

ANSWERS & EXPLANATIONS GENERAL STUDIES (P) TEST – 4155 (2024)

Q 1.C

- Super pollutants, or short-lived climate pollutants (SLCPs), have a shorter atmospheric lifespan compared to Carbon Dioxide (CO₂) but significantly impact climate change and air quality. Methane (CH₄), black carbon (soot), hydrofluorocarbons (HFCs), and tropospheric ozone (O₃) are some of the major superpollutants. Hence option (c) is the correct answer.
- As the most prevalent GHG, CO₂ is the baseline comparator for all other gases. Once it's out, CO₂ can stay for hundreds of years in the atmosphere as part of an unbalanced carbon cycle.
- Nitrous Oxide rarely gets the press of CO₂, but it is a potent enemy when human intervention has unbalanced the nitrous oxide budget. Like CO₂, it can come from burning fossil fuels. In addition, it's emitted through many agricultural processes, particularly involving fertilizer. Since it's so potent, N₂O wreaks havoc when soil erodes, and nitrogen plays a massive role in water pollution. On average, it stays in the atmosphere for about 100 years and is almost 275 times as potent as CO₂ when it comes to Global Warming Potential (GWP).

Q 2.C

- **Cloud seeding:**
 - Water vapor condenses around small particles to form the droplets that make up a cloud. These droplets collide and grow; as they get heavy and the cloud gets saturated, it rains.
 - With cloud seeding, clouds are usually injected with salts like silver iodide, potassium iodide, or sodium chloride, which is the 'seed'. These salts are expected to provide additional nuclei around which more cloud droplets can form. They are dispersed into the cloud either using aircraft or through generators on the ground.
- **Substances used for cloud seeding:**
 - Whether dispersing salt particles, such as sodium chloride (NaCl) and calcium chloride (CaCl₂), in liquid clouds or triggering ice production in supercooled clouds with silver iodide (AgI), each method has a unique approach. Other chemicals used are potassium iodide (KI), sulfur dioxide (SO₂), frozen carbon dioxide – dry ice (CO₂), bismuth tri-iodide (BiI₃), propane (C₃H₈), and others
 - ✓ **Silver Iodide:** Silver iodide is a commonly used substance in cloud seeding due to its efficient ice nucleating properties. It is particularly effective in triggering ice production in supercooled clouds, thereby enhancing precipitation. Despite its efficacy, concerns have been raised regarding its potential toxicity to terrestrial and aquatic life, prompting the exploration of less harmful alternatives. Hence option 1 is correct.
 - ✓ **Sodium chloride:** Sodium chloride, commonly known as table salt, is occasionally used in cloud seeding, particularly in hygroscopic seeding techniques for warm clouds. By dispersing salt particles in liquid clouds, sodium chloride can serve as nuclei around which water condenses, potentially stimulating precipitation. Hence option 2 is correct.
 - ✓ **Potassium iodide:** Potassium iodide is another substance occasionally considered for cloud seeding experiments. While not as commonly used as silver iodide, potassium iodide has been studied for its potential role in cloud nucleation processes. However, its efficacy and environmental impact compared to other seeding agents require further research. Hence option 3 is correct.

Q 3.A

- The National Industrial Corridor Development Programme is India's most ambitious infrastructure programme aiming to develop new industrial cities as "Smart Cities" and converging next-generation technologies across infrastructure sectors.

- **The government of India is developing eleven (11) Industrial Corridor Projects as part of the National Industrial Corridor Programme across the country in a phased manner.** The existing Industrial Corridors list is as follows:
 - Delhi Mumbai Industrial Corridor (DMIC)
 - Chennai Bengaluru Industrial Corridor (CBIC)
 - Extension of CBIC to Kochi via Coimbatore
 - Amritsar Kolkata Industrial Corridor (AKIC)
 - Hyderabad Nagpur Industrial Corridor (HNIC)
 - Hyderabad Warangal Industrial Corridor (HWIC)
 - Hyderabad Bengaluru Industrial Corridor (HBIC)
 - Bengaluru Mumbai Industrial Corridor (BMIC)
 - East Coast Economic Corridor (ECEC) with Vizag Chennai Industrial Corridor (VCIC) as Phase-1
 - Odisha Economic Corridor (OEC)
 - Delhi Nagpur Industrial Corridor (DNIC; **Hence statement 1 is correct.**)
- As per the approved institutional and financial structure for the industrial corridors, the Government of India, **through the National Industrial Corridor Development & Implementation Trust (NICDIT),** provides funds as equity/debt for the development of world-class trunk infrastructure in the industrial nodes/regions under industrial corridors and the States are responsible for making available contiguous and encumbrance free land parcels. **Hence statement 2 is not correct.**

Q 4.B

- **Recent context:** In exercise of the powers conferred by sub-section (1), clause (ii) of sub-section 2 of section 3, sub-section (1) of section 6, and sub-section (1) of section 25 of the Environment (Protection) Act, 1986 the Central Government notified the Rules, on Eco-labelling of Product - the Ecomark Certification Rules, 2023. **Hence statement 1 is not correct.**
 - It provides accreditation and labelling for household and consumer products that meet specific environmental criteria while maintaining quality standards as per Indian norms.
 - Products accredited under the Ecomark Scheme will adhere to specific environmental criteria, ensuring minimal environmental impact.
 - It will build consumer awareness of environmental issues and encourage eco-conscious choices. **Hence statement 3 is correct.**
 - It will also motivate manufacturers to shift towards environmentally friendly production.
 - The scheme seeks to ensure accurate labelling and prevent misleading information about products.
- The Central Pollution Control Board shall be the Administrator of the Ecomark Rules. **Hence statement 2 is correct.**
- The Central Pollution Control Board administers the **Ecomark Scheme in partnership with Bureau of Indian Standards (BIS)**, which is the national body for standards and certification.
- The presence of ECO Logo along with ISI Mark on a product indicates that the product meets certain Environmental criteria along with the Quality requirements as specified in the relevant Indian Standard.

Q 5.A

- **A kriti is a form of musical composition in the Carnatic music literature.** The Sanskrit common noun Kriti means 'creation' or 'work'. A kriti forms the mental backbone of any typical Carnatic music concert and is the longer format of a Carnatic song. **Hence statement 1 is correct.**
- Sri Shyama Shastri, Sri Thyagaraja, and Sri Muthu Swami Dikshitar are together known as the musical Trinity of Carnatic music. They composed hundreds of scholarly Kritis in new and rare ragas hitherto unused.
- Sri Shyama Shastri was eldest among the Trinity. most of his kritis are in praise of mother Goddess Kamakshi of Kanchi. Kritis are available in both Telugu and Sanskrit. They are replete with Raga bhava and Sahitya bhava. His three scholarly Swarajatis are well-known as three gems. **He has composed 9 kritis on Goddess Meenakshi of Madurai, known as Navaratnamalika.** Hence statement 2 is correct.
- **Sri Tyagaraja is believed to have composed more than 1000 kritis.** Nearly 750 compositions have already been published. They include simple as well as scholarly kritis. He brought into usage hundreds of Ragas. **He was a devotee of Lord Rama. The majority of his Kritis are in Telugu, and some of them are in Sanskrit.** Hence statement 3 is not correct.
- Dikshitar was the youngest of Trinity. He was a Sri Vidya upasaka and composed a majority of Kritis on Devi. He has also composed Kritis on innumerable Shaivite and Vaishnavite deities, whom he visited during his pilgrimages. His scholarly compositions speak of his deep knowledge of Indian philosophy,

Jyotisha, Tantrashastra, and Hindu Culture. All his Kritis are in Sanskrit and the literary contents of his Kritis are of high standard and slightly difficult to understand for a layman. The Kritis are brilliant with musical and literary beauties like swaraksharas, various Mudras, Samashti Charana, Madhyama Kala Sahityas, Yati-Prasas etc, **Muthuswami Dikshitar followed the Asampurna Mela Paddhati of Venkatamakhi. But Tyagaraja and Shyama Shastri followed Sampurna Mela Paddahati of Govindacharya.** Now Sampurna Mela Paddhati is in vogue.

Q 6.B

- Purchasing Managers' Index or PMI is an economic indicator, which is derived after monthly surveys of different companies. PMI data for India is released by S&P Global - a global major in financial information and analytics. Earlier PMI data in India was released by IHS Markit before its merger with S&P in 2022. Hence, statement 1 is not correct.
- The index shows trends in both the manufacturing and services sectors. The index helps in determining whether the market conditions, as seen by purchasing managers, are expanding, contracting, or staying the same. It is used to provide information regarding the current and future business conditions. There are two types of PMI — Manufacturing PMI and Services PMI. A combined index is also made using both manufacturing PMI and services PMI. Hence, statement 2 is correct.
- The PMI is derived by sending fact-based questions to a large number of companies in the concerned sector. For manufacturing PMI, the questionnaire is sent to manufacturing companies. The questions are factual and the survey is not meant for opinions, intentions, or expectations. The questions are related to 5 key variables. The variables with their weights in the index are — new orders (30%), output (25%), employment (20%), suppliers' delivery times (15%), and stock of items purchased (10%). The surveys are conducted on a monthly basis.
- The PMI is a number ranging from 0 to 100. A PMI number greater than 50 indicates expansion in business activity. A number less than 50 shows a contraction. Hence, statement 3 is correct.

Q 7.A

- The Jute Packaging Materials Act enacted in 1987 mandated compulsory use of jute sacks manufactured by Indian jute mills for the packaging of products by other Indian industries. For example, it mandated that 100 percent of foodgrains and sugar produced in India be packaged in jute sacks. Hence statement 2 is not correct.
- The Cabinet Committee on Economic Affairs chaired by Hon'ble Prime Minister, has approved reservation norms for mandatory use of jute in packaging for the Jute Year 2023 -24 (1st July, 2023 to 30th June, 2024) on 8th December, 2023. The Mandatory packaging norms approved for Jute Year 2023-24 provide for 100% reservation of the foodgrains and 20% of sugar to be compulsorily packed in jute bags. Hence statement 1 is correct.
- The reservation norms in present proposal would further protect the interest of domestic production of raw jute and jute packaging material in India, thereby, making India self-reliant in consonance with Aatmnirbhar Bharat. Reservation for packaging in jute packaging material consumed around 65% of the raw jute produced in the country (in 2022-23). By bringing into effect the provision of JPM Act, the Government will provide relief to 4 lakh workers employed in jute mills and ancillary units as well as support the livelihood of around 40 lakh farm families. Besides, it will help protect environment because jute is natural, bio-degradable, renewable and reusable fibre and hence fulfils all sustainability parameters.

Q 8.A

- **Madhubani Paintings are made in Bihar and Warli tribe is from Maharashtra hence pair 1 is not correctly matched.** Madhubani paintings are made by Brahmin, Kayasth, and the Harijan community from Bihar. There are differences between the works of Brahmin and Kayasth women and women of lower castes. "The Harijan Madhubani paintings appeared simpler and less sophisticated. They were closer to the Geru tradition of painting, with emphasis on volume and depth rather than ornamentation, whereas the Brahmins and the Kayasth stuck to mythological and religious themes. The Scheduled Caste artists allowed themselves greater freedom of expression by depicting day-to-day life with 'secular' motifs. Yamuna Devi belonged to the Chamar community and made a portrait of a Chamar disposing of the carcass of a cow which is a famous example of this.
- **Warli tribe is associated with Warli paintings,** tribal people from the North Sahyadri Range in Maharashtra, India. The most important aspect of the painting is that it does not depict mythological

characters or images of deities, but depicts social life. Pictures of human beings and animals, along with scenes from daily life are created in a loose rhythmic pattern.

- **Lambani community of Karnataka was involved in Kasuti embroidery**, The embroidery which is well-known is a blend of mirror work, cross-stitching, pattern darning, overlaid stitching, beadwork, quilting stitches, and appliquéd patchwork. Apart from colorful threads and mirrors, they use decorative beads, small cowry shells and coins to embellish the cloth. Hence pair 2 is correctly matched.
- **Kullu shawl is mainly made by the Kinnauri tribe from Himachal Pradesh**. Hence pair 3 is correctly matched. featuring various geometrical patterns and bright colors. Originally, indigenous Kinnauri/ kulvi people would weave plain shawls, but following the arrival of craftspeople from Bushahr in the early 1940s, the trend of more patterned shawls came to rise. Kinnauri/Kinnauras are considered active, generous, frank, peace-loving and hospitable people who are the inhabitants of the border district of Kinnaur in Himachal Pradesh.

Q 9.B

- **About Privileges Committee:** It is a parliamentary standing committee present in both Houses of Parliament. Hence statement 1 is correct.
- **Key Function:** Investigate questions involving the breach of privileges of House or members, as referred to it by the presiding officer of Houses.
- **Privilege Committee of Lok Sabha consisting of 15 members.** The Speaker of Lok Sabha nominates a committee of privileges consisting of 15 members.
- **The Rajya Sabha Privileges Committee has 10 members nominated by the Chairman.** The committee is responsible for investigating allegations of breach of privilege or contempt of either House of Parliament. It also has the power to recommend action against those who are found guilty of such breaches. Hence, statement 2 is not correct and statement 3 is correct.

Q 10.A

- **Five-Year Plans (FYPs) are centralized and integrated national economic programs.** Joseph Stalin implemented the first FYP in the Soviet Union in the late 1920s. After independence, India launched its First FYP in 1951, under the socialist influence of first Prime Minister Jawaharlal Nehru with the objective of the Government to promote a rapid rise in the standard of living of the people by efficient exploitation of the resources of the country, increasing production and offering opportunities to all for employment in the service of the community. The model of the Indian Economy was premised on the concept of planning based on five-year plans from 1951-2017.
- **The Five-Year Plans were formulated, implemented, and regulated by a body known as the Planning Commission.** The Planning Commission was replaced by a think tank called NITI AAYOG in 2015.
- **The first FYP (1951-56) was based on the Harrod-Domar Model.** The Plan focussed on agriculture, price stability, power, and transport.
- The second Five-year Plan(1956-61) is also called the Mahalanobis Plan. The Plan Focussed on rapid industrialization- heavy & basic industries. Advocated huge imports through foreign loans. Hence, statement 1 is not correct.
- **Operation Smiling Buddha (MEA designation: Pokhran-I)** was the assigned code name of India's first successful nuclear bomb test on 18 May 1974. It was conducted during the Fourth FYP (1969-74). Hence, statement 2 is correct.
- **India became a member of the World Trade Organisation (WTO) on 1st January 1995** during the Eighth FYP (1992-97) to continue with the reforms in the economy post-1991. Hence, statement 3 is not correct.

Q 11.C

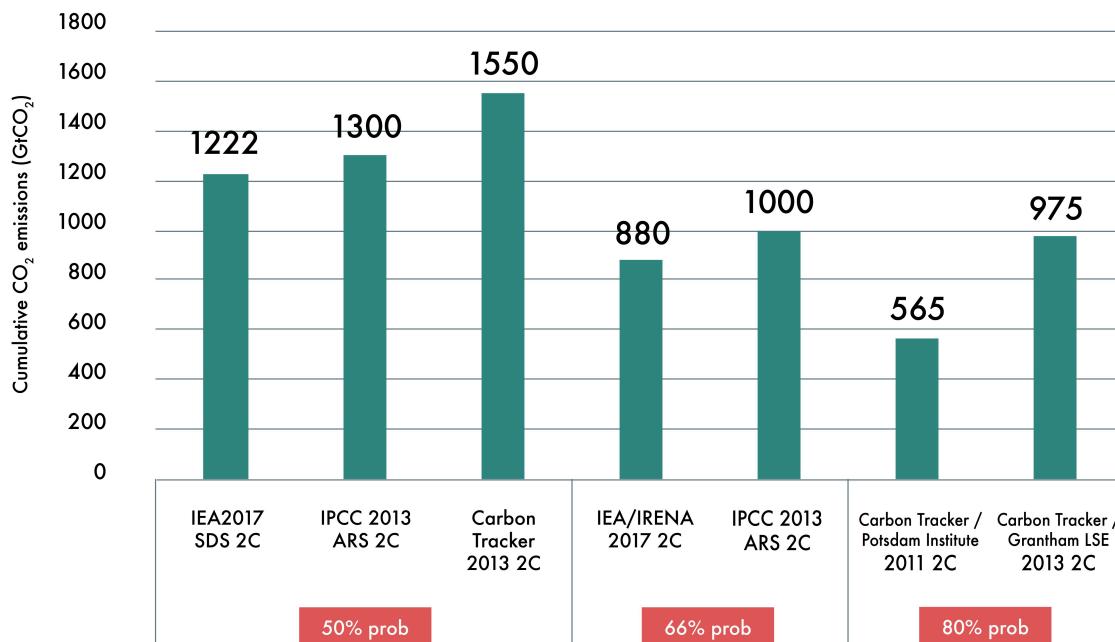
- **Kuka Movement (1840):** The Kuka Movement was founded in 1840 by Bhagat Jawahar Mal (also called Sian Saheb) in western Punjab. A major leader of the movement after him was Baba Ram Singh. (He founded the Namdhari Sikh sect.) After the British took Punjab, the movement got transformed from a religious purification campaign to a political campaign. Its basic tenets were the abolition of caste and similar discriminations among Sikhs, discouraging the consumption of meat, and alcohol, and drugs, permission for intermarriages, widow remarriage, and encouraging women to step out of seclusion.
- **Ahom Revolt (1828):** The British had pledged to withdraw from Assam after the First Burma War (1824-26). But, after the war, instead of withdrawing, the British attempted to incorporate the Ahom territories

into the Company's dominion. This sparked off a rebellion in 1828 under the leadership of Gomdhar Konwar, an Ahom prince, along with compatriots, such as Dhanjay Borgohain, and Jairam Khargharia Phukan. Assembling near Jorhat, the rebels formally made Gomdhar Konwar the king. Finally, the Company decided to follow a conciliatory policy and handed over Upper Assam to Maharaja Purandar Singh Narendra and part of the kingdom was restored to the Assamese king.

- **Sanyasi and Fakir Rebellion (1763 - 1800):** In many of the peasant movements in the later half of the eighteenth-century period, religion played an important role in providing a discursive field within which the peasants understood colonial rule and conceptualized resistance. In other words, their religion defined their ideology of protest. The earliest of these was the Sanyasi and Fakir Rebellion, which rocked northern Bengal and adjacent areas of Bihar between **1763 and 1800**.
- **Hence option (c) is the correct answer.**

Q 12.A

- A carbon budget is the cumulative amount of carbon dioxide (CO_2) emissions permitted over a period of time to keep within a certain temperature threshold. **Hence option (a) is the correct answer.**
- Following figure shows a range of carbon budgets as published by different institutions in the energy and climate change sector that it is projected will keep average increases in global temperature to within 2°C .



Q 13.B

- **Quantum computing** is a revolutionary paradigm in information processing that harnesses the principles of **quantum mechanics** to perform computations. Unlike classical computers, **which use bits to represent information as either 0 or 1, quantum computers use quantum bits or qubits. Qubits can exist in multiple states simultaneously.**
- A qubit (short for quantum bit) is the basic unit of information in quantum computing and counterpart to the bit (binary digit) in classical computing. A qubit plays a similar role as a bit, in terms of storing information, but it behaves much differently because of the quantum properties on which it's based.
- **Superposition is a fundamental property of qubits, allowing them to exist simultaneously in multiple states.** This is in contrast to classical bits, which can only be in one state at a time. In quantum mechanics, a **qubit in superposition is described as a linear combination of distinct quantum states.** For example, a **qubit can be in a superposition of both basis states $|0\rangle$ and $|1\rangle$.** Superposition enables quantum computers to process information in parallel, **exploring multiple possibilities simultaneously.**
- **Entanglement is a quantum phenomenon** where the **quantum states of two or more particles become interconnected**, and the state of one particle cannot be described independently of the others. When qubits are entangled, measurements on one qubit correlate with other ones.
- **Hence option (b) is the correct answer.**

Q 14.C

- India is mulling over private sector participation in nuclear energy development. Currently, Indian law bars private companies from setting up nuclear power plants but allows them to supply components, and equipment and sign construction contracts for work outside of the reactors. Hence, statement 3 is correct.
- Recently, the Prime Minister dedicated to the nation two new Pressurised Heavy Water Reactors (PHWRs) with a cumulative capacity of 1,400 megawatts established at Kakrapar Atomic Power Station (KAPS) in Gujarat's Surat district. It was also in the news recently as its two units attained criticality. Hence, statement 1 is correct.
- Also, in a major boost to their time-tested partnership, India and Russia, recently signed some "very important" agreements related to the construction of the future power-generating units of the Kudankulam nuclear power plant. **The Kudankulam nuclear power plant, India's largest, is being built in Tamil Nadu with the technical assistance of Russia.** The construction began in March 2002. Since February 2016, the first power unit of the Kudankulam NPP has been steadily operating at its design capacity of 1,000 MW. The plant is expected to start operating at full capacity in 2027, according to Russian state media. Hence, statement 2 is correct.

Q 15.A

- A quantum dot is a really small assembly of atoms (just a few thousand) around a few nanometres wide. The 'quantum' in its name comes from the fact that the electrons in these atoms have very little space to move around, so the crystal as a whole displays the quirky effects of quantum mechanics — effects that otherwise would be hard to 'see' without more sophisticated instruments. Quantum dots have also been called 'artificial atoms' because the dot as a whole behaves like an atom in some circumstances.
- Quantum dots are microscopic assemblies of atoms, and their behavior is influenced by quantum effects due to the confined space. Hence statement 1 is correct.
- While Quantum dots are sometimes colloquially referred to as "artificial atoms" because they exhibit atom-like behavior in certain circumstances, and not under all circumstances. Quantum dots have unique behaviors, especially in terms of size-dependent properties, that distinguish them from individual atoms. Hence statement 2 is not correct.
- The behavior of electrons in quantum dots differs from that in larger crystals. Quantum dots, being small assemblies, exhibit size-dependent properties that influence electron behavior. In larger crystals, the behavior of electrons is influenced by different factors, and they do not display the same size-dependent effects observed in quantum dots. Hence statement 3 is not correct.

Q 16.A

- Trans-fat, or trans-fatty acids (TFA), are unsaturated fatty acids that come from either industrial or natural sources. Intake of TFA is associated with an increased risk of heart attacks and death from heart disease as they can raise low-density lipoprotein (LDL) also known as bad cholesterol levels in the blood and lower good cholesterol (HDL) levels. Hence, statement 1 is not correct.
- Industrially-produced trans-fat is formed in an industrial process that adds hydrogen to vegetable oil converting the liquid into a solid, resulting in partially hydrogenated oil which is a cheap and easy way to stabilise and extend the shelf life of the food products. Industrially produced trans-fat can be found in margarine, vegetable shortening, Vanaspati ghee, fried foods, and baked goods such as crackers, biscuits, and pies. Baked and fried street and restaurant foods often contain industrially produced trans-fat.
- Trans fat can also be found naturally in meat and dairy foods from ruminant animals (e.g. cows, sheep, goats). Both industrially produced and naturally occurring trans fats are equally harmful. WHO's recommendation for adults is to limit consumption of trans fat to less than 1% of total energy intake, which is less than 2.2 g per day for a 2000-calorie diet. Hence, statement 2 is not correct.
- Launched in 2018, the WHO's REPLACE action package provides a strategic approach to eliminating industrially produced trans-fat from national food supplies to save lives from cardiovascular health disease. WHO has recently awarded its first-ever certificates validating progress in eliminating industrially produced trans-fatty-acids to five countries: Denmark, Lithuania, Poland, Saudi Arabia, and Thailand as they have demonstrated a best practice policy for eliminating industrially-produced trans-fatty acids, supported by adequate monitoring and enforcement systems. Hence, statement 3 is correct.

Q 17.A

- **What are Xenobots?**
 - Xenobots are the world's first living robots, created from frog cells rather than traditional robotic materials like metal or plastic. Hence statement 1 is correct and statement 2 is not correct.
 - They are named after the African clawed frog, *Xenopus laevis*, from which their cells are derived.
 - These living robots are designed and assembled by researchers using a combination of biological engineering and computer algorithms.
 - Xenobots were first created in 2020 by researchers at the University of Vermont, Tufts University, and the Wyss Institute at Harvard University. They are microscopic structures, about the size of a grain of sand, assembled from frog stem cells.
 - These specially designed cells, influenced by an evolutionary algorithm, self-assemble into functional shapes that can perform specific tasks like moving around, carrying objects, and even self-healing.
 - The US scientists who created the first living robots say the life forms, known as Xenobots, can now reproduce – and in a way not seen in plants and animals.
 - While self-replication is a fascinating aspect of Xenobots, it's important to understand that it differs significantly from natural reproduction in animals. It involves the environment manipulating the cells to form new structures, not the creation of new life through genetic inheritance.

Q 18.C

- National Commission for Protection of Child Rights (NCPCR) is established under the Commission for Protection of Child Rights Act, 2005.
- A child is defined as a person falling in the age group of 0 to 18 years. Hence statement 2 is correct.
- **Functions:**
 - To ensure that all laws, policies, programmes, and administrative mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and also the UN Convention on the Rights of the Child. Hence, statement 1 is correct.
 - Monitors the implementation of laws, policies, and programs related to child rights.
 - Inquires into complaints and violations of child rights.
 - Advises the Central Government on matters related to child rights.
 - Coordinates with other agencies and organizations working in the field of child protection.
- **Powers**
 - Summon individuals and documents relevant to inquiries.
 - Recommend prosecution or disciplinary action against errant individuals or institutions.
 - Approach the Supreme Court or High Courts for enforcement of child rights.
- **The commission consists of the following members namely:**
 - A chairperson who, is a person of eminence and has done outstanding work for promoting the welfare of children; and
 - Six members, out of which at least two are woman, from the following fields, is appointed by the Central Government from amongst person of eminence, ability, integrity, standing and experience in: education; child health, care, welfare or child development; juvenile justice or care of neglected or marginalized children or children with disabilities; elimination of child labour or children in distress; child psychology or sociology; and laws relating to children.
- Key responsibilities of the NCPCR is to monitor the implementation and effectiveness of various laws that safeguard children's rights, including:
 - Protection of Children from Sexual Offences (POCSO) Act, 2012:
 - Juvenile Justice (Care and Protection of Children) Act, 2015:
 - Right to Free and Compulsory Education (RTE) Act, 2009:
 - ✓ Thus NCPCR has the power to monitor the implementation of the Right to Free and Compulsory Education (RTE) Act, 2009. Hence, statement 3 is correct.
- The NCPCR has implemented the Baal Swaraj portal to facilitate the rescue and rehabilitation of children in need of care and protection. The portal provides a centralized platform for:
 - **Reporting Child Abuse:** Individuals can anonymously report cases of child abuse, neglect, and exploitation.
 - **Tracking Cases:** Authorities can track the progress of child protection cases and ensure appropriate action is taken.
 - **Monitoring Children's Welfare:** Data on children in need of care and protection is collected to monitor their well-being and identify areas for improvement.
 - **Connecting with NGOs:** The portal facilitates collaboration between the NCPCR and non-governmental organizations (NGOs) that provide services to children in need.

Q 19.B

- The National Statistical Commission (NSC) was set up in 2005. The setting up of the NSC followed the decision of the Cabinet to accept the recommendation of the **Rangarajan Commission**, which reviewed the Indian statistical system in 2001. **Hence, statement 1 is correct.**
- The NSC was initially constituted in 2006, to serve as a **nodal and empowered body for all core statistical activities of the country, to evolve, monitor and enforce statistical priorities and standards and to ensure statistical coordination**. Hence, **statement 3 is correct.**
- It has one part-time Chairperson and four part-time members, each having a specialisation and experience in specified statistical fields. Besides, Secretary, Planning Commission, is an ex-officio member of the Commission. **The Chief Statistician of India is the Secretary to the Commission.** He is also the Secretary to the Government of India in the Ministry of Statistics and Programme Implementation. **Hence, statement 2 is not correct.**

Q 20.C

- Sarojini Naidu was born in Hyderabad on 13 February 1879. Her father, Aghorenath Chattopadhyay, was a Bengali Brahmin who was the principal of Nizam's College in Hyderabad. She was educated in Madras, London, and Cambridge. Following her time in England, where she worked as a suffragist, she was drawn to the Indian National Congress movement for India's independence from British rule.
- She became a part of the Indian nationalist movement and became a follower of Mahatma Gandhi and his idea of swaraj. She was arrested, along with other Congress leaders including Gandhi, Jawaharlal Nehru, and Madan Mohan Malaviya for participating in the 1930 Salt March. **Sarojini was one of the major figures to have led the Civil Disobedience Movement and the Quit India Movement. She faced repeated arrests by the British authorities during the period and even spent over 21 months (1 year and 9 months) in jail. She was appointed the President of the Indian National Congress in 1925 and later became the Governor of the United Provinces in 1947**, becoming the first woman to hold the office of Governor in the Dominion of India.
- Her work as a poet earned her the sobriquet 'the Nightingale of India', or 'Bharat Kokila' by Mahatma Gandhi because of the colour, imagery, and lyrical quality of her poetry. Naidu's poetry includes both children's poems and others written on more serious themes including patriotism, romance, and tragedy. Published in 1912, 'In the Bazaars of Hyderabad' remains one of her most popular poems.
- **Hence option (c) is the correct answer.**

Q 21.A

- To break the ice and to bridge the gulf between the Muslims League and Congress so that they could present common demands before the British for the legislation of the new Act, a group of prominent Muslims, mostly members of the two chambers of the central met at Delhi on March 20, 1927. M.A. Jinnah presided over the session. The proceedings were captured in a camera and lasted for almost seven hours. They knew that the greatest constitutional contention between the Muslim League and Congress was the matter of the electorate. Congress propagated joint electorates as they believed the separate electorates would have weakened the foundations of Indian nationalism. Whereas the Muslim League out of their insecurity of undermined representation were not ready to let go of their demand for a separate electorate. Jinnah and team realized that they could only convince the Congress to accept a common agenda if they withdrew the League's demand for a separate electorate. They discussed and tried to chalk out the conditions following which the system of Joint Electorates could be accepted. After a prolonged discussion, it was unanimously resolved that the League should accept a settlement with the Congress based on certain proposals; the concluded agreement came to be known as the Delhi Proposals. Jinnah and the company declared that they would withdraw the demand of Separate Electorates provided the following demands would be accepted by the Congress: **Hence option 1 is not correct.**
- Reservation of seats according to the population of different communities in the Punjab and Bengal.
- Muslims should be given 1/3rd representation in the Central Legislature. **Hence option 2 is not correct.**
- Sind should be separated from Bombay and should be constituted into an independent province. Reforms should be introduced in the North-West Frontier Province and Baluchistan on the same footing as in any other province of India. (formation of these new Muslim majority provinces) **Hence option 3 is correct.**

Q 22.C

- The thermal classification scheme of Hutchinson and Löffler (1956) and Hutchinson (1957) is commonly used. This scheme first divides lakes into classes based on those that undergo complete circulation and those that do not.

- **Amictic lakes** are permanently ice-covered and do not circulate. Amictic, perennially ice-covered lakes are rare and largely limited to Antarctica or, more rarely, to very high mountains.
- **Holomictic lakes** circulate throughout the entire water column at some time during the calendar year due to the breakdown of thermal stratification and wind power and the mixing is complete or partial. The circulation homogenizes oxygen and nutrition concentrations in the water. For example: Prashar lake in Himachal Pradesh.
- **Monomictic lakes** only circulate once during the year.
 - **Cold Monomictic Lakes:** Lakes with water temperatures never greater than 4°C and ice-covered most of the year with only one period of circulation in the summer at or below 4°C are called cold monomictic lakes. **For example: Pangong Tso**
 - **Warm Monomictic Lakes:** In warm monomictic lakes, temperatures do not drop below 4°C; these lakes circulate freely in the winter at or above 4°C, and they stratify stably in the summer. **For example: Manasbal lake in Jammu and Kashmir.**
- **Dimictic lakes** have a summer stratification and also a winter stratification under the ice, circulating only during the spring and fall. In northern temperate latitudes most lakes are dimictic, i.e. they circulate twice a year, in spring and autumn
- **Polymictic lakes** stratify irregularly throughout the year, being either very large lakes in colder climates that have minimal ice cover during the winter (cold polymictic) or lakes in tropical or sub-tropical regions that stratify irregularly throughout the year (warm polymictic).
- **Meromictic lakes** do not undergo complete circulation: often the lower portion has a chemically-induced density difference with the upper waters and is perpetually separated from the overlying water. In such a lake, circulation is possible only within a layer, so turnovers from top to bottom do not occur. **For example: Pulicat lake. Hence option (c) is the correct answer.**

Q 23.A

- **The Sargasso Sea:**
 - The Sargasso Sea, located entirely within the Atlantic Ocean, is the only sea without a land boundary. **Hence statement 1 is correct and statement 2 is not correct.**
 - It is a vast patch of ocean named for a genus of free-floating seaweed called Sargassum.
 - While there are many different types of algae found floating in the ocean all around world, the Sargasso Sea is unique in that it harbors species of sargassum that are 'holopelagic' — this means that the algae not only freely floats around the ocean, but it reproduces vegetatively on the high seas. Other seaweeds reproduce and begin life on the floor of the ocean.
 - **While all other seas in the world are defined at least in part by land boundaries, the Sargasso Sea is defined only by ocean currents.**
 - ✓ It lies within the Northern Atlantic Subtropical Gyre.
 - ✓ The **Gulf Stream** establishes the Sargasso Sea's western boundary, while the Sea is further defined to the **north by the North Atlantic Current**, to the **east by the Canary Current**, and to the **south by the North Atlantic Equatorial Current**.



Q 24.B

- Vaishali is a great Buddhist pilgrimage and also the birthplace of Lord Mahavira. It is said that the Buddha visited this place thrice and spent quite a long time here. The Buddha also delivered his last sermon at Vaishali and announced his Nirvana here. After his death, **Vaishali also held the second Buddhist Council.**
- Mahavira, the last Tirthankar of Jainism, was born in Kundupur near Vaishali. So, Vaishali is a great Buddhist pilgrimage and also the birthplace of Lord Mahavira.
- The great Lichchavi clan ruled **Vaishali in the sixth century BC (the Mahajanapada period)**, and the empire extended up to the hills of Nepal. The Lichchavi state is considered to be the first republican state of Asia. According to the Jataka stories, (Buddhist story books giving the account of different births of the Buddha), Vaishali was ruled by some 7707 kings of the Lichchavi clan. Ajatshatru, the great Magadha King, annexed Vaishali in the fifth century BC and after that Vaishali gradually lost its glory and power.
- **Hence option (b) is the correct answer.**

Q 25.D

- According to the notification of the central government, EPR on waste oil applies to producers and bulk generators (like industry, railways, transport companies, power transmission companies, etc.) The notification also provides for the registration of stakeholders, including producers, collection agents, recyclers, and waste oil importers, on the Central Pollution Control Board's (CPCB) online portal. **Hence statement 1 is correct.**
- Waste oil contains toxic substances such as benzene, lead, zinc, and cadmium, in addition to impurities such as dirt, metal parts, and water as a result one liter of used oil can contaminate one million liters of fresh water - a year's supply for 50 people. Globally, the massive consumption of oil after extraction from the earth, processing, manufacturing, transportation, and disposal contributes substantially to the release of greenhouse gases into the atmosphere thereby increasing pollution. **Hence statement 2 is correct.**

For producers of base oil or lubrication oil, the target prescribed in the following Table, -

Sl. No.	Year.	Used oil Recycling Target.
(1)	(2)	(3)
(i)	Extended Producer Responsibility obligation of the Year 2024-2025 (the year in which this Chapter comes into force)	5% of the base oil or lubrication oil sold or imported in the Year 2022-2023.
(ii)	Extended Producer Responsibility obligation of the Year 2025-2026.	10% of the base oil or lubrication oil sold or imported in the year 2023-2024.
(iii)	Extended Producer Responsibility obligation of the Year 2026-2027.	20% of the base oil or lubrication oil sold or imported in the year 2024-2025.
(iv)	Extended Producer Responsibility obligation of the Year 2027-2028.	20% of the base oil or lubrication oil sold or imported in the year 2025-2026.
(v)	Extended Producer Responsibility obligation of the Year 2028-2029.	40% of the base oil or lubrication oil sold or imported in the year 2026-2027.
(vi)	Extended Producer Responsibility obligation of the Year 2029-2030.	40% of the base oil or lubrication oil sold or imported in the year 2027-2028.
(vii)	Extended Producer Responsibility obligation for the year 2030-2031 (Y) onwards shall be 50% of the base oil or lubrication oil sold or imported in the year (Y-2)	
(viii)	For units established after 1 st April, 2024, the extended producer responsibility obligation will start after two years from the end of the financial year in which the unit was established and will be as per the target prescribed above.	

- **Hence statement 3 is correct.**
- **Hence option(d) is the correct answer.**

Q 26.A

- **Chandrayaan-3:**
 - Chandrayaan-3 is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving on the lunar surface. It consists of Lander and Rover configuration. It will be launched by **LVM3 from SDSC SHAR, Sriharikota.**

- **The propulsion module:**
 - ✓ The propulsion module will carry the lander and rover configuration till 100 km lunar orbit.
 - ✓ **The propulsion module has a Spectro-polarimetry of HAbitable Planet Earth (SHAPE) payload to study the spectral and Polari metric measurements of Earth from the lunar orbit.** Hence option (a) is the correct answer.
- **Lander payloads:**
 - ✓ Chandra's Surface Thermophysical Experiment (ChaSTE) to measure the thermal conductivity and temperature;
 - ✓ Instrument for Lunar Seismic Activity (ILSA) for measuring the seismicity around the landing site;
 - ✓ Langmuir Probe (LP) to estimate the plasma density and its variations. A passive Laser Retroreflector Array from NASA is accommodated for lunar laser ranging studies.
- **Rover payloads:**
 - ✓ Alpha Particle X-ray Spectrometer (APXS) and Laser Induced Breakdown Spectroscope (LIBS) for deriving the elemental composition in the vicinity of the landing site.

Q 27.B

- **The inaugural edition of the joint military exercise "Desert Cyclone 2024" will be kicked off on January 2,** marking a significant milestone in the strategic partnership between India and the United Arab Emirates (UAE).
- The two-week-long exercise, scheduled from January 2 to January 15, was conducted in the arid terrains of Mahajan, Rajasthan, primarily focusing on enhancing interoperability and sharing best practices in Urban Operations, according to the Indian Army.
- The inaugural edition of **India-Saudi Arabia Joint Military Exercise 'SADA TANSEEQ'** is scheduled to be conducted from 29th January to 10th February 2024 at Mahajan, Rajasthan. The Exercise aims to train troops of both sides for Joint Operations in Semi Desert terrain under Chapter VII of the United Nations Charter. The Exercise will enable both sides to share their best practices in the tactics, techniques, and procedures of conducting operations in the sub-conventional domain. It will facilitate developing interoperability, bonhomie, and camaraderie between troops from both sides.
- **Al Najah** is the military exercise between India and Oman focusing on Counter Terrorism Operations, Regional Security Operations, and Peace Keeping Operations under the United Nations charter apart from organizing joint physical training schedules, tactical drills, techniques, and procedures.
- **Hence, option (b) is the correct answer.**

Q 28.B

- GDP is the final value of the goods and services produced within the domestic territory of a country during a specified period of time, normally a year. GDP growth rate is an important indicator of the economic performance of a country.
- Domestic territory, as used in national accounting, has a special meaning and is much bigger than the political frontiers of a country. According to United Nation, "**Economic territory is the geographical territory administered by a government within which persons, goods and capital circulate freely.**"
- The following items are included in domestic territory:
 - Territory lying within the political frontiers of a country. It includes territorial waters also.
 - Ships and aircrafts owned and operated by the residents between two or more countries. For Instance, Indian ships moving between UK and USA regularly or passenger planes operated by Air India between Russia and Japan are parts of domestic territory of India. **Hence option 2 is correct.**
 - Fishing vessels, oil and natural gas rigs and floating platforms operated by the residents of a country in the international waters or engaged in extraction in areas where the country has exclusive rights of operation.
 - Embassies, consulates and **military establishments of the country located abroad.** To illustrate, Indian embassies in Russia, America and other countries will form parts of domestic territory of India. **Hence option 1 is correct.**
- What domestic territory does not include:
 - Territorial enclaves (like embassies) used/administered by foreign governments. **Hence option 3 is not correct.**
 - International organisations which are physically located within geographical boundaries of a country. Their offices form part of international territory.

Q 29.D

- The **World Health Organization (WHO)** is a specialized agency of the United Nations responsible for international public health. Its membership is open to all the nations states. **It is not necessary to be a member of UN to become its member.** WHO constitution specifies different criteria for different scenarios. Hence, statement 1 is not correct.
 - Article 4: Members of the United Nations may become Members of the Organization by signing or otherwise accepting this Constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes.
 - Article 5: The States whose Governments have been invited to send observers to the International Health Conference held in New York, 1946, may become Members by signing or otherwise accepting this Constitution.
 - States which do not become Members in accordance with Articles 4 and 5 may apply to become Members and shall be admitted as Members when their application has been approved by a simple majority vote of the Health Assembly.
- A **Participating State may withdraw from participation in the operation of the Agency by notifying the Director-General of the World Health Organization of its intention to withdraw.** Such a notification shall take effect six months after its receipt by the Director-General of the World Health Organization. There are no other laid down provisions for withdrawing the membership by a country. Hence, statement 2 is not correct.
- Recently, the US President announced the withdrawal from WHO. The U.S. Congress itself laid out its own conditions for withdrawal when the government signed on to become a member of WHO in 1948.

Q 30.B

- During the ancient period of India, The state consciously tried to increase income to meet the increased demands in the era of expansion and struggle. It became essential with the tax exemption that was provided to brahmadeyas and devadanas.
- **Also, the king was not allowed to collect revenue from the donated lands. The monarchical state reached to relatively unknown areas with agrarian expansion on an unprecedented scale.**
- The income of the state must have increased through the collection of surplus from hitherto uncultivated and unsettled areas. In between 700-1200 CE, the state charged several taxes and levies on the independent peasants, artisans, merchants, and others.
- The land-grant charters reflect taxes, dues, and levies collected by the state since kings cautiously mentioned their name in the record which was getting transferred to the feudatories.
- **Some important taxes were bhoga, bhaga, kara, uparikara, hiranya, udranga, halikara, samastapratyaya, dasapradha, pravanikara, turuskasanda, aksapatlaprastha, .**
- In addition to these, sometimes a particular king also imposed extra tax/taxes for some special purpose.
- **Hence option (b) is the correct answer.**

Q 31.C

- P/E Ratio or Price to Earnings Ratio is the ratio of the current price of a company's share in relation to its earnings per share (EPS). **Hence statement 1 is correct.**
 - $P/E\text{ Ratio} = (\text{Current Market Price of a Share} / \text{Earnings per Share})$
- Price to Earnings Ratio is one of the most widely-used metrics by analysts and investors across the world. It signifies the amount of money an investor is willing to invest in a single share of a company for Re. 1 of its earnings. For instance, if a company has a P/E Ratio of 20, investors are willing to pay Rs. 20 in its stocks for Re. 1 of their current earnings.
- Hence, when a company demonstrates high P/E Ratio, it means that either the company is overvalued or is on a trajectory to growth. Another interpretation of a high P/E ratio could be that such a company is expected to have increased revenue in the future and speculation of the same by analysts and investors has led to a surge in its current stock prices.
- **On the other hand, a low Price to Earnings Ratio signifies undervaluation of stocks, due to any systematic or unsystematic risk of the market.** Considering a different interpretation of a low P/E ratio, it could also signify that a company shall perform poorly in the future due to which its stock prices are falling in the present. **Hence statement 2 is correct.**

Q 32.B

- In 1945, the United Nations counted 51 Member States. The only previous reform of the UN Security Council (UNSC) that took place was in 1963, when, following the increase in membership through the decolonization process, the number of Member States increased to 117, and the non-permanent members on the Council grew from 6 to 10.
- The United Nations today count 193 Member States, making the current distribution of seats on the Council geographically unbalanced and numerically insufficient for assuring proper representation of the entire UN membership.
- The UN Charter establishes (Articles 108-109), that any reform of the Charter necessarily requires no less than 2/3 of favorable votes of the Members of the General Assembly and their ratification in accordance with their respective constitutional process (including all 5 permanent members).
- Within the Inter-Governmental Negotiations, Italy exerts the role of “focal point” of the “Uniting for Consensus” Group (UfC).
 - UfC is a sizeable group of Countries, from every region, that share key principles, especially in opposing new permanent national seats. While the current status of the five permanent members is rooted in the historical circumstances following the end of the Second World War, UfC Countries are against any reform that would envisage the creation of additional and unjustifiable privileged positions within the international community, to the detriment of the general interest of the UN membership.
 - **Members: Argentina, Canada, Colombia, Costa Rica, Italy, Malta, Mexico, Pakistan, Republic of Korea, San Marino, Spain, Turkey. Hence option 3 is not correct.**
- The G4 (Brazil, India, Japan, and Germany) proposes expanding UNSC membership from 15 to 25 by adding six permanent members and four non-permanent members, with the objective of the G4 obtaining permanent membership. The G-4 agreed to forego their right to the veto for at least 15 years. **Hence option 1 is correct.**
- The L.69 group is of pro-reform member states, including primarily developing countries from Africa, Latin America and the Caribbean, Asia, and the Pacific.
 - The Group is bound by the firm conviction that expansion in both the permanent and non-permanent categories of membership of the UNSC is imperative to better reflect contemporary world realities.
 - The group currently has 42 countries as its members. **India is also a member of the group.** The grouping, which counts numerous African, Latin American, and Asian countries among its members, was formed in 2007. **Hence option 2 is correct.**
- AU Ezulwini Consensus- the African Union releases its report that demands at least two permanent seats and five non-permanent seats to be allocated by the AU. In addition, the AU set forth that either all permanent members—including the new permanent members—must have the right to the veto; if not, then no permanent members may have the right to the veto.

Q 33.C

- Payment banks are differentiated banks, with main objective of payment banks is to widen the spread of payment and financial services to small businesses, low-income households, and migrant labor workforce in a secure technology-driven environment.
- These banks can accept a restricted deposit, which is currently limited to ₹200,000 per customer. They **can accept demand deposits** in the form of savings and current accounts. However, they **cannot accept time and NRI deposits.** **Hence statement 1 is correct.**
- These banks **cannot issue loans and credit cards.** However, they can issue ATM cards or debit cards and provide online or mobile banking services. **Hence statement 2 is correct.**

Q 34.B

- The Snow Leopard Population Assessment in India (SPA) Program is the first-ever scientific exercise that reports the Snow leopard population of 718 individuals in India. It is a first-of-its-kind, four-year-long estimation exercise. The exercise involved setting up cameras, or ‘camera traps,’ in 1,971 locations and surveying 13,450 km worth of trails which teams surveyed for recording signs of snow leopards such as scat, hair, and other body markers. **Hence statement 1 is correct.**
- The Wildlife Institute of India (WII) is the National Coordinator for this exercise which was carried out with support the support of all snow leopard range states and two conservation partners, the Nature Conservation Foundation, Mysuru, and WWF-India. **Hence statement 2 is correct.**

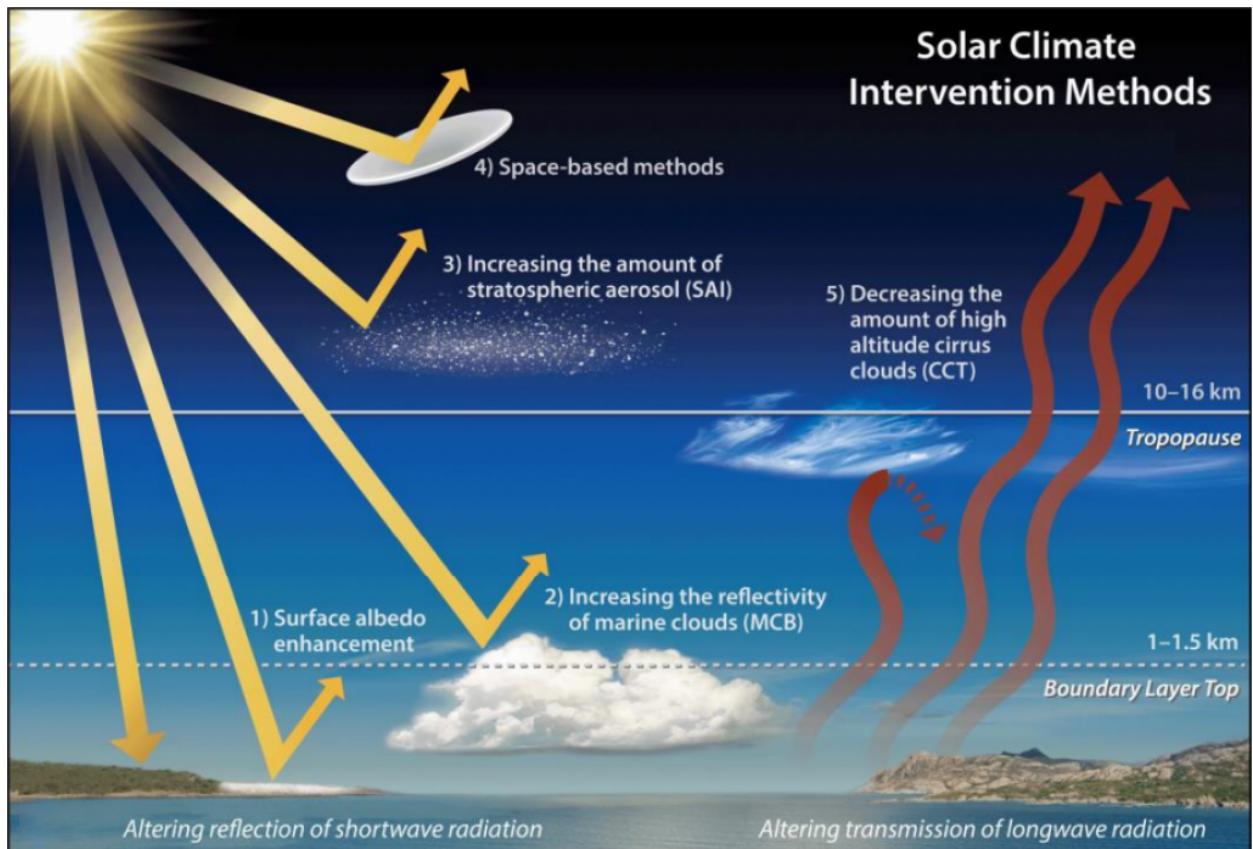
- Based on data analysis, the estimated population of snow leopards in different states are as follows: Ladakh (477), Uttarakhand (124), Himachal Pradesh (51), Arunachal Pradesh (36), Sikkim (21), and Jammu and Kashmir (9). **Hence statement 3 is not correct.**
- Hence option (b) is the correct answer.**

Q 35.D

- The Poona Pact refers to the agreement signed in 1932 to provide the depressed classes with the reservation of the electoral seats in the legislature. **It was signed by Madan Mohan Malviya on behalf of Mahatma Gandhi and B.R. Ambedkar at Yerwada Central Jail in Pune. Hence statement 1 is not correct.**
- Instead of separate electorates, the Poona Pact established a system of reserved seats for the Scheduled Castes within the general electorate. The Hindu joint electorate was retained with reserved seats for untouchables who were given greater representation than by MacDonald. 148 seats were reserved for the Depressed Classes in the provincial legislatures against 71 seats given by the Communal Award. 18% of the total seats of the general electorate in the central legislature were to be kept for the Depressed Classes. **Hence statement 2 is not correct.**
- Based on the recommendations of the Indian Franchise Committee (Lothian Committee), and Ambedkar's efforts, Ramsay MacDonald announced the Communal Award in August 1932. It was based on the concept of separate electorates, which had already been established by the British government through the Morley-Minto Reforms and the Montagu-Chelmsford Reforms. The features of the Award and the reactions against it are as follows. The Poona Pact was accepted by the government as an amendment to the Communal Award. **Hence statement 3 is not correct.**

Q 36.D

- A recently released report by the US government highlights the need for comprehensive research and a governance framework to assess the risks and benefits associated with Solar radiation management (SRM).
- Solar radiation management is a form of climate engineering that aims to reduce global warming by reflecting some of the sun's energy back into space before it can heat up the Earth. Hence option (d) is the correct answer.**
- Some of most discussed methods of SRM:**
 - Researchers from the U.S. have proposed that **billions of tonnes of dust can be launched from the moon to a Lagrange point** – a point in space where the earth's and the Sun's gravitational fields cancel each other out. The feat is obviously beset by severe technical and economic challenges, yet there is interest in it.
 - Stratospheric Aerosol Injection (SAI):** This involves injecting reflective particles, such as sulfate aerosols, into the upper atmosphere (stratosphere), where they would scatter some of the incoming solar radiation back into space.
 - This would mimic the cooling effect of volcanic eruptions, which also release aerosols into the stratosphere.
 - Marine Cloud Brightening (MCB):** This involves spraying fine droplets of seawater or other substances into low-level clouds (marine stratocumulus) over the oceans, where they would act as cloud condensation nuclei and increase the reflectivity and persistence of the clouds.
 - This would enhance the cooling effect of clouds, which already reflect about 20% of the incoming solar radiation.
 - MCB is considered to be more localized and reversible than SAI, but also more technically challenging and dependent on weather conditions.
 - Space Sunshades:** This involves placing large mirrors or screens in orbit around the Earth or at a stable point between the Earth and the sun (Lagrange point 1), where they would block or deflect some of the incoming solar radiation.
 - This would reduce the amount of solar energy reaching the Earth's surface.
 - Space sunshades are considered to be more controllable and adjustable than SAI or MCB, but also more expensive and complex to deploy and maintain.



Q 37.D

- **Ankasamudra Bird Conservation Reserve** is a humanmade Village Irrigation Tank built centuries back and is spread over an area of 98.76ha (244.04 acre) adjoining the Ankasamudra village. It is an ecologically important wetland, rich in biodiversity, comprising over 210 species of plants, 8 species of mammals, 25 species of reptiles, 240 species of birds, 41 species of fishes, 3 species of frogs, 27 species of butterflies and 32 species of odonates.
- **Magadi Kere Conservation Reserve**, is a human-made wetland with an area of nearly 50 hectares which was constructed to store rainwater for irrigation purposes. It is home to over 166 species of birds, of which 130 are migratory. The wetland harbours two vulnerable species, namely Common pochard (*Aythya ferina*) and River tern (*Sterna aurantia*) and four near-threatened species, namely Oriental Darter (*Anhinga melanogaster*), Black-headed Ibis (*Threskiornis melanocephalus*), Woolly-necked Stork (*Ciconia episcopus*) and Painted Stork (*Mycteria leucocephala*).
- **Hirakud Reservoir** is one of the largest man-made reservoirs in India, built across the Mahanadi River by a combination of earth and modern dams of a total length of almost 26 kilometres. The reservoir helps regulate the water level of the river and moderates the impact of floods in the Mahanadi Delta. It provides habitat for over 130 bird species and about 54 fish, with one classified as endangered and six others as near-threatened.
- The second-largest brackish water lake in the country, the beautiful Pulicat Lake lies at the border of the states of Andhra Pradesh and Tamil Nadu on the Barricade Island of Sriharikota. Also called Pazhaverkadu, the lake is popular as a flamingo-watching site and for water activities. The lake is also known for the Pulicat Bird Sanctuary and attracts a number of tourists. Besides flamingos, one can also sight storks and kingfishers. **Hence, option (d) is the correct answer.**
- The Ankasamudra Bird Conservation Reserve, Aghanashini Estuary, Magadi Kere Conservation Reserve from Karnataka and Magadi Kere Conservation Reserve and Longwood Shola Reserve Forest from Tamil Nadu were added to the Ramsar list recently.

Q 38.D

- **Recent Context:** In a landmark announcement at the COP28 (1st December 2023), the Indian PM launched the 'Green Credit Initiative,' a pathbreaking program aimed at reshaping global environmental policies. He also launched the official portal of the Green Credit Initiative at COP28.
- To take ahead the 'LiFE' - 'Lifestyle for Environment' movement announced by the Prime Minister in 2021, the Ministry of Environment, Forest and Climate Change introduced Green Credit Programme (GCP) in 2023.

- GCP is an innovative market-based mechanism designed to incentivize voluntary environmental actions across diverse sectors, by various stakeholders like individuals, communities, private sector industries, and companies. Hence statement 1 is correct.
- The Indian Council of Forestry Research and Education (ICFRE) serves as the GCP Administrator, responsible for program implementation, management, monitoring, and operation. Hence statement 3 is correct.
- The GCP will cover 8 types of activities:
 - Tree plantation which is meant to promote activities for increasing the green cover across the country.
 - Water management is meant to promote water conservation, water harvesting, and water use efficiency or water savings, including treatment and reuse of wastewater.
 - Sustainable agriculture is meant to promote natural and regenerative agricultural practices and land restoration to improve productivity, soil health, and nutritional value of food produced.
 - Waste management is meant to promote circularity, sustainable and improved practices for waste management, including collection, segregation, and environmentally sound management.
 - Air pollution reduction is meant to promote measures for reducing air pollution and other pollution abatement activities.
 - Mangrove conservation and restoration, which is meant to promote measures for conservation and restoration of mangroves.
- In its initial phase, the GCP focuses on two key activities:
 - Water conservation and
 - Afforestation
- The Green Credit Registry and trading platform, being developed by ICFRE along with experts, would facilitate the registration and thereafter, the buying and selling of Green Credits. Hence statement 4 is correct.
- It is important to note that the Green Credit program operates independently of the carbon credits provided under the Carbon Credit Trading Scheme, 2023, which is governed by the Energy Conservation Act of 2001. Hence statement 2 is correct.

Q 39.C

- Warren Hastings took charge as the Governor-General of Bengal at a critical period of the British rule when the British were to encounter the powerful combination of the Marathas, Mysore, and Hyderabad. He followed a policy of ring-fence which aimed at creating buffer zones to defend the Company's frontiers. Broadly speaking, it was the policy of defence of their neighbours' frontiers for safeguarding their own territories. This policy of Warren Hastings was reflected in his war against the Marathas and Mysore. The chief danger to the Company's territories was from the Afghan invaders and the Marathas.
- To safeguard against these dangers, the Company undertook to organise the defence of the frontiers of Awadh on the condition that the Nawab would defray the expenses of the defending army. The defence of Awadh constituted the defence of Bengal during that time. Thus, the states brought under the ring-fence system were assured of military assistance against external aggression—but at their own expense. In other words, these allies were required to maintain subsidiary forces which were to be organised, equipped, and commanded by the officers of the Company who, in turn, were to be paid by the rulers of these states.
- The ring-fence states were required to maintain subsidiary forces that were to be organised, equipped, and commanded by Company officers who were to be paid by the rulers of these states. British never forgot about their imperial ambitions, as a result, their interactions with native states were regulated by their own selfish interests, which changed over time.
- Hence option (c) is the correct answer.

Q 40.D

- The Gaia Hypothesis proposed by James Lovelock (1972) suggests that living organisms on the planet interact with their surrounding inorganic environment to form a synergistic and self-regulating system that created, and now maintains, the climate and biochemical conditions that make life on Earth possible. Gaia bases this postulate on the fact that the biosphere, and the evolution of organisms, affect the stability of global temperature, salinity of seawater, and other environmental variables.
- The scientific investigation of the Gaia hypothesis focuses on observing how the biosphere and the evolution of life forms contribute to the stability of global temperature, ocean salinity, oxygen in the atmosphere, and other factors of habitability in a preferred homeostasis. Initially received with hostility by

the scientific community, it is now studied in the disciplines of geophysiology and Earth system science, and some of its principles have been adopted in fields like biogeochemistry and systems ecology. This ecological hypothesis has also inspired analogies and various interpretations in social sciences, politics, and religion under a vague philosophy and movement.

- Hence option (d) is the correct answer.

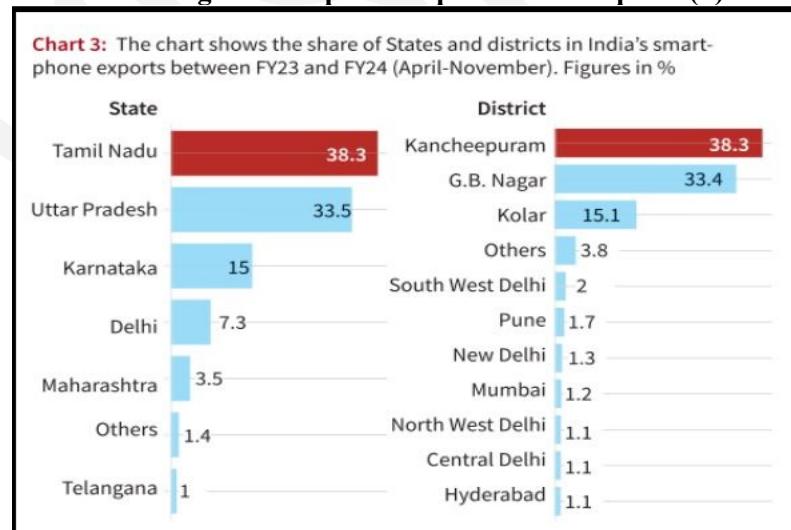
Q 41.B

- **Description of the Large Hadron Collider (LHC):**
 - The Large Hadron Collider (LHC) is a giant, complex machine built to study particles that are the **smallest known building blocks of all things**. Hence statement 3 is not correct.
 - **It is the world's largest and most powerful particle accelerator and collider**. Hence statement 1 is correct.
 - **It has been developed by the European Organisation for Nuclear Research, commonly known as CERN**. Hence statement 2 is correct.
 - Structurally, it is a 27-km-long track loop buried 100 meters underground on the Swiss-French border.
 - It fires two beams of protons almost at the speed of light in opposite directions inside a ring of superconducting electromagnets.
 - The magnetic field created by the superconducting electromagnets keeps the protons in a tight beam and guides them along the way as they travel through beam pipes and finally collide.
 - The LHC uses liquid helium to keep its critical components ultracold at minus 271.3 degrees Celsius.
- **Previous Runs and Discoveries:**
 - The LHC's first run led to the discovery of the Higgs boson or the 'God Particle' in 2012.
 - The second run produced five times more data than the first run.
 - The third run aims to produce 20 times more collisions than the first run.
- **Exploration of 'New Physics':**
 - Scientists are using the LHC data to look beyond the Standard Model of Particle Physics.
 - The hope is to further the understanding of phenomena like dark matter, which makes up most of the universe but is completely invisible.

Q 42.D

- In recent times, India has laid much emphasis on smartphone exports. The Prime Minister lauded phone exports as they crossed the \$5 billion mark. The government credited the Production Linked Incentive scheme for major smartphone companies shifting their suppliers to India. These were in line with the ambitious target set in the National Policy on Electronics 2019, that India will be exporting 600 million mobile phones worth \$110 billion by 2025.
- Within India, Tamil Nadu leads smartphone exports with close to **38% of India's mobiles being sent out from Kancheepuram**. **Gautam Buddha Nagar of Uttar Pradesh and Kolar in Karnataka** are other districts leading in smartphone exports. Hence option (d) is the correct answer.

Chart 3: The chart shows the share of States and districts in India's smartphone exports between FY23 and FY24 (April-November). Figures in %



Q 43.A

- Recently, the RBI has announced the extension of the Prompt Corrective Action (PCA) framework to Government Non-Banking Financial Companies (NBFCs), excluding those in the Base Layer, starting from October 1, 2024.

- Prompt Corrective Action is a system that the RBI imposes on banks showing signs of financial stress. The regulator considers banks as unsafe if they fail to meet the standards on certain financial metrics or parameters.
- The PCA Framework, established by the RBI in 2002, ensures the stability of banks and NBFCs.
- The PCA framework applies to: - All Scheduled Commercial Banks except **Regional Rural Banks, Payment Banks, and Small Finance Banks**. Hence 2 is not correct.
- The framework will apply to all banks operating in India, including foreign banks operating through branches or subsidiaries based on breach of risk thresholds of identified indicators. Hence statement 1 is correct.
- In 2021, the RBI revised the PCA Framework for scheduled commercial banks, round capital, asset quality and leverage will be key areas, earlier asset quality and profitability were the key areas for monitoring under framework. Hence statement 3 is not correct.
- Role of RBI in PCA Framework:-** In governance-related actions, the RBI can supersede the board under Section 36ACA of the Banking Regulation (BR) Act, 1949.- Amendment to Section 45 of the BR Act enables the Reserve Bank to reconstruct or amalgamate a bank, with or without implementing a moratorium, with the approval of the Central government.- The RBI, as part of its mandatory and discretionary actions, may also impose appropriate restrictions on capital expenditure, other than for technological upgradation within Board approved limits, under the revised PCA.

Q 44.C

- India's Obscenity Laws:** Sections 292, 293, and 294 of the Indian Penal Code (IPC) deal with the offense of obscenity.
- The judiciary's point of view:** The Hicklin test was employed by the judiciary in 2014 to evaluate whether something is obscene or not. However, the Supreme Court abolished the Hicklin Test in 2014 while hearing the case of Aveek Sarkar & Anr versus State Of West Bengal and Anr, which involved the publication of a semi-nude photograph of Boris Becker and his fiancee.
- In its verdict, the court declared "when assessing as to whether a particular photograph, an article or book is obscene, reference must be made to the contemporary mores and national norms and not the standard of a group of vulnerable or sensitive persons".
- Sharing indecent pictures in a group on WhatsApp can cause the sender to be prosecuted under Section 67 as well as Section 67A of the IT Act. As per Section 354A of the IPC showing pornography to an individual can be considered sexual harassment. Even if the consent of the receiver is taken, sharing nude pictures is illegal. It cannot be used as a defense by the sender.**
- Hence option (c) is the correct answer.

Q 45.C

- The Reserve Bank of India (RBI) gives temporary loan facilities to the central and state governments. This loan facility is called Ways and Means Advances (WMA).**
- The Ways and Means Advances scheme was introduced in 1997. WMA scheme was introduced to meet temporary mismatches in the receipts and payments of the government. The government can avail of immediate cash from the RBI (if required). But it has to return the amount within 90 days. Interest is charged at the existing repo rate.
- If the WMA exceeds 90 days, it would be treated as an overdraft (the interest rate on overdrafts is 2 percentage points more than the repo rate). The limits for Ways and Means Advances are decided by the government and RBI mutually and revised periodically.
- Hence, option (c) is the correct answer.

Q 46.C

- Recent Context:** Researchers have developed a new electronic soil that was found to increase the growth of barley seedlings by 50 percent in a new study.
- eSoil:**
 - eSoil is an electrically conductive cultivation substrate specifically designed for hydroponic growth. Hence option (c) is the correct answer.
 - It was developed by the Electronic Plants group at Linkoping University and consists of cellulose, a biopolymer, mixed with a conductive polymer called PEDOT. This combination allows for the stimulation of root systems using low-power bioelectronic scaffolding.
 - Hydroponics is a soilless cultivation method that uses water-based nutrient solutions or aggregate substrates like coconut coir or perlite.

- eSoil is tailored for use in hydroponic systems, offering advantages such as reduced water consumption, efficient nutrient utilization, and controlled growth conditions.
- Unlike traditional soils or genetically modified soils, eSoil provides a sustainable alternative for hydroponic cultivation, addressing concerns associated with non-biodegradable substrates like mineral wool. It enhances plant growth rates through electrical stimulation while minimizing energy consumption and eliminating the risks associated with high-voltage systems.
- Overall, eSoil represents a promising innovation in agriculture, particularly in urban environments and areas with limited arable land, offering a more resource-efficient and sustainable approach to food production.

Q 47.B

- UN recognizes Indian government initiative to restore Ganges River under Namami Gange, with special award. Hence option (b) is the correct answer.
 - Effort to revive the river and surrounding basin, home to 520 million people, honoured as World Restoration Flagship.
 - Initiative now eligible to receive United Nations support, funding or technical expertise.
- The UN designated the push, which has so far restored about 15 per cent of the river's length, as one of its inaugural World Restoration Flagships. These initiatives, which are eligible to receive UN support, funding or technical expertise, showcase how environmental advocates are mending damaged ecosystems across the planet. Government of India (GoI) has launched the Namami Gange Programme in 2014-15, to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga and its tributaries.
 - The Ganges basin is home to 520 million people along with more than 25,000 species of plants and animals. The region is responsible for 40 per cent of India's gross domestic product and its forests are also an important store of carbon, which if released would contribute to the climate crisis.
- The effort and other flagship initiatives were selected under the banner of the United Nations Decade on Ecosystem Restoration, a global movement coordinated by the United Nations Environment Programme (UNEP) and the United Nations Food and Agriculture Organization (FAO). It is designed to prevent and reverse the degradation of natural spaces across the plane

Q 48.B

- A chargesheet is a formal document that contains a list of charges or accusations against an individual or legal entity. It is typically used in legal proceedings, such as criminal cases or disciplinary actions.
- The primary purpose of a chargesheet is to:
 - Clearly outline the specific offenses or misconduct being alleged against the accused.
 - Provide the accused with notice of the charges they face.
 - Allow the accused to prepare their defense and respond to the allegations.
- The Supreme Court of India bench, in a recent judgment, ruled that chargesheets are private documents and the state is not obligated to make them publicly available. Hence, statement 1 is not correct.
 - The court held that chargesheets are not public documents under Section 2(20) of the Right to Information Act (RTI Act), 2005. Chargesheets contain sensitive information about accused persons, witnesses, and ongoing investigations.
 - The court recognized the privacy rights of accused persons and witnesses. Making chargesheets publicly available could infringe upon their privacy.
 - The state has the discretion to release chargesheets in certain circumstances, such as when it is necessary for public interest or to facilitate the administration of justice. However, this is not a legal obligation.
- Default bail is the bail granted by the police or court to an accused person as a matter of right, before the filing of a chargesheet.
 - The right to default bail is lost after the filing of a chargesheet. Hence, statement 2 is correct.
- An FIR is the initial report of a crime made to the police.
 - A Chargesheet often incorporates multiple FIRs that have been filed against an individual or organization. These FIRs are the initial reports of the alleged crimes, usually filed by the victims or complainants. Hence, statement 3 is correct.

Q 49.D

- **The President is elected not directly by the people but by members of the electoral college consisting of:**
 - the elected members of both the Houses of Parliament
 - the elected members of the legislative assemblies of the states; and
 - the elected members of the legislative assemblies of the Union Territories of Delhi and Puducherry
- Thus, the nominated members of both of Houses of Parliament, the nominated members of the state legislative assemblies, **the members (both elected and nominated) of the state legislative councils (in case of the bicameral legislature) and the nominated members of the Legislative Assemblies of Delhi and Puducherry do not participate in the election of the President.**
- Thus a **member of the state legislative council is directly disqualified for voting in the election of the President.**
- **Hence option (c) is the correct answer.**

Q 50.A

- The Iqta system was a unique type of land distribution and administrative system introduced during the reign of Iltutmish. In the Iqta system the lands of the Delhi Sultanate were divided into several large and small tracts called Iqta and assigned these Iqtas to the Sultan's soldiers, officers and nobles called as iqtadar or muqti. **Hence statement 1 is not correct.**
- Restrictions on the Iqtadar:
 - The Iqtadar did not always enjoy hereditary powers. The Sultan could take back Iqta from him whenever he pleased.
 - The Iqtadar was liable to be transferred from one place to another.
 - He could not engage himself in wars of extension without the prior approval of the Sultan.
 - He was required to send a part of the booty to the Sultan.
 - He was not allowed to hold his own court.
 - He could not use a canopy or royal emblem.
 - He could not mint coins in his name. **Hence statement 2 is not correct.**
 - He could not read 'Khutba' in his name.
- The landholders were known as iqtadars or muqtis. The duty of muqti was to conduct military campaigns in his area. The muqti is also responsible for maintaining law and order in his/her areas. Muqtis collected revenues from their iqtas as payment. From the time of Balban's reign the muqti was expected to send the balance (fawazil) of the income to the centre after meeting his and the army's expenses. This means that the central revenue department had made an assessment of the expected income of the Iqta, the cost of the maintenance of the army and the muqti's own expenses. **Hence statement 3 is correct.**
- **Hence option (a) is the correct answer.**

Q 51.B

- 'Kurinji, palai, and mullai' are terms from ancient Tamil literature, specifically the Sangam literature, which classify the landscapes of Tamilakam into five eco-regions, each associated with a particular aspect of nature, livelihood, and deity. These classifications reflect the ancient Tamils' deep connection to their environment and its influence on their way of life.
- The Sangam period in Tamilaham was divided into five tinais or eco-zones, each with unique economic activities:
 - Kurinji: Hilly regions focused on hunting and gathering for subsistence.
 - Palai: Arid zones where people resorted to raiding and plundering due to agricultural limitations.
 - Mullai: Pastoral tracts where animal husbandry was practiced.
 - Marudam: Wetlands suitable for the plough agriculture.
 - Neydal: Coastal areas where fishing and salt making were common.
- **Hence option (b) is the correct answer.**

Q 52.A

- The Indian currency is called the Indian Rupee (INR). One Rupee consists of 100 Paise. The symbol of the Indian Rupee is ₹. The design resembles both the Devanagari letter "₹" (ra) and the Latin capital letter "R", with a double horizontal line at the top.
- Legal Tender is a coin or a banknote that is legally tenderable for discharge of debt or obligation. The coins issued by Government of India under Section 6 of The Coinage Act, 2011, shall be legal tender in payment or on account provided that a coin has not been defaced and has not lost weight so as to be less

than such weight as may be prescribed in its case. **Coin of any denomination not lower than one rupee shall be legal tender for any sum not exceeding one thousand rupees. Fifty paise (half rupee) coin shall be legal tender for any sum not exceeding ten rupees.** While anyone cannot be forced to accept coins beyond the limits mentioned above, voluntarily accepting coins for amounts exceeding the limits mentioned above is not prohibited. **Hence statement 2 is not correct.**

- Every banknote issued by Reserve Bank of India (₹2, ₹5, ₹10, ₹20, ₹50, ₹100, ₹200, ₹500 and ₹2000), unless withdrawn from circulation, shall be legal tender at any place in India in payment or on account for the amount expressed therein, and shall be guaranteed by the Central Government, subject to provisions of sub-section (2) Section 26 of RBI Act, 1934. ₹1 notes issued by Government of India are also Legal Tender. ₹500 and ₹1000 banknotes of Mahatma Gandhi series issued up to November 08, 2016 have ceased to be Legal Tender with effect from the midnight of November 8, 2016. **Hence statement 1 is correct.**
- Bank notes are printed at four currency presses, two of which are owned by the Government of India through its Corporation, Security Printing and Minting Corporation of India Ltd. (SPMCIL) and two are owned by the Reserve Bank, through its wholly owned subsidiary, Bharatiya Reserve Bank Note Mudran Private Ltd. (BRBNMPL). The currency presses of SPMCIL are at Nasik (Western India) and Dewas (Central India). The two presses of BRBNMPL are at Mysuru (Southern India) and Salboni (Eastern India). **Hence statement 3 is not correct.**

Q 53.B

- **European Free Trade Association (EFTA):**
 - **Context:** Global Trade Research Initiative (GTRI) released a report titled 'India's FTA Negotiations with European Free Trade Association (EFTA) Countries'
 - India encounters challenges in negotiating a Free Trade Agreement (FTA) with Switzerland and other EFTA nations during the final rounds of talks.
 - **European Free Trade Association (EFTA):**
 - ✓ It is an intergovernmental organization for the promotion of free trade and economic integration between its members.
 - ✓ **It has 4 members: Iceland, Liechtenstein, Norway and Switzerland. Hence option (b) is the correct answer.**
 - ✓ These countries are not part of the European Union.
 - ✓ It was founded by the Stockholm Convention in 1960 by its then-seven Member States (Austria, Denmark, Great Britain, Norway, Portugal, Sweden and Switzerland).

Q 54.C

- A technique of inlaying semi-precious stones in marble is known as Pietra Dura, or we can say that it is the art of carving the stone.
- Pietra Dura was also well known as Parchin Kari in Mughal India. This artwork is regarded as one of the most important and alluring aspects of Mughal art. Such artwork involves expertly cutting, fitting, and polished semi-precious stones like agate, jasper, lapislazuli, and jade.
- The primary purpose of pietra dura artwork is to create decorative stone objects by encrusting stones on abraded marble plates. This technique is valued for its capacity to blend expensive materials creatively.
- The Taj Mahal is the most prominent example of the Pietra Dura in India, credited to the Mughals.
- **Hence option (c) is the correct answer.**

Q 55.D

- During medieval India, there were significant advancements in various fields of science, including mathematics, astronomy, medicine, and technology. Here are some notable scientists and their contributions during this period:
 - **Narayana Pandit - Ganitakumudi:** Narayana Pandit was a mathematician and astronomer who lived in medieval India. He is known for his work "Ganitakumudi," which is a comprehensive treatise on mathematics. The Ganitakumudi covers various topics including arithmetic, algebra, geometry, and astronomy. So, this pair is correct.
 - **Sukracarya - Sukraniti:** Sukracarya, also known as Shukra, was an ancient sage and a revered figure in Hindu mythology. The work Sukraniti attributed to Sukracarya contains a description of how gunpowder can be prepared using saltpeter, sulphur and charcoal in different ratios for use in different types of guns. The principal type of fireworks included those which pierce through the air, produce sparks of fire, blaze with various colors and end with an explosion.

- **Gangadhara - Lilavati Vyakhya:** Gangadhara was a commentator on the mathematical text "Lilavati," authored by Bhaskara II, an eminent mathematician and astronomer of medieval India. Gangadhara's commentary on Lilavati, known as **Lilavati Vyakhya**, is highly regarded for its insights and explanations. Gangadhara also wrote Karamdipika and Suddhantadipika.
- **Jahangir - Tuzuk-i-Jahangir:** Jahangir was the fourth Mughal emperor of India, who ruled from 1605 to 1627. He authored his memoirs, which are famously known as "Tuzuk-i-Jahangiri" or "Memoirs of Jahangir." This autobiographical account provides valuable insights into the political, social, and cultural aspects of Mughal India during his reign. In his work - Tuzuk-i-Jahangir - he recorded his observations and experiments on breeding and hybridization.
- **Hamsadeva compiled a work in the field of Biology entitled Mrga-paksi-sastra** in the thirteenth century. This gives a general, though not always scientific, account of some animals and birds of hunting.
- Nilakantha Jyotirvida compiled Tajik, introducing a large number of Persian technical terms. Faizi, at the behest of Akbar, translated Bhaskara's Bijaganit. Akbar ordered to make Mathematics a subject of study, among others in the education system. Naisiru'd -din-at -tusi was another scholar of Mathematics.
- **Hence option (d) is the correct answer.**

Q 56.B

- **NRI (Non-Resident Indian):** An NRI is an Indian citizen living outside India for a period due to employment, business, education, or any other purpose indicating an indefinite stay abroad.
- **OCI: An Overseas Citizen of India (OCI) is a foreign national of Indian origin who has registered under the Overseas Citizenship of India (OCI) scheme. Hence statement 1 is correct.**
- **Following is the comparison between the two:**
 - **Residential Status:**
 - ✓ NRI: An individual who stays for less than 182 days in India in a financial year is termed NRI for that financial year.
 - ✓ OCI: OCIs can reside in India indefinitely.
 - **Investment Opportunities:**
 - ✓ NRI: NRIs have access to diverse investment options in the countries where they live.
 - ✓ OCI: Similar to NRIs, OCIs enjoy access to most financial instruments and business ventures in India.
 - **Property Ownership:**
 - ✓ NRI: NRIs face restrictions on owning agricultural land.
 - ✓ OCI: OCIs cannot purchase agricultural land in India, though inheritance is allowed with specific permissions.
 - **Taxation: NRIs and OCIs are not subject to the same tax regulations as Indian residents. They are subject to different tax laws and regulations, depending on their residential status and the source of their income.** NRIs are taxed in India on income earned or accrued in India, while OCIs are generally not taxed in India unless their income is sourced from India. **Hence statement 2 is not correct.**
 - ✓ NRI: Income earned outside India is usually not taxable in India.
 - ✓ OCI: Depending on their income sources and residency status, OCIs may face some tax complexities in managing their finances in India and their origin country.
 - ✓ **NRIs are indeed governed by the Foreign Exchange Management Act (FEMA) and the Income Tax Act of India for their financial and taxation matters related to India. However, OCIs may also be subject to certain provisions of FEMA if they engage in financial transactions in India.** However, OCIs may have different taxation rules depending on their residential status and the source of their income. **Hence statement 3 is not correct.**
 - **Citizenship:**
 - ✓ NRI: NRIs are Indian citizens.
 - ✓ OCI: OCIs are foreign nationals who register themselves as OCIs under applicable rules.

Q 57.B

- **Krishnaraja Sagar Dam:**
 - Location: **Located in Karnataka. Hence pair 1 is not correctly matched.**
 - River: Built across the Kaveri River near Mysore in Karnataka.
 - Purpose: Provides irrigation water for agriculture and serves as a source of hydroelectric power generation.

- **Mettur Dam:**
 - Location: **Located in Tamil Nadu. Hence pair 2 is correctly matched.**
 - River: Built across the Kaveri River in the Salem district of Tamil Nadu.
 - Purpose: Mainly used for irrigation, flood control, and hydroelectric power generation.
- **Kabini Dam:**
 - Location: **Located in Karnataka. Hence pair 3 is correctly matched.**
 - River: Built across the Kabini River, a tributary of the Kaveri River, near the town of H.D. Kote in Karnataka.
 - Purpose: Primarily used for hydroelectric power generation and irrigation.

Q 58.A

- **Materials possess an innate resistance to the flow of an electric current,** which leads to a loss of electrical energy and heat. Most materials **retain this resistance even when cooled to a very low temperature** – but some don't. These are the superconductors. They can infinitely conduct a direct current without losing any energy as long as they stay in the superconducting state. (One of the hallmarks of this state is that if it is placed in a weak magnetic field, the material won't allow the field to enter its body.)
- **Superconductivity refers to a state in which a material offers zero, or near-zero, resistance to electric current.** A current is nothing but the movement of charged particles, electrons in most cases, in a particular direction. When the electrons move, they collide and interact, with other atoms in the material. **It is a phenomenon of perfect electrical conductance (i.e. zero resistance) and complete expulsion of magnetic field lines from the interior of a material.** Hence statement 1 is correct.
- As of now, **superconductivity can be achieved only at very low temperatures, more than 250 degrees Celsius below zero, very close to absolute zero which is – 273 degrees Celsius.** Hence statement 2 is not correct.
- The first material to have been discovered to show **superconductive properties was Mercury**, which becomes a **superconductor at close to 270 degrees Celsius below zero**. Most of the other materials commonly used as superconductors – **Lead, Aluminum, Tin, Niobium, and several others** – also become superconducting at comparable temperatures, called critical temperature.

Q 59.A

- **A Joint Parliamentary Committee (JPC) is a committee of members of the Parliament of India, constituted jointly by the Lok Sabha and the Rajya Sabha**, to inquire into a particular matter of public importance. The JPC has the power to summon and examine witnesses, take evidence on oath, and make recommendations to the government.
- The JPC submits its report to the Houses of Parliament, which may then take appropriate action.
- **JPC can have members from both the ruling parties and the opposition. Hence, statement 1 is correct.** By ensuring that the committee has members from both the ruling parties and the opposition, the Parliament can ensure that the committee's findings are impartial and that all viewpoints are represented.
- **The JPC is created by a resolution of either House of Parliament. The resolution must specify the terms of reference of the JPC, the number of members, and the duration of the JPC.** The details regarding membership of the Joint Parliamentary Committee (JPC) and subjects are also decided by Parliament.
 - For example, JPC on Stock Market scam (2001) consisted of 30 members. Hence, statement 2 is incorrect.
- **Prosecution of individuals and cancellation of licences are executive functions and can only be initiated by the government. JPC report can only recommend the prosecution of a particular person.** Hence, statement 3 is incorrect.

Q 60.C

- The Electricity Act, 2003, provides for a roadmap for increasing the share of renewable in the total generation capacity in the country. However, Renewable Energy (RE) sources are not evenly spread across different parts of the country.
- On the one hand there are States (like Delhi) where the potential of RE sources is not that significant. This inhibits State Electricity Regulatory Commissions (SERCs) in these States from specifying higher Renewable Purchase Obligation (RPO). On the other hand there are States (like Rajasthan and Tamil Nadu) where there is very high potential of RE sources. In such States there are avenues for harnessing the RE potential beyond the RPO level fixed by the SERCs. However, the high cost of generation from

RE sources discourages the local distribution licensees from purchasing RE generation beyond the RPO level mandated by the State Commission.

- Renewable Energy Certificates (RECs) are a mechanism for incentivizing producers of electricity from renewable energy sources. **Hence statement 1 is correct.**
- Central Electricity Regulatory Commission (CERC) has notified Regulation on Renewable Energy Certificate (REC) in fulfillment of its mandate to promote renewable sources of energy and development of market in electricity.
- Salient Features of the REC Framework:
 - There will be a central level agency to be designated by the Central Commission for registration of RE generators participating in the scheme.
 - The Central Agency will issue the REC to RE generators.
 - The value of REC will be equivalent to 1 MWh of electricity injected into the grid from renewable energy sources. **Hence statement 2 is correct.**
 - The REC will be exchanged only in the Power Exchanges approved by CERC within the band of a floor price and a forbearance (ceiling) price to be determined by CERC from time to time. **Hence statement 3 is correct.**

Q 61.C

- Local Winds:**
 - Local winds are small-scale wind systems that form and dissipate within a relatively limited area, typically ranging from tens to hundreds of kilometers.
 - They are driven by differences in temperature and pressure over short distances**, unlike global winds influenced by the Earth's rotation and large-scale pressure patterns.
- key characteristics of local winds:**
 - Short-lived:** They typically last for hours to days.
 - Small scale:** They affect a limited geographic area.
 - Varied effects:** They can be warm or cold, wet or dry, depending on their origin and local conditions.
 - Named regionally:** They often have descriptive names specific to the region where they occur.

Local Winds Around The World

Name of the Local Wind	Nature of Wind
Chinook	Hot and Dry wind in Rockies
Foehn	Hot and Dry wind in Alps
Khamsin	Hot and Dry wind in Egypt
Sirocco	Hot and Moist wind from Sahara to Mediterranean Sea
Solano	Hot and Moist wind from Sahara towards Iberian Peninsula
Harmattan	Hot and Dry Wind blowing in West Africa
Bora	Cold and Dry wind blowing outwards from Hungary to Northern Italy
Mistral	Very cold wind (Blows from Alps over France)
Punas	Cold and dry wind blowing down towards the western side of Andes
Blizzard	Coldwinds in Tundra Region
Purga	Cold wind in Russian Tundra
Levanter	Cold wind in Spain
Norwester	Hot wind in New Zealand
Santa Ana	Hot wind in South California

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

Q 62.B

- The Amravati school of art flourished in the region of Andhra Pradesh between the lower valleys of rivers Krishna and Godavari. The main patrons of this art form were the Satavahans but it carried on even later, patronized by their successor Ikshavaku rulers. Sculptures of this school are mainly found on the railings, plinths and other parts of stupas. The thematic representations include the stories from the life of the Buddha. An important characteristic of the Amravati school is the ‘narrative art’. The medallions were carved in such a manner that they depict an incident in a natural way. For example, one medallion depicts a whole story of ‘taming of an elephant by the Buddha’. **Hence statement 1 is correct.**

- The Amaravati School of Art is noted for the use of white marble, not red marble, in its sculptures and stupas. The material used in Amaravati art is distinguished by its distinctive white marble, which differentiates it from other schools. **Hence statement 2 is incorrect.**
- Though nature and floral motifs are present, human figures, especially in the context of Buddha's life and Jataka tales, are more prominent. Among the events of Buddha's life, the most popular to be depicted, are his descent from heaven in the form of a white elephant, Queen Maya's conception, the casting of his horoscope after his birth, the great renunciation, the transportation of Gautam's head-dress to heaven, the scene of temptation, the Naga- Muchalinda protecting the Buddha from the rain with broad-hood, the first sermon, and the mahaparinirvana represented by the stupa. **Hence statement 3 is correct.**

Q 63.D

- **The Basic Structure of the Indian Constitution refers to a doctrine developed by the Indian judiciary through various landmark judgments, particularly the Kesavananda Bharati case (1973), which established that certain fundamental features of the Constitution are immutable and cannot be amended by the Parliament.**
 - **Origins:** The concept of the Basic Structure emerged from the need to safeguard the core principles of the Constitution from arbitrary amendments by the legislature. The doctrine was first articulated in the landmark case of Kesavananda Bharati v. State of Kerala (1973), where the Supreme Court held that while Parliament has the power to amend the Constitution, it cannot alter its basic structure.
 - **Core Principles:** Basic Structure Doctrine does not only encompass specific provisions of the Constitution that are explicitly mentioned. It includes certain core principles and values that cannot be altered through constitutional amendments. These core principles include:
 - ✓ Supremacy of the Constitution
 - ✓ Sovereignty, unity, and integrity of India
 - ✓ Rule of law
 - ✓ Judicial review
 - ✓ Separation of powers between the legislature, executive, and judiciary
 - ✓ Federalism
 - ✓ Secularism
 - ✓ Democratic principles. Hence statement I is not correct.
 - **Judicial Review:** The Basic Structure doctrine grants the judiciary the authority to review constitutional amendments and strike them down if they violate the core principles of the Constitution.
 - ✓ The Supreme Court acts as the guardian of the Constitution and ensures that any amendments do not undermine its basic structure.
 - **Evolution:** The concept of the Basic Structure has evolved over time through judicial interpretations and decisions.
 - ✓ While certain core principles were identified in the Kesavananda Bharati case, the scope of the Basic Structure has expanded through subsequent judgments to include additional principles essential for upholding democracy, equality, and justice.
 - **Limitations:** The Basic Structure doctrine does not provide an exhaustive list of features that constitute the basic structure. It is flexible and adaptable to changing circumstances. Hence statement II is correct.
 - ✓ However, the doctrine imposes limitations on the amending power of the Parliament, ensuring that amendments do not alter the fundamental framework of the Constitution.
 - **Significance:**
 - ✓ The Basic Structure doctrine is significant as it upholds the supremacy of the Constitution and protects the rights and liberties of citizens from arbitrary amendments by the legislature.
 - ✓ It ensures the stability and continuity of the constitutional framework while allowing for necessary reforms through democratic processes.
- **Hence option (d) is the correct answer.**

Q 64.D

- An antecedent river pattern refers to a river system that maintains its course and direction of flow despite changes in the surrounding landscape, such as tectonic uplift, erosion, or the formation of new geological features. This phenomenon occurs when a river's course predates the geological changes that occur in its watershed. Himalayan Rivers mostly have antecedent river patterns. **Hence statement 1 is not correct.**

- River capturing happens due to headward erosion of tributaries. Tributaries of the Himalayan river system like Chambal, Sindh, and Banas are formed due to river capturing. **Hence statement 2 is not correct.**
- Rivers of peninsular India are mostly Superimposed and rejuvenated resulting in trellis, radial and rectangular patterns. Himalayan Rivers on the other hand mostly have dendritic patterns. **Hence statement 3 is not correct.**

Q 65.A

- **The Speaker of the Lok Sabha is the presiding officer of the lower house of the Indian Parliament. The Speaker is elected by the members of the Lok Sabha from among themselves.**
- The Speaker is responsible for safeguarding the rights and privileges of the members of the Lok Sabha.
- The Constitution of India requires the Speaker should be a member of the House.
- **The Speaker is elected from among the Lok Sabha members by a simple majority of members present and voting in the House. Hence, statement 1 is incorrect.**
- The Speaker holds Office from the date of his/her election till immediately before the first meeting of the next Lok Sabha (for 5 years).
- The speaker once elected is eligible for re-election.
- **The Speaker of the Lok Sabha in India enjoys a greater order of precedence than Cabinet Ministers due to several reasons:**
 - The Speaker of the Lok Sabha is placed sixth in the order of precedence, immediately after the President, Vice President, Prime Minister, and Chief Justice of India.
 - Cabinet Ministers are placed seventh in the order of precedence. Hence, statement 2 is correct.
- **The Speaker of the Lok Sabha gives his/her resignation to the Deputy Speaker and not to the President. Hence, statement 3 is incorrect.**

Q 66.B

- The chaparral biome is found in a little bit of most of the continents - the west coast of the United States, the west coast of South America, the Cape Town area of South Africa, the western tip of Australia, and the coastal areas of the Mediterranean. Winters in the chaparral type are cool and wet followed by warm, dry weather for 3 or 4 months until summer rains start. **Hence statement 1 is not correct.**
- **Chaparral vegetation becomes extremely dry by late summer. The wildfires commonly occur during this period** and are necessary for the germination of many shrub seeds and also serve to clear away dense ground cover, thus maintaining the shrubby growth form of the vegetation by preventing the spread of trees. Chaparral returns to its prefire density within about 10 years but may become grassland by too frequent burning. **Hence statement 2 is correct.**
- **Hence option (b) is the correct answer.**

Q 67.A

- **The beneficiaries under the Saksham Anganwadi and Poshan 2.0 scheme are children in the age group of 0-6 years, pregnant women and lactating mothers and adolescent girls in the age group 14-18 years. Hence statement 1 is not correct.**
- **The current Saksham Anganwadi and Poshan 2.0 (erstwhile ICDS) is one of the largest and unique programmes of the Govt. of India for early childhood care and development.**
- Under Saksham Anganwadi and Poshan 2.0, 2 lakh AWCs will be provided Rs40,000 AWCs per year in aspirational districts. AWC would be strengthened, upgraded and rejuvenated for improved nutrition and educational delivery. In FY 2022-23, all 40,000 Saksham Anganwadis have been identified in aspirational districts. **Hence statement 2 is correct.**
- **Saksham Anganwadi and Poshan 2.0 is a centrally sponsored scheme under the Ministry of Women and Child Development.** It is implemented through the State Governments/ UT administrations based on a cost sharing ratio between the Central Government and the State Government. **Hence statement 3 is not correct.**
- **Hence option (a) is the correct answer.**

Q 68.A

- **Unemployment trap is a situation when unemployment benefits discourage the unemployed to go to work.** People find the opportunity cost of going to work too high when one can simply enjoy the benefits by doing nothing.

- While the purpose of social security and welfare systems is to provide relief to the unemployed, they end up providing them with an incentive not to return to work. An unemployment trap arises when opportunity cost of going to work is higher than the income received, discouraging people from returning to work and being productive.
- Hence option (a) is the correct answer.**

Q 69.D

- Recent context:** Scientists are planning to bring back the extinct bird Dodo to Mauritius using Nicobar Pigeon.
- The Nicobar pigeon, native to the Andaman and Nicobar Islands, the Malay Archipelago and some islands of Micronesia, is hailed as one of the most beautiful pigeons in the world. It is found in the Islands of Nicobar, south west peninsular Thailand, Malaysia, Vietnam, Indonesia, Philippines, Solomans and Palau. **Hence statement 1 is not correct.**
 - It is native to the Andaman and Nicobar Islands, the Malay Archipelago and some islands of Micronesia.
 - It nests in large colonies on the trees of dense forests, the female lays one or two eggs in the breeding season. **Hence statement 3 is not correct.**
 - It is draped in a colorful plumage, with hues of green, blue, yellow and copper that explode into a bomb of colors in the sunlight.
 - The bird's feathers are iridescent due to the many layers of keratin air sacs in the feathers.
 - Females Nicobar Pigeons are smaller in size than their male counterpart.
 - DNA studies have shown that it is also the only living cousin of extinct birds like the dodo, the Rodrigues solitaire of Madagascar and the spotted green pigeon of the Pacific Islands.
 - There are two subspecies of Nicobar Pigeon, one is endemic to Palau Island in the Pacific Ocean, and the other subspecies is found in all other parts of its range.
 - It is classified as **Near Threatened in the IUCN Red List** and listed in Appendix 1 of CITES as their numbers in the wild are on the decline. **Hence statement 2 is not correct.**
- Dodo: It is an extinct flightless bird that was endemic to the Island of Mauritius. Dodos were large birds, approximately 3-feet tall.
- Rodrigues solitaire: The Rodrigues solitaire is an extinct flightless bird genetically within the family of pigeons and doves. It was endemic to the island of Rodrigues, in the Indian Ocean and most closely related to the extinct dodo of the subfamily Raphinae.

Q 70.B

- Lala Lajpat Rai was born on 28 January 1865, in a Punjabi Hindu family.
- In 1886, he moved to Hisar and started to practice law and became a founding member of the Bar Council of Hisar along with Babu Churamani. He also founded the Hisar district branch of the Indian National Congress and reformist Arya Samaj.
- To shape the political policy of India to gain independence, he also practiced journalism and was a regular contributor to several newspapers including The Tribune. In 1886, he helped Mahatma Hansraj establish the nationalistic Dayananda Anglo-Vedic School in Lahore.
- In 1914, he quit law practice to dedicate himself to the freedom of India. He was elected President of the Indian National Congress in the Calcutta Special Session of 1920.
- In 1921, he founded Servants of the People Society, a non-profit welfare organization. He was of the view that Hindu society needed to fight its own battle with the caste system, the position of women, and untouchability.**
- Lala Lajpat Rai believed that everyone should be allowed to read and learn from the Vedas irrespective of one's caste or gender.
- When the Simon Commission visited Lahore on 30 October 1928, Lajpat Rai led a non-violent march in protest against it. The superintendent of police, James A. Scott, ordered the police to lathi (baton) charge the protesters and personally assaulted Rai. He did not fully recover from his injuries and died on 17 November 1928.
- The Political Future of India was an influential piece of work written by Lala Lajpat Rai.**
 - This revolutionary book, consisting of 18 chapters, began with defining democratic principles in both European and Indian contexts and analyzed the present condition in India.
 - Then he turned towards the bureaucracy and military and further explained the impacts that the European communities had in the social sphere of the subcontinent, including the princely states.

- It also emphasized the demand for fiscal autonomy for India listing the facts that strengthen such a claim. Mentioning the Rowlatt report, the book further stressed the freedom struggle, especially in Punjab.
- Pointing out the problems in education and the political system in British India, he concluded the book with a comparison note on other nation-states in the world.
- **Hence option (b) is the correct answer.**

Q 71.A

- Pitt's India Act (1784), named for the British Prime Minister William Pitt the Younger, established the dual system of control by the British government and the East India Company, by which the company retained control of commerce and day-to-day administration but important political matters were reserved to a secret committee of three directors in direct touch with the British government; this system lasted until 1858. **Hence statement 1 is not correct.**
- Cornwallis wanted to have the powers of both the governor-general and the commander-in-chief. The Act of 1786 conceded this demand and also gave him the power to override the council's decision if he owned the responsibility for the decision. Later, this provision was extended to all the governors-general. **Hence statement 2 is not correct.**
- The British Charter Act of 1793 was the attempt by the British government to regulate the affairs of the East India Company, which had acquired great power and influence in the Indian subcontinent since its first voyage in the early 17th century. The act provided that
 - The Company, after paying the necessary expenses, interest, dividends, salaries, etc., from the Indian revenues, was to pay 5 lakh pounds annually to the British government.
 - The Company was empowered to give licenses to individuals as well as the Company's employees to trade in India. The licenses, known as 'privilege' or 'country trade', paved the way for shipments of opium to China.
 - The Home Government members were to be paid out of Indian revenues, which continued up to 1919. **Hence statement 3 is correct.**

Q 72.B

- **Recent context:** Maharashtra's Cultural Affairs Minister signed a memorandum of understanding (MoU) with the Victoria and Albert Museum in London to bring back Chhatrapati Shivaji Maharaj's legendary wagh nakh to the state.
- The MoU states that the antique weapon will be handed over to the Government of Maharashtra on a loan basis for a period of three years, during which it will be displayed in museums across the state.
- Literally 'tiger claws', the wagh nakh is a medieval claw-like dagger that was used across the Indian subcontinent. Designed to either fit over the knuckles or be concealed under the palm, the weapon consisted of four or five curved blades affixed to a glove or a bar of some kind. It was a weapon used for personal defense or stealth attack, and could easily slice through skin and flesh.
- The most famous use of the wagh nakh in history comes from the story of Afzal Khan's killing by Shivaji. Khan was a general of Bijapur's Adil Shahi Sultanate.
 - Shivaji killed Afzal Khan at the foot of Pratapgarh fort in present-day Satara district in Maharashtra. Battle of Pratapgad's victory in 1659 was a turning point in Chhatrapati Shivaji's campaign to establish the Maratha Empire.
- **Hence option (b) is the correct answer.**

Q 73.D

- **India's first center for research on conserving the endangered Gangetic river dolphin**, the National Dolphin Research Centre (NDRC) was inaugurated in Patna on March 4, 2024, by Bihar Chief Minister Nitish Kumar. The institute, located close to the Ganga River in Patna deals with various aspects of Dolphin conservation such as changing behavior, survival skills, food habits, causes of death, etc. NDRC will also train fishermen on how to conserve and protect dolphins during fishing.
- The **Gangetic River dolphin is India's national aquatic animal**. It is a Schedule I animal under the Wild Life (Protection) Act, of 1972. It has been declared an **endangered species** by the International Union for Conservation of Nature. The Gangetic River dolphin is one of four freshwater dolphin species in the world. The other three are found in the Yangtze River in China (now extinct), the Indus River in Pakistan, and the Amazon River in South America. The dolphin is found in India, Bangladesh, and Nepal. It is blind, finds its way, and prey in river waters through echolocation. Bihar is home to around half of India's estimated 3,000 Gangetic dolphins.
- **Hence option (d) is the correct option.**

Q 74.D

- The world is on the brink of a public health triumph as it closes in on eradicating Guinea worm disease. There were more than 3.5 million cases of this disease in the 1980s, but according to the World Health Organization's (WHO) weekly epidemiological report, they dwindled to 14 cases in 2021, 13 in 2022, and just six in 2023.
- Guinea worm disease, also called dracunculiasis, is the work of the Guinea worm (*Dracunculus medinensis*), whose infamy dates back to biblical times, when it was called the “fiery serpent” and whose presence researchers have confirmed in Egyptian mummies. Individuals whose bodies the worm has entered first experience a painful blister, usually on a lower limb. When seeking relief, they may immerse the affected area in water, which prompts the worm to emerge and release hundreds of thousands of larvae, potentially contaminating communal water sources and perpetuating the infection cycle.
- While a Guinea worm by itself is not lethal, it debilitates those whom it infects and prevents them from performing daily tasks and earning their livelihoods. More than 90% of Guinea worm infections manifest in the legs and feet. The individual has an excruciating experience when the adult female worm emerges through the skin. The open sore left by its exit is also susceptible to secondary infections. The disease affects people of both sexes. The struggle against Guinea worm disease is symbolic of a broader fight against the diseases of poverty and the self-fulfilling relationship between poverty and illness. The disease thrives in areas where access to clean, safe drinking water is a luxury, and health education and resources are scant.
- **Nations like South Sudan and Mali, where Guinea worm disease was once more common, have made commendable progress, although the fight continues in Chad and the Central African Republic. Hence, option (d) is the correct answer.**
- India eliminated Guinea worm disease in the late 1990s, concluding a commendable chapter in the country’s public health history through a rigorous campaign of surveillance, water safety interventions, and community education. The government of India received Guinea worm disease-free certification status from the WHO in 2000.

Q 75.D

- **The MARPOL Convention, short for the International Convention for the Prevention of Pollution from Ships, is one of the most important international marine environmental conventions.** It was first adopted on November 2, 1973, and has been amended by several protocols since then. The main objective of MARPOL is to minimize pollution of the seas, including pollution from oil, chemicals, harmful substances, sewage, and garbage, both from ships and offshore platforms.
- The International Maritime Organization's World Maritime Theme for 2023 is 'MARPOL at 50- Our commitment goes on'. The theme reflects the organization's long history of protecting the environment from the impact of shipping via a robust regulatory framework and emphasizes its ongoing commitment to this important work. The theme 'MARPOL at 50 - Our commitment goes on' spotlights the International Convention for the Prevention of Pollution from Ships (MARPOL), which covers the prevention of pollution of the marine environment by ships from operational or accidental causes
- **Hence option (d) is the correct answer.**

Q 76.D

- All businesses, banks and individuals have two main components in their balance sheet – assets and liabilities. Bank assets and liabilities are somewhat the same as individual assets and liabilities. Bank assets are considered anything that the bank owns, whereas bank liabilities are anything that the bank owes to someone else.
- Banks have general assets just like businesses and individuals. These assets make money for the bank. For instance, cash, interest-earning loan accounts, government securities, etc. Loans are important assets for banks because they generate revenue from the interest that the customer pays on these loans. The three most common bank assets are:
 - **Loans given to bank customers**
 - **Deposits made to the central bank**
 - **Trading assets including SLR investments of government securities**
- Liability for a bank is anything that it owes to the outsiders. Examples of liabilities for a bank include distribution payments to customers from stock, interest paid to customers for savings and fixed deposits. The most common bank liabilities are:
 - Loans taken from the central bank
 - **Deposits made by the bank customers; Hence option (d) is the correct answer.**
 - Trading liabilities

Q 77.D

- Neutrinos are the **most abundant particles that have mass in the universe**. Every time atomic nuclei come together (like in the sun) or break apart (like in a nuclear reactor), they produce neutrinos. **Neutrinos are elementary particles that belong to the lepton family. Hence statement 1 is correct.**
- They are among the **fundamental building blocks of the universe**. Neutrinos are extremely elusive and possess unique characteristics.
- **Neutrinos are electrically neutral and rarely interact with matter.** Neutrinos have **no electric charge**, and they interact very weakly with matter, making them challenging to detect. They can **pass through ordinary matter**, including the **Earth, without significant interaction**.
- Neutrinos are often referred to as '**ghost particles**' because they are **nearly massless, electrically neutral, and interact so weakly** with other particles that they can traverse large distances without being easily detected. **Their lack of interaction with electromagnetic forces, such as light, makes them invisible to the naked eye. Hence statement 2 is correct.**
- Neutrinos are produced in various astrophysical processes, and one significant source is the **remnants of supernova explosions**. During a supernova, immense energy is released, and neutrinos are among the particles emitted in the process. **Studying neutrinos from supernovae can provide valuable insights into these cataclysmic events. Hence statement 3 is correct.**

Q 78.A

- **Autoimmune diseases:**
 - In autoimmune diseases, the body's immune system—our defense against illness—can't tell the difference between good cells and bad cells and ends up attacking them all. So you get sick either way.
 - But in a study published in Nature Biomedical Engineering this month, the scientists say a so-called "**inverse vaccine**" helped them stop an immune response from attacking healthy cells when it was faced with a laboratory model of an autoimmune disease.
- **What is an inverse vaccine?**
 - Conventional vaccines train the immune system to spot infectious diseases and stop them from multiplying and spreading. Take the COVID-19 vaccine, for example. It contains elements that represent the coronavirus spike protein—the thing that attaches itself to cells and infects them and makes you sick.
 - If you've had a vaccine for COVID-19, your body should be able to recognize that spiky shape of the virus attached to a cell and kill it.
 - **An inverse vaccine, on the other hand, stops the immune system from attacking cells—specifically, good, healthy cells. Hence option (a) is the correct answer.**
 - They prevent the immune system from attacking healthy cells by retraining them to spare them. Inverse vaccines add a do not-attack signal to healthy cells.

Q 79.A

- Article 270 of the Constitution provides for the scheme of distribution of net tax proceeds collected by the Union government between the Centre and the States. The taxes that are shared between the Centre and the States include corporation tax, personal income tax, Central GST, the Centre's share of the Integrated Goods and Services Tax (IGST) etc. This division is based on the recommendation of the Finance Commission (FC) that is constituted every five years as per the terms of Article 280.
- Apart from the share of taxes, States are also provided grants-in-aid as per the recommendation of the FC. The divisible pool, however, does not include cess and surcharge that are levied by the Centre.
- The share of States from the divisible pool (vertical devolution) stands at 41% as per the recommendation of the 15th FC. The distribution among the States (horizontal devolution) is based on the following criteria.

Table 1 : The criteria for horizontal devolution among States over the last five FCs

Criteria	11th FC 2000-05	12th FC 2005-10	13th FC 2010-15	14th FC 2015-20	15th FC 2021-26
Income Distance	62.5	50	47.5	50	45
Population (1971 Census)	10	25	25	17.5	-
Population (2011 Census)	-	-	-	10	15
Area	7.5	10	10	15	15
Forest cover	-	-	-	7.5	-
Forest and ecology	-	-	-	-	10
Infrastructure index	7.5	-	-	-	-
Fiscal discipline	7.5	7.5	17.5	-	-
Demographic performance	-	-	-	-	12.5
Tax effort	5	7.5	-	-	2.5
Total	100	100	100	100	100

- The criteria as per the 15th FC can be briefly explained as follows:
 - ‘Income distance’ is the distance of a State’s income from the State with highest per capita income which is Haryana. States with lower per capita income would be given a higher share to maintain equity among States.
 - ‘Population’ is the population as per the 2011 Census. Till the 14th FC, weightage was given for the population as per the 1971 Census but that has been discontinued in the 15th FC.
 - ‘Forest and ecology’ consider the share of dense forest of each State in the aggregate dense forest of all the States.
 - ‘The demographic performance’ criterion has been introduced to reward efforts made by States in controlling their population. States with a lower fertility ratio will be scored higher on this criterion.
 - ‘Tax effort’ as a criterion has been used to reward States with higher tax collection efficiency.
- Hence option (a) is the correct answer.

Q 80.A

- The OjaPali is the most distinctive folk dance from Assam, representing the rich tradition and cultural heritage of the state. Assamese culture is enriched by the elements of the ethnic culture of various tribes and castes, religions, and languages. Out of these traditional cultures, OjaPali is one of the oldest performing arts. Hence statement 1 is correct.
- An OjaPali performance combines narrative singing and dancing interspersed with dramatic dialogue and action. In real Pali and Oja are two different Chorus groups of dancers and singers. In this group, the Palis are "assistants" of Oja means "leaders". In an Ojapali, one who is an expert in dancing, singing, and recitation, and has the proficiency of delivering dialogues, is known as Oja.
- Ojapali focuses on the stories from the epics and Puranas. It is associated with the goddess Manasa's worship. The story is divided into three parts - Deva Khanda, Baniya Khanda, and Bhatiyali Khanda. Their dance bears clear evidence of many aspects of Indian classical dances like 'Hasta', 'Gati', 'Bhramari', 'Utplavana', 'Asana' etc. Hence statements 2 and 3 are not correct.
- The songs sung by these people are basically in etc. The songs sung by these the Sanskrit language and of two types: malaci or malanci geets and jagar. They also sing a kind of mixed song, "Patsha Geet", which were written under Muslim influence.
 - The only instrument played by Ojapali is 'Khutitaal' (palm sized Cymbal). The music of Ojapali has a raga system of clear classical orientation and the Neo-Vaishnava heritage.
- Types of Ojapali Dances
 - Biygoa Ojapali and Sukannani Ojapali are classified according to their style of performance. The central subjects of the Biygoa Ojapali are the epics of the Ramayana and the Mahabharata. They sing the story in pure classical style, involving ragas, mudra (hand gestures) being its noticeable element. Dance is another key feature of this performance. The only instrument played by them is the khutitaal.
 - But, performers of the Sukannani Ojapali tell the tragic story of Behula-Lakhindar, from the Padma Purana, among the masses. Sukannani Ojapali performers are known as 'Maroi-gowa' or singers of Maroi Puja. Mudra is an essential part of the Sukannani Ojapali. Before performing the story or the passages, they sing hymns in praise of gods and goddesses.

Q 81.A

- The Ministry of Information and Broadcasting (MIB) in India has issued an advisory requiring broadcasters to allocate at least 30 minutes of air time each day for public service programming. Hence, statement 1 is correct.
- This content must be of national importance and social relevance.
- Broadcasters are required to air a minimum of 30 minutes of public service content per week. This content can be broadcast in smaller time slots throughout the day, except between midnight and 6 am.
 - Also, the time for which the Public Service Broadcasting content is telecast in between commercial breaks shall not be accounted for the 12-minute limit for commercial breaks. The time for the content under Public Service Broadcasting shall be accounted for cumulatively on a monthly basis i.e. 15 hours per month.
- The advisory states that foreign channels downlinking in India in languages other than those specified in the Eighth Schedule of the Indian Constitution are exempt from the obligation of public service broadcasting. Hence statement 3 is not correct.
- The total public service content aired each month will be accounted for by the broadcasters. The government will monitor the compliance of broadcasters with the advisory through regular audits and reports. Failure to comply may result in penalties or sanctions.
- Broadcasters shall submit a monthly report on the Broadcast Seva Portal on or before the 7th day of the following month. Hence statement 2 is not correct.
- The time for transmission of the relevant content shall be flexible except that any content transmitted from Midnight to 6:00 AM shall not be accounted for under Public Service Broadcasting.
- Broadcasters have the liberty to modulate their content.
- The content can be shared between the Broadcasters and could be repeated telecast on one or several TV channels.
- Voluntary compliance and self-certification would be the guiding principles.
- The themes of public service programming can cover a wide range of topics that are considered essential for the overall well-being of society. These themes include:
 - Education and the spread of literacy
 - Agriculture and rural development
 - Health and family welfare
 - Science and technology.
 - Welfare of women
 - Welfare of the weaker sections of society (including Scheduled Tribes)
 - Protection of the environment and cultural heritage
 - National integration

Q 82.B

- The Ninth Schedule did provide protection to laws from judicial review, but this immunity was challenged and altered by the Supreme Court in its landmark judgment in the Kesavananda Bharati case. Additionally, laws placed in the Ninth Schedule are not entirely immune from constitutional amendments. Hence statement 1 is not correct. The procedure for amending the Constitution is more stringent compared to the procedure for amending ordinary laws.
- Amending the Constitution of India requires a more stringent procedure compared to amending ordinary laws. Constitutional amendments typically require a special majority of both Houses of Parliament, or in some cases, a special majority along with the ratification by at least half of the state legislatures. Hence statement 2 is correct.
- The preamble of the Constitution is an integral part of the Constitution and can be amended, but not by a simple majority. Any amendment to the preamble would require a constitutional amendment, which necessitates either a two-thirds majority of both Houses of Parliament or a special majority as well as ratification by at least half of the state legislatures. Hence statement 3 is not correct.

Q 83.B

- In India, currencies are issued by the RBI with the backing of reserves comprised of gold and foreign exchange (foreign currencies). For the issue of currencies, the RBI follows Minimum Reserve System at present. The Minimum Reserve System (MRS) is followed from 1956 onwards.

- **Under the Minimum Reserve System, the RBI has to keep a minimum reserve of Rs 200 crore comprising of gold coin and gold bullion and foreign currencies.** Out of the total Rs 200 crores, **Rs115 crore should be in the form of gold coins or gold bullion.** The purpose of shifting to MRS was to expand money supply to meet the needs of increasing transactions in the economy. **Hence statement 1 is not correct.**
- **The minimum reserve is a token of confidence and doesn't have any practical connection with amount new currencies issued by the RBI.** Under the Minimum Reserve System, RBI can issue **unlimited amount of currency by keeping the reserve.** But RBI follows some principle or rule for issuing new currencies based upon economic growth and transaction needs of the people. **Hence statement 2 is correct.**

Q 84.A

- After 1878, the disgusted followers of Keshab set up a new organization, the Sadharan Brahmo Samaj. The Sadharan Brahmo Samaj was started by Ananda Mohan Bose, Sib Chandra Deb, and Umesh Chandra Dutta. It reiterated the Brahmo doctrines of faith in a Supreme being, one God, the belief that no scripture or man is infallible, and belief in the dictates of reason, truth, and morality. **Hence pair 1 is not correctly matched.**
- Paramahansa Mandali Founded in 1849 in Maharashtra, the founders of the Paramahansa Mandali—Dadoba Pandurang, Mehtaji Durgaram and others—began as a secret society that worked to reform Hindu religion and society in general. The ideology of the society was closely linked to that of the Manav Dharma Sabha. **Hence pair 2 is not correctly matched.**
- Gopal Krishna Gokhale (1866–1915), a liberal leader of the Indian National Congress, founded the Servants of India Society in 1905 with the help of M.G. Ranade. The society aimed to train national missionaries for the service of India; to promote, by all constitutional means, the true interests of the Indian people; and to prepare a cadre of selfless workers who were to devote their lives to the cause of the country in a religious spirit. **Hence pair 3 is not correctly matched.**

Q 85.B

- Non-Aligned Movement (NAM) is a group of states that are not formally aligned with or against any major power bloc. The movement emerged during the Cold War, a period marked by intense geopolitical rivalry between the United States and its allies on one side and the Soviet Union and its allies on the other.
- **The Non-Aligned Movement was founded in 1961 during the Belgrade Conference, which was attended by leaders from 25 countries.**
 - Before the formal establishment of NAM, the Asian-African Conference was held in Bandung, Indonesia, in 1955. This conference laid the groundwork for non-alignment and was attended by leaders such as Jawaharlal Nehru (India), Sukarno (Indonesia), and Gamal Abdel Nasser (Egypt). **Hence statement 1 is correct.**
- NAM membership has grown over the years, and it includes a diverse group of countries from Asia, Africa, Latin America, and Europe. It currently has 120 member states.
- The Movement recognizes three categories for participation: Full Member, Observer and Guest.
- The Bandung Principles and the Membership Criteria of the Non-Aligned Movement function as admission criteria both for new members and observers. At present, the Movement has 120 Member States, 17 Observer Countries and 10 Observer organizations.
- Membership Criteria of The Movement of Non-Aligned Countries
 - The Country should have adopted an independent policy based on the coexistence of States with different political and social systems and on nonalignment, or it should have shown a tendency to favor such a policy.
 - The Country in question should support national independence movements in a consistent manner.
 - The Country should not be a member of a multilateral military alliance concluded in the context of great power conflicts.
 - If the Country has a bilateral military agreement with a great power or it is a member of a regional defense pact, the agreement or pact should have not been concluded deliberately in the context of great power conflicts.
 - **If the Country has granted military bases to a foreign power, the concession should have not been made in the context of great power conflicts.**
 - ✓ **Thus a country can give a military base to another country but with some conditions. Hence statement 3 is not correct.**

- Prominent member countries

- Afghanistan
- Bangladesh
- Bhutan
- Indonesia
- Iran
- Malaysia
- Maldives
- Mauritius
- Myanmar
- Saudi Arabia
- Sri Lanka
- Pakistan**

- Hence statement 2 is correct.**

Q 86.A

- Digestive enzymes** are a group of enzymes that **break down polymeric macromolecules into their smaller building blocks**, to facilitate their absorption into the cells of the body.
- In the human digestive system, the main sites of digestion are the mouth, stomach, and small intestine.** Some major digestive enzymes, their sources, and their functions are given below:

Enzyme	Source	Function
Amylase	Salivary glands (salivary amylase)Pancreas (pancreatic amylase)	Breaks down carbohydrates into simple sugars
Proteases	Stomach (pepsin) Pancreas (trypsin , chymotrypsin, carboxypeptidase)Small intestine (enteropeptidase)	Breaks down proteins into smaller peptides
Lipase	Pancreas (pancreatic lipase)Small intestine	Breaks down fats into fatty acids and glycerol
Nuclease	PancreasSmall intestine	Breaks down nucleic acids into nucleotides
Lactase	Small intestine	Breaks down lactose into glucose and galactose
Sucrase	Small intestine	Breaks down sucrose into glucose and fructose
Maltase	Small intestine	Breaks down maltose into glucose
Isomaltase	Small intestine	Breaks down isomaltose into glucose
Peptidase	Small intestine	Further breaks down peptides into amino acids

- Hence, pair 1 and pair 2 are not correctly matched and pair 3 is correctly matched.**

Q 87.A

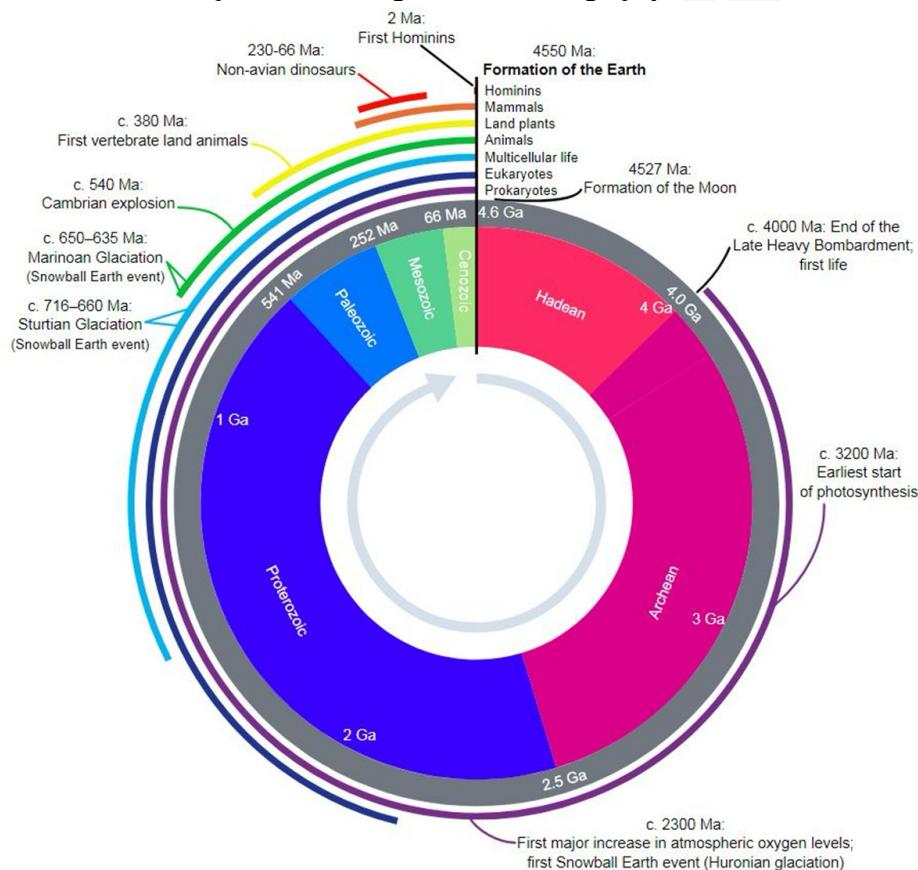
- To answer moral queries on key environmental questions there are two distinct approaches. On one hand one could point to the wellbeing of future generations and the survival of the human species. On another hand, one could also appeal to the preservation of biodiversity and the intrinsic value of the natural world. These two attitudes are indeed distinct, and many scholars have therefore differentiated between “**anthropocentric**” (also called “homocentric” or “altruistic”) and “**biocentric**” (also called “ecocentric” or “biospheric”) concerns for the environment.
- Anthropocentric concerns for the environment are narrowly aimed at preserving the welfare of humans, while biocentric concerns are oriented toward protecting non-human organisms and nature as a whole. While anthropocentrism can sometimes lead to pro-environmental attitudes and actions, biocentrism is more reliably and robustly related to environmentalism, both for abstract values and for concrete behaviors. This makes sense, as anthropocentrism promotes the preservation of the environment as a means to an end rather than an end in itself. However, biocentrism treats environmentalism as a moral imperative independently of its impact on human flourishing.
- Hence option (a) is the correct answer.**

Q 88.A

- The Anthropocene Working Group (AWG), a 37-member research group, began deliberations in 2009 to come up with a starting point for the epoch and, after years of deliberation, decided on the year 1952. The period after World War II is seen as the “Great Acceleration”, during which the human population

skyrocketed, the burning of fossil fuels surged, the fallout of nuclear tests spread across the planet, the use of nitrogen-based fertilizers became rampant, and plastics became ubiquitous. **Hence statement 1 is not correct.**

- Currently, human beings are living in the **Phanerozoic aeon, during the Cenozoic era, the Quaternary period, the Holocene epoch, and the Meghalayan age**. The Holocene epoch (from the Greek “holos”, meaning ‘whole’, and “kainos”, meaning “new”) began some 11,700 years ago, at the end of the Last Glacial Period (LGP). During the LGP, up to 25% of the Earth’s land surface was covered by glaciers, the mean sea level was up to 400 feet lower, and the average temperature fell to 8 degrees Celsius. **Hence statement 2 is correct.**
- A proposal to include Anthropocene epoch in the Geological time scale is submitted to the International Union of Geological Sciences (IUGS), the representative body of more than a million geoscientists from more than 120 countries and regions devoted to international cooperation in the field of geology. The proposal was taken up for a vote by the Subcommission on Quaternary Stratigraphy (SQS), a constituent body of the International Commission on Stratigraphy (ICS), the largest scientific organization within the IUGS. The SQS voted 12 to 4 against the proposal, with two abstentions. The IUGS committee determined that adding an Anthropocene epoch — and terminating the Holocene — was not supported by the standards used to define epochs according to chronostratigraphy. **Hence statement 3 is not correct.**



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

Q 89.C

- **Delegated legislation is a rule-making power that is granted by the legislature to executive authorities (such as government ministers or agencies) to enable them to implement primary laws effectively.** This means that the legislature gives the executive branch the ability to create specific rules, regulations, and orders that have the force of law. **Hence, statement 1 is correct.**
- **Purpose of Delegated Legislation**
 - **Flexibility:** It allows the executive branch to respond quickly to changing circumstances without the need to amend primary legislation.
 - **Technicality:** Some laws require technical expertise to implement, which the executive branch may possess.
 - **Workload:** It reduces the workload of the legislature by delegating the rule-making function to the executive.
 - **Expertise:** The executive branch often has specialized knowledge and expertise that can be valuable in creating detailed rules.

- **By-laws are rules and regulations made by local authorities (such as councils) under the authority of an Act of Parliament.**
 - By-laws are examples of delegated legislation. Hence, statement 2 is correct.
- **Exercise of Delegated Legislation is Subject to Judicial Review. Hence, statement 3 is correct.**
 - Judicial review is the power of the courts to examine the actions of other branches of government to ensure they comply with the law and the Constitution.
- **Judicial review of delegated legislation typically involves examining:**
 - Whether the authority has the power to make the delegated legislation under the enabling act.
 - Whether the delegated legislation is consistent with the purpose and intent of the enabling act.
 - Whether the delegated legislation is reasonable and not arbitrary or capricious.
 - Whether the delegated legislation complies with the Constitution and other applicable laws.

Q 90.C

- **Recent context:** India hosted the first 'Global Symposium on Farmers' Rights' (GSFR) at the ICAR Convention Centre, National Agricultural Science Centre in New Delhi from September 12 to 15, 2023.
- Organised by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, the Global Symposium is being hosted by Ministry of Agriculture and Farmers Welfare, in collaboration with Protection of Plant Varieties and Farmers' Rights (PPVFR) Authority, Indian Council of Agricultural Research (ICAR), ICAR-Indian Agricultural Research Institute (IARI), and ICAR-National Bureau of Plant Genetic Resources (NBPGR).
- Global Symposium on Farmers' Rights (GSFR) adopted the Delhi Framework on Farmers' Rights.
- **Key highlights of Delhi Framework:**
 - Creating functional synergy across different UN instruments (ITPGRFA, CBD, United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) etc.) for realization of farmers' rights.
 - Establish/support farmer-managed seed system for traditional varieties and create self-sustaining production and marketing value chain.
 - Building farmer-centric partnership opportunities.
- **International Treaty on Plant Genetic Resources for Food and Agriculture:**
 - **It is also known as Seed Treaty.**
 - It is a legally binding comprehensive agreement adopted in November, 2001 at **Rome** during the 31st session of the Food and Agriculture Organization of the United Nations, which entered into force on June 29, 2004 and currently has 149 Contracting Parties, including India. **Hence statements 1 and 2 are correct.**
 - **The treaty was aimed at:**
 - ✓ recognising the significant contribution of farmers to the diversity of crops that feed the world;
 - ✓ establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials; and
 - ✓ ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have originated. **Hence statement 3 is correct.**

Q 91.D

- Cherenkov radiation is a form of energy that we can perceive as a blue glow emitted when the electrically charged particles that compose atoms (i.e. electrons and protons) are moving at speeds faster than that of light in a specific medium. Cherenkov radiation is named after the 1958 Physics Nobel Prize laureate, Pavel Cherenkov, who shared the award with Ilya Frank and Igor Tamm, for being the first to experimentally demonstrate and explain this glow.
- Nothing can travel faster than the speed of light in a vacuum. However, in other mediums, particles can potentially move faster than light. For instance, while in water, light would instantly slow down to 75% of its normal speed, but there are other particles that don't slow down as much and end up moving faster than light. Whenever that happens, a blue or violet glow occurs.
- The Major Atmospheric Cherenkov Experiment Telescope (MACE) in Hanle, Ladakh, is placed at an altitude of 4,300 meters above sea level. Its goal is to detect Cherenkov radiation from space. It is the world's second-largest, ground-based gamma-ray telescope with a 21-meter-diameter dish. The largest telescope of the same class is the 28-meter-diameter telescope, which is part of the High Energy Stereoscopic System (HESS) in Namibia. **Hence, option (d) is the correct answer.**

Q 92.B

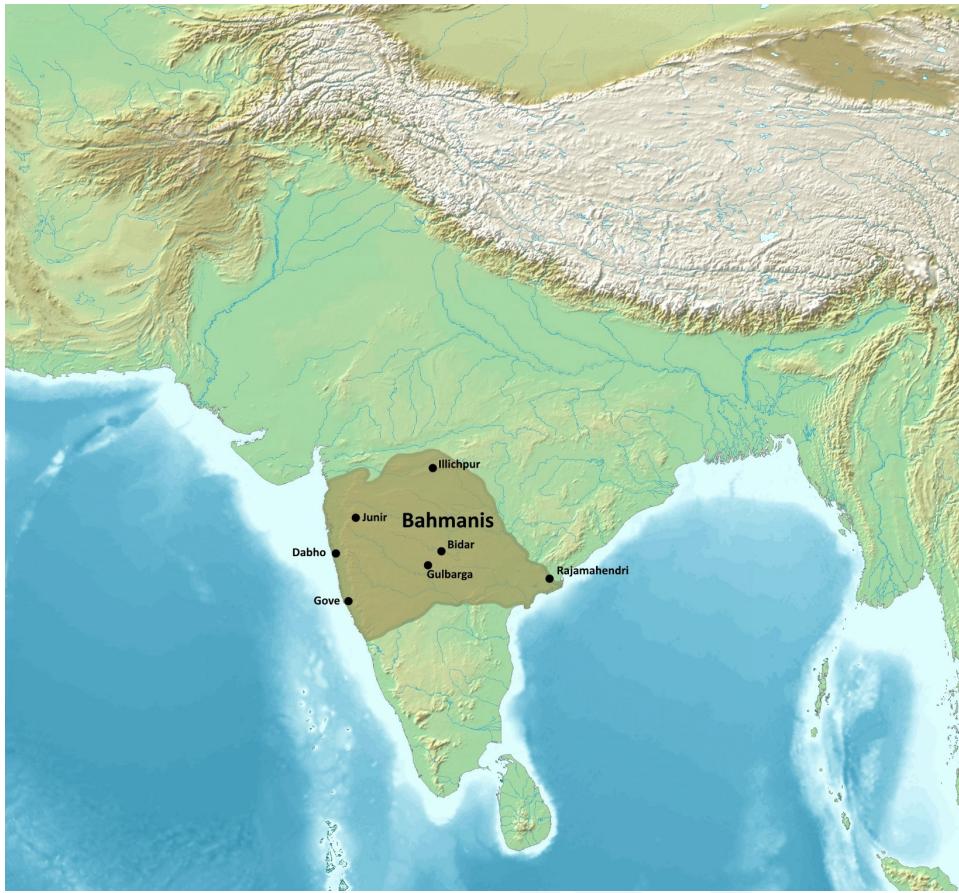
- The Jan Aushadhi Campaign aims to create a demand for generic medicines by improving access to better healthcare through low treatment costs and easy availability wherever needed in all therapeutic categories.
- A Bureau of Pharma PSUs of India (BPPI) was established on the 1st of December 2008 comprising all the Pharma CPSUs under the Department of Pharmaceuticals (under the Ministry of Chemicals & Fertilizers). The Bureau will bring about effective collaboration and cooperation in furthering the working and resources of these organizations. More specifically it would:
 - Co-ordinate marketing of the generic drugs through the Jan Aushadhi stores. **Hence statements 2 and 3 are correct.**
 - Co-ordinate supply of medicines in the State from their plants, other Pharma PSUs of Central & State Governments, and Private Sector.
 - Coordinate with Hospitals in preparation of formulary.
 - Monitor the proper running of Jan Aushadhi stores with the help of other CPSUs.
 - Provide medicines as per rates decided in the joint Forum/Core Committee.
 - Monitor activities of the Jan Aushadhi stores in the areas allocated to them.
- It is a central sector scheme. **Hence statement 1 is not correct.**

Q 93.B

- **Narmada River is the largest west-flowing river of the peninsula of India.** It rises from Narmada Kund, located at Amarkantak, in the Anuppur district of Madhya Pradesh, at an elevation of about **1057 m** in the **Maikala range**.
- The river flows through Madhya Pradesh, Maharashtra, and Gujarat between Vindhya and Satpura hill ranges before falling into the Gulf of Cambay in the Arabian Sea about 10 km north of Bharuch, Gujarat.
- **Dhuandhar Falls originates from the Narmada river.** Located 25 km from Jabalpur city, this waterfall is a popular tourist destination due to its charming beauty.
- **Hence option (b) is the correct answer.**

Q 94.D

- The Bahmani Sultanate was a Muslim empire that ruled the Deccan Plateau in South India. The Bahmani Sultanate came to power in 1347 during the Rebellion of Ismail Mukh after Ismail Mukh abdicated in favor of Zafar Khan, who would establish the Bahmani Sultanate. The Bahmani Sultanate was in perpetual war with its neighbors, including its rival, the Vijayanagar Empire. The Sultanate would begin its decline under the reign of Mahmood Shah. In 1518, the Bahmani Sultanate split up into the Deccan sultanates, ending its 180-year rule over the Deccan.
- **Dabhol was of great importance in the 14th, 15th and 16th centuries.** It used to be the principal port of the South Konkan region, carrying on trade with ports in the Mediterranean, the Red Sea and the Persian Gulf. During the 13th to 15th centuries, this port was ruled by the Bahamani dynasty and was known as Mustafabad.
- Arikamedu was an ancient Roman trade center and coastal settlement in Pondicherry. Arikamedu, an archaeological site in Kakkayanthope, Puducherry was formerly a major Chola port dedicated to bead making and trading with Roman traders and was believed to be the only town to have ties with Rome.
- Motupalli port was a significant trading hub of the Kakatiya dynasty. Notably, Marco Polo, the Venetian traveler, visited the Kakatiya kingdom through this port and mentioned it in his travelogue.



- Hence option (d) is the correct answer.

Q 95.C

- The Rainforest Alliance is an international non-profit organization working at the intersection of business, agriculture, and forests to make responsible business the new normal. It was founded in 1987 by Daniel Katz, an American environmental activist. **Hence statement 1 is correct.**
- The Rainforest Alliance works on a variety of issues, from forests to human rights, in 78 nations across the globe. The Rainforest Alliance launched the world's first global forestry certification program in 1989 and is one of the founders of the **Forest Stewardship Council** (FSC). The Rainforest Alliance also certifies sustainable farming through the Rainforest Alliance Sustainable Agriculture Standard. The Forest Stewardship Council GmbH is an international non-profit, multistakeholder organization established in 1993 that promotes responsible management of the world's forests via timber certification. This organization uses a market-based approach to transnational environmental policy. **Hence statement 2 is correct.**
- Hence option (c) is the correct answer.

Q 96.B

- On January 31, 2024, five additional Indian wetlands were added to the global list of wetlands of international importance under the Ramsar Convention, bringing the total number of such sites in the country to 80.
- Wetlands added:
 - **Magadi Kere Conservation Reserve (Karnataka):** It is a human-made wetland with an area of nearly 50 hectares which was constructed to store rainwater for irrigation purposes. It is home to over 166 species of birds, of which 130 are migratory. **Hence pair 1 is correctly matched.**
 - **Aghanashini Estuary (Karnataka):** It is spread over an area of 4801 ha, and is formed at the confluence of the Aghanashini River with the Arabian Sea. The brackish water of the Estuary provides diverse ecosystem services including flood and erosion risk mitigation, biodiversity conservation, and livelihood support. **Hence pair 2 is not correctly matched.**
 - **Longwood Shola Reserve Forest (Tamil Nadu):** It derives its name from the Tamil word, "Solai", which means a 'tropical rain forest'. The 'Sholas' are found in the upper reaches of the Nilgiris, Anamalais, Palni hills, Kalakadu, Mundanthurai and Kanyakumari in Tamil Nadu. These forested wetlands serve as habitats for the globally endangered Black-chinned Nilgiri Laughing thrush

(Strophocincla cachinnans), Nilgiri Blue Robin (Myiomela major), and vulnerable Nilgiri Wood-pigeon (Columba elphinstonii). Hence pair 3 is correctly matched.

- **Karaivetti Bird Sanctuary (Tamil Nadu):** spanning 453.72 ha is one of the largest inland wetlands of Tamil Nadu, and is a significant source of groundwater recharge for the area. Karaivetti has one of the largest congregations of waterbirds in the State of Tamil Nadu. About 198 species of birds have been recorded here. Hence pair 4 is not correctly matched.
- **Ankasamudra Bird Conservation Reserve (Karnataka):** It is a humanmade Village Irrigation Tank built centuries back and is spread over an area of 98.76ha (244.04 acre) adjoining the Ankasamudra village. It is an ecologically important wetland, and over 30'000 waterbirds nest and roost at this wetland.
- Note: The Ramsar Convention is an international treaty for the conservation and wise use of wetlands. It is named after the Iranian city of Ramsar, on the Caspian Sea, where the treaty was signed on February 2, 1971.

Q 97.B

- **A Government Security (G-Sec)** is a tradeable instrument issued by the Central Government or the State Governments. It acknowledges the Government's debt obligation. G-Secs carry practically no risk of default and, hence, are called risk-free gilt-edged instruments. Hence, statement 1 is correct.
- Such securities are short-term (usually called treasury bills, with original maturities of less than one year) or long-term (usually called Government bonds or dated securities with an original maturity of one year or more). In India, the Central Government issues both, treasury bills and bonds or dated securities while the State Governments issue only bonds or dated securities, which are called the State Development Loans (SDLs). Hence, statement 2 is correct.
- **Retail Direct Scheme** is a one-stop solution to facilitate investment in Government Securities by individual investors. Under this scheme individual retail investors can open a Gilt Securities Account – “Retail Direct Gilt (RDG)” account with RBI. kinds of Government securities that can be traded through the Retail Direct platform are:
 - Government of India Treasury Bills (T-Bills)
 - Government of India dated securities (dated G-Sec)
 - State Development Loans (SDLs)
 - Sovereign Gold Bonds (SGB)
 - Retail investors, that is, individuals (both resident Indians and NRI) are allowed to open an RDG account. Hence, statement 3 is not correct.

Q 98.A

- The phrase "Office of Profit" is mentioned in Article 102 of the Indian Constitution. Hence, statement 1 is not correct.
- It states that a person shall not be eligible to be a member of Parliament if he holds any office of profit under the Government of India or the Government of any State or under any local or other authority subject to the control of any of the said Governments.
- The term "Office of Profit" is not defined in the Constitution. However, it has been interpreted by the courts to mean any position that gives the holder a financial benefit or other advantage. This includes positions that are paid, as well as those that provide perks such as housing or transportation.
- The power to exempt offices from the purview of 'Office of Profit' lies with Parliament and state legislature and not with Central and State governments. Hence, statement 2 is not correct.
- Parliament and state legislatures have the power to make laws to exempt offices from the purview of the 'Office of Profit'.
 - For example, the Tamil Nadu Legislature (Prevention of Disqualification) Act, 1952.
 - Parliament has also enacted the Parliament (Prevention of Disqualification) Act, 1959, which has been amended several times to expand the exempted list.
- There is no limit on the number of offices that can be exempted from the 'Office of Profit' purview. This is because the President has the discretion to exempt any office that he or she deems fit. Hence, statement 3 is correct.

Q 99.D

Recent Context: The Central government has embarked on a mission to promote tourism at ecologically-sensitive wetlands better known as Ramsar sites like Odisha's Chilika lake and Haryana's Sultanpur bird sanctuary. The focus would be to shift these fragile wetlands from high-value tourism to nature tourism by directly supporting conservation action and letting local communities and economies take the lead.

- The initiative to develop these sites has been taken by the Union Tourism Ministry and the Ministry of Environment, Forest and Climate Change under the ‘Amrit Dharohar Capacity Building Scheme’ 2023.
- The Amrit Dharohar initiative, part of the 2023-24 budget announcement, was launched during June 2023 to promote unique conservation values of the Ramsar Sites in the country while generating employment opportunities and supporting local livelihoods. The scheme is being implemented in convergence with various Central Government ministries and agencies, State wetland authorities, and a network of formal and informal institutions and individuals, working together for a common cause.
- **The aim is to enhance livelihood opportunities for local communities through harnessing the nature-tourism potential of the Ramsar Sites across the country. Hence option (d) is the correct answer.**
- Out of 16 identified Ramsar sites, five have been selected for pilot projects under the scheme.
 - These pilot sites include Sultanpur National Park (Haryana), Bhitarkanika Mangroves (Odisha), Chilika Lake (Odisha), Sirpur (Madhya Pradesh), and Yashwant Sagar (Madhya Pradesh).
 - Training programs for participants are carried under the Alternative Livelihood Programme (ALP) (a 30 hours/15 days training programme) and Paryatan Navik Certificate (boatman certification for tourism).

Q 100.C

- **The Directive Principles of State Policy (DPSP) are guidelines or principles given to the federal institutes governing the State of India, to be kept in mind while framing laws and policies. These principles aim to create social and economic democracy in the country.**
- **Socialistic principles:** These principles contemplate the ideology of socialism and lay down the framework of a democratic socialist state. The concept envisages providing social and economic justice so that the state can achieve the optimum norms of the welfare state. They direct the state through the following articles:
 - **Article 38:** To promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic, and political shall inform all the institutions of the national life.
 - **Article 39:** To Secure: (a) Right to an adequate means of livelihood for all citizens (b) Equitable distribution of material resources of the community for the common good (c) Operation of an economic system to prevent the concentration of wealth and means of production (d) Equal pay for equal work for both men and women (e) Opportunities for the healthy development of children.
 - **Article 39 A:** To promote equal justice and to provide free legal aid to the poor.
 - **Article 41:** To secure the right to work, right to education, and right to public assistance in cases of unemployment, old age, sickness, and disablement.
 - **Article 42:** To make provision for just and humane conditions for work and maternity relief.
 - **Article 43:** To secure a living wage, a decent standard of living, and social and cultural opportunities for all workers. The State shall promote cottage industries on an individual or cooperative basis in rural areas.
 - **Article 43 A:** To take steps to secure the participation of workers in the management of industries.
 - **Article 47:** Raise the level of nutrition and the standard of living of people and improve public health. **Hence option (c) is the correct answer.**
- **Liberal-intellectual principles:**
 - To secure for all citizens a **uniform civil code** throughout the country (Article 44). **Hence option (a) is not correct.**
 - To protect and improve the environment and to safeguard forests and wildlife (Article 48 A).
- **Gandhian principles:**
 - To **promote voluntary formation**, autonomous functioning, democratic control, and professional management of **co-operative societies** (Article 43B). **Hence option (b) is not correct.**
 - To **promote the educational and economic interests of SCs, STs, and other weaker sections of society** and to protect them from social injustice and exploitation (Article 46). **Hence option (d) is not correct.**

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