct.**
- **Manager of Foreign Exchange:** It includes broad functions like—managing the FEMA (Foreign Exchange Management Act, 1999); keeping the Forex (foreign exchange) reserves of the country; stabilizing the exchange rate of rupee; and representing the Government of India in the IMF and World Bank (and other international financial agencies of which India is member). **Hence option 2 is correct.**
- **In India, the Reserve Bank of India (RBI) has the exclusive right to print money.** It prints all currency notes, except the one rupee denomination notes and its subsidiary coins. Instead, they are issued by the Government of India through the Ministry of Finance. Additionally, the Finance Ministry issues all other coins in various denominations on behalf of the Government of India. **Hence option 1 is not correct.**
- **Regulator and Supervisor of Payment and Settlement Systems:** Introduces and upgrades safe and efficient modes of payment systems in the country to meet the requirements of the public at large. Objective: maintain public confidence in payment and settlement system

Q 45.B

- Ergosphere comes from the Greek word ‘ergon’, meaning ‘work’. It got its name because it is possible to get energy and even mass from this place. **An “ergosphere” is the region in between the event horizon and the stationary limit.** A “stationary limit” is a surface around the outside of a rotating black hole. **It is a sphere around the singularity of a Black Hole.** When anything enters this sphere, it can't escape unless it travels faster than light (which is impossible).
- **An Ergosphere is shaped like an oblate spheroid**, or a pumpkin. At the top and bottom of the black hole, it touches the event horizon, but as you move the middle part, it goes out farther. It is a bigger sphere surrounding the Event Horizon that an object can enter and then leave if it's moving fast enough, but still less than the speed of light. It is possible to extract matter and energy from the ergosphere, but not from beyond the event horizon.
- Scientists have suggested a possibility of sending objects into the ergosphere and allow it to accelerate there along the black hole's direction of rotation, so that it comes out moving faster. This energy ‘gain’ will translate to the black hole losing some angular momentum.

Black Hole Regions

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

Q 46.D

- Recent context: The Prime Minister paid a visit to the Ranganathaswamy Temple in Srirangam, where he immersed himself in the rendition of verses from the 12th-century Tamil epic, **Iramavataram**, also known as **Kamba Ramayanam**, penned by the revered poet **Kamban**. Hence, **statement 1 is not correct**.
- Early medieval Tamil literature includes the intense devotional poetry of the Vaishnava saints (Alvars) and Shaiva saints (Nayanars or Nayanmars) and their hagiographies.
- **Alvars:**
 - It embodies a deeply personalized religious devotion centred around the worship and reverence of one deity, Vishnu.
 - Alvars are twelve, including a woman saint, Andal.
 - Alvar's Vaishnava poetry took off with the compositions of Peyalvar, Puttalvar, and Poikaialvar.
 - **In the 10th century, Nathamuni collected the Alvar hymns into the canon known as the Nalayira DivyaPrabandham. Hence, statement 2 is not correct.**
 - The Alvarvaipavam is a sacred biography of the Vaishnava saints.
- **Nayanars:**
 - It encapsulates a deeply personal religious sentiment characterized by profound devotion to a singular deity, Shiva.

- Nayanars were also known as Samayacharyas and were sixty-three in number, including a woman saint Karaikkal Ammaiyan.
- The hymns of the Nayanmar saints were compiled in the 10th century by Nambi Andar Nambi and this compilation formed the core of the Shaiva canon, the Tirumurai. Nambi also wrote a work called the Tiruttandar Tiruvantati about the saints.
- In the 12th century, the accounts of the Shaiva saints were collected in a text called the Periyapuranam. Hence, statement 3 is not correct.

Q 47.A

- Land Degradation Neutrality (LDN) has been defined by the Parties to the Convention as - "A state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems". Hence statement 1 is correct.
- The LDN Target Setting Programme is an initiative of the United Nations Convention to Combat Desertification (UNCCD). It was launched in 2014 with a group of 14 pilot countries and with the overall objective to enable countries to define national baselines, set voluntary LDN targets, and identify measures to achieve them.
- The Sustainable Development Goals (SDGs) provide a framework for countries to determine how best to improve the lives of their people now while ensuring that these improvements are sustained for future generations.
- A total of 17 SDGs came into effect in January 2016 and are expected to guide social, economic, and environmental policy and investment over the next 15 years. SDG 15 promotes "Life on Land" and SDG target 15.3 targets to achieve LDN by 2030. It did not find mention under India's Intended Nationally Determined Contributions submitted to the UNFCCC. Hence statement 2 is not correct.
- The government of India has committed to achieving land degradation neutrality by the SDG target year of 2030.

Q 48.B

- Greek ambassadors played crucial roles in diplomatic relations between the Hellenistic world and the Mauryan Empire, providing valuable accounts of Indian society, governance, and culture during the 4th to 3rd centuries BCE. While Megasthenes is the most renowned among them, their combined contributions offer glimpses into the historical interactions of these two ancient civilizations.
 - **Megasthenes and Chandragupta Maurya:**
 - Megasthenes was a Greek ambassador sent by Seleucus Nicator to the court of Chandragupta Maurya, likely around 302 BCE. Megasthenes authored "Indika," which provided valuable insights into the administration, society, and culture of the Mauryan Empire, particularly during Chandragupta Maurya's rule. Hence pair 1 is correctly matched.
 - **Deimachus and Bindusara:**
 - Deimachus, another Greek ambassador, was sent to the court of Bindusara, succeeding Megasthenes in the diplomatic exchanges between the Seleucid Empire and the Mauryan Empire. The details about Deimachus and his mission are not as extensively documented as those of Megasthenes, but historical accounts mention his association with Bindusara. Hence pair 2 is correctly matched.
 - **Dionysius and Ashoka:**
 - Dionysius is mentioned in historical accounts as a Greek ambassador, and he was associated with the court of Ashoka, the grandson of Chandragupta Maurya. Hence pair 3 is not correctly matched.
- Hence option (b) is the correct answer.

Q 49.A

- Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme launched in 2021 to compensate the duties/taxes/levies at the Central, State and Local level borne on the exported product which are otherwise not credited or remitted or refunded in any manner. This scheme is fully administered by the Department of Revenue, Ministry of Finance. It replaced the WTO-incompatible Merchandise Exports from India Scheme (MEIS) scheme, which had faced several challenges from WTO members. Hence statement 3 is correct.
- Taxes which are intended to compensate:
 - VAT and Excise duty on the fuel used in self-incurred transportation costs; on the fuel used in generation of electricity via power plants or DG Sets; on the fuel used in running of machineries/plant;

- Electricity duty on purchase of electricity;
- Mandi Tax/ Municipal Taxes/ Property Taxes;
- Stamp duty on export documents;
- Un-creditable CGST/ SGST/ IGST/ Compensation Cess
- The benefit under RoDTEP is not limited only to the manufacturer and exporter but available to all exporters irrespective of their status in respect of the goods manufactured in India.
- The **rebate under RoDTEP is not dependent upon the realisation of export proceeds at the time of claim of rebate. However, the rebate is allowed subject to receipt of sale proceeds within the timeframe allowed under the Foreign Exchange Management Act (FEMA), 1999.** Hence statement 1 is not correct.
- Benefits under the **scheme is given to large set of exported items. However, there are some sectors which are not covered under this scheme.** Sector like steel, pharmaceuticals, chemical, textiles are covered under RoSCTL (Rebate of State and Central Taxes and Levies). Hence the statement 2 is not correct.

Q 50.C

- **Government has approved the Hybrid Annuity Model (HAM) in 2016 for building National Highways (NH) to speed up the construction of roads in the country by renewing interest of private developers in highway projects.**
- As the name suggested HAM model is mix of Build-Operate-Transfer (BOT) model and Engineering, Procurement, Construction (EPC) model.
 - Build-Operate-Transfer (BOT) model: A private entity is responsible for building, designing, and operating the road and transferring it back to the government.
 - Engineering, Procurement, Construction (EPC) model: The cost is completely borne by government. Government invites bids for engineering knowledge from the private players.
- **Features of Hybrid Annuity Model (HAM):**
 - **40% of project cost is paid by government and remaining 60% by developer. Hence statement 1 is not correct.**
 - **Toll free collection is the responsibility of Government/Authority. Hence statement 2 is correct.**
 - **Project costs is inflation-indexed (through a Price Indexed Multiple),** which is the weighted average of Wholesale Price Index (WPI) and Consumer Price Index for Industrial Worker (CPI-IW) in the ratio of 70:30. Hence the statement 3 is correct.
 - Developer is responsible for maintenance of the project till the end of the concession period. The concessions period shall comprise construction period, which shall be project specific and fixed operations period of 15 years.
 - The Operation and Maintenance (O&M) payments is **made to the developer by the Authority**, in accordance with the **amount quoted which will be inflation-indexed. Hence the statement 4 is not correct.**

Q 51.D

- The term “invisible e-waste” refers to e-waste that goes unnoticed due to its nature or appearance, leading consumers to overlook its recyclable potential. Consumers fail to recognize almost one-sixth of electronic waste generated globally, amounting to nearly 9 billion kilograms per year, a study conducted by Waste Electrical and Electronic Equipment (WEEE) found.
- Common examples of invisible e-waste items in households include toothbrushes, shavers, external drives and accessories, headphones and earbuds, remote controls, speakers, LED lights, power tools, household medical equipment, heat and smoke detectors, and many others.
- **Many of these devices, such as vapes contain lithium,** which makes their battery rechargeable but also causes serious fire risks when the device is discarded. Moreover, **lithium is a ‘strategic raw material’** crucial to the economy and green energy transition, hence invisible e-waste is becoming a cause of concern.
- **Hence option (d) is the correct answer.**

Q 52.B

- On September 28, 2023, RBI has published the quarterly data of external debt of India at the end of June 2023. The Reserve bank of India (RBI) released that external debt data of India which rose marginally to USD 629.1 billion at June-end 2023, although the debt-GDP ratio declined to 18.6%..
- **At end-June 2023, long-term debt (with original maturity of above one year) was placed at USD 505.5 billion,** recording an increase of USD 9.6 billion over its level at end-March 2023. The share of

short-term debt (with original maturity of up to one year) in total external debt declined to 19.6% at end-June 2023 from 20.6% at end-March 2023. Similarly, the ratio of short-term debt (original maturity) to foreign exchange reserves declined to 20.8% at end-June 2023 (22.2% at end-March 2023). Hence statement 1 is correct.

- US dollar-denominated debt remained the largest component of India's external debt, with a share of 54.4% at end-June 2023, followed by debt denominated in the Indian rupee (30.4%), SDR (5.9%), yen (5.7%), and the euro (3.0%). Hence statement 2 is not correct.
- The share of outstanding debt of non-financial corporations in total external debt was the highest at 39.8%, followed by deposit-taking corporations (except the central bank) (26.6%), general government (21.1 %) and other financial corporations (7.6%), the report added. Hence statement 3 is not correct.
- Loans remained the largest component of external debt, with a share of 32.9%, followed by currency and deposits (22.9%), trade credit and advances (19.0%) and debt securities (16.8\$).

Q 53.B

- **Indian Councils Act of 1861:**
 - Indians were first nominated to the **Imperial Legislative Council** through the Indian Councils Act of 1861. This act marked a significant step towards Indian participation in legislative affairs under British rule.
 - In 1862, Viceroy Lord Canning appointed three Indians- **Maharaja Sir Narendra Singh of Patiala, Raja Deo Narain Singh of Benares, and Raja Sir Dinkar Rao Raghunath of Gwalior** to the newly constituted Legislative Council. Between 1862 and 1892, forty-five Indians were nominated to the Legislative Council.
 - Key provisions of the Indian Councils Act of 1861 regarding the nomination of Indians to the Imperial Legislative Council included:
 - **Introduction of Non-Official Members:** The Act allowed for the appointment of non-official members to the legislative councils. These members were nominated by the Viceroy or provincial governors to represent various communities and interests.
 - **Qualifications for Nomination:** The Act specified certain qualifications for individuals to be eligible for nomination as non-official members. These qualifications typically included factors such as property ownership, education, and social standing.
 - **Representation of Communities:** The Act aimed to ensure representation from diverse communities, including Hindus, Muslims, Sikhs, and others, to provide a platform for their interests to be voiced within the legislative process.
 - **Appointment by the Viceroy:** The final authority for the nomination of non-official members rested with the Viceroy of India, who made appointments based on recommendations from various sources, including local governments, community leaders, and public figures.
- **Syed Ahmed Khan:**
 - Syed Ahmed Khan was a prominent Muslim leader and educationist during the 19th century in British India.
 - He is best known for his efforts in promoting **modern education among Muslims** and advocating for the socio-economic upliftment of the community.
 - Syed Ahmed Khan was not elected as President of the Indian National Congress (INC). He had ideological differences with the INC and did not actively participate in its activities.
 - He was not a member of any extremist organization; rather, he emphasized moderation and cooperation with the British authorities.
 - Syed Ahmed Khan did not serve as a governor of any Indian province under British administration.
 - **Syed Ahmed Khan was nominated to the Imperial Legislative Council in 1878.**
 - His nomination to the council was a recognition of his status as a prominent Muslim leader and educationist in British India.
- **Kristodas Pal:**
 - Kristodas Pal was a prominent Bengali lawyer, politician, and nationalist leader during the British colonial period.
 - He was a staunch supporter of Indian nationalism and played a significant role in the Swadeshi movement in Bengal.
 - Like Syed Ahmed Khan, Kristodas Pal was not elected as President of the Indian National Congress.
 - He was not associated with any extremist organization. Instead, he advocated for peaceful and constitutional methods to achieve Indian independence.
 - Kristodas Pal did not serve as a governor of any Indian province under the British administration.
 - **Kristodas Pal was nominated to the Imperial Legislative Council in 1909.**

- His nomination came at a time when he was already a prominent figure in the Indian nationalist movement, particularly in Bengal.
- **Rashbehari Ghosh:**
 - Rashbehari Ghosh was an Indian lawyer and political leader from Bengal.
 - He was associated with the Indian National Congress and served as its president in 1907.
 - Ghosh was also a member of the Imperial Legislative Council, where he actively participated in debates and discussions.
 - He was not a member of any extremist organization. He believed in constitutional methods of agitation.
 - Rashbehari Ghosh did not hold any gubernatorial positions in British India.
 - **Rashbehari Ghosh was nominated to the Imperial Legislative Council in 1903.**
 - His nomination followed his active involvement in the Indian National Congress and his growing influence as a political leader in Bengal.
- **Hence option (b) is the correct answer.**

Q 54.B

- Alternative Investment Funds (AIFs) in India are **privately pooled investment** vehicles that can invest in a broad range of assets, including unlisted companies, private equity funds, hedge funds, real estate, and infrastructure. **Hence statement 1 is correct.**
- **The Securities and Exchange Board of India (SEBI) is the regulator of the securities market in India.** It was established in 1992 under the Securities and Exchange Board of India Act, 1992. The SEBI Act gives the SEBI the power to regulate the securities market in India. This includes the power to regulate Alternative Investment Funds (AIFs). In 2012, the SEBI issued a set of guidelines for AIFs - **Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012.** These guidelines set out the requirements that AIFs must meet in order to be registered with the SEBI. **Hence statement 2 is correct.**
- **A scheme of an Alternative Investment Fund (AIF), except for an angel fund, cannot have more than 1000 investors.** If the AIF is established as a company, the regulations of the Companies Act, 1956 will be applicable. For angel funds, each scheme is restricted to a maximum of two hundred angel investors. **Hence statement 3 is not correct.**

Q 55.C

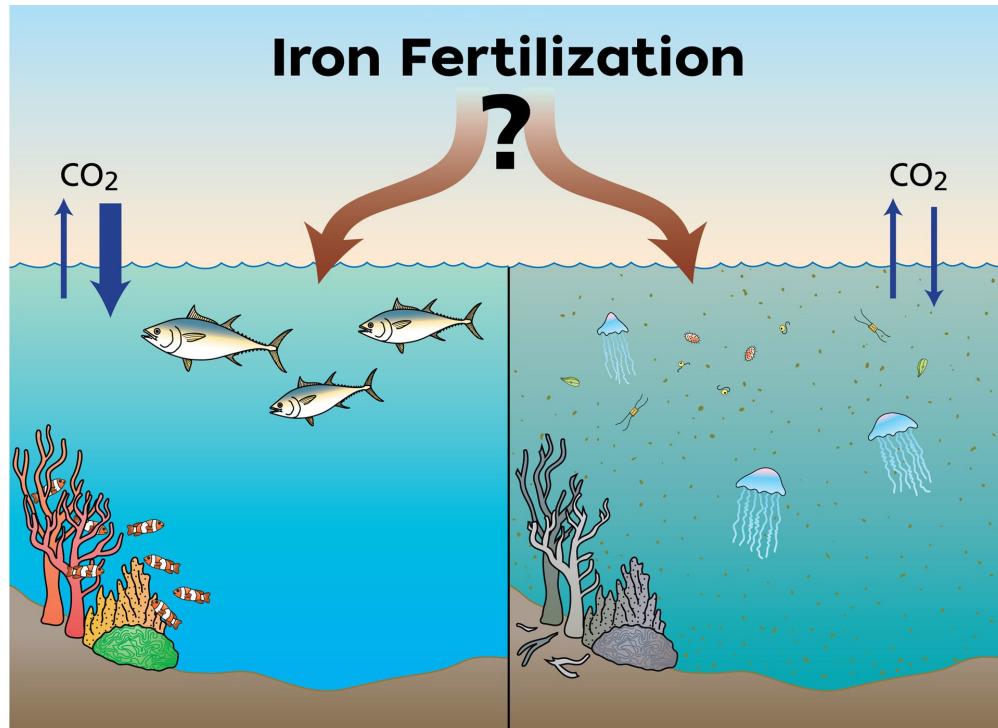
- **International Big Cat Alliance (IBCA) is a mega global alliance launched by India in April 2023 during the 50th anniversary of Project Tiger.** Hence, statement 1 is correct.
- **The alliance aimed at the conservation of the world's seven principal big cats, which include the tiger, lion, snow leopard, leopard, jaguar, puma, and cheetah.** Hence, statement 3 is correct.
- Through the alliance, the member nations will exchange experiences, provide faster assistance to their neighbours, and place a strong emphasis on capacity building.
- **The Intergovernmental body will have 97 countries with many Asian and African countries becoming a part of the alliance.** Hence, statement 2 is correct.
- Standard operating procedures will be created by the alliance and used by all members as a guide.
- There will be also a list of dos and don'ts that will instruct nations on how to stop illegal wildlife trading and poaching.
- The idea holds that once illegal wildlife trade is reduced, poaching will eventually come to an end.
- **The IBCA is anticipated to be self-sustaining after the first five years, which will be supported by India's "total grant assistance" of \$100 million, through membership fees, contributions from bilateral and multilateral organisations, and the private sector.** Hence, statement 4 is correct.
- **Hence, option (c) is the correct answer.**

Q 56.B

- Iron addition to the ocean happens naturally, such as when winds blow dust from the Sahara Desert or ash from a volcanic eruption. When the plume of dust or ash settles over the ocean's surface, it triggers massive blooms of phytoplankton that remove substantial amounts of carbon dioxide from the atmosphere. Iron fertilization is a Carbon Dioxide Removal (CDR) technique that mimics this natural system, artificially adding iron to the ocean's surface to stimulate the growth of phytoplankton. **Hence option (b) is the correct answer.**
- Despite being one of the most abundant elements in the Earth's crust, dissolved iron is only found in low concentrations in surface waters in the open ocean. This is because the oxidised form of iron is particulate

and tends to sink out. Consequently, sufficient dissolved iron is only found in coastal regions and in open ocean waters that receive high dust input or upwelling.

- In the 1990s and early 2000s, a series of experiments tested iron fertilization in the open ocean. These tests consistently found that adding iron led to phytoplankton blooms. However, the extent to which that carbon sank to the depths wasn't always measured, and the phytoplankton were not able to use all of the iron for growth before the mineral sank.



Q 57.B

- The administration of the Delhi Sultanate, which spanned from the 13th to the 16th century, comprised various departments responsible for the governance and management of the vast empire. Some key departments and their functions include:
 - Diwan-i-Wizarat (Department of Revenue):** Managed by the Chief Revenue Officer (Wazir), this department was responsible for revenue collection, land assessment, and administration of taxes. The revenue collected was crucial for financing the state and maintaining the military. **Hence pair 1 is not correctly matched.**
 - Diwan-i-Ariz (Military Department):** Oversaw the army and defense forces. It was responsible for recruitment, payment of salaries to soldiers, and the overall maintenance of the military, crucial for safeguarding the empire against external threats. **Hence pair 2 is correctly matched.**
 - Diwan-i-Insha (Department of Correspondence):** Managed official communications and correspondence. It played a vital role in maintaining communication between the central administration and regional officials, ensuring efficient governance. **Hence pair 3 is not correctly matched.**
 - Diwan-i-Risalat (Department of Ecclesiastical Affairs):** Oversaw religious and judicial matters. It was responsible for interpreting and implementing Islamic law (Sharia), settling legal disputes, and managing religious endowments.
 - Diwan-i-Kohi (Agriculture Department):** Focused on agricultural matters, land development, and irrigation projects. This department aimed to boost agricultural productivity, which was a significant source of revenue for the state.
 - Diwan-i-Bandagan (Slave Department):** Managed the affairs related to slaves, who often served in various administrative and military roles. The department handled their recruitment, training, and deployment.
 - Diwan-i-Siyasat (Foreign Affairs Department):** Dealt with foreign relations, diplomacy, and trade. This department was responsible for maintaining diplomatic ties, negotiating treaties, and overseeing trade relations with neighboring regions and foreign powers.
 - Diwan-i-Khairat (Charity Department):** Managed charitable and welfare activities. It distributed funds for the welfare of the poor, construction of public amenities, and support for religious institutions.

- **Shiqdar-i-Shiqdaran (Police Department):** Administered law and order, with local officials known as Shiqdars ensuring public safety, preventing crimes, and maintaining discipline.
- **Kotwal (City Administrator):** Oversaw the administration and security of cities. The Kotwal was responsible for maintaining law and order, collecting taxes, and managing municipal affairs.
- These departments, each headed by a specific official, collectively formed the administrative apparatus of the Delhi Sultanate, providing governance in various spheres of public life.
- **Hence option (b) is the correct answer.**

Q 58.B

- The Second Schedule of the Indian Constitution contains the provisions relating to the emoluments, allowances, and privileges for different offices. The various offices are:
 - The President of India
 - The Governors of States
 - The Speaker and the Deputy Speaker of the Lok Sabha
 - The Chairman and the Deputy Chairman of the Rajya Sabha
 - The Speaker and the Deputy Speaker of the Legislative Assembly in the states
 - The Chairman and the Deputy Chairman of the Legislative Council in the states
 - **The Judges of the Supreme Court**
 - The Judges of the High Courts
 - **The Comptroller and Auditor General of India**
- Thus the Second Schedule of the Indian Constitution does not contain the provisions relating to the emoluments of the UPSC chairman and the Attorney General. **Hence option (b) is the correct answer.**
- The provisions in the Second Schedule can be amended by a simple majority of the two Houses of Parliament outside the scope of Article 368.

Q 59.A

- The Constitutional provisions relating to the Eighth Schedule occur in articles 344(1) and 351 of the Constitution.
- **Article 344(1) provides for the constitution of a Commission by the President on the expiration of five years from the commencement of the Constitution** and thereafter at the expiration of ten years from such commencement, which shall consist of a Chairman and such other members representing the different languages specified in the Eighth Schedule to make recommendations to the **President for the progressive use of Hindi for official purposes of the Union.**
- Article 351 of the Constitution provides that it **shall be the duty of the Union to promote the spread of the Hindi language to develop** it so that it may serve as a medium of expression for all the elements of the composite culture of India and to secure its enrichment by assimilating without interfering with its genius, the forms, style and expressions used in Hindustani and in the other languages of India specified in the Eighth Schedule, and by drawing, wherever necessary or desirable, for its vocabulary, primarily, on Sanskrit and secondarily on other languages. **Hence statement 1 is correct.**
- The **Eighth Schedule to the Constitution consists of 22 languages.** Of these 22 languages, 14 were initially included in the Constitution. The Sindhi language was added in 1967. Thereafter three more languages viz., Konkani, Manipuri, and Nepali were included in 1992. Subsequently, **Bodo, Dogri, Maithili, and Santhali were added in 2004. Hence statement 3 is not correct.**
- At present, there are demands for the inclusion of 38 more languages in the Eighth Schedule to the Constitution. As the evolution of dialects and languages is dynamic, and influenced by socio-eco-political developments, it is difficult to fix any criterion for languages, whether to distinguish them from dialects, or for inclusion in the Eighth Schedule to the Constitution of India. Thus, **both attempts, through the Pahwa (1996) and Sitakant Mohapatra (2003) Committees to evolve such fixed criteria have not borne fruit. Hence statement 2 is not correct.**

Q 60.B

- **Article 19** guarantees to all citizens the six rights. These are:
 - Right to freedom of speech and expression.
 - Right to assemble peaceably and without arms.
 - Right to form associations or unions or co-operative societies.
 - Right to move freely throughout the territory of India.
 - Right to reside and settle in any part of the territory of India.
 - Right to practice any profession or to carry on any occupation, trade or business.

- **Freedom of Speech and Expression:** It implies that every citizen has the right to express his views, opinions, belief and convictions freely by word of mouth, writing, printing, picturing or in any other manner.
- The State can impose reasonable restrictions on the exercise of the freedom of speech and expression on the grounds of
 - sovereignty and integrity of India,
 - **security of the state,**
 - friendly relations with foreign states,
 - public order,
 - decency or morality,
 - **contempt of court,**
 - defamation, and
 - incitement to an offence. **Hence option (b) is the correct answer.**
- **Freedom of Movement:** This freedom entitles every citizen to move freely throughout the territory of the country. The grounds of imposing reasonable restrictions on this freedom are two, namely, the interests of general public and the protection of interests of any scheduled tribe. The Supreme Court held that the freedom of movement of prostitutes can be restricted on the ground of public health and in the interest of public morals. The Bombay High Court validated the restrictions on the movement of persons affected by AIDS.

Q 61.B

- Girnar hills is located in the Junagadh district of the state of Gujarat, India. They have inscriptions of Ashoka (one of fourteen Major Rock Edicts of Ashoka), Rudradaman I, and Skandagupta.
 - The Junagadh rock inscription of Rudradaman, also known as the Girnar Rock inscription of Rudradaman, is a Sanskrit prose inscribed on a rock by the Saka ruler Rudradaman I. The inscription is made up of twenty lines. The first eight lines provide a historical record of the restoration work of a reservoir known as "Sudarshana Lake". It also states that Pushyagupta, one of Chandragupta Maurya's governors, was in charge of constructing a dam on Sudarshana Lake near Girnar in Kathiawar.
 - Ashoka's Major Rock Edict at Girnar Hills belongs to 250 BC. This rock edict is a huge stone and has carvings in Brahmi script and Pali language. It addresses the rejection of greed and animal sacrifice while promoting moral principles such as purity of thought, secularism, kindness, and gratitude.
 - Skandagupta (455 – 467 CE), son of Kumaragupta I, is credited with the third inscription on the Girnar ranges about the Sudarshana Lake repairs and construction of two temples.
- Girnar also known as Revatak Parvata rises dramatically from the plains, and is covered with Jain and Hindu temples. Girnar Hills is the place where the 22nd Tirthankar Lord Neminath attained Nirvana. Temples located on the hill are sacred to the Digambara and the Svetambara branches of Jainism. Famous Hindu temples include the Temple of Amba Mata, where newlyweds worship to ensure a happy marriage, the Temple of Gorakhnath is perched on Gujarat's highest peak at 1117m and Kalika a shrine devoted to the goddess Kali.
- **Hence option (b) is the correct answer.**

Q 62.C

- A geosyncline is a large-scale depression or basin in the Earth's crust that accumulates sediments over geologic time.
- Geosynclines form through tectonic processes such as crustal stretching, rifting, or subsidence. These depressions can be hundreds to thousands of kilometers long and may develop in continental or oceanic crust.
- As the geosyncline subsides, it creates accommodation space for the accumulation of sediments derived from erosion of adjacent landmasses or volcanic activity. These sediments may include sand, mud, and organic matter, which gradually accumulate and compact over time.
- The sediments deposited in a geosyncline form a stratigraphic sequence, with older rocks typically found at greater depths and younger rocks closer to the surface. This sequence may include various types of sedimentary rocks, such as sandstone, shale, limestone, and conglomerate, reflecting the changing environmental conditions over time.
- Geosynclines are often associated with active tectonic processes, such as mountain building or crustal deformation. The accumulation of sediments in a geosyncline may be influenced by nearby tectonic activity, leading to the formation of complex geological structures such as folds, faults, and thrust belts.

- Over millions of years, geosynclines may undergo cycles of sedimentation, deformation, and uplift, ultimately shaping the geological evolution of a region. As sediments accumulate and undergo lithification, they may become uplifted and exposed through tectonic forces or erosional processes, forming mountain ranges or plateaus.
- Geosynclines are characterized by the accumulation of sediments over long periods of time. These sediments are derived from erosion of adjacent landmasses or volcanic activity and gradually accumulate in the geosyncline basin.
 - Over time, these sediments undergo compaction and cementation to form sedimentary rocks such as sandstone, shale, limestone, and conglomerate.
 - While igneous and metamorphic rocks may also be present in geosynclines, sedimentary rocks are the most abundant and characteristic type found in these geological formations.
- Hence option (c) is the correct answer.

Q 63.D

- **Adaptation of desert plants:** Desert plants have had to develop different ways of capturing water in order to survive in their habitat. These changes are called adaptation. A common adaptation is to store water in the roots, stems, leaves, or fruit. Plants that store water in this way are called succulents, one of which is the cactus. Some plants have developed very long roots that go deep into the ground to reach underground water. Others have developed spreading root systems lying just below the surface and stretching widely. This gives the plant many tiny roots that capture water when it rains.
- **DESERT PLANTS CONSERVE WATER BY FOLLOWING METHODS:**
 - They are mostly shrubs. Hence, statement 2 is correct.
 - Leaves are absent or reduced in size. Hence, statement 3 is correct.
 - Leaves and stem are succulent and water storing
 - In some plants, even the stem contains chlorophyll for photosynthesis
 - The root system is well developed and spread over a large area. Hence, statement 1 is correct.
 - The annuals wherever present germinate, bloom and reproduce only during the short rainy season, and not in summer and winter
 - Various other xerophilous adaptations are resorted to such as reduced leaves, thick hairy growth, succulence, coatings of wax, thick cuticle, protected stomata, etc., all having for their object of reduction of transpiration.

Q 64.B

- The International Energy Agency is a Paris-based autonomous intergovernmental organisation, established in 1974, that provides policy recommendations, analysis and data on the global energy sector. It is an **autonomous inter-governmental organization within the OECD framework**. It works with governments and industry to shape a secure and sustainable energy future for all. **Hence statement 1 is correct.**
- It was founded in 1974 to ensure the security of oil supplies. It was **created in response to the 1973-1974 oil crisis** when an oil embargo by major producers pushed prices to historic levels and exposed the vulnerability of industrialised countries to dependency on oil imports. **Hence statement 2 is not correct.**
- It consists of 31 member countries and eleven association countries. **A candidate country to the IEA must be a member country of the Organisation for Economic Co-operation and Development (OECD). Hence statement 3 is correct.**
- **India, which joined the IEA Family as an Association country in 2017**, sent a formal request for full membership to IEA ministers in October 2023. Ministers from the International Energy Agency's member countries agreed to start discussions with India on the Indian government's request to become a full IEA member, recognising the country's strategic importance in tackling global energy and climate challenges. **Hence statement 4 is not correct.**

Q 65.A

- Müllerian mimicry belongs to the biological phenomenon known as **aposematism**. Aposematic (warning) signalling is a common defensive phenomenon in which poisonous, dangerous or otherwise unpalatable or unprofitable organisms advertise these qualities to other organisms, usually to animals, as defence from predation. Aposematic signalling may be conveyed visually by colour, movement and morphology, chemically by odour and taste, and even by sound; all these are from a lower trophic level to a higher one.
- **Müllerian mimicry** is a phenomenon in which two or more species with effective defences share a similar appearance or signalling, and this sharing reduces the cost of associative learning, and even

promotes the evolution of refraining from attack by their enemies. The evolution of mimicry requires a model or models, a mimic, and a predator/herbivore or predators/herbivores (an operator) that select for the mimicking phenotype.

- Hence option (a) is the correct answer.

Q 66.B

- **Nagaland:** In 1963, the State of Nagaland was formed by taking the Naga Hills and Tuensang area out of the state of Assam. This was done to satisfy the movement of the hostile Nagas. However, before giving Nagaland the status of the 16th state of the Indian Union, it was placed under the control of the governor of Assam in 1961. **Hence option 1 is not correct.**
- **Himachal Pradesh:** In 1971, the union territory of Himachal Pradesh was elevated to the status of a state (18th state of the Indian Union). **Hence option 2 is correct.**
- **Goa, Daman, and Diu:** India acquired these three territories from the Portuguese using a police action in 1961. They were constituted as a union territory by the 12th Constitutional Amendment Act, of 1962. Later, in 1987, Goa was conferred a statehood. Consequently, Daman and Diu were made a separate union territory. Now, Daman and Diu and Dadra and Nagar Haveli have been merged into 1 single union territory. **Hence option 3 is correct.**
- **Manipur, Tripura, and Meghalaya:** In 1972, the political map of Northeast India underwent a major change. Thus, the two Union Territories of Manipur and Tripura and the Sub-State of Meghalaya got statehood and the two union territories of Mizoram and Arunachal Pradesh (originally known as North-East Frontier Agency—NEFA) came into being. With this, the number of states in the Indian Union increased to 21 (Manipur 19th, Tripura 20th, and Meghalaya 21st). Initially, the 22nd Constitutional Amendment Act (1969) created Meghalaya as an ‘autonomous state’ or ‘sub-state’ within the state of Assam with its legislature and council of ministers. However, this did not satisfy the aspirations of the people of Meghalaya. The union territories of Mizoram and Arunachal Pradesh were also formed out of the territories of Assam. **Hence option 4 is not correct.**

Q 67.B

- Under the TRIPS agreement, it is obligatory on the part of a Member to provide protection to new plant variety either through a patent or an effective sui generis system or a combination of these two systems. India was therefore under an obligation to introduce a system for protecting new plant varieties. India opted for a sui generis system and enacted The Protection of Plant Varieties and Farmers' Rights Act 2001. **Hence statement 1 is correct.**
- The Protection of Plant Varieties and Farmers' Rights Act 2001 was enacted in India to protect the new plant varieties. The Act provides an effective framework to conserve and encourage the development of various plant varieties. It established an effective system to safeguard and recognise the rights of breeders, researchers and farmers to promote agricultural development in the country. **Hence statement 2 is correct.**
- The objectives of the Protection of Plant Varieties and Farmers' Rights Act are:
 - to stimulate investments for research and development both in the public and the private sectors for the development of new plant varieties by ensuring appropriate returns on such investments;
 - to facilitate the growth of the seed industry in the country through domestic and foreign investment which will ensure the availability of high-quality seeds and planting material to Indian farmers; and
 - to recognize the role of farmers as cultivators and conservers and the contribution of traditional, rural and tribal communities to the country's agro-biodiversity by rewarding them for their contribution through benefit sharing and protecting the traditional rights of the farmers
- Besides the Act provides a range of rights to farmers including use, re-use, save, share and sell the unbranded seeds of a registered variety. Besides, Indian farmers can register their own varieties which get protection. The Act seeks to safeguard researchers' rights as well. It also contains provisions for safeguarding the larger public interest. The farmer's rights include his traditional rights to save, use, share or sell his farm produce of a variety protected under this Act provided the sale is not for the purpose of reproduction under a commercial marketing arrangement. **Hence statement 3 is not correct.**

Q 68.B

- Vembanad-Kol Wetland is the largest brackish, humid tropical wetland ecosystem on the southwest coast of India, fed by 10 rivers and typical of large estuarine systems on the western coast, renowned for its clams and supporting the third largest waterfowl population in India during the winter months. Over 90 species of resident birds and 50 species of migratory birds are found in the Kol area. Water birds found in abundance include Northern Pintail Ducks, Little Cormorants, Whiskered Terns, Lesser

Whistling Teals, Pond Herons, Purple Herons, Indian Shangs, Purple Moorhens, Cattle Egrets and the Cotton, Common and Garganey Teals.

- **Black-necked Crane** resides in **high-altitude Ramsar wetlands like Tsomoriri and Tso kar in the UT of Ladakh** are the main breeding ground of the species. These wetlands with small mounds provide an excellent habitat for the birds for breeding. **Hence pair 1 is not correctly matched.**
- **Nalsarovar is a natural freshwater lake (a relict sea) that is the largest natural wetland in the Thar Desert.** It represents a dynamic environment with salinity and depth varying depending on rainfall.
- It is an important stopover site within the **Central Asia Flyway**, with globally threatened species such as **the critically endangered Sociable Lapwing and the vulnerable Marbled Teal stopping over at the site during migration**, while the **vulnerable Sarus Crane** takes refuge there during summer when other water bodies are dry. **The wetland is also a lifeline for a satellite population of the endangered Indian Wild Ass which uses this area in the dry season.** Hence pair 2 is correctly matched.
- **Bhoj Wetland Two contiguous human-made reservoirs were created by constructing an earthen dam across the Kolans River and is surrounded by the city of Bhopal.** The lakes are very rich in biodiversity, particularly for macrophytes, phytoplankton, zooplankton, both natural and cultured fish species, insects, reptiles and amphibians. The wetland has a large presence of both resident and migratory birds. **Among them is the vulnerable Sarus crane, the tallest flying bird which can reach heights of upto 5 feet 11 inches.** Hence pair 3 is correctly matched.

Q 69.A

- **Bioswales are landscape features that collect polluted stormwater runoff, soak it into the ground, and filter out pollution.** Bioswales are similar to rain gardens but are designed to capture much more runoff coming from larger areas of impervious surfaces like streets and parking lots. They also have more complicated design features such as layers of engineered soil and gravel, perforated pipe underdrains, and overflow structures to help handle runoff from bigger storms. Similar to rain gardens, bioswales use native plants to help absorb more water and prevent erosion. Typically, an engineer and a landscape architect are needed to ensure the bioswale is designed and built correctly.
- **Hence option (a) is the correct option.**

Q 70.B

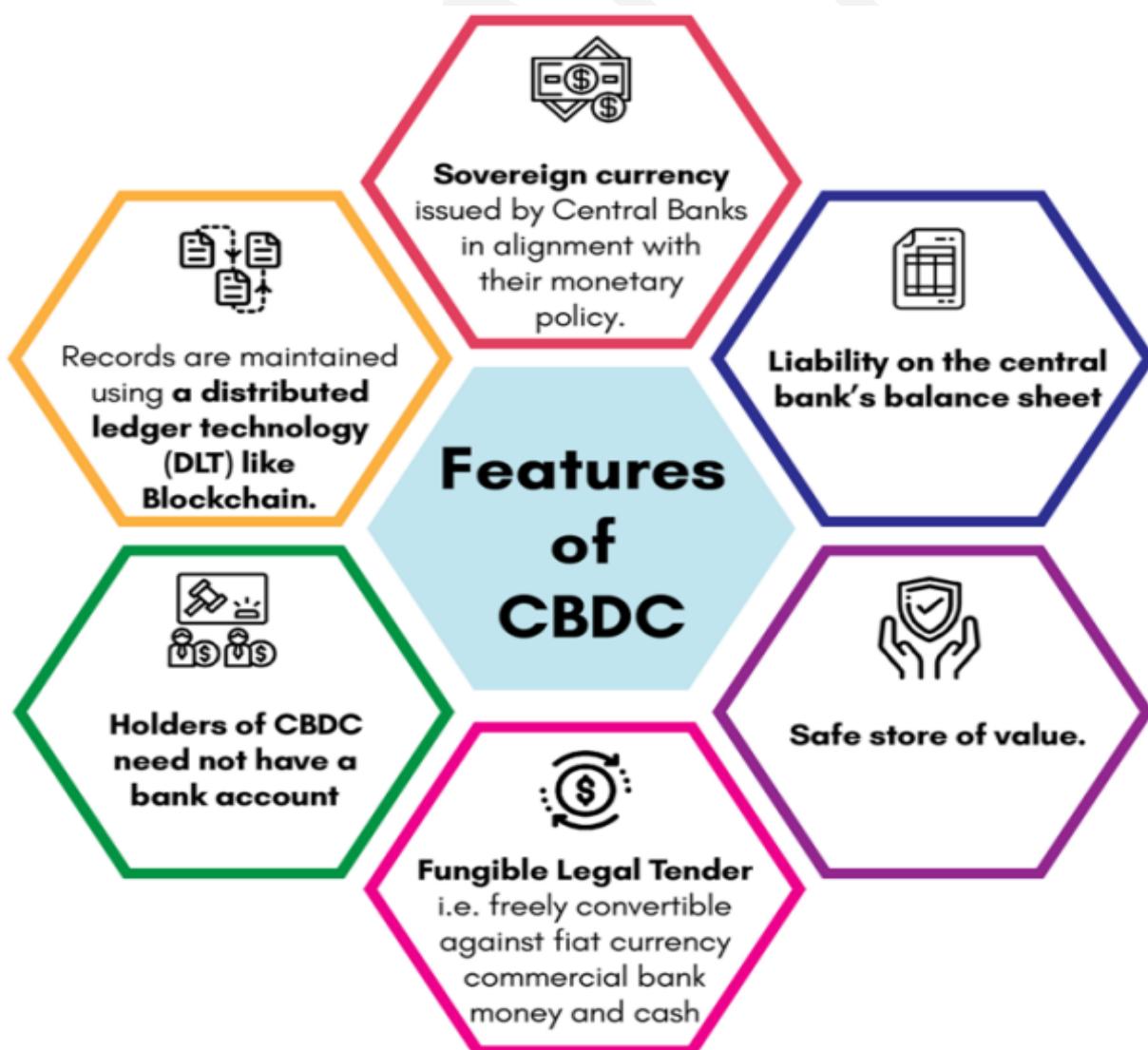
- Jet streams are relatively narrow bands of strong wind in the upper levels of the atmosphere, typically occurring around 30,000 feet (9,100 meters) in elevation.
- Key features of jet streams include:
 - Jet streams can reach speeds of over 100 knots (115 miles per hour or 185 kilometers per hour). These fast-moving currents are often much stronger than the surrounding air masses.
 - Jet streams are relatively narrow bands of wind, typically only a few hundred kilometers wide. They can extend horizontally across thousands of kilometers, however.
 - **In the Northern Hemisphere, jet streams generally flow from west to east. Jet streams typically flow from west to east in both the Northern and Southern Hemispheres.**
 - This west-to-east flow is a result of the Coriolis effect, which deflects moving air masses to the right in the Northern Hemisphere and to the left in the Southern Hemisphere due to the Earth's rotation. As a result, jet streams tend to follow a predominantly west-to-east path, although they may meander north and south.
 - **Hence statement 1 is correct.**
 - **Jet streams often meander or have large undulations, known as Rossby waves.** These waves are influenced by factors such as temperature gradients, topography, and atmospheric disturbances. The meandering of jet streams can affect weather patterns by steering weather systems and fronts.
 - As air flows along the curved surface of the Earth, it experiences a deflection to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.
 - **This deflection leads to the meandering path observed in jet streams, known as Rossby waves. These waves can amplify, propagate, and even break, influencing weather patterns and the behavior of atmospheric disturbances. Hence statement 2 is correct.**
- Jet streams play a significant role in shaping weather patterns and climate. They can influence the movement and intensity of weather systems, such as storms, precipitation, and temperature changes. Pilots and meteorologists often monitor jet streams to anticipate weather conditions and plan flight routes.
- **Jet streams are typically strongest during the winter season rather than the summer. This is because the temperature contrast between polar and equatorial regions is greater during the winter,**

leading to stronger pressure gradients and faster winds in the upper atmosphere. Hence statement 3 is not correct.

- In contrast, during the summer, the temperature gradient tends to weaken, resulting in weaker jet streams. Therefore, jet streams are generally strongest during the winter months when the temperature difference between the poles and the equator is most pronounced

Q 71.D

- Reserve Bank of India (RBI) has launched a pilot project on Central Bank Digital Currency (CBDC) or 'eRupee'. CBDC is a legal tender issued by the RBI in digital form. It is a fungible legal tender, for which holders need not to have a bank account. They can store it in a CBDC stand alone wallet. Hence statement 1 is not correct.
- It is same as the fiat currency. However, it is present in digital form. So, it appears as 'liability' (currency in circulation) on the RBI's balance sheet. Hence statement 2 is not correct.
- Two forms of CBDCs may be introduced:
 - CBDC-Retail: Potentially available for use by all private sector, non-financial consumers, and businesses.
 - CBDC-Wholesale: Designed for restricted access by financial institutions.
- It is different from UPI-based apps like Google Pay, Phone pay and also from cryptocurrency. CBDC is a sovereign currency backed by the Central bank i.e. RBI whereas crypto currency is decentralized form of currency not backed by any central authority.
- eRupee or CBDC can only be transferred to eRupee wallet and not directly to someone else's bank account. However, CBDC can be redeem from the eRupees wallet to wallet holder linked bank account. Hence statement 3 is not correct



Q 72.C

- **Recent context:** The 7th Session of Codex Committee on Spices and Culinary Herbs (CCSCH) was recently held in Kochi. During this session, the committee finalised and recommended quality standards for five spices — allspice, juniper berries, star anise, turmeric, and cardamom.
- The Codex Alimentarius, or “Food Code” is a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission. The Commission, also known as CAC, is the central part of the Joint FAO/WHO Food Standards Programme and was established by FAO and WHO to protect consumer health and promote fair practices in food trade.
- Codex Committee on Spices and Culinary Herbs(CCSCH), is one of the subsidiary bodies under CAC. **It is an exclusive committee for spices and culinary herbs to elaborate standards in harmonization with worldwide standards. Hence statement 1 is correct.**
- The committee was established in July 2013 by the CAC at its 36th meeting held at Rome. India is the host country and the Spices Board, Kochi acts as the secretariat for CCSCH. **Hence statement 2 is correct.**

Q 73.A

- It is a regional security grouping comprising India, Sri Lanka, the Maldives and Mauritius. The CSC (Colombo Security Conclave), initially known as the Trilateral for Maritime Security Cooperation, evolved out of trilateral meetings between NSAs and Deputy NSAs from India, Maldives, and Sri Lanka, starting in 2011.
- It came to a standstill after 2014 due to rising tensions between India and the Maldives. After its revival and re-branding as the CSC in 2020, Mauritius was added as a member of the grouping. Current members of CSC include India, Maldives, Mauritius, and Sri Lanka, while Bangladesh and Seychelles are the two observer nations.
- **Cooperation under the conclave focuses on five pillars – maritime safety and security, countering terrorism and radicalization, combating trafficking and transnational organized crime, cyber-security and protection of critical infrastructure, and humanitarian assistance and disaster relief.** A permanent secretariat, based in Colombo, was established in 2021 to coordinate all activities and implement decisions made at the NSA level.



- Hence option (a) is the correct answer.

Q 74.D

- Forty-Second Amendment Act, 1976: The most comprehensive amendment made so far to the Constitution. It is known as the ‘Mini- Constitution’.
- **The Amendment Act added three new words (i.e., socialist, secular, and integrity) in the Preamble.**
- Added Fundamental Duties by the citizens (new Part IV A).
- **Made the president bound by the advice of the cabinet.**
- Provided for administrative tribunals and tribunals for other matters (Added Part XIV A).
- Froze the seats in the Lok Sabha and state legislative assemblies based on the 1971 census till 2001.
- Made the constitutional amendments beyond judicial scrutiny.
- Curtailed the power of judicial review and writ jurisdiction of the Supreme Court and high courts.

- Raised the tenure of Lok Sabha and state legislative assemblies from 5 to 6 years.
- Provided that the laws made for the implementation of Directive Principles cannot be declared invalid by the courts on the ground of violation of some Fundamental Rights.
- Empowered the Parliament to make laws to deal with anti-national activities and such laws are to take precedence over Fundamental Rights.
- Added three new Directive Principles viz., equal justice and free-legal aid, participation of workers in the management of industries, and protection of the environment, forests, and wildlife.
- Facilitated the proclamation of national emergency in a part of the territory of India.
- **Extended the one-time duration of the President's rule in a state from 6 months to one year.**
- Empowered the Centre to deploy its armed forces in any state to deal with a grave situation of law and order.
- Shifted five subjects from the state list to the concurrent list, viz, education, forests, protection of wild animals and birds, weights and measures and administration of justice, constitution and organization of all courts except the Supreme Court and the high courts.
- Did away with the requirement of quorum in the Parliament and the state legislatures.
- Empowered the Parliament to decide from time to time the rights and privileges of its members and committees.
- **Provided for the creation of the All-India Judicial Service.** Hence statement 2 is correct.
- Shortened the procedure for disciplinary action by taking away the right of a civil servant to make representation at the second stage after the inquiry (i.e., on the penalty proposed).
- **The Sixty-first Amendment of the Constitution of India, officially known as The Constitution (Sixty-first Amendment) Act, 1988, lowered the voting age from 21 years to 18 years. Hence option (d) is the correct answer.**

Q 75.C

- **The Pala Empire, which thrived in ancient India from the 8th to the 12th century,** was a Buddhist dynasty known for its cultural and intellectual achievements. The Palas ruled over a vast territory in present-day Bengal and Bihar, contributing to the development of art, literature, and education in the region.
- **The decline of the Pala dynasty in Bengal** was a complex process influenced by various factors. While pinpointing a single cause can be challenging, historians suggest several interconnected reasons for the decline of the Pala rulership:
 - **External Invasions:**
 - **The decline of the Pala dynasty in Bengal was influenced by external invasions. Hence statement I is correct.**
 - **Invasions by Mahmud of Ghazni during the 11th century had a profound impact. Ghazni's repeated incursions resulted in the plundering of wealth, destruction of infrastructure, and disruption of trade, weakening the Pala rulers. Hence statement II is not correct.**
 - **Internal Conflicts and Weak Succession:** Internal disputes over the throne and weak succession practices often led to power struggles among the Pala rulers. This weakened the central authority and contributed to instability.
 - **Economic Decline:** The disruption of trade routes and economic activities caused by external invasions negatively affected the prosperity of the region. Bengal's wealth, which largely depended on maritime trade, suffered.
 - **Cultural Changes:** There was a shift in royal patronage from Buddhism to Hinduism. The Pala rulers, originally patrons of Buddhism, gradually shifted their support to Hinduism. This change might have alienated certain sections of the population.
 - **Local Rebellions and Resistance:** The emergence of local rebellions and resistance movements against the central authority weakened the Pala administration. This was compounded by the dissatisfaction of local chieftains and communities.
 - **Environmental Factors:** Environmental factors, such as floods and famines, might have contributed to the decline. These events could have led to economic hardship, displacement of populations, and weakened the rulers' ability to govern effectively.
 - **Infiltration by Later Chola Dynasty:** The later Chola dynasty, based in South India, extended its influence into Bengal. Their political and military activities in the region might have further strained the Pala rulers.

- **Turko-Afghan Invasions:** The rise of Turko-Afghan power in the Indian subcontinent, marked by the Ghurid and Ghaznavid invasions, contributed to the shifting political landscape. This, in turn, impacted the stability of regional dynasties like the Palas.
- It's important to note that these factors were interconnected, and the decline of the Pala dynasty was likely a result of a combination of these elements rather than a singular cause. The historical narrative of this period is complex, and the decline of the Pala dynasty marked the end of a significant chapter in the history of Bengal.
- **Hence option (c) is the correct answer.**

Q 76.B

- The Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Bill, 2023 was enacted in December 2023.
- The Bill replaces the Election Commission (Conditions of Service of Election Commissioners and Transaction of Business) Act, 1991. It provides for the appointment, salary, and removal of the Chief Election Commissioner (CEC) and Election Commissioners (ECs).
- The CEC and ECs will be appointed by the President upon the recommendation of a Selection Committee.
- **The Selection Committee will consist of the Prime Minister, a Union Cabinet Minister, and Leader of Opposition/leader of the largest opposition party in Lok Sabha. Hence statement I is correct.**
- The Supreme Court in 2023, in the **Anoop Baranwal v Union of India** case noted that the Constituent Assembly intended to provide for an independent Election Commission whose appointment is regulated by law and not decided by the Executive. The Court ruled that until Parliament made a law for such a process, CECs and ECs would be appointed on the recommendation of a Selection Committee. **This Committee will comprise the Prime Minister, the Chief Justice of India, and the Leader of the Opposition in Lok Sabha** (or leader of the largest opposition party). **Hence statement-II is correct.**
- But the Selection Committee provided under the Act does not consist of the Chief Justice of India. **Hence option (b) is the correct answer.**

Q 77.C

- **The Future Circular Collider (FCC) is a research infrastructure being developed by CERN.** The Future Circular Collider is a proposed particle accelerator with an energy significantly above that of previous circular colliders, such as the Super Proton Synchrotron, the Tevatron, and the Large Hadron Collider. It aims to host the next generation of high-performance particle accelerators and advance particle physics research.
- The FCC will run under the jurisdiction of France and Switzerland, just like the LHC currently does, but the future accelerator will stretch 56.5 miles (90.7 kilometers), making it over three times the length of CERN's current particle accelerator, which is 16.8 miles (27 kilometers) long. The LHC is the largest and most powerful particle accelerator in the world.
- The FCC will operate in the same way as the LHC, accelerating charged particles around a loop, using superconducting magnets, then smashing them together as they approach the speed of light.
- Scientists can probe fundamental physics by observing showers of secondary particles created when particles like protons slam together. But whereas the LHC can attain energies of around 13 tera electronvolts (TeV) when operating at full power, CERN says the FCC should be able to reach energies as great as 100 TeV
- **Hence option (c) is the correct answer.**

Q 78.B

- **The "Global Cooperation Barometer 2024" report, published by the World Economic Forum in collaboration with McKinsey & Company,** measures the state of global cooperation in 2024. The report includes an analysis of various factors affecting global cooperation, such as economic, political, and social factors.
- It is meant to serve as a tool for leaders to better understand the contours of cooperation broadly and along five pillars – trade and capital flows, innovation and technology, climate and natural capital, health and wellness, and peace and security.
- This report, therefore, aims to help business and government stakeholders gain a better understanding of the nature of cooperation to shape a healthier and more prosperous and sustainable world in the year ahead and beyond.

The Global Cooperation Barometer's 5 pillars of global cooperation

	<p>Trade and capital</p> <p>→ Promote global development and resilience Focus of analysis is on i) development and resilient outcomes; through ii) presence of global economic flows that promote likely opportunities for these outcomes</p>
	<p>Innovation and technology</p> <p>→ Accelerate innovation and beneficial technological progress Focus of analysis is on i) global progress in innovation and technology; through ii) presence of the global sharing of underlying knowledge that contributes to these outcomes by fostering collaboration across global talent</p>
	<p>Climate and natural capital</p> <p>→ Support the resolution of climate and natural capital challenges Focus of analysis is on i) lowering of emissions, preservation of natural capital, and preparedness for likely impact of climate change; through ii) shared global goals/commitments that increase humanity's ability to limit and adapt to the dynamics of a changing climate</p>
	<p>Health and wellness</p> <p>→ Enable global population to lead longer and better lives Focus of analysis is on i) impact of the burden of disease on duration and quality of life; through ii) commitment to global public health standards and collaboration through flows of goods, R&D/IP and health financing</p>
	<p>Peace and security</p> <p>→ Prevent and resolve conflicts Focus of analysis is on i) prevention of death and long-term negative implications of conflict; through ii) commitment to multilateral peacekeeping operations and international stabilization efforts</p>

- Hence option (b) is the correct answer.

Q 79.B

- **High-powered money (M0) is the sum of commercial bank reserves and currency (notes and coins) held by the public.** High-powered money is the monetary base for the expansion of bank deposits and creation of money supply.
- The supply of money varies directly with changes in the monetary base and inversely with the currency and reserve ratios. The use of high-powered money consists of the demand of commercial banks for the legal limit or required reserves with the central bank and excess reserves, and the demand of the public for currency.
- The following are the components that determine high powered money:
 - **Currency in circulation. Hence option 2 is correct.**
 - **Banker's deposits with the Reserve Bank of India (RBI). Hence option 3 is correct.**
 - 'Other' Deposits with RBI. Other' deposits with RBI comprise mainly: (i) deposits of quasi-government and other financial institutions including primary dealers, (ii) balances in the accounts of foreign Central banks and Governments, (iii) accounts of international agencies such as the International Monetary Fund, etc.
- Following the recommendations of the Second Working Group on Money Supply (SWG) in 1977, RBI has been publishing four monetary aggregates – M1, M2, M3 and M4 - besides the reserve money.
 - **M1 = Currency with the Public + Demand Deposits with the Banking System + 'Other' Deposits with RBI***=Currency with the Public + Current Deposits with the Banking System + Demand Liabilities Portion of Savings Deposits with the Banking System + 'Other' Deposits with RBI*
 - **M2 = M1+ Time Liabilities Portion of Savings Deposits with the Banking System + Certificates of Deposit issued by Banks + Term Deposits of residents with a contractual maturity of up to and**

including one year with the Banking System; =Currency with the Public + Current Deposits with the Banking System + Savings Deposits with the Banking System + Certificates of Deposits issued by Banks + Term Deposits of residents with a contractual maturity up to and including one year with the Banking System + 'Other' Deposits with RBI*.

- **M3= M2+ Term Deposits of residents with a contractual maturity of over one year with the Banking System + Call/Term borrowings from 'Non-depository' financial corporations by the Banking System. Thus, Time deposits with commercial banks does not form part of High powered money. Hence option 1 is not correct.**
- Note: * 'Other' deposits with RBI comprise mainly: (i) deposits of quasi-government and other financial institutions including primary dealers, (ii) balances in the accounts of foreign Central banks and Governments, (iii) accounts of international agencies such as the International Monetary Fund, etc.

Q 80.C

- The Government of India has replaced the Bank Board Bureau (BBB) with the Financial Service Institutions Bureau (FSIB). It is set up under the Department of Financial Services (DFS), Ministry of Finance.
- **Composition of FSIB:**
 - **Chairperson:** to be nominated by Central Government. **Hence statement 1 is not correct.**
 - **Ex officio members:** Secretary in charge of Department of Financial Services (DFS), Department of Public Enterprises, Chairperson of the Insurance Regulatory and Development Authority of India (IRDAI), Deputy Governor of RBI. **Hence statement 2 is correct**
 - 3 persons with subject matter knowledge relating to PSBs and Financial Institutions and 3 persons with subject matter knowledge relating to PSIs (to be nominated by the Central Government) as part time members.
- The functions of FSIB includes:
 - **Recommend persons for appointment as whole-time directors and non-executive chairpersons on the Boards of financial services institutions (including public sector banks (PSBs), public sector insurers (PSIs) and financial institutions (FIs)). Hence statement 3 is correct.**
 - Advise on certain other matters relating to personnel management in these institutions.
 - Promote excellence in Corporate Governance in Public Sector Financial Institutions.
 - **To advise the Government on formulation and enforcement of a code of conduct and ethics for whole-time directors in PSBs, FIs and PSIs. Hence statement 4 is correct.**
 - To help PSBs, FIs and PSIs in terms of developing business strategies and capital raising plan etc.

Q 81.D

- Sir B.N. Rau was appointed as the constitutional advisor (Legal advisor) to the Constituent Assembly and S.N. Mukherjee was the chief draftsman of the constitution in the Constituent Assembly. **Hence option (d) is the correct answer.**
- Sir B. N. Rau was the Constitutional Adviser to the Constituent Assembly who prepared a rough draft of the Constitution for the consideration of the Drafting Committee.
- In the words of Dr. B.R. Ambedkar, the chairman of the drafting committee, a much greater share of the credit for drafting the Constitution should go to S. N. Mukherjee, the Chief Draftsman of the Constitution. He was praised for his ability to put the most intricate proposals in the simplest and clearest legal form.

Q 82.B

- **Optical networking is a means of communication that uses signals encoded in light to transmit information in various types of telecommunications networks.** These include limited-range local-area networks (LAN) or wide-area networks (WANs), which cross metropolitan and regional areas as well as long-distance national, international, and transoceanic networks. **Hence statement 1 is not correct.**
- Optical networking uses fibers that are made of glass or plastic for data transmission. The fibers have different wavelengths, and the data is transmitted by using modulation and demodulation techniques. Optical networking is becoming more popular as it has the advantage of providing faster and more reliable connections than traditional communication networks. **Hence statement 2 is correct.**
- Optical networks can also move more data across a cable at longer distances: Using electronics and copper, speeds top out at around 100 Gbps over short distances. Fiber can move data over a single data channel and across multi-mile distances and with further amplification. Greater speeds can be obtained by dividing a single optical cable into multiple data channels. Also, Optical networking decreases latency between endpoints on the network. Where an electric current moves data at about 10% of the speed of

light optical signals in fiber optic cable travel 10 times faster, at the speed of light. **Hence statement 3 is not correct.**

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

Q 83.C

- **The Golden Threshold - Sarojini Naidu:**
 - "The Golden Threshold" is a collection of poems written by Sarojini Naidu. It was published in 1905 and is one of her notable works. The title poem celebrates the beauty and culture of India. **Hence pair 1 is correctly matched.**
- **Hind Swaraj - Mahatma Gandhi:**
 - "Hind Swaraj" is a book written by Mahatma Gandhi. Published in 1909, it is a seminal work where Gandhi outlines his vision for a self-reliant and culturally rooted India. The book delves into issues of modernization, Westernization, and the path to true self-governance. **Hence pair 2 is correctly matched.**
- **Unhappy India - Lala Lajpat Rai:**
 - "Unhappy India" is indeed a book written by Lala Lajpat Rai. Published in 1928, the book critiques British colonial policies and their impact on India's socio-economic and political conditions. **Hence pair 3 is correctly matched.**
- **Other important Books and Associated authors are**
 - "Bapu Kutir" by Vinoba Bhave
 - "Discovery of India" by Jawaharlal Nehru
 - "The Story of My Deportation" by Lala Lajpat Rai
 - "Indian Struggles, 1920-1942" by Subhas Chandra Bose
 - "Azaadi Ke Baad" by Maulana Abul Kalam Azad

Q 84.A

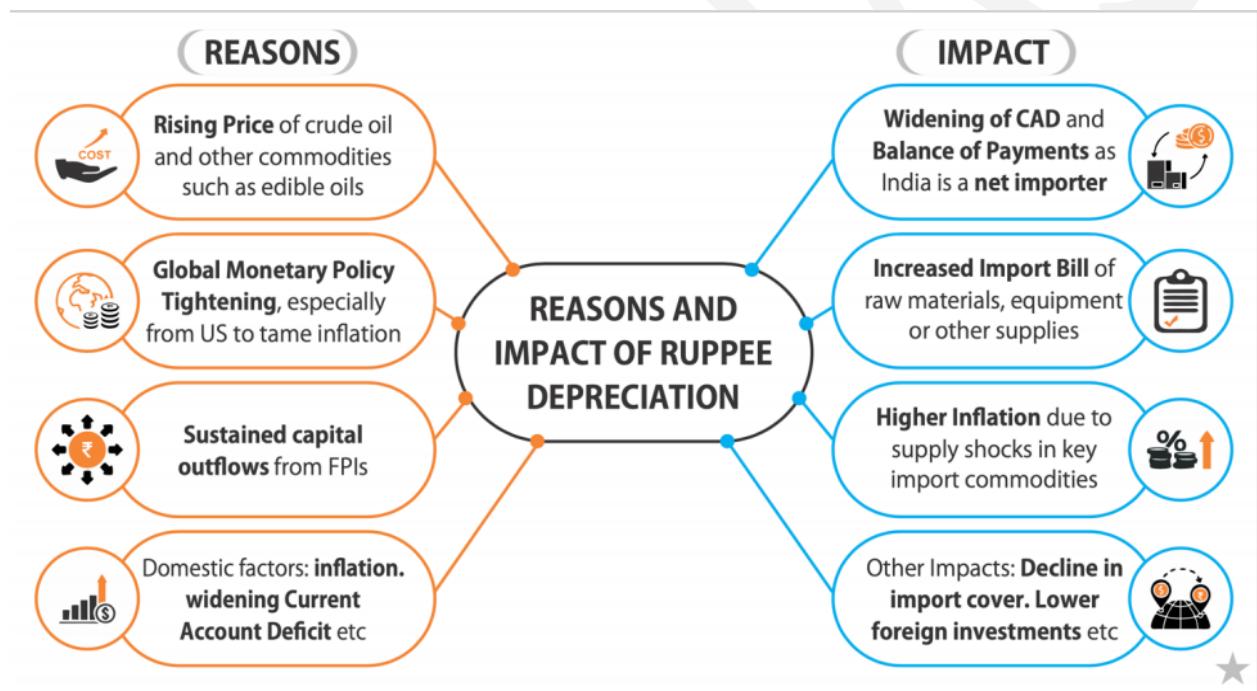
- **The World Governments Summit is a global knowledge exchange platform for governments that was established in 2013 under the dynamic leadership of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, Ruler of Dubai and is poised to scale newer heights of excellence and inclusivity. Hence statement 1 is not correct.**
- **It is an annual global gathering that brings together world leaders, policymakers, experts, and thought leaders from various fields to discuss and address pressing global issues.** The Summit, in its various activities, explores the agenda of the next generation of governments, focusing on harnessing innovation and technology to solve universal challenges facing humanity. **Hence statement 2 is not correct.**
- **In 2024, the World Governments Summit will take place under the theme of 'Shaping Future Governments'** where the conversation will involve governments, international organizations, thought leaders, and private sector leaders from around the globe to international cooperation and enable governments to identify innovative solutions for future challenges— further rippling to inspire and empower the next generation of governments. **Hence statement 3 is correct.**

Q 85.A

- **The Miller Committee was constituted by Krishnaraja Wadiyar IV, the Maharaja of Mysore in the year 1918.**
- **The princely state of Mysore was the first state to appoint a committee to go into the demands of the Backward Classes,** the realisation of which would break the monopoly of the dominant minority in the field of administration.
- **The Committee in its report submitted in August 1919 called for special provisions for non-Brahmins in scholarships and educational facilities and in appointment to state civil service, which came into force by an order of the Government in May 1921.**
- Wadiyar championed many progressive endeavours such as compulsory education for women, but the strong measures he took to ensure educational, employment and political representation of the backward communities was met with stiff resistance from his own Dewan, Visvesvaraya, who was strongly opposed to the idea of reservations. Visvesvaraya rejected the recommendations of the Miller report, and Wadiyar overruled his objections, leading to the former's resignation.
- **This report became the blueprint for subsequent policies and is one of the important documents referenced by Dr B.R. Ambedkar while framing the policies for proportionate representation of depressed classes at the national level.** Hence, option (a) is the correct answer.

Q 86.A

- Exchange rate is the price of one currency in terms of another currency. It can be fixed (exchange rate decided by central banks) or floating (decided by demand and supply) exchange rate.
- The depreciation of rupees means fall in the value of rupees compare to external currency (mainly compare to US dollar) in a floating exchange rate system. For example in January 2024 the value of \$1 USD is ₹80 and in February 2024, if the value of \$1 USD has become ₹85, then it is called as the depreciation of rupee.
- There can be various reason behind depreciation of rupee:
 - Rise in interest rate by the US Federal Reserve. It attracts more investors to invest in US itself rather than investing in developing countries. So there can be outflow of capital from Indian market and result into rise in demand for US dollars. Hence option 1 is correct.
 - High inflation rate in India attracts less investment. It can also results in widening Current Account Deficit and depreciation of Indian rupee. Hence option 2 is correct.
 - Rising geopolitical tensions like Russia- Ukraine conflict and Israel-Hamas war can cause disruption of supply chain and rising prices of essential commodities like oil, natural gas etc. It results in import derived inflation in India and depreciation of Indian rupee.
- However, when RBI increases interest rate in India it helps in curbing inflation in India and also attracts foreign investors in India to gain higher returns. Further when there is rise in export from India it results in accumulation of US dollar. Hence both these events result in appreciation of Indian rupee rather than depreciation. Hence options 3 and 4 are not correct.



Q 87.D

- Ammonia (NH₃) is a highly reactive and soluble alkaline gas. It originates from both natural and anthropogenic sources, with the main source being agriculture, e.g. manures, slurries, and fertiliser application.
- Ammonia comes from the breakdown and volatilisation of urea. Emissions and deposition vary spatially, with "emission hot spots" associated with high-density intensive farming practices. Other agriculture-related emissions of ammonia include biomass burning or fertiliser manufacture.
- Ammonia is also emitted from a range of non-agricultural sources, such as catalytic converters in petrol cars, landfill sites, sewage works, composting of organic materials, combustion, industry, and wild mammals and birds.
- Hence option (d) is the correct answer.

Q 88.D

- Recently, the RBI has replaced two tier regulatory framework by a four tier regulatory framework for Urban Cooperative Banks (UCBs). Some of the provision under four tier regulatory framework is:
 - Minimum net worth of ₹2 crore for Tier 1 UCBs and ₹5 crore for others.
 - Tier 1 UCBs shall maintain, as hitherto, a minimum CRAR of 9 percent of Risk Weighted Assets (RWAs) on an ongoing basis.
 - Tier 2 to 4 UCBs shall maintain a minimum CRAR of 12 percent of RWAs on an ongoing basis

- The revised criteria for determining the Financially Sound and Well Managed (FSWM) status is:
 - Net NPA of not more than 3%.
 - No default in the maintenance of CRR / SLR during the preceding financial year.
 - Sound internal control system with at least two professional directors on the Board
 - Core Banking Solution (CBS) fully implemented.
- Urban and Multi State Cooperative Banks are under the direct supervision of RBI. But, Regulatory Frameworks for UCBs, Universal Banks (UNBs), Small Finance Banks (SFBs) and Regional Rural Banks (RRBs) varies:**

Comparison of Regulatory Frameworks for UCBs, UNBs, SFBs and RRBs

 Regulatory Approval	 UCBs	 UNBs	 SFBs	 RRBs
 Capital Adequacy	Under Basel I norms, capital to be maintained only on credit risk.	Under Basel III norms, Capital to be maintained on credit, market risk and operational.	Under Basel II norms, but capital to be maintained only on credit risk.	Under Basel I
 Opening of Branches, Extension Counter	UCBs which meet the Financially Sound and Well Managed (FSWM) criteria are allowed under automatic route .	Under automatic approval route , subject to conditions.	Under automatic approval route , subject to conditions.	Under automatic approval route , subject to conditions.
 Extension of area of operation	Under prior approval route	Not applicable. Area of operation extends to the entire country.	Not applicable. Area of operation extends to the entire country.	Area of operation of RRBs is fixed.
 Priority Sector Lending targets	75 per cent of Adjusted Net Bank Credit (ANBC).	40 per cent of ANBC	75 per cent of ANBC	75 per cent of ANBC
 Inclusion under Second Schedule to RBI Act, 1934	Prior approval route UCBs fulfilling prescribed criteria are eligible to apply.	Prior approval route All new SCBs after commencement of operations are eligible to apply.	Prior approval route All new SFBs after commencement of operations are eligible to apply.	Prior approval route Newly amalgamated RRBs are Scheduled by RBI on the basis of certificate issued by NABARD. ★

- Hence option (d) is the correct answer.

Q 89.B

- **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)** is a Central Sector Scheme to provide income support to all landholding farmers' families in the country to supplement their financial needs for procuring various inputs related to agriculture and allied activities as well as domestic needs. Under the PM-KISAN scheme, all landholding farmers' families shall be provided the financial benefit of Rs.6000 per annum per family payable in three equal installments of **Rs.2000 each, every four months (Rs 6000 per year and not in every quarter)**. Hence statement 1 is not correct and statement 2 is correct.
- In the beginning when the PM-Kisan Scheme was launched in February 2019, its benefits were admissible only to Small & Marginal Farmers' families, with combined landholding up to 2 hectares. The Scheme was later revised w.e.f. 1.6.2019 and extended to all farmer families irrespective of the size of their landholdings. Land holding is the sole criterion to avail of the benefit under the Scheme.
- Under the Scheme, the entire financial liability towards the transfer of benefits to targeted beneficiaries will be borne by the Government of India. If a member of the family is an income tax Payee in the last assessment year, then the family is not eligible for benefits under the scheme.
- A landholder farmer's family is defined as "a family comprising of husband, wife and minor children who own cultivable land as per the land records of the concerned State/UT. The existing land-ownership system will be used for the identification of beneficiaries for the calculation of benefits.
- The responsibility of identifying the eligible farmers' families for benefit under the scheme is entirely of the State/UT Governments. The prevailing land-ownership system/record of land in different States/Union Territories will be used to identify the intended beneficiaries for the transfer of scheme benefits. Hence statement 3 is correct.

Q 90.A

- The mugger crocodile is a medium-sized broad snouted crocodile, also known as mugger and marsh crocodile. This species is found in India, Sri Lanka, Pakistan, Nepal and possibly, in Bangladesh, its range extends westwards into eastern Iran. The species has become locally extinct over large parts of its range, with viable populations only occurring in Protected Areas in India and Sri Lanka. Significant populations occur in middle Ganga (Bihar and Jharkhand), Chambal River (Rajasthan and Madhya Pradesh) and in Gujarat. Hence statement 1 is correct.
- The mugger, which is highly adaptable and has been found to co-exist with humans in urban landscapes, is widespread in India except its north-eastern States and it is known to occupy various habitat types such as rivers up to 3-5 m depth, lakes, marshes, human-constructed ponds, reservoirs, irrigation canals, as well as estuaries and coastal saltwater lagoons. Hence statement 4 is not correct.
- It has been listed as Vulnerable on the IUCN Red List. Outside protected areas, it is threatened by conversion of natural habitats, gets entangled in fishing nets and is killed in human-wildlife conflict situations and in traffic accidents. Hence statement 2 is not correct.
- Incubation temperature determines sex in the mugger crocodile. Exclusively females are produced at constant temperatures of 28.0°C through 31°C. At 32.5°C, only males are produced. Both sexes are produced in varying proportions at 31.5, 32.0, and 33.0°C. Hence statement 3 is correct.
- Hence option (a) is the correct answer.

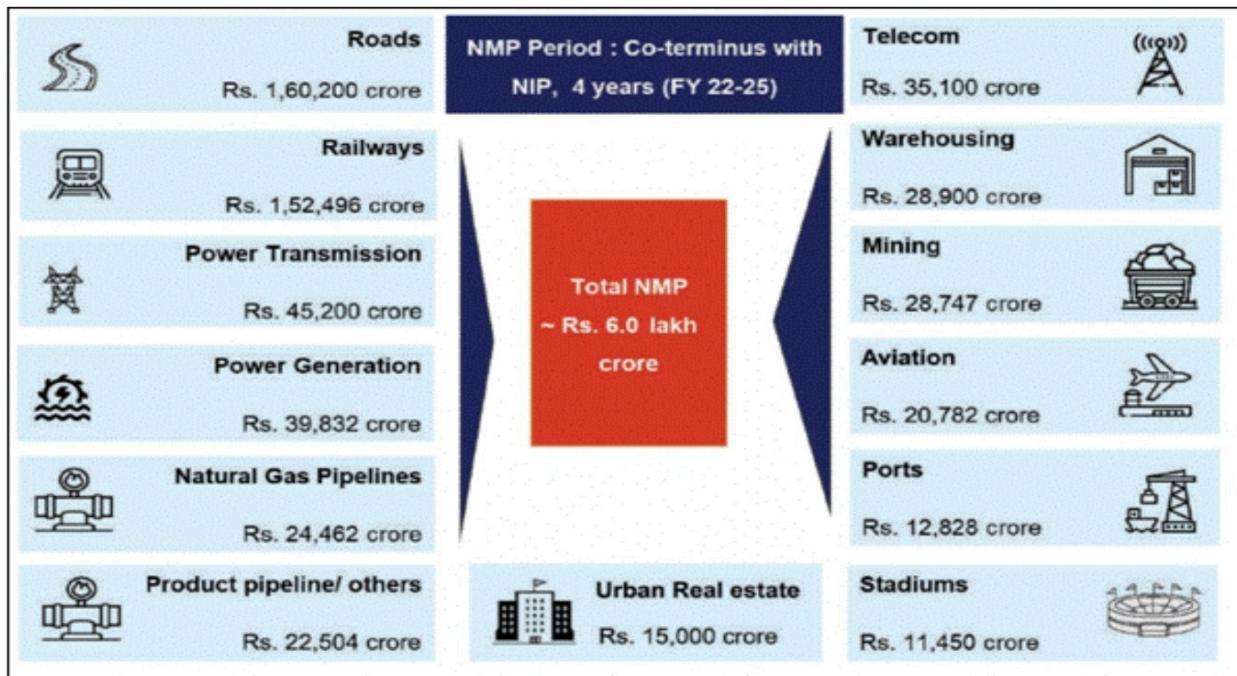
Q 91.A

- Based on the mandates for 'Asset Monetisation' under the union Budget 2021-22, National Monetisation Pipeline (NMP) was prepared by the NITI Aayog. The aggregate Monetisation potential under the NMP is Rs. 6 lakh crore over a four-year period, from FY 2022 to FY 2025.
- The objective of the programme is to unlock the value of investment in brownfield public (not greenfield) sector assets by tapping institutional and long-term patient capital. The NMP is aimed at creating a systematic and transparent mechanism for public authorities to monitor the performance of the initiative and for investors to plan their future activities. Hence statement 1 is not correct.
- Disinvestment and monetisation of non-core assets falls outside the preview of the NMP. The primary ownership of the assets under the NMP remains with the government. Currently, only assets of

union ministries and CPSEs in infrastructure are included in the NMP. Hence the statement 3 is not correct.

- There is an unavoidable link between infrastructure creation and monetisation. So, the period of NMP will be co-terminus with that of National Infrastructure Pipeline (NIP) in FY25. Hence the statement 2 is correct.

Sector wise Monetisation Pipeline over FY 2022-25 (Rs crore)



Q 92.A

- **Bakhar:**
 - Bakhar is a historical genre of literature found predominantly in Maharashtra, India.
 - These texts are written in Marathi and focus on recording historical events, particularly related to the Maratha Empire.
 - Bakhars are composed of biographies of great rulers, genealogies of prominent families or accounts of momentous battles.
 - They are usually written in prose or a mix of prose and poetry. Examples of Bakhar texts include "Sabhasad Bakhar," "Shivdigvijay Bakhar," and "Chitnis Bakhar."
- **Buranji:**
 - Buranji is a genre of historical chronicles found in the northeastern region of India, particularly Assam. These texts were written in Assamese and cover historical events, traditions, customs, and legends of the region.
 - Buranjis were traditionally maintained by Ahom rulers and officials to record administrative matters, genealogies, and notable events.
 - They often incorporate local myths, legends, and folklore alongside historical narratives.
 - Buranjis provide valuable insights into the socio-political and cultural landscape of Assam over centuries.
 - Examples of Buranjis include "Rajmala," "Gargya Buranji," and "Chakradhwaj Buranji." Hence, option (a) is the correct answer. Hence, option (a) is the correct answer.

Q 93.B

- Fronts are transition zones between two air masses with different characteristics, such as temperature, humidity, and density. These boundaries often lead to significant weather changes as the air masses interact.
 - There are four main types of fronts: cold fronts, warm fronts, stationary fronts, and occluded fronts.
- **Cold Fronts**
 - Occur when a cold air mass advances and displaces a warmer air mass.
 - A cold front occurs when a cold air mass advances and displaces a warmer air mass. As the cold air mass moves forward, it wedges under the warmer air, forcing it to rise rapidly. This

**lifting of warm air can lead to the formation of clouds and precipitation along the front.
Hence statement 1 is not correct.**

- Cold air wedges under the warm air, forcing it to rise rapidly.
- Typically associated with intense weather phenomena like thunderstorms, heavy rainfall, and sometimes tornadoes.
- **Cold fronts move faster than warm fronts and tend to produce more abrupt weather changes.**
 - **Cold fronts are associated with the leading edge of advancing cold air masses, which are denser and typically more forceful than warm air masses. As a result, cold fronts tend to advance more rapidly than warm fronts. Cold fronts often bring sudden changes in weather conditions, such as thunderstorms, gusty winds, and temperature drops, as they move through an area. Hence statement 2 is correct.**
- **Warm Fronts**
 - Occur when a warm air mass advances and rises over a colder air mass.
 - Warm air gradually ascends over the cooler air, leading to the formation of stratiform clouds and precipitation.
 - **Precipitation associated with warm fronts is often lighter and more prolonged compared to cold fronts.**
 - **Warm fronts occur when a warm air mass advances and rises over a colder air mass. As the warm air rises gradually, it cools and condenses, leading to the development of stratiform clouds and precipitation over a broad area.**
 - **The precipitation associated with warm fronts tends to be lighter and more prolonged compared to the more intense and localized precipitation often observed with cold fronts.**
Hence statement 3 is correct.
 - Warm fronts move slower than cold fronts and bring more gradual weather changes.
- **Stationary Fronts**
 - Form when the boundary between two air masses stalls and neither air mass displaces the other.
 - Weather conditions near a stationary front can be relatively stable for extended periods.
 - However, stationary fronts can still bring prolonged periods of precipitation and cloudiness.
- **Occluded Fronts**
 - Form when a faster-moving cold front catches up to a slower-moving warm front and overtakes it.
 - The warm air mass is forced aloft as the cold air advances, leading to the lifting of warm air and subsequent precipitation.
 - Occluded fronts often bring a mixture of weather conditions, including rain and thunderstorms.
 - There are two types of occluded fronts: warm occlusions and cold occlusions, depending on whether the air behind the occluded front is warmer or colder than the air ahead of it.

Q 94.D

- Blue carbon refers to carbon dioxide that is absorbed from the atmosphere and stored in the ocean. **“Blue” refers to the watery nature of this storage.** The vast majority of blue carbon is carbon dioxide that has dissolved directly into the ocean. Much smaller amounts are stored in underwater sediments, coastal vegetation and soils; carbon-containing molecules, such as DNA and proteins; and ocean life from whales to phytoplankton.
- International agreements aimed at curbing climate change have focused growing attention on coastal blue carbon: carbon stored by saltwater ecosystems in their vegetation and soils. In terms of total area, these ecosystems—salt marshes, mangroves, seagrass meadows—have a small global footprint, but their deep, water-logged soils can bury many times more carbon per acre than even a tropical rainforest.
- **Hence option (d) is the correct option.**

Q 95.C

- **The Cabinet Secretariat** is responsible for the **administration of the Government of India (Transaction of Business) Rules, 1961, and the Government of India (Allocation of Business) Rules 1961**, facilitating smooth transaction of business in Ministries/ Departments of the Government. This Secretariat provides Secretarial assistance to the Cabinet and its Committees and also assists in decision-making in Government by ensuring Inter-Ministerial coordination, ironing out differences amongst Ministries/ Departments, and evolving consensus through the instrumentality of the standing/ adhoc Committees of Secretaries. Through this mechanism, new policy initiatives are also promoted.
- **Attached Offices/Statutory bodies:**
 - **The Directorate of Public Grievances (DPG) in the Cabinet Secretariat** of the Government of India helps to obtain responses to unresolved grievances on matters relating to some Central

Government Departments and Organisations. DPG can help you to obtain a response and resolution on these grievances from the department or organization. **Hence option 3 is correct.**

- **NACWC** was established under the Chemical Weapons Convention Act, of 2000 to implement the provisions of the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction, signed on behalf of the Government of India at Paris in 1993. **NACWC is an office in the Cabinet Secretariat. Hence option 2 is correct.**
- **The Government of India established the Office of the Principal Scientific Adviser (PSA) in 1999.** The PSA's office aims to provide pragmatic and objective advice to the Prime Minister and the cabinet in matters of Science and Technology. **The Office of PSA was placed under the Cabinet Secretariat in 2018. Hence option 1 is correct.**

Q 96.A

- **Located in Central Africa, Gabon boasts a wealth of natural resources.**
- With a coastline on the Atlantic Ocean, it is bordered by Cameroon, Equatorial Guinea and the Republic of Congo.
- Despite its vast, mainly forested surface area, Gabon only had 2.3 million inhabitants in 2021.
- Gabon's level of urbanization is one of the highest in Africa, with over 80% of its population living in urban areas.
- The two main cities, Libreville and Port-Gentil are home to almost 59% of the population.
- Youth is a distinctive feature of its demography: half the population is under 20, and while the fertility rate in urban areas is four children per woman, it climbs to six in rural areas.
- **Recently in August/September 2023, Soldiers in Gabon said they'd seized power and appointed the republican guard chief as head of state and Gabon's election committee announced that President Ali Bongo Ondimba had won the election, but soldiers soon staged a coup.**
- **Hence option (a) is the correct answer.**

Q 97.D

- **An Foreign Currency Non-Resident (FCNR) is a bank account for NRIs to maintain a Fixed Deposit account in India.** This account allows you as an NRI to save your money earned in the currency form of the country you've originally earned the money from.
- Mostly banks book FCNR deposits in the following currencies - US Dollars; Pounds Sterling; Euro; Japanese Yen; Australian Dollars; Canadian Dollars
- Here are some features of an FCNR Account that make it an extremely feasible option to invest and maintain funds in India-
- **FCNR Accounts are Term Deposit Accounts and not a Savings Account.** Premature withdrawal is allowed by Banks but Interest is paid only post completion of 1 year. **Hence statement 2 is not correct.**
- **The interest you earn on your deposits on FCNR Accounts is tax-free**, i.e., it is not taxable in India. **Hence statement 1 is not correct.**
- **The Principal amount of your FCNR deposit and the interest you earn thereon is fully repatriable**, e., it is completely transferable. **Hence statement 3 is not correct.**
- You can also avail an overdraft facility over your FCNR Term Deposit Account.
- You can open an FCNR Account by transferring money from your existing Non-Resident External (NRE) Account.

Q 98.D

- Deep in the frigid waters of the Arctic Ocean, an Indian observatory is quietly churning out data that is expected to help scientists understand the Arctic climate process and its influence on the Indian monsoon system.
- **The deployment of IndARC, the country's first underwater moored observatory in the Kongsfjorden fjord, halfway between Norway and the North Pole, represents a major milestone in India's scientific endeavours in the Arctic region, says Shailesh Nayak, Secretary of, the Ministry of Earth Sciences.**
- Designed and developed by scientists from the Earth System Science Organisation (ESSO), National Centre for Antarctic and Ocean Research (NCAOR), National Institute of Ocean Technology (NIOT) and Indian National Centre for Ocean Information Services (INCOIS), IndARC was deployed from RV Lance, a research vessel belonging to the Norwegian Polar Institute.
- **Hence, option (d) is the correct answer.**

Q 99.A

- **The Quit India Movement, 1942:**
 - The Quit India Movement launched in 1942 saw Mahatma Gandhi issuing specific instructions to different sections of Indian society. These instructions aimed to guide their participation in the non-violent movement demanding an end to British rule.
- **Gandhi's General Instructions to Different Sections:**
 - Gandhi's special instructions were spelled out at the Gowalia Tank meeting but not actually issued. They were directed at various sections of society.
 - **Government servants:** Do not resign but declare your allegiance to the Congress. **Hence option 1 is not correct.**
 - **Soldiers:** Do not leave the army but do not fire on compatriots. **Hence option 2 is correct.**
 - **Students:** If confident, leave studies.
 - **Peasants:** If zamindars are anti-government, pay mutually agreed rent, and if zamindars are pro-government, do not pay rent. **Hence option 3 is not correct.**
 - **Princes:** Support the masses and accept the sovereignty of your people.
 - **Princely states' people:** Support the ruler only if he is anti-government and declare yourselves to be a part of the Indian nation.

Q 100.B

- India's first winter scientific expedition to the Arctic was flagged off from New Delhi on December 18, 2023. Since 2008, India has operated a research base in the Arctic named **Himadri**, which has been mostly hosting scientists during the summer (April to October). Indian scientific expeditions to the Arctic during the winter (November to March) will allow researchers to conduct unique scientific observations during polar nights, where there is no sunlight for nearly 24 hours and sub-zero temperatures (as low as -15 degrees Celsius). This will aid in expanding understanding of the Arctic, especially climate change, space weather, sea-ice and ocean circulation dynamics, ecosystem adaptations, etc., which affect weather and climate in the tropics, including monsoons. **Hence statement 1 is correct.**
- Indian scientific expeditions to the Earth's poles (the Arctic and the Antarctic) are facilitated under the **PACER scheme**. The Polar Science and Cryosphere Research (PACER) scheme comprising the Antarctic program, Indian Arctic program, Southern Ocean program, and Cryosphere and Climate program is implemented successfully through the National Centre for Polar and Ocean Research (NCPOR), an autonomous institute under the Ministry of Earth Sciences. **Hence statement 2 is not correct.**
- The **University of the Arctic (UArctic)** is a network of universities, colleges, research institutes, and other organizations concerned with education and research in and about the North Pole. Since 2013, India has been an 'Observer' in the Arctic Circle Assembly and forums and is a council member of the University of Arctic. **Indian Maritime University from India is part of the UArctic network.** The Indian Maritime University (IMU), a teaching-cum-affiliating University under the aegis of the Ministry of Ports, Shipping & Waterways, Government of India, established through an Act of Parliament in 2008 as a Central University, plays a key role in the development of a trained human resource for the maritime sector in India. **Hence statement 3 is correct.**
- **Hence option (b) is the correct answer.**

Copyright © by Vision IAS

All rights are reserved. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of Vision IAS.