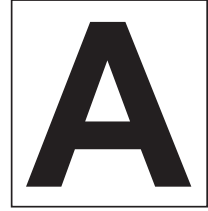


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Test Booklet Series



परीक्षण पुस्तिका अनुक्रम

शानुबेहार-2026

ALL INDIA OPEN MOCK TEST

GENERAL STUDIES PAPER-I

(01st February, 2026)

Answer Key

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

DELHI CENTRE:

Vivekananda House
6-B, Pusa Road, Metro Pillar No. 111,
Near Karol Bagh Metro
New Delhi-110060
Phone: 8081300200

DELHI CENTRE:

Tagore House
27-B, Pusa Road, Metro Pillar No. 118,
Near Karol Bagh Metro
New Delhi-110060
Phone: 8081300200

DELHI CENTRE:

Mukherjee Nagar
637, Banda Bahadur Marg,
Mukherjee Nagar,
Delhi-110009
Phone: 9311667076

PRAYAGRAJ CENTRE:

13A/1B, Tashkand Marg,
Civil Lines, Near Hyundai
Showroom, Prayagraj,
Uttar Pradesh-211001
Phone: 9958857757

JAIPUR CENTRE:

Plot No. 6 & 7, 3rd Floor,
Sree Gopal Nagar,
Gopalpura Bypass,
Jaipur-302015
Phone: 9358200511

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1. (b)

Statement 1 is not correct: According to **Article 56(1)(c)** of the Constitution, the President shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office. The Vice-President acts as President only in case of a vacancy occurring due to **death, resignation or removal**, or otherwise (Article 65). The Vice-President does not act as President merely upon the expiry of the President's term.

Statement 2 is correct: The Constitution is silent on who performs the duties of the Vice-President, when a vacancy occurs in the office of the Vice-President of India, before the expiry of his term, or when the Vice-President acts as the President of India. The only provision in the Constitution is with regard to the Vice-President's function as the Chairperson of the Council of States (Rajya Sabha), which is performed, during the period of such vacancy, by the Deputy Chairperson of the Rajya Sabha, or any other member of the Rajya Sabha authorised by the President of India.

Additional information:

- The Vice-President of India is the second highest constitutional office in the country.
- He serves for a five-year term, but can continue to be in office, irrespective of the expiry of the term, until the successor assumes office.
- The Vice-President may resign his office by submitting his resignation to the President of India.
- Vice-President can be removed from office by a resolution of the Rajya Sabha, passed by a majority of its members at that time and agreed to by the Lok Sabha. A resolution for this purpose may be moved only after a notice of at least a minimum of 14 days has been given of such an intention.
- During any period when the Vice-President acts as, or discharges the functions of the President,

he is not entitled to any salary or allowances payable to the Chairperson, Rajya Sabha.

2. (b)

Statement 1 is not correct: Inclusion of a language in the Eighth Schedule does not mandate that official documents of the Government of India must be made available in that language. The **Official Languages Act, 1963** primarily governs the use of languages for official purposes of the Union, which mainly mandates the use of **Hindi and English**.

Statement 2 is correct: **Article 344(1)** of the Constitution provides for the constitution of an **Official Language Commission** by the President. It explicitly states that this Commission shall consist of a Chairman and such other members representing the different languages specified in the **Eighth Schedule**.

Statement 3 is correct: **Article 351** of the Constitution directs the Union to promote the spread of the Hindi language and to develop it so that it may serve as a medium of expression for all the elements of the composite culture of India. It specifically mandates securing its enrichment by assimilating the **forms, style and expressions** used in Hindustani and in the **other languages of India specified in the Eighth Schedule**.

Statement 4 is not correct: Inclusion in the Schedule does not automatically imply inclusion on the currency notes. Currently, the **Eighth Schedule** contains **22 languages**, whereas the language panel on Indian currency notes displays only **15 languages** (excluding Hindi and English which appear on the front and back).

3. (d)

Option (d) is the correct answer: According to **Article 197** of the Constitution, if an ordinary Bill has been passed by the State Legislative Assembly and transmitted to the Legislative Council, and the

Council rejects the Bill, the **Legislative Assembly may pass the Bill again** (with or without amendments) and transmit it to the Legislative Council. If the Council again rejects it or does not pass it within one month, the Bill is deemed to have been passed by both Houses in the form passed by the Assembly.

- So, the ultimate power lies with the Assembly; the Council can only delay the passage for a maximum period of **4 months** (3 months in the first instance and 1 month in the second instance).

Additional information:

The Constitution does not provide for a joint sitting of the State Legislative Assembly and the State Legislative Council to resolve a deadlock over a Bill. The provision for a Joint Sitting (Article 108) is available only to the Parliament of India.

4. (d)

Statement 1 is not correct: Electoral Trusts are not established by political parties. They are non-profit companies established by corporate entities or individuals under Section 25 of the Companies Act, 1956 (now Section 8 of the Companies Act, 2013). They are solely tasked with distributing contributions received from individuals or companies to political parties. Electoral trusts were set up under the Electoral Trusts Scheme, 2013.

Statement 2 is correct: The electoral trusts route is transparent on contributors and beneficiaries. Trusts must maintain audited accounts, **disclosing donors, recipients**, and disbursements to the CBDT and the **Election Commission of India (ECI)**.

Statement 3 is correct: Under Section 17CA of the Income Tax Act of 1961, any citizen of India, a company registered in India, or a firm or Hindu Undivided Family or association of persons living in India, can donate to an electoral trust. The scheme explicitly mandates that Electoral Trusts cannot accept contributions from individuals who are not citizens of India or from any foreign entity.

5. (c)

Statement 1 is correct: According to Article 60 of the Constitution, every President and every person

acting as President or discharging the functions of the President shall, before entering upon his office, make and subscribe an oath or affirmation in the presence of the Chief Justice of India, or in his absence, the senior-most Judge of the Supreme Court available.

Statement 2 is correct: Article 146 states that the appointments of officers and servants of the Supreme Court shall be made by the **Chief Justice of India** or such other Judge or officer of the Court as he may direct.

- Provided that the President may by rule require that in such cases as may be specified in the rule, no person not already attached to the Court shall be appointed to any office connected with the Court, save after consultation with the Union Public Service Commission.

Statement 3 is not correct: There is **no provision** for a casting vote for the Chief Justice of India in judicial proceedings. According to **Article 145(5)**, judgments are delivered with the concurrence of a **majority** of the Judges present.

Statement 4 is correct: Article 130 declares Delhi as the seat of the Supreme Court. However, it also authorizes the **Chief Justice of India** to appoint other place or places as the seat of the Supreme Court. This decision is taken only with the **approval of the President** of India.

Additional information: Appointment procedure of CJI:

- According to the Memorandum of procedure of appointment of Supreme Court Judges, the appointment to the office of the Chief Justice of India should be of the seniormost Judge of the Supreme Court considered fit to hold the office.
- The Union Minister of Law, Justice and Company Affairs would, at the appropriate time, seek the recommendation of the outgoing Chief Justice of India for the appointment of the next Chief Justice of India.
- Whenever there is any doubt about the fitness of the seniormost Judge to hold the office of the Chief Justice of India, consultation with other Judges as envisaged in Article 124 (2) of the Constitution would be made for appointment of the next Chief Justice of India.

- After receipt of the recommendation of the Chief Justice of India, the Union Minister of Law, Justice and Company Affairs will put up the recommendation to the Prime Minister who will advise the President in the matter of appointment.

6. (a)

Option (a) is the correct answer: The 'e-Zero FIR initiative' was launched by the Ministry of Home Affairs' **Indian Cybercrime Coordination Centre (I4C)** as a pilot project in Delhi. Its primary aim is to automatically convert complaints of cyber financial crimes (initially those involving losses above ₹10 lakh) filed on the National Cybercrime Reporting Portal (NCRP) or Helpline 1930 into a Zero FIR. This will be immediately routed to the territorial Cybercrime Police Stations. Complainants can visit the cybercrime Police Station within 3 days and get the Zero FIR converted into a regular FIR.

7. (a)

Statement 1 is not correct: The promotion of international peace and security is explicitly mentioned as a **Directive Principle of State Policy** under **Article 51** of the Constitution. However, it is **not listed** as a Fundamental Duty of citizens under Article 51A.

Statement 2 is correct: This provision is mentioned in **both** the Directive Principles and Fundamental Duties.

- **Article 48A (DPSP):** States that the State shall endeavour to **protect and improve the environment** and to safeguard the forests and wild life of the country.
- **Article 51A(g) (Fundamental Duty):** It is the duty of every citizen of India to **protect and improve the natural environment** including forests, lakes, rivers and wild life, and to have compassion for living creatures.

Statement 3 is not correct in this context: To uphold and protect the **sovereignty, unity and integrity of India** is explicitly mentioned as a **Fundamental Duty** under **Article 51A(c)**. It is not explicitly listed as a distinct Directive Principle of State Policy, although the preservation of the nation's integrity is an inherent goal of the State.

8. (c)

Option (c) is the correct answer: In India, cryptocurrencies are **not recognised as legal tender**; they cannot be used to settle debts or buy goods and services legally as a currency. However, their holding and trading are **not illegal**. The Government of India has classified cryptocurrencies as "**Virtual Digital Assets**" (VDAs). There is a 30% tax on income from the transfer of these assets and a 1% TDS on transactions, which implies that while they are not currency, dealing in them is permitted under a regulated tax framework.

9. (a)

Statement 1 is correct: Union Budget 2025 announced the further increase of FDI sectoral cap for the insurance sector from 74% to 100%. And recently, Bima Sabki Raksha (Amendment of Insurance Laws) Act, 2025, was passed allowing 100% foreign direct investment (FDI). This enhanced limit will be available for those companies which invest the entire premium in India.

Statement 2 is correct: The Indian insurance market is heavily dominated by the life insurance segment. The share of life insurance business for India is at around 75 per cent while the share of non-life insurance business is at around 25%.

Statement 3 is not correct: To facilitate the ease of doing business and speed up product launches, the **Insurance Regulatory and Development Authority of India (IRDAI)** has introduced the "**Use and File**" procedure for most life and general insurance products. Under this new regime, insurance companies can launch new products **without prior approval** from the regulator, provided they file the product details with the IRDAI within a specified timeline.

10. (c)

Option (c) is the correct answer: According to the **Expenditure Method**, Gross Domestic Product (GDP) is calculated as the sum of all final expenditures in the economy. The formula is:

$$GDP = C + G + I + (X - M)$$

Where:

- **C** = Private Final Consumption Expenditure
- **G** = Government Final Consumption Expenditure
- **I** = Final Investment Expenditure (Gross Domestic Capital Formation)
- **X – M** = Net Exports (Exports minus Imports)

Data given:

- **C** = ₹50,000 crore, **G** = ₹9,000 crore, **I** = ₹10,000 crore
- **Net Exports (X – M)** = ₹7,000 – ₹8,000 = – ₹1,000 crore

Therefore, GDP = 50,000 + 9,000 + 10,000 + (– 1,000) **GDP** = 69,000 – 1,000 **GDP** = ₹68,000 crore

11. (c)

Statement I is correct: India imports a significant share of its crude oil in the form of **sour crude**, primarily from the Middle East.

Statement II is correct and explains Statement I: Sour crude oil contains **higher sulphur content** and is therefore **cheaper** in the international market compared to sweet crude oil. India's refineries, especially newer and upgraded ones, are configured to process heavier and sourer crudes, making such imports economically attractive.

Statement III is not correct: Sour crude oil requires **more complex and expensive refining processes** (such as **hydrodesulfurization**) to remove the excess sulfur and meet stringent environmental standards like **BS-VI**. In contrast, sweet crude oil contains very little sulfur and is much easier and cheaper to refine into high-quality fuels like petrol and diesel.

12. (c)

Context: Recently, the Parliament has passed the **Viksit Bharat- Guarantee for Rozgar and Aajeevika Mission (Gramin) Bill, 2025**, also referred to as **Viksit Bharat- G RAM G Bill, 2025**. The Bill represents a comprehensive statutory overhaul of **MGNREGA**, aligning rural employment with the long-term vision of **Viksit Bharat 2047**

Option (c) is not correct: The Viksit Bharat – Guarantee for Rozgar and Aajeevika Mission (Gramin) Bill, 2025 retains the provision that if a person seeking work is not provided employment within 15 days, the State Government must pay the unemployment allowance. The liability for unemployment allowance and compensation for delayed payments remains with the States, not the Central Government.

Option (a) is correct: The Bill increases the guaranteed wage employment from at least 100 days to **125 days** in a financial year for every rural household whose adult members volunteer for unskilled manual work.

Option (b) is correct: The Act envisages a shift from a central sector scheme to a centrally sponsored framework reflecting the inherently local nature of rural employment and asset creation. Under the new architecture, states share both cost and responsibility through a normative allocation framework, creating stronger incentives for effective implementation and preventing misuse. Planning is grounded in regional realities through Gram Panchayat Plans. At the same time, the Centre continues to set standards, while states execute with accountability, resulting in a cooperative partnership that improves efficiency and strengthens outcomes.

Option (d) is correct: To address the issue of farm labor shortage, the Bill mandates State Governments to **pre-notify a period of up to 60 days** in every financial year (covering peak sowing and harvesting seasons) during which works under the scheme **shall not be undertaken**.

MGNREGA	Viksit Bharat-G RAM G
100 days of wage employment per rural household	125 days of wage employment per rural household
Multiple and scattered categories of works with limited strategic focus	4 clearly defined priority areas focusing on water security, rural infrastructure, livelihoods and climate resilience
Center bears unskilled wage costs, states bear unemployment allowance	State cost-sharing for wages, 60:40 for most states, 90:10 for certain special-category regions
No explicit statutory "pause window"	States can notify up to 60 days in a FY when work will not be executed
Demand based funding with unpredictable allocations	Normative funding ensuring predictable budgeting while protecting the employment guarantee
Gram Panchayat planning is central	Integrates institutionalised convergence and infrastructure planning

13. (b)

Option (b) is the correct answer: A low and stable rate of inflation is preferred because it stimulates

Aggregate Demand. When people expect prices to rise slightly in the future, they are encouraged to consume and invest now rather than delaying purchases. This helps in avoiding a **Liquidity Trap** or a **Deflationary Spiral**, where falling prices lead to reduced spending, lower production, and higher unemployment.

14. (a)

Statement 1 is not correct: Makhana, commonly known in English as fox nut, is the dried edible seed of the prickly water lily or gorgon plant (*Euryale ferox*). It is often confused with but is botanically distinct from the Lotus plant (*Nelumbo nucifera*).

- Prickly water (*Euryale ferox*) lily is found in freshwater ponds throughout South and East Asia. It is recognized for its violet and white flowers, as well as its large, round, and prickly leaves, which can often exceed a meter in diameter.

Statement 2 is correct: India is the largest producer of makhana in the world, accounting for nearly 80 per cent of global production. India is also the largest exporter of makhana, with major markets including the United States of America, Canada, Australia and the Middle East.

Statement 3 is not correct: Bihar accounts for approximately 90% of India's makhana production. Despite being the largest producer, Bihar has not been able to harness makhana's growing market. The largest makhana exporters in India are Punjab and Assam; the former does not even grow its own makhana.

Additional information:

- In 2022, 'Mithila Makhana' was conferred a Geographical Indication tag.

15. (a)

Statement 1 is correct: The **HOPE (Himalayan Outpost for Planetary Exploration)** mission is a space analog mission designed to simulate space-like conditions on Earth. It serves as a testing ground for human adaptability, life support systems, and habitat technologies in preparation for future long-duration missions to the Moon and Mars.

Statement 2 is correct: Tso Kar valley in Ladakh was specifically selected for this analog mission due to its striking environmental parallels with early Mars, due to high UV flux, low air pressure, cold extremes and saline permafrost.

Statement 3 is not correct: An analog mission is strictly a **ground-based simulation** conducted on Earth. It does **not** involve launching astronauts into space or Low Earth Orbit (LEO). The primary objective is to study the physical and psychological effects of isolation and confinement in a controlled, Earth-based environment that mimics extraterrestrial challenges.

16. (a)

Context:

- ICAR–Central Rice Research Institute (CRRI), Cuttack, has been granted a patent for its breakthrough innovation “Systems and Methods for Targeted
- Genome Editing in Plants”, centred on a miniature RNA-guided nuclease TnpB.
- India Launches First Indigenous CRISPR Gene Therapy for Sickle Cell Disease.

Statement 1 is correct: TnpB-based gene-editing technology, recently patented by ICAR-National Rice Research Institute (NRRI), uses the TnpB protein, which is significantly smaller (about 408 amino acids) than the widely used Cas9 (approx. 1300 amino acids) or Cas12a enzymes. This compact size allows for easier delivery into plant cells, such as rice, via viral vectors, enabling precise genome editing without the limitations of larger proteins. It is considered a major indigenous breakthrough offering an alternative to foreign patented CRISPR systems.

Statement 2 is not correct: **Birsa-101** is **not a rice variety**. It is India's first indigenous CRISPR-based **gene therapy for Sickle Cell Disease**, developed by the **CSIR-Institute of Genomics and Integrative Biology (IGIB)**. It is named in honour of the tribal freedom fighter **Birsa Munda**. The genome-edited rice varieties recently released by ICAR are **Pusa DST Rice 1** (drought and salt tolerant) and **DRR Dhan 100 (Kamala)** (high yield and stress tolerant).

17. (d)

Option (d) is the correct answer: **Thermal stability** is a major disadvantage of Lithium-ion batteries compared to Lead-acid batteries. Li-ion batteries are sensitive to high temperatures and are prone to a phenomenon called **Thermal Runaway**, where an increase in temperature causes a further increase in temperature, potentially leading to fires or explosions. Because of this, they require sophisticated **Battery Management Systems (BMS)** to monitor temperature and voltage.

- In contrast, Lead-acid batteries are thermally robust and can withstand rougher handling and wider temperature ranges without complex safety circuits.

18. (c)

Statement 1 is correct: The **Dark Web** consists of websites that exist on an encrypted network and cannot be found by using traditional search engines (like Google or Bing) or visited by using traditional browsers. It requires specialised software (such as Tor) for access.

Statement 2 is not correct: Merely accessing the Dark Web is **not illegal** in India. The technology itself provides privacy and anonymity, which can be used for legitimate purposes (e.g., by journalists or whistleblowers). However, activities conducted on the Dark Web that violate Indian laws (such as trafficking, hacking, or illegal trade) are punishable under relevant statutes.

Statement 3 is correct: The internet is often described using an “iceberg model.”

- **Surface Web:** The small portion visible above water (indexed by search engines).
- **Deep Web:** The massive portion below water not indexed by search engines (e.g., online banking pages, medical records, private databases).
- **Dark Web:** A small subset of the Deep Web that is intentionally hidden and requires specific software to access

19. (c)

Context: Mary E. Brunkow, Fred Ramsdell and Shimon Sakaguchi are awarded the Nobel

Prize in Physiology or Medicine 2025 for their groundbreaking discoveries concerning peripheral immune tolerance that prevents the immune system from harming the body.

Assertion (A) is correct: **Peripheral immune tolerance** is indeed essential for preventing autoimmune diseases. It serves as a secondary checkpoint in peripheral tissues (like lymph nodes and spleen) to neutralize or suppress self-reactive T and B cells that act against the body’s own tissues.

Reason (R) is incorrect: The process described in the reason refers to **Central Tolerance**, not Peripheral Tolerance.

Central Tolerance occurs in the primary lymphoid organs (**Thymus** for T cells and **Bone Marrow** for B cells), where developing immune cells are exposed to self-antigens, and those that react too strongly are deleted (negative selection) before they mature and exit.

Peripheral Tolerance occurs *after* the cells have matured and left the thymus. It deals with the self-reactive cells that managed to escape the central screening process.

Additional information: Regulatory T (TReg) cells are essential for maintaining peripheral tolerance. As the name suggests regulatory T cells (also called Tregs) are T cells which have a role in regulating or suppressing other cells in the immune system. Tregs control the immune response to self and foreign particles (antigens) and help prevent autoimmune disease.

20. (a)

Context: Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act, 2025 consolidates and modernises India’s nuclear legal framework. It enables limited private participation in the nuclear sector under regulatory oversight.

- 1 and 2 are permitted for private entities: The Act permits private companies to undertake the following activities:

Undertake plant operations, power generation, equipment manufacturing

- Selected activities such as the fabrication of nuclear fuel including conversion, refining

and enrichment of uranium-235 up to such threshold value

- Production, use, processing or disposal of other prescribed substances.
- **Note:** In addition, all activities that involve radiation exposure must obtain prior safety authorisation from the regulatory authority.

3 and 4 are not permitted: Under the Act, certain sensitive nuclear fuel-cycle activities are reserved exclusively for the Central Government or its wholly owned institutions. These include:

- Enrichment or isotopic separation of prescribed or radioactive substances (unless otherwise notified)
 - ♦ **Management of spent fuel such as reprocessing, recycling, radionuclide separation**
 - ♦ **High-level waste handling, production and upgradation of heavy water, and any other facilities or activities specifically notified by the Government.**

Additional information:

- It strengthens statutory regulation by granting statutory recognition to the Atomic Energy Regulatory Board (AERB).
- The Act repeals two major legislations: the Atomic Energy Act (AEA), 1962 and the Civil Liability for Nuclear Damage Act (CLNDA), 2010.

21. (a)

Statement 1 is correct: Radar (Radio Detection and Ranging) works on the principle of transmitting electromagnetic waves (radio waves) towards an object and detecting the echo reflected back. By measuring the **time delay** between the transmission of the pulse and the reception of the echo, the distance (range) of the object is calculated.

Statement 2 is correct: A Doppler Radar (or Pulse-Doppler Radar) utilizes the **Doppler Effect** to measure the velocity of a target. When radio waves bounce off a moving object, their frequency changes (Doppler shift). By analyzing this frequency shift along with the time delay, the radar can determine both the **distance** and the **velocity**

(speed and direction) of the moving object relative to the radar.

Statement 3 is not correct: Radar systems typically operate in the **radio** and **microwave** regions of the electromagnetic spectrum. These waves have **longer wavelengths** (ranging from millimeters to meters) compared to **visible light** (which ranges from approx. 380 to 700 nanometers).

- **Additional information:** In the electromagnetic spectrum, wavelength decreases in the order: Radio waves > Microwaves > Infrared > Visible light > Ultraviolet > X-rays > Gamma rays.

22. (d)

Statement 1 is correct: Iron Pillar of Delhi is standing under the open sky for over 1,600 years and still stands tall without rusting. Scientists believe it is rust-resistant because a unique thin layer, created by the special iron used and oxygen from the air, forms on the surface of the iron, protecting it from corrosion.

Statement 2 is correct: The inscription on the iron pillar in Delhi speaks of a king named 'Chandra', who has been identified with Chandragupta II (not to be confused with Chandragupta Maurya from the Maurya dynasty). Chandragupta II, also known as 'Vikramāditya', was one of the renowned rulers of the Gupta dynasty. He was a devotee of Viṣṇu.

Statement 3 is correct: Iron Pillar was probably erected first in front of the Udayagiri caves (Madhya Pradesh) and brought to Delhi a few centuries later. Currently, it is located within the Qutb Minar complex in Delhi.

23. (d)

Bhadrakali Temple Inscription carved in 1169 CE in Prabhas Patan serves as a primary record for the roles various rulers played in the legacy and reconstruction of the Somnath Temple. It mentions the construction of Somnath Mahadev in all four yugas. Accordingly, in the Satya Yuga, Chandra (Soma) built it of gold; in the Treta Yuga, Ravana built it of silver; in the Dvapara Yuga, Shri Krishna built it of wood. These comprise the earliest three temples.

- **Statement 1 is correct:** Kumarapala constructed the fifth Somnath temple in 1169 CE on the same site as previous structures. His devotion is credited with helping raise Somnath as a proud symbol of Gujarat's Golden Age.
- **Statement 2 is correct:** During its 1299 invasion of Gujarat, Alauddin Khalji's army, led by Ulugh Khan, defeated the Vaghela king Karna, and sacked the Somnath temple. The temple was rebuilt by Mahipala I, the Chudasama king of Saurashtra in 1308 and the *lingam* was installed later by his son. This is not mentioned in the Bhadrakali Temple Inscription.
- **Statement 3 is correct:** Bhimdev I of the Solanki Dynasty is credited with constructing a beautifully artistic stone temple for Somnath. He built the fourth temple on the site's earlier remains.

Additional information:

- In 1026, during the reign of Bhima I, the Turkic Muslim ruler Mahmud of Ghazni raided and plundered the Somnath temple, breaking its *jyotirlinga*. He took away a loot of 20 million dinars. Kumarapala rebuilt the Somnath temple in "excellent stone and studded it with jewels," according to the inscription in 1169.
- The Iron Man of India and Deputy Prime Minister Vallabhbhai Patel ordered the reconstruction of the Somnath temple. Accordingly, The Somnath Trust was established to collect funds and oversee the construction of the temple. The new structure was built by the traditional Somapuri builders of temples in Gujarat. In 1951, Dr. Rajendra Prasad, the President of India performed the installation ceremony for the temple.

24. (b)

The correct chronological order is as follows:

Option 3 - Ramanuja, born in Tamil Nadu in the 11th century, was deeply influenced by the Alvars. According to him the best means of attaining salvation was through intense devotion to Vishnu. He propounded the doctrine of Vishishtadvaita or qualified oneness in that the soul even when united with the Supreme God remained distinct.

Ramanuja's doctrine greatly inspired the new strand of bhakti which developed in north India subsequently.

Option 2 - Sant Dnyaneshwar was a 13th-century Marathi saint who founded the Varkari tradition in Maharashtra. He authored the *Dnyaneshwari* (a commentary on the Bhagavad Gita). His work, emphasizing devotion to Lord Vitthal and Advaita philosophy, made spiritual knowledge accessible to common people, influencing later saints like Eknath and Tukaram.

Option 1 - Srimanta Sankardeva (15th-16th century) was the founder of the Vaishnavite sect in Assam. He began discussing his new concepts of neo-Vaishnavism by holding regular discourses and prayers. These places became a centre for the establishment of the unique monastic institution called Sattr. Sankardeva wrote Chihn-Yatra, his first play or 'drama with paintings' on Vaikuntha, Lord Vishnu's celestial abode. Following this, he wrote many other bhaonas, a unique form of drama.

Option 4 - Tukaram was a 17th-century Marathi poet, Hindu saint, and ardent follower of Lord Shri Vitthal, also known in Maharashtra as Tuka, Tuko Baraya, and Tukoba. In Maharashtra, he was a Saint of the Varkari sampradaya (Marathi-Vaishnav tradition). Tukaram's poetry is often regarded as the pinnacle of the Bhagawat tradition.

25. (a)

Statement 1 is correct: Vaikom Satyagraha was an important struggle to end caste discrimination in the erstwhile princely state of Travancore. With political support, the Vaikom Satyagraha was launched in 1924 in protest against the restrictions on marginalised communities from using the public roads around the Vaikom temple.

Statement 2 is not correct: Mahatma Gandhi also supported the movement unconditionally and visited Vaikom in 1925. He held a series of discussions with leaders of various caste groups.

Statement 3 is not correct: The Vaikom Satyagraha was officially withdrawn in November 1925 after consultations between Gandhi and W.H. Pitt (police commissioner of Travancore).

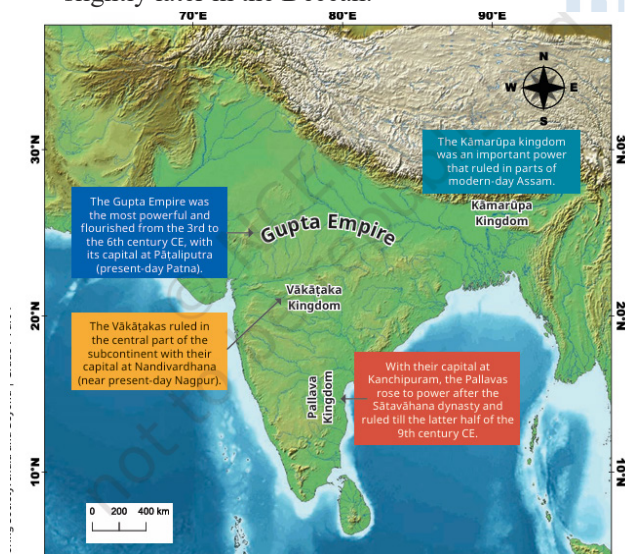
A compromise was reached for grant of access to roads. **The Satyagraha did not result in the opening of the Vaikom Temple to all castes. In 1936, the historic Temple Entry Proclamation was signed by the Maharaja of Travancore which removed the age-old ban on the entry of temples.**

Additional information:

- Madhavan, K.P. Kesava Menon and K. Kelappan (also known as Kerala Gandhi) are considered the pioneers of the Vaikom Satyagraha movement.
- Periyar's wife Nagammai and sister Kannammal, played an unprecedented role in the fight.

26. (c)

Option (c) is correct: Location 3 corresponds to Vakatakas. The Vakatakas were contemporaries of the Guptas, while the Chalukyas rose to prominence slightly later in the Deccan.



27. (b)

Statement 1 is correct: Riots occurred mainly in the Ryotwari areas of Poona and Ahmednagar districts of the Bombay Presidency. The Ryotwari system mandated that peasants pay high, inflexible land revenues directly to the colonial government, regardless of agricultural productivity which most peasants found it impossible to pay.

Statement 2 is not correct: The immediate targets of peasant anger were not European planters, but

moneylenders. The peasantry launched attacks on the moneylenders and destroyed the debt contracts and bonds. In several places, debt records of the moneylenders were publicly burnt.

Statement 3 is correct: Indebtedness of peasants was a key underlying cause as they resorted to borrowing from moneylenders to pay the land revenues to the colonial government. The American Civil War (1861–1865) had created a temporary boom in cotton prices, leading peasants to take loans to expand cultivation. When the war ended, prices crashed, but the government's high revenue demand remained. Peasants turned to moneylenders to pay taxes, falling into a "debt trap."

Additional information:

- During the American Civil War, most peasants had switched to cotton farming, attracted by the high prices, but the prices crashed dramatically in 1864 when the War concluded, and supply of Cotton resumed from America. The situation was made worse by a series of bad harvests over the next several years. It was during this period of crisis that the British administration suddenly raised land revenue by over 50%.
- Organisations such as the Poona Sarvajanik Sabha threw their weight behind the peasantry, and campaigned actively for relief to the struggling agriculturalists.
- The demonstration of anger by the peasantry compelled the administration to swing into action, and the Deccan Agriculturalists Relief Act was passed in 1879 to extend protection to them against the moneylenders.

28. (c)

Option (c) is the correct answer: Natyashastra, attributed to sage Bharata Muni is the foundational ancient Indian treatise on dramaturgy i.e. theatre, dance, and music. It defines natya (drama) as the "fifth Veda" detailing chapters on performance art, acting techniques, costumes, and the aesthetic theory of Rasa (emotional essence).

29. (d)

Statement 1 is not correct: Species in tropical regions tend to have narrower ecological niches

(they are specialists), while species in temperate regions tend to have broader ecological niches (they are generalists). The tropical climate is stable and predictable over long periods. This stability allows species to evolve highly specialized adaptations (narrow niches) to exploit specific resources and coexist with many other species through resource partitioning.

Statement II is correct: Temperate regions are characterized by distinct **seasonal variability** (Summer, Autumn, Winter, Spring) due to the tilt of the Earth's axis and its revolution around the sun. In contrast, tropical regions (near the Equator) experience relatively constant high temperatures and day lengths year-round, with the primary variation being rainfall (wet/dry seasons) rather than temperature.

30. (a)

Statement 1 is correct: The vast majority of plastics currently in use are synthetic polymers derived from **fossil fuels** (crude oil and natural gas). Over 99% of plastics are produced from chemicals sourced from fossil fuels.

Statement 2 is incorrect: **Polyvinyl chloride (PVC)** and **polystyrene (PS)** are notoriously difficult to recycle.

- **PVC :** Contains chlorine and other additives that make it hazardous to process and contaminate other plastics in the recycling stream.
- **Polystyrene :** Is lightweight (often foam), bulky, and easily contaminated by food, making it economically unviable to collect and recycle.
- **Note:** The most easily recyclable plastics are typically PET and HDPE.

Statement 3 is incorrect: The Government of India (under the Plastic Waste Management Amendment Rules, 2021) has banned the manufacture, import, stocking, distribution, sale, and use of plastic carry bags having a thickness **less than** 120 microns. The ban applies to *thin* bags because they are difficult to collect and recycle; thicker bags (above 120 microns) are *allowed* because they are easier to handle in the waste stream and encourage reuse due to higher cost.

31. (c)

Water Budget is a crucial tool for water management planning. It provides a comprehensive view of how much water is available from different sources, how it is utilised, and where shortages or surpluses might arise. It systematically accounts for all water inflows, outflows, and storage changes within a specific geographic area

32. (d)

- **Pair 1 is correctly matched:** Gharial prefers deep fast flowing rivers, however adult gharial have also been observed in still water branches (jheel) of rivers and in comparatively velocity-free aquatic environments of deepholes (kunds) at river bends and confluences. The surviving population can be found within the tributaries of the Ganges river system: Girwa (Uttar Pradesh), Son (Madhya Pradesh), Ramganga (Uttarakhand), Gandak (Bihar), **Chambal** (Uttar Pradesh, Madhya Pradesh and Rajasthan) and Mahanadi (Orissa).
- **Pair 2 is correctly matched:** Indus River dolphins are believed to have originated in the ancient Tethys Sea. When the sea dried up approximately 50 million years ago, the dolphins were forced to adapt to their only remaining habitat—rivers. Today, they can only be found in the lower parts of the Indus River in Pakistan and in the River Beas, a tributary of the Indus River in Punjab, India.
- **Pair 3 is correctly matched:** Mahseer roughly translates as mahi – fish and sher – tiger, and hence is also referred as tiger among fish. It is a large cyprinid and known to be the toughest among the fresh water sport fish. Golden Mahseer lives in fast-moving waters, inhabiting hill streams with a rocky and stony substrate. They can be found in temperatures between 5°C and 25°C. The fish has also been introduced in lakes and occurs in large reservoirs. **The Golden Mahseer inhabits the Himalayan foothills, the Indus, Ganga and Brahmaputra basins and can also be found down south in the Balamore, Cauvery, Tambraparini, and Kosi Rivers.**

33. (a)

1, 2, and 4 are correct: These methods fall under the category of **Solar Radiation Management (SRM)**, which aims to cool the planet by reflecting a small percentage of incoming solar energy back into space.

- **1. Stratospheric Aerosol Injection:** Involves spraying reflective particles (like sulfur dioxide) into the upper atmosphere to scatter sunlight, mimicking the cooling effect of volcanic eruptions.
- **2. Marine Cloud Brightening:** Involves spraying sea salt into low-lying clouds to make them whiter and brighter, thereby increasing their reflectivity (albedo).
- **4. Space-based Solar Reflectors:** Involves placing giant mirrors or sunshades in orbit to physically block or reflect sunlight before it reaches Earth.

3 is not correct: **Ocean Fertilisation** is a type of **Carbon Dioxide Removal (CDR)**, not Solar Radiation Management. It involves adding nutrients (like iron) to the ocean to stimulate phytoplankton growth, which absorbs CO_2 from the atmosphere. It does not primarily work by reflecting sunlight.

34. (c)

Statement 1 is correct: **Chemical Oxygen Demand (COD)** measures the amount of oxygen required to chemically oxidize *total* organic matter (both biodegradable and non-biodegradable) in water. **Biological Oxygen Demand (BOD)** measures the oxygen required by microorganisms to decompose only the *biodegradable* organic matter. Since COD represents the total organic load and BOD represents only the biodegradable portion, a large difference between the two (a high COD/BOD ratio) indicates that a significant portion of the organic matter present is **non-biodegradable** (recalcitrant) and cannot be broken down by bacteria.

Statement 2 is correct:

- **Domestic sewage** primarily consists of easily biodegradable organic waste (food, excreta),

leading to a BOD value that is relatively close to the COD value.

- **Industrial effluents** often contain complex synthetic chemicals, heavy metals, and toxic compounds that are resistant to biological degradation or toxic to microorganisms. This results in a much higher COD (due to chemical oxidation) but a lower BOD (due to poor biological breakdown), leading to a significantly **higher COD relative to BOD** compared to domestic sewage.

35. (d)

Statement 1 is incorrect: Eco-Sensitive Zones (ESZs) are notified by the **Central Government** (specifically the Ministry of Environment, Forest and Climate Change - MoEFCC), not by the State Governments. The State Governments only submit proposals for these zones. The notification is issued under the **Environment (Protection) Act, 1986**.

Statement 2 is incorrect: ESZs are **not** designated within the core zones. They are areas **surrounding** Protected Areas (National Parks, Wildlife Sanctuaries etc). Their purpose is to act as “shock absorbers” or transition zones between the high-protection core areas and the lower-protection general areas.

Statement 3 is incorrect: Agricultural activity is **allowed** in ESZs. Activities permitted in the areas include ongoing agriculture and horticulture practices by local communities, rainwater harvesting, organic farming etc.

36. (b)

Statement 1 is correct: The Census of India enumerates every person residing in the country at the time of the census, regardless of their nationality. This means it includes both Indian citizens and foreign nationals (non-citizens) who are present in the country during the enumeration period. It is a headcount of the total population, unlike the National Register of Citizens (NRC), which is specifically for citizens.

Statement 2 is not correct: The Office of the Registrar General and Census Commissioner, India (ORGI) is responsible for conducting the decennial

Census. This office functions under the Ministry of Home Affairs (MHA), Government of India, and not directly under the Prime Minister's Office (PMO).

Statement 3 is correct: For the first time since independence, Census 2027 will include caste enumeration for all individuals. Caste except Scheduled Caste (SC) and Scheduled Tribes (ST) has been excluded from all census operations conducted since independence.

Additional information:

- The earliest references of conducting census in the country can be found in Kautilya's 'Arthashastra' (321-296 BC) and later in the writings of Abdul Fazl's in 'Ain-e-Akbari' during the days of Emperor Akbar.
- The first modern population census in India was conducted between 1865 and 1872, though it didn't happen simultaneously across all regions. India conducted its first coordinated census in 1881.
- The Census Act, 1948 and the Census Rules, 1990 provide the legal framework for conduct of Census.
- Census 2027 will be the 16th Census in the country and 8th after independence.
- It is the first Census by digital means in the country. Data will be collected using mobile applications that will be available for both Android as well as iOS versions.
- Option to self-enumerate will be provided to the public.

37. (b)

Option (b) is the correct answer: The **Lipulekh Pass** is a high-altitude Himalayan pass located at the strategic **tri-junction** of the Indian state of **Uttarakhand** (Pithoragarh district), **Nepal**, and China.

- Old Lipulekh pass is situated in the Vyas valley of Pithoragarh district in Uttarakhand and it carries immense religious significance as a route for the annual Kailash Mansarovar Yatra.

38. (b)

1, 2, 4 and 5 are correct: The **Southern Common Market (MERCOSUR)** is a South American trade

bloc established by the **Treaty of Asunción** in 1991 and the Protocol of Ouro Preto in 1994. Its full members are **Argentina, Brazil, Paraguay, and Uruguay**. Recently, **Bolivia** has also become a full member (officially admitted in 2024). **Venezuela** is a full member but has been **suspended** since 2016 due to the violation of the bloc's democratic clause.

- It is the third largest integrated market after the European Union (EU), North American Free Trade Agreement (NAFTA).
- India has a Preferential Trade Agreement with MERCOSUR.

39. (c)

Directorate General of Civil Aviation is an attached office of the Ministry of Civil Aviation.

Option (c) is correct: Among the given functions, except for "Investigation Of All Civil Aviation Accidents", all others are functions of DGCA. The Aircraft Accident Investigation Bureau (AAIB), established in 2012 under the Ministry of Civil Aviation, is responsible for the investigation of serious accidents and incidents. All Accidents and Serious Incidents involving aircraft with AUW more than 2250 Kgs or Turbojet aircraft are investigated by AAIB.

40. (a)

Option (a) is the correct answer: The discovery of **jarosite** in the **Kutch region** (specifically Matanomadh village) is significant because jarosite is a hydrous sulphate of potassium and iron that forms only in the presence of **water**. Its discovery on **Mars** (by NASA's Opportunity rover) was considered strong evidence of past water activity on the Red Planet. Therefore, finding it in Kutch indicates that the area once possessed **environmental and chemical conditions** similar to those on Mars, serving as a terrestrial analogue or "blueprint" for understanding Martian geology.

41. (a)

Context: Hockey India is celebrating a year-long celebration marking the 100th anniversary of Indian Hockey.

Statement 1 is correct: The first national body for hockey was formed in 1925 in the historic city of Gwalior.

Statement 2 is correct: Hockey India provides the equal prize money for Men's and Women's Teams winning tournaments and standardized match-winning fees across genders. Hockey remains the only team sport in the nation with complete pay parity.

Statement 3 is not correct: The Indian women's hockey team did not win a medal at the Tokyo Olympics in 2020. They achieved a historic 4th place finish, narrowly losing the bronze medal match to Great Britain (4-3). It was the Indian men's team that won a bronze medal at the Tokyo Olympics, ending a 41-year medal drought.

- **Additional information:** Indian team won the first Olympic Gold medal beating Netherlands in Amsterdam. Since then, Indian hockey team has won a total of eight Olympic Gold medals - highest number of gold medals by any country at the Olympics till date.

42. (d)

Statement I is Correct: Medium-textured soils like loam and clay loam contain a balanced mix of sand, silt, and clay. This gives them both large pores (for drainage) and small pores (for retention). Hence, they **hold adequate moisture** and allow good aeration and **plant root growth**.

- **Example: Loamy soils of the Indo-Gangetic plains** are ideal for crops like wheat, rice, and sugarcane because they **have high water-holding capacity and good permeability**.

Statement II is Not correct: Clay soils have very fine particles and tiny pores. They hold maximum total water, but much of it is **tightly bound and unavailable to plants**.

- **Example: Heavy black cotton soils (clayey) in Maharashtra and Madhya Pradesh retain moisture** but can become waterlogged and crack on drying thus **limiting the plant growth**.

Statement III is correct: When **soil is compacted** (due to heavy machinery, overgrazing, or lack of organic matter), the pore spaces collapse. As a result water infiltration slows down, roots can't penetrate easily. It significantly restricts the effective water uptake by plants even if water is present.

43. (b)

A is correct: P waves are faster and travel through solids, liquids and gases, while S-waves are slower and can travel only through solids because fluids lack shear strength. In seismograms, P-waves reach first, followed by S-waves, helping locate an earthquake's epicenter.

R is correct: S-waves are transverse waves, meaning that the rock particles vibrate perpendicular to the direction of wave propagation. In contrast, P-waves are longitudinal waves, where particles vibrate parallel to the direction of wave travel

R does not correctly explain A: While the reason correctly describes the nature of S-waves, it does not explain why they are slower. Wave speed depends on the elastic properties and density of the material it passes through. S-waves are slower because they rely only on a material's shear strength to move, while P-waves use both compression and shear forces, giving them a stronger push and hence greater speed.

44. (a)

Pair 1 is correctly matched: The temperate grasslands of **Australia are called Downs**, parts of eastern Australia, mainly in Queensland and New South Wales.

Pair 2 is not correctly matched: Canterbury Plains are located in New Zealand, not Brazil. They are fertile alluvial plains on the South Island mainly used for dairy and sheep farming. **Brazil has Campos** (tropical/subtropical grasslands) not Canterbury.

Pair 3 is not correctly matched: Velds are temperate grasslands of South Africa, not South America. Velds located mainly in the **Highveld plateau**, between **Drakensberg Mountains and Kalahari Desert**.

Pair 4 is not correctly matched: Pampas are temperate grasslands of Argentina and Uruguay in South America, not North America known for cattle ranching and wheat farming.

Pair 5 is correctly matched: Pustaz are temperate grasslands of Hungary in Central Europe. Used for wheat cultivation and dairy farming.

45. (c)

Statement 1 is correct: Abor Hills located in Arunachal Pradesh, part of the Eastern Himalayas. Drained by the Dibang River, a tributary of the Brahmaputra.

Statement 2 is correct: Mishmi Hills located in the northeastern tip of Arunachal Pradesh, forming the boundary with China and Myanmar. Hence, the Mishmi Hills touch the India–China border.

Statement 3 is correct: Seshachalam Hills located in Andhra Pradesh, forming part of the southern Eastern Ghats near Tirupati. Recognized as a Biosphere Reserve (declared 2010). Composed mainly of Archaean quartzite and limestone.

46. (d)

Statement 1 is correct: The magnitude of temperature anomalies is generally larger in the Northern Hemisphere than in the Southern Hemisphere. This is because the Northern Hemisphere has a much higher percentage of landmass. Land has a lower specific heat capacity than water, meaning it heats up and cools down much faster. Consequently, the temperature contrasts (anomalies) from the average are significantly sharper and more extreme in the North compared to the ocean-dominated Southern Hemisphere, where the water moderates temperature fluctuations.

Statement 2 is correct: During January (winter in the Northern Hemisphere), the land surfaces cool down rapidly due to the loss of outgoing longwave radiation. This causes the continents to become colder than the average temperature for their latitude, resulting in negative anomalies. In contrast, the oceans retain heat for longer (high thermal inertia) and remain warmer than the surrounding land at the same latitude, resulting in positive anomalies.

Statement 3 is correct: During July (summer in the Northern Hemisphere), the situation reverses. The continents heat up quickly under intense insolation, becoming warmer than the latitudinal average, which creates positive anomalies. The oceans, warming up much more slowly, remain

relatively cooler than the land, resulting in negative anomalies.

47. (a)

Pair 1 is correctly matched: The Hundru Fall on the Subarnarekha River is an example of a knick point caused by rejuvenation. It is located Near Ranchi, in Jharkhand (Ranchi Plateau). The Subarnarekha flows over the Chota Nagpur Plateau. It plunges abruptly creating the Hundru Falls, one of Jharkhand's highest waterfalls.

Pair 2 is correctly matched: Chitrakote Fall on the Indravati River in Bastar is often called the Niagara of India. It is located Near Jagdalpur, Bastar District, Chhattisgarh. The Indravati River cuts through the Chhattisgarh Plateau (part of the Dandakaranya region).

Pair 3 is correctly matched: Kunchikal Fall is not formed by the Narmada River. The Kunchikal Fall is formed by the **Varahi River in the Western Ghats of Karnataka**. It is Located Near Agumbe, Shivamogga District, Karnataka . **The Varahi River** originates in the Western Ghats and flows westward into the Arabian Sea. **Hence, this pair is incorrect.**

48. (b)

Statement 1 is correct: Greenland is geographically part of the North American continent, based on geological and tectonic characteristics, even though it is politically linked to Europe.

Statement 2 is not correct: Greenland does **not lie entirely within the Arctic Circle**. While a large part of Greenland is within the **Arctic Circle**, its southern regions extend **south of it**.

Statement 3 is correct: Greenland is **politically an overseas territory of Denmark**. It enjoys a high degree of self-governance but Denmark retains control over defence and foreign affairs.

49. (b)

Statement 1 is not correct: While the date of election of the Speaker is fixed by the President, the date of election of the **Deputy Speaker** is fixed by the **Speaker** of the Lok Sabha (under Rule 8 of

the Rules of Procedure and Conduct of Business in Lok Sabha).

Statement 2 is correct: The procedure for removing both the Speaker and the Deputy Speaker is identical. According to **Article 94** of the Constitution, they can be removed by a resolution of the Lok Sabha passed by a **majority of all the then members of the House** (Effective Majority). A minimum of 14 days' notice must be given before moving such a resolution.

Statement 3 is correct: **Article 93** of the Constitution states that the Lok Sabha shall choose the Speaker and Deputy Speaker "**as soon as may be**." However, neither the Constitution nor the Rules of Procedure prescribe a specific timeline for holding the election of the Deputy Speaker.

50. (c)

Option (c) is the correct answer: The **Fifteenth Finance Commission (XV FC)** recommended the following criteria and weightages for the horizontal devolution of central taxes among states for the period 2021-26:

- **Income Distance: 45%** (Highest weightage)
- **Population (2011 Census): 15%**
- **Area: 15%** (Not listed in the question)
- **Demographic Performance: 12.5%**
- **Forest and Ecology: 10%** (Not listed in the question)
- **Tax and Fiscal Efforts: 2.5%** (Lowest weightage)

Arrangement in descending order: Income Distance (45%) > Population (15%) > Demographic Performance (12.5%) > Tax and Fiscal Efforts (2.5%) (**Sequence: 2 – 1 – 4 – 3**)

51. (a)

Statement 1 is not correct: Constitutional safeguards regarding preventive detention are provided under **Article 22**, which falls under the **Right to Freedom** (Articles 19–22). The **Right against Exploitation** (Articles 23–24) deals with the prohibition of traffic in human beings, forced labor, and employment of children in hazardous factories.

Statement 2 is correct: Under **Article 22(5)** of the Constitution, the authority detaining a person under preventive detention must communicate the grounds of detention "as soon as may be" and afford the detainee the **earliest opportunity of making a representation** against the detention order.

Statement 3 is not correct: The safeguard of being produced before a magistrate within 24 hours (Article 22(2)) applies only to ordinary arrests (punitive detention). **Article 22(3)** explicitly states that this protection **does not apply** to any person who is arrested or detained under any law providing for **preventive detention**.

52. (b)

Statement 1 is correct: The **Constitution of India** does not prescribe any specific qualifications for the appointment of the Chairperson or members of the UPSC. The only provision (under **Article 316**) is that as nearly as may be **one-half** of the members of the Commission should be persons who have held office for at least **ten years** either under the Government of India or under the Government of a State.

Statement 2 is correct: According to **Article 319**, the **Chairperson of the UPSC** shall be **ineligible for further employment** either under the Government of India or under the Government of a State after ceasing to hold office. This provision ensures the independence and impartiality of the office.

- A member other than the Chairman of the Union Public Service Commission shall be eligible for appointment as the Chairman of the Union Public Service Commission or as the Chairman of a State Public Service Commission, but not for any other employment either under the Government of India or under the Government of a State;

Statement 3 is not correct: The removal process for the Chairperson or members of the UPSC is different from that of a Supreme Court Judge.

Removal process of UPSC members:

- President can remove the chairman or any other member of UPSC from the office under the following circumstances:

- If he is adjudged an insolvent (bankrupt)
- If he engages in any other paid employment during his term of office
- If in the opinion of President, he is unfit to continue in office by reason of infirmity of mind or body.

Removal on ground of misbehavior: President can also remove the chairman or any other member of UPSC for misbehavior. For removal on grounds of misbehavior, the President has to refer the matter to the Supreme Court for an enquiry. Upon enquiry, if the Supreme court advises the President for removal, then the President can remove the chairman or such member. The advice given by the Supreme Court in this regard is binding on the President.

53. (c)

Statement 1 is correct: According to **Article 110(1)(f)** of the Constitution, a bill is deemed to be a Money Bill if it contains provisions dealing with the receipt of money on account of the Consolidated Fund of India or the **Public Account of India**, or the custody or issue of such money.

Statement 2 is correct: The salary and allowances of the President are **expenditure charged** upon the Consolidated Fund of India (Article 112(3)(a)).

Article 110(1)(e) states that a bill is a Money Bill if it deals with the declaring of any expenditure to be expenditure charged on the Consolidated Fund of India or the **increasing of the amount of any such expenditure**.

Statement 3 is correct: **Article 110(1)(f)** explicitly includes “the **audit of the accounts of the Union or of a State**” as a matter that qualifies a bill as a Money Bill.

Statement 4 is not correct: **Article 110(2)** specifically clarifies that a bill shall **not** be deemed to be a Money Bill by reason only that it provides for the imposition, abolition, remission, alteration, or regulation of any tax by any **local authority or body for local purposes**.

54. (a)

Statement 1 is correct: Pax Silica is a **US-led strategic initiative** (launched in December 2025)

aimed at building a secure, resilient, and innovation-driven supply chain for **silicon and Artificial Intelligence (AI)**. The initiative focuses on securing the entire technology stack—from critical minerals and energy inputs to semiconductors, AI infrastructure, and advanced manufacturing—to reduce dependency on high-risk countries.

Statement 2 is not correct: China is not a member. The initiative is explicitly designed to counter China’s dominance in critical minerals and technology supply chains.

- The founding members who attended the inaugural summit in December 2025 were the United States, Japan, South Korea, Singapore, the Netherlands, the United Kingdom, Israel, the United Arab Emirates, and Australia. India was invited to join the initiative later.

55. (c)

1, 2, and 4 are correct: **High-frequency indicators (HFIs)** are economic data points released with high periodicity (daily, weekly, or monthly) that provide an early pulse of the economy’s health before the official quarterly data is available.

Index of Industrial Production (IIP): Released **monthly**, it tracks the manufacturing activity in the economy and is a key HFI.

Goods and Services Tax (GST) collections: Released **monthly**, it acts as a proxy for consumption and formal economic activity.

Purchasing Managers’ Index (PMI): Released **monthly**, it is a survey-based indicator that provides a forward-looking view of business activity and sentiment.

3 is not correct: **Gross Domestic Product (GDP)** is a lagging indicator released on a **quarterly** basis (every 3 months) in India. While it is the most comprehensive measure of economic growth, its low frequency and significant time lag make it a “broad” indicator rather than a “high-frequency” one.

56. (a)

Statement 1 is not correct: Depreciation of the rupee primarily leads to **cost-push inflation** (specifically “imported inflation”), not demand-

side inflation. As the rupee weakens, essential imports like crude oil, fertilizers, and electronic components become more expensive in rupee terms. This increases the cost of production for domestic industries.

Statement 2 is correct: Depreciation means that the domestic currency loses value relative to foreign currencies. Consequently, foreigners can buy more Indian goods for the same amount of their currency (e.g., one Dollar can buy more Rupees). This makes Indian exports **cheaper and more competitive** in international markets, potentially boosting export volume.

Statement 3 is not correct: An **expansionary monetary policy** (lowering interest rates or increasing money supply) would typically **worsen** the depreciation. Lower interest rates make Indian assets (like bonds) less attractive to foreign investors compared to countries with higher rates, leading to capital outflows (selling of Rupees to buy Dollars). To defend a falling rupee, the RBI would typically adopt a **contractionary** (tight) monetary policy (raising interest rates) to attract foreign capital and support the currency.

57. (b)

Option (b) is the correct answer: The **Union Budget for 2026-27** will typically include data for three consecutive years:

- **Actuals for the preceding year:** Since the budget is presented in Feb 2026, the “preceding year” is **2024-25**. (Therefore, Statement 2 is incorrect).
- **Revised Estimates (RE) for the current year:** The “current year” is **2025-26** (the year in which the budget is being presented). Since this year is still ongoing (ends March 31, 2026), final data is not available, so “Revised Estimates” are presented. (Therefore, Statement 1 is incorrect).
- **Budget Estimates (BE) for the upcoming year:** The budget is being presented for **2026-27**, so it contains the “Budget Estimates” for this year. (Therefore, Statement 3 is correct).

58. (c)

Statement 1 is correct: India’s **government debt market** (Central and State government securities)

is **significantly larger** than its corporate debt market, reflecting the government’s borrowing needs and the dominance of G-Secs in the overall debt market.

Statement 2 is correct: **Corporate bonds generally offer higher yields** than government securities of comparable maturity because they carry **credit risk**, whereas government securities are considered **sovereign risk-free**.

Statement 3 is correct: The **Reserve Bank of India (RBI)** regulates the **Government Securities (G-Sec) market** and the money market. The **Securities and Exchange Board of India (SEBI)** regulates the **corporate debt market** (corporate bonds).

Statement 4 is not correct: The classification of debt into the money market or capital market depends on **maturity**, not the issuer.

- **Money Market:** Instruments with maturity of less than 1 year (e.g., Government Treasury Bills, Corporate Commercial Papers).
- **Capital Market:** Instruments with maturity of more than 1 year (e.g., Government Dated Securities, Corporate Bonds).
- Corporate debt is a broad category covering all debt instruments issued by corporations to raise funds. It can include both money market instruments (e.g. commercial paper) and capital market instruments (e.g. Corporate bonds).
- Government bonds (dated securities) are also long-term instruments and are a core component of the capital market.

59. (a)

Pair 1 is Correct: In a PTA, two or more partners agree to reduce tariffs on agreed number of tariff lines. The list of products on which the partners agree to reduce duty is called a positive list. India MERCOSUR PTA is such an example. However, in general PTAs do not cover substantially all trade.

Pair 2 is Incorrect: An FTA involves the elimination of tariffs on substantially all trade between the member countries. However, unlike a Customs Union, members of an FTA **do not maintain a common external tariff**. Each member

retains its own independent tariff regime against non-members.

Pair 3 is Correct: A Customs Union is an advanced form of economic integration where members not only trade freely among themselves (like an FTA) but also adopt a **common external tariff (CET)** for imports from non-member countries.

Pair 4 is Correct: A Common Market integrates the features of a Customs Union (free trade + CET) and adds the **free movement of factors of production**, such as labour and capital, across member borders.

Pair 5 is Correct: Economic Union is a Common Market extended through further harmonization of fiscal/monetary policies and shared executive, judicial & legislative institutions. European Union (EU) is an example.

60. (c)

Statement 1 is correct: Sustained economic growth is a crucial driver for human development because it increases the **Gross National Income (GNI)**. This expansion of the resource base provides the government and society with the necessary financial means to invest in essential sectors like **education, healthcare, and infrastructure**, which are fundamental components of human development.

Statement 2 is correct: The link between economic growth and human development is not automatic. It depends heavily on **how the growth is distributed**. If growth is inclusive and reduces inequality, it translates into better living standards for the majority. Conversely, if growth is concentrated among the wealthy (jobless growth or exclusive growth), human development indicators may stagnate despite a rising GDP.

Statement 3 is correct: Economic growth by itself is **neither a necessary nor a sufficient condition** for human development.

It is **not sufficient** because growth without social investment or equity may not translate into better human outcomes.

- It is **not strictly necessary** because targeted public policies and redistribution can improve human development even at modest growth levels.

61. (b)

Option (b) is the correct answer: The **Resilience and Sustainability Trust (RST)** is an initiative of the **International Monetary Fund (IMF)**. IMF's Resilience and Sustainability Trust (RST) helps low-income and vulnerable middle-income countries build resilience to external shocks and ensure sustainable growth, contributing to their longer-term balance of payments stability. It complements the IMF's existing lending toolkit by providing longer-term, affordable financing to address longer-term challenges, including climate change and pandemic preparedness.

62. (a)

A – 3 (Accretion disk): An accretion disk is a rotating disk of matter (gas, dust, and stellar debris) that spirals toward a black hole. As the material falls in, friction and gravitational forces heat it to extreme temperatures, causing it to emit intense radiation (X-rays and visible light). This makes the accretion disk the **main source of light** or detectable radiation associated with a black hole.

B – 2 (Singularity): The singularity is the theoretical point at the very **center/core** of a black hole. According to general relativity, this is where the black hole's mass is compressed into an infinitely small point with **infinite density**, and where the standard laws of physics break down.

C – 1 (Event horizon): The event horizon is the **boundary** surrounding the black hole. It marks the "point of no return" where the gravitational pull is so strong that the escape velocity exceeds the speed of light. Consequently, **nothing, not even light, can escape** once it crosses this threshold.

63. (b)

Statement I is correct: Developing effective vaccines against cancer (especially therapeutic vaccines) is scientifically challenging and has been a major focus of medical research for decades.

Statement II is correct and explains Statement I: The primary reason for the difficulty in creating cancer vaccines is that **cancer cells originate from the body's own cells**. Unlike bacteria or viruses, which look foreign to the immune system, cancer

cells often lack strong “foreign” antigens. The immune system is trained to ignore “self” cells (tolerance), so it often fails to attack the tumor. Overcoming this immune tolerance without causing autoimmune damage to healthy tissues is the main hurdle.

Statement III is correct but does not explain

Statement I: It is true that some cancers are associated with viral infections. **Hepatitis D** (which infects only those already infected with Hepatitis B) is known to accelerate the progression of liver disease to cirrhosis and **Liver Cancer**. However, this fact does not explain *why* vaccines are generally hard to develop. In fact, for virus-associated cancers (like HPV-induced cervical cancer or Hepatitis B-induced liver cancer), we actually *have* successful preventative vaccines because the virus itself provides a clear foreign target.

64. (a)

Statement 1 is correct: Biosimilars are biological products that are **highly similar** to an already approved reference biological medicine (the “reference product”). This means there are no clinically meaningful differences between the biosimilar and the reference product in terms of safety, purity, and potency.

Statement 2 is not correct: Unlike generic drugs (which are identical chemical copies of small-molecule drugs), biosimilars are **not identical** copies of the reference product. Biologics are large, complex molecules produced in living cells, and natural variations occur during the manufacturing process. Therefore, a biosimilar is “highly similar” but never an exact molecular replica.

Statement 3 is correct: The primary goal of developing biosimilars is to introduce competition in the market, which drives down costs and improves **affordability and patient access** to critical biologic therapies (used for treating cancer, autoimmune diseases, etc.).

65. (a)

Statement 1 is correct: **Directed Energy Weapons (DEWs)** use concentrated electromagnetic energy or atomic/subatomic particles to damage or destroy

targets. Since they utilize lasers (electromagnetic waves) or particle beams, they deliver energy at the **speed of light** (lasers) or near the speed of light (particle beams). This allows for near-instantaneous engagement of targets.

Statement 2 is not correct: DEWs do **not** rely on kinetic energy. Kinetic energy weapons (like bullets or missiles) rely on the physical impact of a solid mass to destroy a target. In contrast, DEWs neutralise targets through **thermal effects** (melting/burning), **mechanical disruption**, or **interference** with electronic systems using concentrated energy, not physical impact.

Statement 3 is correct: The **Mk-II (A) DEW** is a **laser-based weapon system** developed by the **DRDO** and is capable of generating a **30-kilowatt** laser beam to neutralize aerial threats like drones and surveillance sensors at a range of up to 5 km. It is a “hard-kill” system that causes structural failure in the target.

66. (a)

Option (a) is the correct answer: Fentanyl is a potent **synthetic opioid** analgesic (pain reliever) that is similar to morphine but is **50 to 100 times more potent**. It is a legitimate pharmaceutical drug approved for treating severe pain, typically advanced cancer pain (often used as a patch or lozenge). However, illicitly manufactured fentanyl is a major driver of overdose deaths in the US.

Option (b) is incorrect: While the US government has designated illicit fentanyl as a “Weapon of Mass Destruction” for domestic policy and funding purposes (to unlock resources for combating it), it is not formally listed as weapon of mass destruction under the Chemical Weapons Convention.

Option (c) is incorrect: Fentanyl is fully synthetic, meaning it is made in a laboratory using chemicals. It is not derived from the opium poppy plant. Morphine and Codeine are natural opiates derived from the poppy, while Heroin is semi-synthetic.

67. (c)

Statement 1 is correct: A significant portion of the Earth’s internal heat is generated by the **radioactive decay** of isotopes such as Uranium, Thorium, and

Potassium in the Earth's crust and mantle. The rest is primordial heat left over from the planet's formation.

Statement 2 is correct: The most accessible and high-grade geothermal resources are located along **tectonic plate boundaries** (like the "Ring of Fire"), where volcanic activity and magma are closer to the surface, making it easier to tap into the heat.

Statement 3 is correct: Unlike solar (which needs sun) or wind (which needs wind), the heat from the Earth is constant 24/7, making it **independent** of weather conditions, time of day, or seasons.

Statement 4 is not correct: Geothermal energy is classified as a **renewable** energy source. While individual reservoirs can be locally depleted if heat is extracted faster than it is naturally replenished, the Earth's total heat content is practically limitless on human timescales.

68. (a)

Statement 1 is correct: Tears produced in response to **tear gas** are classified as **Reflex Tears**. Tear gas causes chemical irritation of the ocular surface, which triggers a reflex protective response leading to excessive tear production. These tears help dilute, wash away, and neutralise irritant chemicals, thereby protecting the eye.

Statement 2 is not correct: Emotional tears and reflex tears differ significantly in both composition and function.

- **Function:** While reflex tears function to protect the eye from irritants, emotional tears serve a psychological and social function
- **Composition:** Emotional tears contain a higher concentration of hormones, neuropeptides, and neurotransmitters when compared to reflexive or basal tears.

69. (b)

Kathakali and Mohiniyattam are two distinct classical dance forms originating from Kerala.

Statement 1 is incorrect: Kathakali is traditionally performed by male artists. Historically, men played all roles, including female characters (Sthree Vesham). Mohiniyattam is exclusively performed

by female dancers. The name itself means "dance of the enchantress" (Mohini, the female avatar of Vishnu) and is characterized by a graceful, feminine style.

Statement 2 is correct: Kathakali is famous for its elaborate costumes, painted faces, and masks. In Mohiniyattam, masks are not involved.

Additional information:

- Total classical dances - While the Sangeet Natak Akademi recognizes eight classical dance forms in India, the Ministry of Culture includes Chhau, bringing the total to nine. These include Bharatanatyam, Kathak, Kathakali, Kuchipudi, Odissi, Manipuri, Sattriya, Mohiniyattam, and Chhau.
- Mohiniyattam is characterized by soft, swaying movements and delicate expressions. Rooted in temple traditions, Mohiniyattam is often performed in praise of Lord Vishnu, embodying feminine grace and devotion.
- Kathakali is a vibrant dance-drama, famous for its dramatic storytelling. It combines dance, music, and acting to portray stories from epics like the Mahabharata and Ramayana.

70. (a)

Pair 1 is not correctly matched: Dhamek Stupa is located in Sarnath, Uttar Pradesh (not in Bihar). It is a massive cylindrical structure marking the spot where Gautama Buddha gave his first sermon to his five disciples after attaining enlightenment.

Pair 2 is correctly matched: Piprahwa Stupa is located in Uttar Pradesh. They were discovered by William Claxton Peppé in 1898. Inscriptions in Brahmi script found on the vases link them to the Sakya clan's share of the Buddha's relics.

Pair 3 is not correctly matched: Ramabhar Stupa is located in Kushinagar in Uttar Pradesh(not in Nepal). It was built over a portion of the Buddha's ashes on the spot where he was cremated by the ancient Malla people. Lumbini in Nepal is the birthplace of Buddha

Additional Information:

- Recently, the Prime Minister of India inaugurated "The Light and The Lotus: Relics of

the Awakened One”, an international exposition of the sacred Piprahwa relics associated with Lord Buddha in New Delhi.

- The event coincided with the recent repatriation of these Buddhist relics that had been taken out of India during the colonial period and were nearly auctioned abroad by Sotheby’s Hong Kong.

71. (d)

Statement 1 is correct: Rani Chennamma was an Indian freedom fighter and Rani of the Kittur, a former princely state in Karnataka. She led the Kittur revolt of 1824 against the British after they declined to acknowledge her adopted son as the successor according to the ‘doctrine of lapse’.

Statement 2 is correct: Awadh was annexed by the British East India Company in 1856 and Nawab Wajid Ali Shah, the last Nawab of Awadh was sent into exile to Calcutta. Later, Begum Hazrat Mahal proclaimed her son Birjis Qadar as the Nawab of Awadh and led resistance in Lucknow during 1857.

Statement 3 is correct: The Heraka movement aimed to reform and preserve the Zeliangrong Nagas’ social practices while resisting British policies and the spread of Christianity. The term “Heraka” means “pure,” and the movement aimed to revitalise the indigenous religion where the followers worship supreme god Tingkao Ragwang. Rani Gaidinliu assumed leadership of the Heraka Movement in 1931. It was linked with the Civil Disobedience Movement as she urged the Naga tribes to refuse to pay taxes and boycott British goods, making it difficult for the British administration to operate in the area.

- **Additional Information:** In 1937, Jawaharlal Nehru met Gaidinliu and was deeply moved by her determination and commitment. He referred to her as the “Daughter of the Hills” and bestowed the title “Rani” (Queen) in honour of her bravery and leadership.

72. (a)

Statement 1 is correct: Amaravati or Dhanyakatakam or Dharanikota served as the capital for the Satavahanas. It lies in modern

Andhra Pradesh on the banks of Krishna river. Pratishthana was the capital of the first Satavahana king, Simuka. It lies in modern Maharashtra on the banks of Godavari river.

Statement 2 is correct: Satavahanas coins frequently depict ship motifs serving as crucial numismatic evidence for the presence of maritime trade with the Roman Empire and Egypt.

Statement 3 is not correct: Satavahanas patronised not only Brahmanical traditions but also Buddhism and Jainism. They promoted **Brahmanism**, performing **Vedic sacrifices** like **ashvamedha** and **vajapeya**, and worshipping **Vaishnava gods** such as **Krishna** and **Vasudeva**. They were instrumental in developing the famous Amaravati Stupa and the rock-cut caves comprising chaityas and viharas for Buddhist monks at Karle, Bhaja, and Nasik. The founder of the dynasty, Simuka, is noted in records to have built Jain and Buddhist temples.

73. (c)

The Munda Rebellion, or Ulgulan (“Great Tumult”), was a major tribal uprising that occurred primarily between 1899 and 1900.

Statement 1 is correct: The Munda community historically benefited from the khuntkatti land system, which acknowledged them as the original inhabitants and cultivators of the land. However, during the 19th century, this system began to decline due to the encroachment of dikus (landlords) and thikadars (contractors), who exploited the Mundas through unfair land practices and moneylending. The introduction of the zamindari system further marginalized the Mundas, transforming them from landowners into labourers. In this context, Birsa Munda emerged as a prominent leader of Munda tribal resistance against the British colonial government and local exploiters like dikus (landlords).

Statement 2 is correct: One of the most notable consequences of Ulgulan was the enactment of the Chotanagpur Tenancy Act (CNT) in 1908. This act provided some protection to tribal land rights by restricting the transfer of tribal land to non-tribals.

Additional Information:

- Birsa Munda advocated for a revival of traditional tribal beliefs. He urged his followers to embrace Munda culture, reject superstitions, and promote unity among tribals.
- The rebels used guerilla warfare tactics, capitalising on their knowledge of the local terrain. The rebellion was marked by coordinated attacks on British installations, which demonstrated a high level of organisation.
- Despite initial successes, the Munda Rebellion was suppressed by the British in early 1900. Birsa Munda was captured and later died under mysterious circumstances in custody in 1900.
- **November 15 is celebrated as Janjatiya Gaurav Divas (Tribal Pride Day) to commemorate the birth anniversary of tribal freedom fighter Birsa Munda. The Ministry of Tribal Affairs promotes tribal art, language, and traditions through other digital initiatives such as Adi Sanskriti and Adi Vaani.**

74. (a)

Pair 1 is correctly matched: SA Dange's 1921 pamphlet, *Gandhi vs. Lenin*, compared the ideologies of Mahatma Gandhi and Vladimir Lenin, ultimately arguing that Lenin's approach of radical revolutionary action was superior for liberating the working class, as opposed to the non-violent agitation by Gandhi.

Pair 2 is not correctly matched: MS Golwalker served as the second chief of the Rashtriya Swayamsevak Sangh(RSS). His books include *Bunch of Thoughts* and *We or Our Nationhood Defined*.

- *Hind Swaraj or Indian Home Rule* is a book written by Mahatma Gandhi in which he expressed his views on Swaraj, modern civilization, mechanisation etc.

Pair 3 is not correctly matched: *India Divided* is a book written by India's first President Dr. Rajendra Prasad. It specifically examines the theory that the Hindus and Muslims of India were two nations, and concludes that the solution of the Hindu- Muslim issue should be sought in the formation of a secular

state, with cultural autonomy for the different groups that make up the nation.

- MN Roy wrote the book *India in Transition*. It explores India's transformative journey during the early 20th century, examining the impact of colonial rule and the rise of nationalism. Rooted in Marxist thought, the book emphasizes the need for revolutionary action to achieve genuine independence.

Additional Information: 2025 marks the centenaries of both the Rashtriya Swayamsevak Sangh (RSS) and the Communist Party of India (CPI), highlighting 100 years of opposing ideologies in Indian politics. Both were founded in 1925.

75. (b)

Statement 1 is correct: For the first time, Indians were allowed to be part of the Viceroy's executive council. Satyendra Prasad Sinha became the first Indian to join the Viceroy's Executive Council as a law member.

Statement 2 is not correct: Bicameral legislature at the Central level was introduced by the Government of India Act 1919 (Montagu-Chelmsford Reforms). It established a dual-house system consisting of the Council of State and the Central Legislative Assembly.

Statement 3 is correct: The most controversial feature of the 1909 Act was the provision of separate electorates for Muslims i.e. allowing Muslim members to be elected exclusively by Muslim voters. Because of this, Lord Minto became known as the "Father of the Communal Electorate".

Statement 4 is not correct: Dyarchy in the provinces or the system of dual government (dividing subjects into "reserved" and "transferred" categories) was introduced by the Government of India Act 1919, not 1909.

76. (c)

X = Assam: Bagurumba is one of the folk dances of the Bodo community from Assam, deeply inspired by nature. The dance symbolises blooming flowers and reflects harmony between human life and the natural world. It represents peace, fertility, joy and collective harmony, and is closely associated with

festivals such as Bwisagu, the Bodo New Year, and Domasi. Traditionally performed by young Bodo women, with men accompanying as musicians, the dance features gentle, flowing movements that imitate butterflies, birds, leaves and flowers. Performances are usually organised in groups, forming circles or lines that enhance its visual elegance.

Y = Painting: Sohrai, a ritualistic wall-painting tradition practised by tribal communities in Jharkhand, is typically created by women during harvest and festive seasons. Using natural earth pigments and bamboo brushes, the artists transform mud walls into vivid depictions of animals, plants, and geometric motifs—deeply connected to agrarian life and spiritual beliefs. **Sohrai Khovar Painting** has received the **Geographical Indication (GI) tag** in the year 2020.

Z = Odisha: Patachitra, or Pattachitra, is a general term for traditional, cloth-based scroll painting based in Odisha and West Bengal. It is closely associated with the **Jagannath Temple in Puri**, where it is traditionally used to **decorate the sanctum sanctorum**.

Additional Information:

- PM participated in “Bagurumba Dwhou 2026”, a historic cultural event celebrating the rich heritage of the Bodo community.
- To preserve and promote India’s rich cultural heritage, the Ministry of Culture has established the National Mission on Cultural Mapping (NMCM). Implemented by the Indira Gandhi National Centre for the Arts (IGNCA), the mission aims to document India’s cultural heritage and its potential to revitalize rural economics.
- Project PARI (Public Art of India) is a collaborative initiative by the Ministry of Culture, Lalit Kala Akademi, and the National Gallery of Modern Art to revitalize India’s public art landscape. Drawing inspiration from India’s rich artistic heritage and contemporary themes, it aims to create public art that reflects the nation’s cultural identity.
- **Patua Painting** is a folk art tradition from **West Bengal**, practiced by the **Patua** or

Chitrakar community. It is painted on **cloth scrolls** called *pati* or *patta*. It is used to narrate **Mangal Katha**, especially by **Hindu Patuas** in **Kalighat**.

77. (d)

1, 2, 3, and 4 are all correct: Mangrove plants have evolved a suite of specialized adaptations to survive in harsh, saline, and waterlogged coastal environments.

- **Viviparous reproduction:** Seeds germinate while still attached to the parent tree (e.g., in *Rhizophora*). This prevents the seed from falling into the saline water or anaerobic mud before it is ready, increasing the chances of survival.
- **Presence of pneumatophores:** These are specialized “breathing roots” (e.g., in *Avicennia*) that grow vertically upward from the underground root system. They have pores (lenticels) to take in oxygen from the air, which is scarce in the waterlogged soil.
- **Thick cuticle and sunken stomata:** To minimize water loss through transpiration (since fresh water is physiologically scarce despite being surrounded by water), mangrove leaves often have a thick waxy cuticle and sunken stomata, similar to desert plants (xerophytes).
- **Salt glands in the leaves:** Some species (e.g., *Avicennia*, *Aegiceras*) have special glands on their leaves that actively excrete excess salt absorbed from the water, often visible as white salt crystals on the leaf surface.

78. (b)

Option (b) is the correct answer: No other place on Earth is as rich and varied in marine life as the Coral Triangle. Spanning Malaysia, Indonesia, the Philippines, Papua New Guinea, the Solomon Islands, Fiji and Northern Australia, this extraordinary expanse of ocean covers some 5.7 million km². The Coral Triangle matches the richness and diversity of the Amazon rainforest.

79. (b)

Statement 1 is correct: Biostimulation is a method of bioremediation that involves the modification of the environment to stimulate existing bacteria

capable of bioremediation. This is typically done by the addition of rate-limiting nutrients (like phosphorus and nitrogen) or electron acceptors (like oxygen) to encourage the growth and activity of **indigenous (native) microbial populations**.

Statement 2 is correct: **Phytoremediation** relies on the use of plants to absorb, accumulate, or degrade contaminants. Since it depends on the direct contact between the plant roots and the contaminant, it is limited by the depth of the root system. Consequently, it is generally **ineffective** for treating contaminants located at **greater depths** in the soil or deep groundwater aquifers.

Statement 3 is incorrect: **Anaerobic bioremediation** is actually highly **suitable** and often the preferred method for degrading **chlorinated organic compounds**. These compounds are highly oxidized and degrade best through a process called **reductive dechlorination**, which occurs in the absence of oxygen (anaerobic conditions) where the contaminant acts as an electron acceptor.

80. (b)

Statement 1 is incorrect: Lichens represent a symbiotic association between a **fungus** and an **alga** or **cyanobacterium**. The association between fungi and the roots of higher plants is called **Mycorrhiza**.

Statement 2 is correct: Lichens are considered **pioneer species** in primary succession, particularly on bare rocks (Xerosere). They secrete organic acids (like oxalic acid) that dissolve rock minerals, initiating the process of soil formation (pedogenesis) which paves the way for mosses and higher plants.

Statement 3 is correct: Lichens that contain **cyanobacteria** (blue-green algae) as their photosynthetic partner are capable of **fixing atmospheric nitrogen**. These “cyanolichens” play a crucial role in the nitrogen cycle of nutrient-poor ecosystems like tundras and deserts.

81 (a)

Statement 1 is correct: The ocean acts as the primary heat sink for anthropogenic global warming, absorbing approximately 90% of the excess heat generated by greenhouse gas emissions.

Statement 2 is correct: As water temperature rises, the chemical capacity of seawater to dissolve carbon dioxide decreases. This acts as a positive feedback mechanism that leaves more carbon dioxide in the atmosphere, thereby further increasing the warming.

Statement 3 is not correct: Ocean acidification decreases the oxygen-holding capacity of seawater. It creates expanding “dead zones” where low oxygen levels make it difficult for marine life to survive.

- **Additional Information:** Multiple, high-intensity stressors are a common feature of past mass extinction events. These stressors include increased global warming, ocean acidification and increased deoxygenation – together commonly referred to as climate change’s ‘deadly trio’.

82. (b)

Pair 1 is correctly matched: Siliserh Lake in Alwar district was recently declared a Ramsar site, making it India’s 96th such recognised wetland. Known for its rich biodiversity and scenic landscape, Siliserh is a popular haven for birdwatchers, offering sightings of more than 100 bird and animal species — from cranes to colourful kingfishers. Its proximity to the Sariska Tiger Reserve further enhances its appeal as a key tourism destination in the region.

Pair 2 is not correctly matched: Barda wildlife sanctuary has become second home for Asiatic Lions after Gir national park. There are two rivers here, the Bileshvary River and the Joghri River. Different ethnic groups such as Maldharis, Bharvads, Rabaris, and Gadhvis live in this area.

Pair 3 is correctly matched: Indore and Udaipur have become the first Indian cities to gain international recognition as accredited wetland cities under the Ramsar Convention. It is an international recognition for cities committed to conserving and sustainably managing their wetlands. It recognises urban areas that protect wetlands, ensuring they provide essential services to the environment and communities.

Additional Information: The highest number of accredited cities come from China followed

by France reflecting the city's effort to integrate wetland conservation into urban planning.

83. (c)

Statement 1 is correct: The energy sector contributed the most to overall emissions (75.66%), followed by agriculture, Industrial Processes and Product Use, and Waste.

Statement 2 is correct: Between 2005 and 2020, India's emission intensity of Gross Domestic Product (GDP) reduced by 36%.

Additional Information: India's achievements in respect of the NDC targets:

- In 2020, India's total GHG emissions decreased by 7.93% with respect to 2019.
- India's forest and tree cover has consistently increased and currently stands at 25.17% of the total geographical area of the country.
- During 2005 to 2021, an additional carbon sink of 2.29 billion tonnes of CO₂ equivalent has been created.
- By October 2024, the share of non-fossil sources in the installed electricity generation capacity was 46.52%.

84. (a)

Statement 1 is correct: Elephants are the largest land mammals on earth and have distinctly massive bodies, large ears, and long trunks.

Statement 2 is not correct: Elephant tusks do not regenerate if they are broken or damaged, as they are modified teeth, not living tissue that can heal like a broken bone or regrow like a fingernail. While they continue to grow from the root throughout an elephant's life, a broken tusk remains broken forever.

Statement 3 is correct: As per Synchronous All India Elephant Estimation (SAIEE) 2021–25, India's Asian elephant population is estimated to be 22,446. The numbers remain highest in the Western Ghats (11,934), followed by the North Eastern Hills and Brahmaputra floodplains (6,559), Shivalik Hills and Gangetic plains (2,062), and Central India and Eastern Ghats (1,891). Among states, Karnataka continues to harbour the largest population.

Statement 4 is not correct: Elephant reserves in India, established under the central Project Elephant (1992), are primarily administrative, rather than statutory, designations to conserve habitat. They lack independent legal status under the Wildlife (Protection) Act, 1972 (WPA), often overlapping with existing, protected areas like National Parks or Reserved Forests. At present, 33 Elephant Reserves are spread across 14 major elephant states.

Additional Information:

- Compared to the last all-India estimate in 2017 (27,312), the population is lower by 17.81%. However, the population report added a caveat that the two figures are not directly comparable due to a change in methodology, and said the latest estimate should be treated as a "new baseline".
- The latest report flags a range of threats across elephant habitats. In the Western Ghats, elephants are increasingly disconnected due to changing land use, including expanding coffee and tea plantations, invasive plant species, farmland fencing, and rapid development projects.
- Other issues - habitat loss, fragmentation, and disruption of traditional corridors caused by railway lines, roads, power infrastructure, encroachments, and other land-use changes. In Central India, mining pressures dominate as a major concern. The report also points to plant invasions, human-induced disturbance, and conflict with local communities as persistent challenges requiring cooperative engagement.

85. (b)

Statements 1 and 3 are correct: DIGIPIN is an open source nationwide geo-coded addressing system developed by the Department of Posts in collaboration with IIT Hyderabad and NRSC, ISRO. It divides India into approx. 4m x 4m grids and assigns each grid a unique 10-character alphanumeric code based on latitude and longitude coordinates.

- While a regular postal address depends on locality, street, and house numbers, DIGIPIN is a geospatial reference using a 10-character

alphanumeric code based on the exact coordinates of a location.

- A postal pincode identifies a broader area, such as a locality or neighborhood, whereas a DIGIPIN identifies a specific approx. 4m x 4m location, providing much more precision.

Statement 3 is not correct: DIGIPIN does not store any private or personal data. It only provides an alphanumeric code based on geographic coordinates, ensuring privacy.

Additional information:

- DIGIPIN simplifies address management by providing precise location-based identification, especially in areas with unstructured or changing addresses. It also helps in areas where no clear address exists, such as rural regions, forests, and oceans.
- DIGIPIN codes can be integrated into navigation systems and apps, allowing for precise location access.

86. (c)

Option (c) is the correct answer: The term “Petrodollar” refers to US dollars earned by oil-exporting countries from the sale of crude oil on the international market.

87. (c)

Statement 1 is correct: Article I of the Biological Weapons Convention (BWC) explicitly states that each State Party undertakes “**never in any circumstances**” to develop, produce, stockpile, or otherwise acquire or retain microbial or other biological agents, or toxins that have no justification for prophylactic, protective, or other peaceful purposes (i.e., biological weapons).

Statement 2 is not correct: Article III of the Convention imposes a **strict ban** on transfers. It states that State Parties undertake **not to transfer to any recipient whatsoever**, directly or indirectly, and not to assist, encourage, or induce any State, group of States, or international organizations to manufacture or acquire biological agents or toxins for non-peaceful purposes..

Statement 3 is correct: Article VI provides the mechanism for dealing with breaches. It states that

any State Party which finds that any other State Party is acting in breach of obligations may **lodge a complaint with the Security Council of the United Nations**. The Security Council may then initiate an investigation, and State Parties undertake to cooperate with it.

88. (c)

Option (c) is the correct answer: Trachoma is a chronic infectious disease of the eye caused by the bacterium *Chlamydia trachomatis*. It is the leading infectious cause of blindness worldwide.

- **Transmission:** It is transmitted through contact with eye and nose discharges of infected people, particularly young children. It is also spread by **flies** (specifically *Musca sorbens*) which have been in contact with infected eyes or noses.

89. (c)

A-3: At the core of the National Blockchain Framework is the Vishvasya Blockchain Stack. It is an indigenous and modular platform designed to provide the technical foundation for building and deploying blockchain-based applications for governance. The features of Vishvasya Blockchain Stack are:

- **Blockchain-as-a-Service (BaaS):** Vishvasya provides blockchain infrastructure as a shared service. This allows government entities to deploy blockchain-based applications without the need to create or manage their own infrastructure.
- **Distributed Infrastructure:** The stack is deployed across **NIC data centres** located in **Bhubaneswar, Pune, and Hyderabad**. This distributed network architecture ensures fault tolerance, scalability, and resilience for blockchain-based applications.
- **Permissioned Blockchain Layer:** The platform is built on a **permissioned blockchain**, ensuring that only verified and authorized participants can join or validate transactions.

B-2: NBFLite is a sandbox version of the blockchain technology stack, designed to encourage innovation, experimentation, and capacity building. It allows startups, research institutions, and students to prototype blockchain-based applications in a

controlled environment without requiring full-scale deployment.

C-1: Praamaanik is an innovative solution that leverages blockchain technology to verify the authenticity and source of mobile applications. When users scan or check an app, Praamaanik matches the details with blockchain records to validate its legitimacy, thereby fostering trust and transparency within the mobile ecosystem.

90. (b)

Option (b) is the correct answer: India has the unique distinction of being the only country producing all the five kinds of silk namely, Mulberry, Eri, Muga, Tropical Tasar and Temperate Tasar. Among them, mulberry silk is the most popular variety, which contributes around 79% of the country's silk production.

91. (c)

Statement 1 is not correct: The Act does **not** impose a ban on e-sports. While it explicitly **prohibits online money games** (games involving stakes/bets for monetary enrichment), it seeks to **promote and regulate** e-sports and online social games. E-sports are defined as competitive games based on skill (physical dexterity, mental agility) without betting elements.

Statement 2 is correct: The Bill empowers the central government to take steps for the **recognition and development of online social games** (and e-sports). This includes supporting initiatives to increase public access to safe social gaming content and incentivizing technology platforms.

Statement 3 is correct: A national-level regulatory authority will be established, or an existing one may be designated for oversight. Its functions will include categorising and registering online games, deciding whether a game qualifies as a money game, and addressing public grievances. The Authority will issue guidelines, codes of practice and directions to ensure compliance.

92. (c)

Statement 1 is correct: According to **Article 75(1B)** of the Constitution (added by the **91st**

Amendment Act, 2003), a member of either House of Parliament belonging to any political party who is disqualified for being a member of that House under the Tenth Schedule (**Anti-Defection Law**) shall also be **disqualified to be appointed as a Minister**. This disqualification persists for the duration of the period commencing from the date of their disqualification till the date on which the term of their office as such member would expire or till the date on which they contest an election to either House of Parliament and are declared elected, whichever is earlier.

Statement 2 is correct: According to **Article 75(2)** of the Constitution, the Ministers shall hold office during the **pleasure of the President**.

93. (b)

In elections to the Rajya Sabha (Council of States), only the elected members of the State Legislative Assembly (MLAs) participate. Members of the State Legislative Council (MLCs) do not have the right to vote. Therefore, the 40 members of the Legislative Council mentioned in the problem are irrelevant. Only the 180 MLAs present and voting are considered.

- Total value of votes:
- Number of MLAs voting = 180
- Value of each vote = 100
- Total Value of Votes = 18,000
- Calculation of Quota:
- The election follows the system of Proportional Representation by means of the Single Transferable Vote (PR-STV).

The formula for the minimum quota to get elected is:

$$\text{Quota} = \left(\frac{\text{Total Value of Votes}}{\text{Number of Vacancies} + 1} \right) + 1$$

$$\text{Quota} = [18000 / (5+1)] + 1 = 3001$$

94. (d)

A is not correct but R is correct: The **quality of coal depends on its carbon content and degree of metamorphism**. Older coal seams such as **Carboniferous** have **higher carbon content** than

younger coals such as Gondwana or Tertiary. The Gondwana coal of India, though important for its abundance, is **geologically younger and less metamorphosed than Carboniferous coal** found in older geological formations. Hence, its carbon content is relatively lower.

Coal metamorphism is the transformation of plant material into **peat** → **lignite** → **bituminous** → **anthracite**, as heat and pressure increase over time.

The older the coal, the more metamorphosed it becomes, higher in carbon content, less volatile matter, more energy per unit weight.

95. (c)

Pair 1 is correctly matched: Kamarajar Port is India's first corporatized major port, operating as a company under the Companies Act. Formerly known as **Ennore Port**, it was renamed Kamarajar Port Ltd. It mainly handles coal, iron ore, automobiles, and liquid cargo.

Pair 2 is correctly matched: Paradip Port is the Largest Cargo Handling Port in India. It is located in **Odisha** (east coast, near the Mahanadi delta). Handles bulk cargo especially iron ore, coal, crude oil, and fertilizers. **According to Ministry of Ports FY 2025–26, Paradip Port handled over 145 million tonnes of cargo, the highest among all major ports, surpassing Kandla (Deendayal) Port on the west coast.**

Pair 3 is correctly matched: Jawaharlal Nehru Port is the Largest Container Port in India. It is located in **Navi Mumbai, Maharashtra** (west coast), also called Nhava Sheva Port. **Handles containers** (cargo packed in standard-sized boxes), not bulk commodities. It accounts for **more than 50% of India's total container traffic.**

96. (b)

Statement 1 is correct: Africa is the **only continent** through which the **Equator**, the **Prime Meridian**, and **both the Tropic of Cancer and the Tropic of Capricorn** pass through the mainland (not merely offshore or through islands).

Statement 2 is not correct: Africa lies in both the **Eastern and Western Hemispheres** because the

Prime Meridian passes through it, not because of the Equator.

- The **Equator** divides the Earth into **Northern and Southern Hemispheres**.
- The **Prime Meridian** divides the Earth into **Eastern and Western Hemispheres**.

97. (a)

Statement 1 is correct: Water vapour is a significant absorber of radiation. It absorbs a part of the incoming solar radiation (insolation), specifically in the near-infrared part of the spectrum, thereby reducing the amount of energy that actually reaches the Earth's surface. It also plays a crucial role in absorbing terrestrial radiation (outgoing longwave radiation) from the Earth, acting as a blanket.

Statement 2 is not correct: Water vapour is the most important factor in determining **atmospheric stability and instability**. When moist air rises, it cools, condenses, and releases latent heat of condensation. This release of latent heat makes the air parcel warmer and more buoyant, increasing instability thus resulting in cloud formation and convectional rainfall.

Statement 3 is not correct: Dust particles are found in greater abundance in dry and desert regions and decrease from the lower to higher latitudes.

- **Equatorial regions have humid, rising air so dust settles quickly due to rain.**
- **Polar regions have stable air and snow cover so very little dust generation.**
- **Subtropical regions (like the Sahara, Arabian Desert, Thar Desert) produce the maximum dust due to strong surface winds and dry conditions.** The subtropical high-pressure belts (subsidence of air) are the world's dustiest regions, because they are hot, dry, windy and barren.

98. (b)

Option (b) is the correct answer: The given crop is Jute.

Jute requires high temperature, heavy rainfall and a humid climate. It grows well on well-drained fertile soils in floodplains (Alluvial soil) where soils are renewed every year.

Jute cultivation is confined to areas having warm and humid climate, particularly in the Ganga–Brahmaputra delta. The new **alluvial soils of the Ganga–Brahmaputra delta are ideal for jute.**

- The Ganga–Brahmaputra delta provides all of these naturally
- **Climate:** Hot and humid monsoon weather.
- **Rainfall:** 150–200 cm, well-distributed.
- **Soil:** Deep **alluvial deposits**, renewed by floods.
- **No frost:** Tropical plains, warm all year.
- Jute is sensitive to **cold or frost**, which damages tender shoots. Hence, it grows only in **tropical lowlands**, not in hilly or temperate regions.

99. (a)

Option (a) is the correct answer:

- **1 is correct:** Somaliland has a long coastline (approx. 850 km) along the **Gulf of Aden** to its north.
- **2 is correct:** It shares a border with **Djibouti** to the northwest.

- **3 is correct:** It is bordered by **Ethiopia** to the west and south.
- **4 is not correct:** Somaliland is bordered to the east by the **Puntland** region of Somalia. It does not have a direct coastline on the **Arabian Sea**; the Arabian Sea/Indian Ocean lies further east, bordering Puntland (the tip of the Horn of Africa).

100. (d)

Statement I is not correct, but Statement II is correct:

- Intrusive igneous rocks form below the Earth's surface, **when magma cools slowly**. **Slow cooling allows large, visible crystals** (e.g., **quartz, feldspar**) to form coarse-grained texture. These rocks are also called plutonic rocks.
- Extrusive igneous rocks form when lava cools rapidly at or near the surface. Rapid cooling prevents crystal growth and results in fine-grained or glassy texture. These are also called volcanic rocks.

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