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1. Economy

- 1) Which of the following is an initiative of the National Stock Exchange (NSE) aimed at providing a fundraising platform for small and medium-sized enterprises (SMEs) and startups?
- NSE IX
 - Social Stock Exchange
 - NSE EMERGE
 - Nifty 50

Solution: C

(a) NSE IX is the international exchange located at **GIFT City**, designed for trading a wide range of global assets like stocks, derivatives, and commodities. It is not specifically for domestic SMEs.

(b) The Social Stock Exchange is a novel platform created to enable **non-profit organizations (NPOs) and for-profit social enterprises (FPEs)** to raise funds for social causes, focusing on social impact rather than purely commercial returns.

(c) **NSE EMERGE** is the dedicated platform launched by the NSE to provide a venue for **SMEs and startups** to raise capital and get listed on the stock exchange. It has relaxed listing norms compared to the main board, making it accessible for growing companies.

(d) The Nifty 50 is a **benchmark stock market index** representing the weighted average of 50 of the largest Indian companies listed on the NSE. It is an indicator of market performance, not a fundraising platform.

- 2) With respect to The Banking Laws (Amendment) Act, 2025, which of the following provisions is/are correctly stated?
- The Act revises the definition of 'substantial interest' in a bank from ₹5 lakh to ₹2 crore.
 - It mandates that Public Sector Banks must transfer all unclaimed assets to the Depositor Education and Awareness Fund (DEAF).
 - The Act empowers Public Sector Banks to independently determine the remuneration for their statutory auditors.
 - The tenure for directors in cooperative banks has been reduced to 8 years to align with the Companies Act, 2013.

Select the correct answer using the code given below:

- 1 and 3 only
- 2 and 4 only
- 1, 2 and 3 only
- 3 and 4 only

Solution: A

- Statement 1 is correct.** The Act explicitly updates the threshold for '**substantial interest**' from **₹5 lakh, a value set in 1968, to ₹2 crore**. This change reflects decades of inflation and economic growth.
- Statement 2 is incorrect.** The Act allows PSBs to transfer unclaimed shares, interests, and bond redemptions to the **Investor Education and Protection Fund (IEPF)**, which is established under the Companies Act. The Depositor Education and Awareness Fund (DEAF) is maintained by the RBI for unclaimed deposits, not shares or bonds. This is a subtle but crucial distinction.
- Statement 3 is correct.** A key reform in the Act is to enhance audit quality by empowering **PSBs to determine the remuneration for their statutory auditors**. This is expected to attract top-tier audit firms and improve financial transparency.
- Statement 4 is incorrect.** The tenure for directors in cooperative banks has been **raised from 8 to 10 years**, not reduced. This change was made to align with the provisions of the **97th Constitutional Amendment Act**, which deals with cooperative societies, not the Companies Act.

- 3) Consider the following statements about the National Stock Exchange of India (NSE):
1. Since its inception, the NSE has operated on a member-owned model, where a cartel of brokers controls access to the exchange.
 2. It was the first exchange in India to introduce screen-based, anonymous order-driven trading, which democratized market access.
 3. The Social Stock Exchange, launched by NSE in 2023, is a platform for Micro, Small, and Medium Enterprises (MSMEs) to raise capital.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** A key objective and feature of the NSE was to break the existing model of broker cartels. The model ensures "**no cartel of brokers, promoting a level playing field.**" Its structure is professionally managed and demutualized, not member-owned in the traditional sense.
- **Statement 2 is correct.** The NSE is credited as a **pioneer in the Indian capital markets** for being the first exchange to introduce a fully automated, **screen-based trading system.** This system allows for anonymous order matching, which enhanced transparency and provided equitable access to investors across the country, a significant step in democratizing the market.
- **Statement 3 is incorrect.** The Social Stock Exchange (SSE) is a specific platform launched by NSE for **fundraising by non-profits and social enterprises**, not for MSMEs. The platform for SMEs and startups is **NSE EMERGE.** The objectives of the two platforms are distinct.

- 4) Consider the following statements:

Statement I: The Banking Laws (Amendment) Act, 2025 aims to modernize the regulatory framework of the Indian banking sector.

Statement II: The Act includes provisions for updating outdated financial thresholds.

Statement III: The Act aligns the governance norms of cooperative banks with constitutional mandates.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only one of the Statements II and III is correct and that explains Statement I
- (d) Neither Statement II nor Statement III is correct

Solution: A

- Statement I provides a broad summary of the Act's purpose: to **modernize the regulatory framework.** This is the main assertion.
- Statement II is correct. It provides a specific example of modernization by mentioning the update of the **'substantial interest' threshold from ₹5 lakh (a 1968 value) to ₹2 crore.** This is a clear instance of updating an outdated rule to reflect current economic realities. This action directly supports the claim of modernization in Statement I.
- Statement III is also correct. It points to another modernizing reform: aligning the **tenure of cooperative bank directors with the 97th Constitutional Amendment.** This brings a segment of the banking sector in line with constitutional principles for democratic and autonomous functioning. This also serves as a prime example of modernization mentioned in Statement I.

- 5) With reference to the recently revised UPI operational rules by NPCI, consider the following:

1. A limit on the number of daily balance checks per application.
2. Restriction on the execution time for auto-debit mandates.
3. Display of the recipient's registered bank name before transaction confirmation.

4. A mandatory 90-second cooling-off period between any two consecutive UPI transactions.

How many of the above statements are correct?

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

Solution: C

- **Change 1 is correct.** A limit of **50 balance checks per day per app** has been introduced to reduce server load.
- **Change 2 is correct.** Auto-debit mandates are now restricted to **non-peak hours** (before 10 AM, 1–5 PM, or after 9:30 PM) to balance system load.
- **Change 3 is correct.** To reduce errors and fraud, the **registered bank name of the recipient** will be shown for verification before the user confirms the payment.
- **Change 4 is incorrect.** The 90-second gap is not between any two transactions. It is specifically for **checking the status of a single transaction**, and a user is limited to 3 such status checks per transaction with a minimum 90-second interval between attempts.

6) Which one of the following best describes the primary purpose of the reserve mechanism for a fiat-collateralised stablecoin (blockchain-based digital currency) like USDC?

- (a) To generate speculative profits for the issuer.
- (b) To ensure the stablecoin can be programmatically integrated into DeFi protocols.
- (c) To fund the development of new blockchain technologies.
- (d) To maintain a one-to-one peg with the reference fiat currency by backing each digital unit with an equivalent real-world asset.

Solution: D

- The core principle of a fiat-collateralised stablecoin is to maintain price stability by pegging its value to a traditional fiat currency, such as the US dollar. To achieve this, the issuer holds reserves of the corresponding fiat currency or highly liquid, low-risk assets equivalent to the value of the stablecoins in circulation.
- This reserve mechanism ensures that for every digital coin issued, there is a corresponding real-world asset held in custody.
- This backing allows users to redeem their stablecoins for the underlying fiat currency, which instills confidence and maintains the **1:1 peg**.

7) Which of the following sectors are permitted to raise funds through External Commercial Borrowings (ECBs) under the Automatic Route in India?

- a) Agriculture, trading, and real estate investment trusts (REITs)
- b) Microfinance, start-ups, and non-banking financial companies (NBFCs)
- c) Gambling, lottery, and real estate development
- d) Defense manufacturing, power distribution, and healthcare infrastructure

Solution: D

ECBs under the Automatic Route are generally allowed for sectors that promote economic growth, such as defense manufacturing, power, and healthcare. Restricted sectors like gambling, lottery, and real estate (excluding affordable housing) are not eligible for ECBs.

8) Consider the following statements about the Debt-to-GDP ratio:

1. It measures the government's total fiscal deficit in a given year.
2. It includes only external debt and excludes domestic borrowing.
3. It is always considered a negative indicator for a country's economy.

How many of the above statements are incorrect?

- a) Only one

- b) Only two
- c) All three
- d) None

Solution: C

The **Debt-to-GDP ratio** is an important indicator of a country's financial health, representing the proportion of a nation's total debt compared to its gross domestic product (GDP). It helps assess a country's ability to repay its debt based on its economic output.

- **Statement 1 is incorrect** because the ratio measures **total accumulated government debt**, including past deficits, rather than just the **fiscal deficit of a single year**.
- **Statement 2 is incorrect** because the **Debt-to-GDP ratio includes both external (foreign) and domestic (internal) debt**, giving a comprehensive picture of national liabilities.
- **Statement 3 is incorrect** as a high **Debt-to-GDP ratio is not always negative**. Some countries, like Japan, maintain high debt levels due to strong investor confidence, low interest rates, and stable economic policies.

9) Consider the following statements about the Trickle-Down approach:

1. It relies on tax cuts for corporations and wealthy individuals to drive economic growth.
2. It assumes that increased private sector investment will lead to job creation and wage growth.
3. It has led to universal income growth in countries that have fully implemented it.

How many of the above statements are incorrect?

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

Solution: A

- The **Trickle-Down approach** is an economic theory suggesting that benefits given to the wealthy and corporations eventually "trickle down" to the rest of society.
- **Statement 1 is correct** because this approach typically involves tax cuts for high-income individuals and businesses to encourage investment and economic expansion.
- **Statement 2 is also correct**, as Trickle-Down theory assumes that when the private sector flourishes, it leads to increased investments, job creation, and wage growth, benefiting the broader economy.
- However, **Statement 3 is incorrect** since real-world evidence does not support the claim that Trickle-Down policies lead to universal income growth. Instead, studies have shown that such policies often result in greater income inequality, with wealth accumulation concentrated among the richest while lower-income groups see little to no significant improvement.
- Countries like the **U.S. and the U.K.** have implemented Trickle-Down strategies, but wage stagnation and inequality have persisted.

10) Consider the following statements regarding the Debt-to-GDP ratio and its implications:

1. A higher ratio indicates a lower capacity to repay debts.
2. Countries with higher Debt-to-GDP ratios always experience economic crises.
3. A rising Debt-to-GDP ratio can increase interest payments on government bonds.
4. A country can have a high Debt-to-GDP ratio and still maintain financial stability.

Which of the above statements are correct?

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

Solution: B

- A country's Debt-to-GDP ratio measures its debt relative to its economic output, indicating its ability to manage and repay its obligations. **A higher ratio often signals a greater debt burden, making repayment challenging**, which is why **Statement 1 is correct**.
- However, **Statement 2 is incorrect** because while a **high ratio increases risk, it does not automatically lead to an economic crisis**. Countries like Japan have sustained high debt levels for years due to factors like domestic investment and low interest rates.
- **Statement 3 is correct** since rising debt typically leads to higher interest payments on government bonds, increasing fiscal pressure.
- **Statement 4 is also correct** as financial stability depends on multiple factors, including economic growth, investor confidence, and monetary policy. For instance, the U.S. has managed a high Debt-to-GDP ratio without immediate instability.

11) With reference to the Revised Income Tax Bill, 2025, which of the following statements is correct?

- The Bill introduces a new, higher tax slab for super-rich individuals.
- The Bill disallows refunds for Income Tax Returns (ITR) filed after the due date.
- The Bill replaces the concepts of "Previous Year" and "Assessment Year" with a single "Tax Year".
- The Bill proposes a new tax on agricultural income.

Solution: C

The Revised Income Tax Bill, 2025, aims to simplify the direct tax framework. A key feature of this bill is the introduction of a single 'Tax Year' concept, which replaces the often confusing dual concepts of "Previous Year" and "Assessment Year." This change is intended to streamline the tax filing process and make it more understandable for the average taxpayer. The bill also includes taxpayer-friendly provisions such as allowing refunds even if the ITR is filed after the due date. The focus is on simplification and modernization of the existing structure.

12) Consider the following statements about the Revised Income Tax Bill, 2025:

- It restores the deduction for inter-corporate dividends.
- It removes the notional rent on vacant property.
- It introduces an Alternate Minimum Tax on Limited Liability Partnerships (LLPs).

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: B

- The Revised Income Tax Bill, 2025, includes several key reforms.
- **Statement 1 is correct** as the bill restores the Rs 80M deduction for inter-corporate dividends, a measure aimed at providing relief to corporations.
- **Statement 2 is also correct**; the bill rationalizes property taxation by removing the concept of notional rent on vacant properties, which was a point of grievance for many taxpayers.
- **Statement 3 is incorrect**. The bill actually *removes* the Alternate Minimum Tax on LLPs, providing relief to these entities. The bill's features are designed to simplify the tax regime and improve the ease of doing business.

Key Features of the Revised Bill:

- **Single 'Tax Year' Concept:** Replaces "Previous Year" and "Assessment Year" with a uniform term to simplify understanding and compliance.
- **Simplified Refund Provisions:** Refunds allowed even if ITR is filed after the due date, reducing taxpayer grievances.

- **Corporate & MSME Relief:** Rs 80M deduction for inter-corporate dividends restored and MSME definition aligned with MSME Act for uniformity.
- **Rationalised Property Taxation:** Notional rent on vacant property removed; clear deductions for municipal tax and interest on rented property.
- **Compliance & Governance Reform:** Unnecessary provisions removed, [CBDT](#) empowered for **digital-era rule-making** and NIL-TDS option for zero-liability taxpayers.
- **Charitable Trust & LLP Relief:** Relaxation in transfer pricing rules and removal of [Alternate Minimum Tax on LLPs](#).
- **Enhanced Digital Alignment:** Structured section numbering, improved terminology, and cross-referencing for easier navigation and reduced ambiguity.

- 13) With reference to S&P Global's recent upgrade of India's sovereign rating, consider the following statements:
1. The upgrade to 'BBB' places India firmly within the investment-grade category, potentially reducing borrowing costs for Indian corporates.
 2. This is the first sovereign rating upgrade for India by S&P Global in the last five years.
 3. The upgrade in the transfer and convertibility assessment to 'A-' indicates improved confidence in the country's ability to meet its external financial obligations.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** A rating of 'BBB' is within the **investment-grade category** (BBB- and above). An improved rating enhances global investor confidence, making Indian government and corporate bonds more attractive. This increased demand can lead to lower yields, effectively **reducing the cost of borrowing** for both the government and corporations in international markets.
- **Statement 2 is incorrect.** This is the first sovereign upgrade by S&P for India **since January 2007**. This is a period of more than 18 years, not just five years.
- **Statement 3 is correct.** The **Transfer and Convertibility (T&C) assessment** reflects the risk that a sovereign may impose capital or exchange controls that prevent entities from converting local currency to foreign currency to service their debt. An upgrade from 'BBB+' to 'A-' signifies a lower perceived risk in this regard, boosting confidence in the country's external payment capabilities.

- 14) Consider the following statements regarding Credit Rating Agencies (CRAs) like S&P Global:
1. CRAs provide binding directives to investors on which securities to purchase or sell.
 2. They assess the willingness and ability of an entity to meet its financial obligations in a timely manner.
 3. By assigning ratings, they primarily aim to reduce information asymmetry in the financial markets.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** Ratings provided by CRAs are **independent opinions or assessments**, not binding directives or investment recommendations. Investors use these ratings as one of many tools for their decision-making, but they are not obligated to follow them.
- **Statement 2 is correct.** This is the core function of a CRA. Their analysis focuses on evaluating the **creditworthiness** of an issuer, which encompasses both its financial capacity (**ability**) and its track record and intent (**willingness**) to repay its debts as per the agreed terms.

- CRAs like S&P Global have a wide scope. They assign ratings not only to corporates but also to **sovereign governments (national and sub-national), infrastructure projects, insurance companies, and other public finance sectors.**
- **Statement 3 is correct.** In financial markets, borrowers (like companies or governments) have more information about their financial health than lenders (investors). This is known as **information asymmetry**. CRAs help **reduce this asymmetry** by providing a standardized, independent assessment of credit risk, which enhances market transparency and investor confidence.

15) Consider the following actions:

1. Implementation of a predictable monetary policy framework.
2. Sustained increase in the public debt-to-GDP ratio.
3. Improvement in the quality of government capital expenditure.
4. Consistent path of fiscal consolidation.

According to S&P Global, how many of the above were considered as criteria for upgrading India's long-term sovereign rating?

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

Solution: C

- **Action 1 is a valid criterion.** A **stable and predictable monetary policy** helps in anchoring inflation expectations and contributes to macroeconomic stability. This is a positive factor for credit rating agencies.
- **Action 2 is not a valid criterion.** A sustained **increase** in the public debt-to-GDP ratio is viewed as a sign of fiscal weakness and would be a reason for a downgrade, not an upgrade. The goal is to **reduce or stabilize** this ratio.
- **Action 3 is a valid criterion.** An **improved quality of public spending**, with a focus on capital expenditure (e.g., on infrastructure), is seen as positive because it enhances the long-term growth potential of the economy.
- **Action 4 is a valid criterion.** **Fiscal consolidation** refers to the government's efforts to reduce its fiscal deficit and public debt. A sustained commitment to this path signals fiscal discipline and is a key positive indicator for credit rating agencies.

16) Consider the following statements regarding the proposed GST Revamp:

1. The revamp aims to introduce a single GST rate of 18% for all goods and services to simplify the tax structure.
2. The proposed structure includes a special 40% rate for essential food items to generate higher revenue.
3. The GST Council has already approved the proposed changes, which are set to be implemented from the next financial year.

How many of the above statements are incorrect?

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

Solution: C

- The proposed GST revamp does not aim for a single GST rate. Instead, it proposes a **two-slab structure with core rates of 5% and 18%**, which is a simplification from the current multi-slab system but not a single rate.
- The **5% rate is intended for merit goods and essential items**, while the **18% rate will apply to standard goods and services.**
- The special **40% rate is proposed for select sin and luxury goods like tobacco, alcohol, and pan masala, not essential food items**, which will continue to be zero-rated.

- Furthermore, the proposal has not yet been approved by the GST Council. It has been sent to the states and a Group of Ministers (GoM) for their consideration and approval. The implementation is targeted for Diwali 2025, not the next financial year.

17) Which of the following statements about the Revised Income Tax Bill, 2025 is incorrect?

- The bill aims to modernize the six-decade-old Income Tax Act, 1961.
- The bill aligns the definition of MSMEs with the MSME Act.
- The bill empowers the Central Board of Direct Taxes (CBDT) for digital-era rule-making.
- The bill introduces stricter penalties for delayed ITR filing.

Solution: D

The bill is a new legislation to replace the 1961 Act, aligns the MSME definition for uniformity, and empowers the CBDT for modern rule-making. Option (d) is incorrect. In fact, the bill includes a provision that is lenient towards taxpayers, allowing for refunds even if the ITR is filed after the due date, which is a measure to reduce taxpayer grievances, not to introduce stricter penalties.

18) Consider the following statements regarding Middle-Income Trap.

- Middle-income trap is a situation where a middle-income country struggles to become a high-income economy, mainly due to declining costs and rising competitiveness.
- Since 1990, more than 100 middle-income countries (MICs) have transitioned to high-income status.
- Rising Income Inequality is one of the factors for countries falling into the Middle-Income Trap.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: A

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The World Bank **defines the middle-income trap** as a situation where a middle-income country struggles to become a high-income economy **due to rising costs and declining competitiveness**. There are concerns that India may fall into this trap, potentially stalling at a per capita income of USD 5,000-6,000 on its path to becoming a developed economy.

Key Highlights of the Report:

- **Wealthy countries often hit a growth slowdown** at around \$8,000 per capita (10% of U.S. GDP per person).
- **Since 1990, only 34 middle-income countries (MICs)** have transitioned to high-income status.
- **As of end-2023, 108 MICs host 75%** of the global population and generate over 40% of global GDP.
- **Challenges for MICs include ageing populations**, rising protectionism, and the need for faster energy transitions.

Why Countries Fall into the Middle-Income Trap

- Struggles of Developing Countries:** Middle-income nations often lag due to competition with low-wage producers and lack of innovation, stalling growth.
- Structural Shift:** Transitioning sectors or growth drivers risk stagnation in per capita income, especially if innovation capabilities are lacking.
- Rising Income Inequality:** High-income inequality, exemplified by large wealth gaps, restricts consumer spending and economic progress.

19) Consider the following statements regarding the "regulated venue" for pre-listing companies proposed by SEBI:

- It is an informal market that operates outside the purview of SEBI.
- Its objective is to promote fair price discovery before an IPO.

3. It aims to formalize the trading of unlisted shares, which currently happens in the grey market.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The proposed "regulated venue" will be a formalized platform under SEBI's oversight. It is intended to be the opposite of an informal market.
- **Statement 2 is correct.** One of the main objectives of this move is to promote fair price discovery for shares of companies before their IPOs. A regulated and transparent market is expected to reflect true demand and supply more accurately.
- **Statement 3 is correct.** The regulated venue is proposed as a transparent alternative to the unregulated grey market, where shares of unlisted companies are currently traded.

20) The establishment of a "regulated venue" for pre-listing companies by SEBI is significant because it is expected to:

1. Increase the volatility of IPOs.
2. Reduce tax leakages for the government.
3. Enhance investor protection.
4. Discourage companies from going public.

Select the correct answer code:

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

Solution: D

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- **Statement 1 is incorrect.** By allowing for better price discovery before an IPO, a regulated venue is more likely to reduce, not increase, the volatility of IPOs.
- **Statement 2 is correct.** By formalizing the trades of unlisted shares, the government will be able to track these transactions and collect the due taxes, thereby reducing tax leakages.
- **Statement 3 is correct.** A market under SEBI's oversight will have rules and regulations in place to protect investors from fraud, manipulation, and misleading practices, which are risks associated with the unregulated grey market.
- **Statement 4 is incorrect.** A more transparent and efficient pre-listing market could actually encourage more companies to go public, as it would provide them with a better indication of their market valuation.

21) Consider the following statements regarding the Monetary Policy Committee (MPC) of India:

Statement I: The Monetary Policy Committee is statutorily empowered to determine the policy interest rate required to achieve the inflation target.

Statement II: The decisions of the MPC are binding on the Reserve Bank of India, ensuring institutional accountability in monetary policy formulation.

Statement III: All members of the MPC, including the three external members, hold office for a term of four years and are eligible for re-appointment.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Statement II is correct and it explains Statement I
- (d) Statement II is correct and it explains Statement I and Statement III is incorrect

Solution: D

- **Statement I is correct.** The MPC was established through the amendment of the RBI Act, 1934. Its primary mandate is to maintain price stability while keeping in mind the objective of growth. It is legally empowered to fix the benchmark policy rate (repo rate) to achieve the inflation target, which is currently set at 4% with a tolerance band of +/- 2%.
- **Statement II is correct and explains Statement I.** The statutory framework makes the MPC's decisions on the policy rate **binding on the RBI**. This is a crucial feature that gives the committee its power and ensures that its mandate (Statement I) is effectively executed. This binding nature enforces accountability, as the RBI cannot unilaterally override the committee's decision, thus strengthening the inflation-targeting framework.
- **Statement III is incorrect.** While the three external members nominated by the Central Government do have a term of four years, the RBI Act explicitly states that they **are not eligible for re-appointment**. This provision is designed to ensure their independence and prevent the establishment of vested interests, allowing for fresh perspectives to be brought into the committee periodically. The internal RBI members' tenure is linked to their position within the RBI.

22) Consider the following statements about Digital Services Taxes (DSTs):

1. DSTs are a form of corporate income tax levied on the global profits of large digital companies.
2. The tax liability under a DST is determined by the location of the company's headquarters.
3. India has aligned its policy with the OECD global tax framework by deciding to withdraw its Equalisation Levy.

How many of the above statements are correct?

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

Solution: A

- **Only statement 3 is correct.** India has moved towards aligning its taxation policy with the global consensus developed by the OECD, leading to the phased **withdrawal of its unilateral Equalisation Levy**.
- **Statement 1 is incorrect;** DSTs are **not a corporate income tax on profits**. Instead, they are a tax on gross revenues generated from specific digital services within a country.
- **Statement 2 is also incorrect.** DSTs are **destination-based taxes**, meaning the tax liability is tied to the location of the users or consumers who generate the revenue, not the company's headquarters. This principle is precisely why they were introduced—to tax economic activity that occurs in a country even if the company has no physical presence there.

About Digital Services Taxes (DSTs):

What it is?

- A **gross-revenue tax** (not corporate income tax) levied on specific digital services like online advertising, digital marketplaces, intermediation, and sale of user data.
- Applied on the **revenues generated from users in the taxing country**, irrespective of where the company is headquartered.

Aim:

- To ensure **fair taxation** of global digital companies that earn significant revenue from a country's users without having a physical presence there.
- To address tax base erosion and ensure that **value created by user participation** is taxed locally.

Features:

- **Destination-based** → tax liability is tied to the **user's location**, not the firm's HQ.
- Targets **large companies** exceeding global and domestic revenue thresholds (e.g., €750 million worldwide + local threshold).
- Generally imposed at **2–7.5% rates** on in-scope services.
- Criticised as discriminatory, since most large affected platforms (Google, Amazon, Meta, Apple) are **US-based**.

India and Digital Services Tax:

- **Equalisation Levy (2016):** 6% tax on online advertising services provided by non-resident companies.
- **Expanded (2020):** 2% levy on e-commerce supplies/services by foreign digital firms.
- **Withdrawal:**
 - 2% e-commerce levy removed in **August 2024**.
 - 6% online ad levy withdrawn from **April 2025** (via Finance Act, 2025).
- India aligned its policy with the **OECD global tax framework**, moving away from unilateral DSTs.

23) Which of the following best describes the rationale behind countries implementing Digital Services Taxes (DSTs)?

- To create a uniform global tax rate for all multinational corporations.
- To penalize US-based technology companies for anti-competitive practices.
- To tax the value created by user participation in a digital economy, irrespective of a company's physical presence.
- To replace corporate income tax with a simpler, revenue-based taxation system for all businesses.

Solution: C

- The fundamental principle behind DSTs is to address the tax challenges of digitalization. Traditional tax rules are based on physical presence (a 'permanent establishment'). Digital giants, however, can earn enormous revenues from a country's users without having a significant physical presence there. DSTs are designed to **capture the value created by local user engagement, data, and participation**, which contributes to the profits of these digital platforms. Option (c) perfectly encapsulates this 'value creation' principle.

24) Which of the following could help countries come out of Middle-Income Trap?

- Implement Structural Reforms
- Increase Capital Accumulation
- Boost Private Investment
- Accelerate Infrastructure Pipeline
- Increase Labor Force Participation

How many of the above options is/are correct?

- Only two
- Only three
- Only four
- All five

Solution: D

Action Needed	Description
Greater Divestitures	Privatize inefficient public enterprises to raise funds, improve productivity, and attract foreign investment.
Boost Middle Class	Cut taxes or replace income tax with a consumption tax to increase disposable income and simplify the tax system.
Increase Labor Force Participation	Invest in education and skill development ; support initiatives like the New Education Policy and Skill India Mission .
Accelerate Infrastructure Pipeline	Invest in and speed up the execution of infrastructure projects , such as roads and power, to enhance connectivity and quality of life.

Build on Manufacturing Momentum	Enhance India’s role as a global manufacturing hub with initiatives like PLI; improve ease of doing business and labour laws.
Boost Private Investment	Attract more foreign and domestic investment through support for infrastructure and manufacturing projects.
Implement Structural Reforms	Undertake targeted reforms to improve productivity and competitiveness in sectors like finance, urban planning, and e-commerce.
Increase Capital Accumulation	Boost investment to achieve the USD 30 trillion economy goal, with government support for infrastructure and manufacturing.

25) Consider the following statements regarding Investment Models.

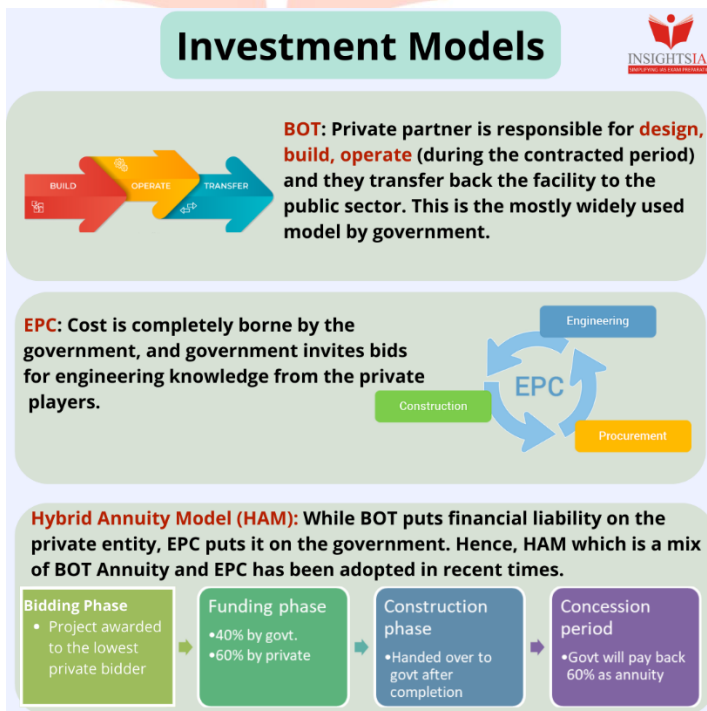
1. In the BOT model, the private partner is responsible for designing and building the infrastructure project and then transferring back the facility to the public sector.
2. In the EPC model, the cost is completely borne by the government, and government invites bids for engineering knowledge from the private players.
3. In the Hybrid Annuity Model, generally the funding by the government will be higher than the private player.

How many of the above statements are incorrect?

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

Solution: A

Statement 3 is incorrect.



26) Why might the internationalization of a currency create a dilemma for a country?

- a) It always leads to currency depreciation
- b) It guarantees economic growth

- c) It eliminates the need for foreign exchange reserves
- d) It requires balancing global currency supply with domestic monetary policies

Solution: D

- The internationalization of a currency creates a dilemma for a country because it requires balancing the supply of enough currency globally while maintaining domestic monetary policies. This challenge arises from the need to meet international demand for the currency, which can potentially conflict with domestic economic objectives.

The country must carefully manage its currency's role in global markets while ensuring that its monetary policies remain effective for domestic economic stability. This balancing act can be complex, as increased global use of the currency can impact factors such as exchange rates, interest rates, and capital flows, which in turn affect the country's ability to control its domestic economy.

27) Consider the following statements regarding the Standing Committee on Economic Statistics (SCES):

1. SCES was established by the Ministry of Finance.
2. The committee focuses primarily on advising survey methodology and finalizing survey tabulation plans.
3. SCES is a permanent committee tasked with providing oversight on economic statistics.

How many of the above statements is/are incorrect?

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

Solution: B

Only Statement 2 is correct.

- The **Standing Committee on Economic Statistics (SCES)** was established in **2019** by the **Ministry of Statistics and Programme Implementation (MoSPI)**, not the **Ministry of Finance**, making **Statement 1 incorrect**.
- The committee plays a crucial role in providing guidance on survey methodology, including **sampling design, survey instruments, and tabulation plans**, which makes **Statement 2 correct**.
- However, **Statement 3 is incorrect** because SCES is **not a permanent body**; it was formed to address specific statistical issues and does not function as a continuous oversight mechanism.
- The committee primarily works on improving economic surveys such as those related to **employment, consumption, and enterprises**.

28) Consider the following statements regarding Revenue Expenditure in socio-economic spending:

1. It includes salaries, pensions, and subsidies.
2. It does not contribute to the creation of productive assets.
3. It has been declining as a percentage of GDP in India.
4. It includes capital investments in new projects.

Which of the above statements are correct?

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

Solution: A

Statements 1 and 2 are correct because revenue expenditure includes salaries, pensions, and subsidies, and it does not create productive assets.

Statement 3 is correct, as India has been shifting focus towards capital expenditure for better economic outcomes.

Statement 4 is incorrect because capital investments are part of capital expenditure, not revenue expenditure.

What is Socio-Economic Expenditure?

Socio-economic expenditure refers to government spending aimed at improving social and economic outcomes, such as education, healthcare, infrastructure, and welfare schemes. It includes:

1. **Capital Expenditure (Capex):** Investments in infrastructure like roads, railways, and ports.
2. **Revenue Expenditure:** Day-to-day spending on salaries, subsidies, and welfare programs.
3. **Development Expenditure:** Long-term investments in education, healthcare, and R&D.
4. **Interest Payments:** Costs incurred due to past borrowings.
5. **Subsidies:** Financial support for essential goods and services like food and fuel.

Data and Trends in India's Socio-Economic Expenditure:

1. **Capital Outlay to GDP Ratio:** Increased from 1.5% in 2000 to 2.5% in 2023, reflecting higher infrastructure spending.
2. **Revenue Expenditure to Capital Outlay Ratio:** Declined from 8:1 in 2000 to 5:1 in 2023, indicating better spending quality.
3. **Development Expenditure to GDP Ratio:** Rose from 6% in 2000 to 8% in 2023, driven by investments in health and education.
4. **Interest Payments to Total Expenditure Ratio:** Fell from 25% in 2000 to 20% in 2023 due to fiscal consolidation.
5. **State-Level Spending:** States' development expenditure increased post-14th Finance Commission recommendations, with higher fiscal devolution.

29) Consider the following statements regarding interest payments as part of socio-economic expenditure:

1. They form a small fraction of total government expenditure in India.
2. Their share has been increasing due to rising fiscal deficits.
3. High interest payments reduce the amount of funds available for development spending.

How many of the above statements is/are incorrect?

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

Solution: B

Statement 3 is correct because high interest payments reduce the government's ability to allocate funds for development projects.

Statement 1 is incorrect because interest payments form a significant part (around 20%) of India's total expenditure.

Statement 2 is incorrect, as India's fiscal deficit has been managed better in recent years.

30) Consider the following statements regarding the effects of Rupee-Dollar Swap Auctions on liquidity:

1. Swap auctions completely eliminate the need for other monetary policy tools like repo rate changes.
2. They help inject rupee liquidity into the banking system when there is a shortfall.
3. Swap auctions can only be conducted for short-term liquidity management.

How many of the above statements is/are incorrect?

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

Solution: B

Rupee-Dollar Swap Auctions are a tool used by the Reserve Bank of India (RBI) to manage liquidity in the banking system by exchanging rupees for dollars or vice versa.

- **Statement 1 is incorrect** because swap auctions do not eliminate the need for other monetary policy tools like **repo rate adjustments** or **open market operations (OMOs)**. They are used as a complementary measure to influence liquidity conditions rather than replacing existing tools.
- **Statement 2 is correct** as swap auctions can **inject rupee liquidity** when banks sell USD to the RBI in exchange for rupees. This increases the availability of rupees in the financial system, addressing liquidity shortages.
- **Statement 3 is incorrect** because swap auctions are **not limited to short-term liquidity management**. They can be structured for both short-term and long-term purposes, depending on the central bank's objectives.

31) Match the following types of socio-economic expenditure with their key characteristics:

Type of Expenditure	Key Characteristic
A. Capital Expenditure	1. Day-to-day operational costs
B. Revenue Expenditure	2. Investment in infrastructure
C. Development Expenditure	3. Costs incurred due to borrowings
D. Interest Payments	4. Spending on health and education

Select the correct match:

- a) A-1, B-2, C-4, D-3
- b) A-2, B-1, C-3, D-4
- c) A-1, B-2, C-3, D-4
- d) A-2, B-1, C-4, D-3

Solution: D

- **Socio-economic expenditure** in an economy is classified into different types based on its purpose and impact.
- **Capital Expenditure (A-2)** refers to spending on long-term assets like infrastructure, machinery, and buildings that enhance economic productivity over time. It is not consumed immediately but generates future benefits.
- **Revenue Expenditure (B-1)** includes day-to-day operational costs such as salaries, subsidies, and administrative expenses, which do not create long-term assets but are essential for maintaining government functions.
- **Development Expenditure (C-4)** is directed towards sectors like health, education, and research & development, aiming to improve human capital and overall socio-economic conditions.
- **Interest Payments (D-3)** are the costs incurred by the government on borrowed funds, which include repayments on loans and debts.

32) Consider the following statements about the use of Dollar-Rupee Swap Auctions in India:

1. RBI always purchases dollars in these auctions to boost forex reserves.
2. These swaps permanently alter the money supply in the economy.
3. Swap auctions are conducted at a fixed exchange rate set by the RBI.

How many of the above statements is/are incorrect?

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

Solution: C

- Dollar-Rupee Swap Auctions are a tool used by the Reserve Bank of India (RBI) to manage liquidity and stabilize the foreign exchange market. These swaps involve the exchange of U.S. dollars and Indian rupees between the RBI and authorized market participants for a specified period, with a commitment to reverse the transaction at a future date.

- **Statement 1 is incorrect** because the RBI does not always purchase dollars; it can either buy or sell dollars depending on its objective—buying dollars injects rupees into the system, while selling dollars absorbs excess rupee liquidity.
- **Statement 2 is incorrect** as swap transactions are temporary in nature and do not lead to a permanent alteration in money supply.
- **Statement 3 is incorrect** because the exchange rate in swap auctions is determined through bidding in the auction process, not by a fixed rate set by the RBI.

2. Ecology and Environment

- 1) Consider the following statements about the "India Wetlands Resolution" adopted at Ramsar CoP15:
1. The resolution primarily focuses on mobilizing international funds for the physical restoration of degraded wetlands in developing countries.
 2. It advocates for a whole-of-society approach that integrates pro-planet behavioural choices into national wetland conservation strategies.
 3. The resolution is an extension of India's domestic initiatives like Mission LiFE and the Save Wetlands Campaign.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The core focus of the resolution is on **promoting sustainable lifestyles and behavioural changes**, not on mobilizing international funds for restoration. While funding is important for conservation, this specific resolution's novelty lies in its emphasis on consumption patterns and community choices (the "demand side") rather than just financial mechanisms for supply-side interventions.
 - **Statement 2 is correct.** The resolution's central aim is to integrate **sustainable lifestyles and pro-planet behavioural choices** into wetland management. It champions a "whole-of-society" approach, meaning it seeks to involve individuals, communities, and private entities, not just governments, in the conservation effort through their daily actions.
 - **Statement 3 is correct.** The resolution directly builds upon and globalizes India's domestic flagship programs. It translates **Mission LiFE (Lifestyle for Environment)** from a national movement into a global paradigm for wetland conservation and is supported by the citizen-engagement efforts of India's **Save Wetlands Campaign**. This demonstrates India's attempt to use its domestic policy successes to shape global environmental governance.
- 2) The "India Wetlands Resolution" adopted at Ramsar CoP15 is significant primarily because it:
- (a) Establishes a legally binding framework for all member nations to halt wetland degradation by 2030.
 - (b) Secures a multi-billion dollar "Global Wetlands Fund" to be administered by India.
 - (c) Elevates India's soft power by translating its domestic environmental policy (Mission LiFE) into a global conservation paradigm.
 - (d) Mandates the transfer of eco-friendly technologies for wetland restoration from developed to developing countries.

Solution: C

(a) Ramsar resolutions are generally not legally binding in the same way as a treaty protocol. They represent commitments and encourage action but do not typically create a hard-law framework.

(b) The resolution's focus is on lifestyle changes, not establishing a new global fund.

(c) This option correctly captures the strategic and diplomatic significance of the resolution. By successfully proposing and passing a resolution that globalizes its own domestic policy—**Mission LiFE**—India demonstrates leadership in environmental governance. This act of shaping the global discourse using its own unique model is a clear exercise of **soft power and innovative "lifestyle diplomacy."**

(d) While technology transfer can be a part of environmental agreements, it is not mentioned as a feature or the primary significance of this particular resolution, which is focused on behavioural and policy integration.

3) With reference to the Asiatic Lion, consider the following statements:

1. It is listed as 'Endangered' on the IUCN Red List.
2. A prominent longitudinal fold of skin running along its belly is a key distinguishing feature from its African counterpart.
3. The species is found exclusively within the protected boundaries of Gir National Park.

How many of the above statements are incorrect?

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

Solution: B

- **Statement 1 is incorrect.** The Asiatic lion (*Panthera leo persica*) is listed as **Vulnerable** on the IUCN Red List, not Endangered. While its population has recovered significantly from the brink of extinction due to concerted conservation efforts, it still faces threats that keep it in the Vulnerable category.
- **Statement 2 is correct.** One of the most distinct morphological features of the Asiatic lion compared to the African lion is the presence of a **longitudinal fold of skin along its belly**. This feature is a reliable marker for identification. Other distinguishing characteristics include a sparser mane in males, which leaves the ears more visible.
- **Statement 3 is incorrect.** While Gir National Park remains the primary and core habitat for the Asiatic lion, the population has expanded significantly beyond its boundaries. Today, a substantial number of lions, estimated to be over 200, inhabit adjoining areas in Gujarat, including other protected areas, agro-pastoral landscapes, and coastal zones. This dispersal has led to increased human-lion interactions outside the park.

4) Consider the following statements about the Mouse Deer (Chevrotain):

1. It is the world's smallest hoofed mammal and belongs to a primitive ruminant lineage distinct from both deer and mice.
2. Certain species of chevrotain exhibit an unusual dietary behaviour for ruminants by occasionally consuming animal matter.
3. The species is known for a unique defence mechanism where it drums its hooves at a high frequency to deter predators.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The mouse deer (chevrotain) is the **world's smallest hoofed mammal** and clarifies that despite its name, it is unrelated to deer (family Cervidae) or mice, belonging to its own family, **Tragulidae**, representing a primitive ruminant lineage.
- **Statement 2 is correct.** While primarily herbivorous, the **African chevrotain** is an exception and occasionally consumes insects, crabs, and even scavenged meat, which is an unusual trait for a ruminant.

- **Statement 3 is incorrect.** The hoof-drumming is a real adaptation, but its purpose is to **signal distress or warn off threats**, not to directly deter predators through the sound itself. It is a communication signal. Furthermore, the most prominent defence mechanism is its ability to hide underwater.

5) Consider the following statements regarding Silver-backed Chevrotain:

Statement I: The recent rediscovery of the Silver-backed Chevrotain in Vietnam has generated significant global conservation optimism.

Statement II: The species was believed to be extinct for several decades, and its reappearance highlights the potential for other 'lost' species to persist undetected in underexplored habitats.

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

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

Solution: A

- **Statement-I is a correct observation.** The rediscovery has "sparked global conservation optimism."
- **Statement-II is also correct and provides the reason.** The optimism mentioned in Statement-I is not just about this one species. It is because the species was **thought to be extinct for over 30 years**. Its rediscovery provides tangible hope and a powerful argument for increasing survey efforts in remote ecosystems, as other species currently presumed extinct might also survive.

6) Consider the following statements regarding mangrove distribution in India:

1. The Sundarbans in West Bengal host the largest single block of mangrove forests in the country.
2. Mangrove cover is also found in the intertidal zones of the Godavari and Mahanadi deltas.
3. The state of Gujarat has a significant area of mangroves, particularly in the Gulf of Kutch.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** The **Sundarbans**, a UNESCO World Heritage Site located in the delta of the Ganges, Brahmaputra, and Meghna rivers in the Bay of Bengal, represents the **largest contiguous block of mangrove forest** in the world, a significant portion of which lies in West Bengal, India.
- **Statement 2 is correct.** The east coast of India features significant mangrove ecosystems in its river deltas. The deltas of the **Mahanadi River** in Odisha and the **Godavari-Krishna rivers** in Andhra Pradesh are known for their rich mangrove biodiversity.
- **Statement 3 is correct.** After West Bengal, the state of **Gujarat** has the second-highest mangrove cover in India. These mangroves are predominantly found along the **Gulf of Kutch** and the Gulf of Khambhat, adapted to the arid climate and high salinity conditions of the region.

7) Consider the following statements regarding the Asian Giant Tortoise:

1. It is listed as 'Endangered' in the IUCN Red List.
2. It is one of the few tortoise species that builds an above-ground nest.
3. In India, it is protected under Schedule I of the Wildlife Protection Act, 1972.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three

(d) None

Solution: A

- **Statement 1 is incorrect.** The Asian Giant Tortoise (*Manouria emys*) is listed as 'Critically Endangered' on the IUCN Red List due to severe threats from habitat loss and hunting.
- **Statement 2 is correct.** This species exhibits a unique reproductive behavior among tortoises; the female constructs a large nest mound from leaf litter and other forest debris and is known to guard it, which is a rare form of parental care in the tortoise world.
- **Statement 3 is incorrect.** The Asian Giant Tortoise is listed under **Schedule IV** of the Wildlife Protection Act, 1972, not Schedule I. Schedule I provides the highest level of protection, which is not accorded to this species, although it is critically endangered globally.

- 8) With reference to 'Restitutionary Damages' in the context of Indian environmental law, which of the following statements is most accurate?
- a) They are punitive fines imposed on polluters after a lengthy judicial process.
 - b) They can only be imposed by the National Green Tribunal.
 - c) They are compensatory payments that can be imposed even before environmental damage occurs to prevent potential harm.
 - d) They are a form of tax collected by the central government to fund environmental projects.

Solution: C

- Restitutionary damages are fundamentally **restorative, not punitive**. The key feature highlighted by the Supreme Court is their **preventive and precautionary** nature. Unlike fines that punish past violations, these damages can be imposed *ex-ante* (beforehand) based on the risk or likelihood of environmental harm. This aligns with the precautionary principle, a cornerstone of environmental jurisprudence.
- The Supreme Court has empowered Pollution Control Boards to impose these damages under the Water and Air Acts, not just the National Green Tribunal.
- They are not a tax but a direct financial liability on a potential polluter to fund the restoration or protection of the environment, based on the 'polluter pays' principle.

- 9) Consider the following statements regarding the reintroduction of the Asian Giant Tortoise in Nagaland:

Statement I: The reintroduction program is a joint initiative of the Nagaland Forest Department and the India Turtle Conservation Programme (ITCP).

Statement II: The tortoises were reintroduced into a designated Community Reserve, highlighting the role of community-led conservation efforts.

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

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

Solution: B

- **Statement I is correct.** The **key partners** involved in the conservation project: the state's forest department and a specialized conservation organization, the ITCP.
- **Statement II is also correct.** The reintroduction site is the **Zeliang Community Reserve**. This choice of location underscores the strategy of involving local communities in conservation, which is often crucial for the long-term success of such initiatives.
- However, Statement II does not explain *why* the joint initiative was formed.

10) Consider the following statements regarding the Nilgiri Tahr:

1. It is endemic to the entire stretch of the Western Ghats, from Gujarat to Kerala.
2. The animal is listed as 'Endangered' on the IUCN Red List and is protected under Schedule I of the Wildlife Protection Act, 1972.
3. The males are distinguished by a prominent silver saddle patch on their backs.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The Nilgiri Tahr is endemic to the **Southern Western Ghats**, specifically a 400 km stretch from the Nilgiris in Tamil Nadu to the Kanyakumari hills, and parts of Kerala. Its habitat does not extend to the northern parts of the Western Ghats in states like Gujarat or Maharashtra. It is a specialist species adapted to the montane grasslands and shola forest edges at high altitudes (1,200 to 2,600 m).
- **Statement 2 is correct.** The Nilgiri Tahr faces significant threats from habitat loss and poaching, which has led to its classification as '**Endangered**' on the IUCN Red List. To provide it with the highest level of legal protection in India, it is listed under **Schedule I** of the Wildlife Protection Act, 1972, which prohibits its hunting and trade.
- **Statement 3 is correct.** A key distinguishing feature of the adult male Nilgiri Tahr is the development of a light grey area on its back, which is known as a '**saddle patch**'. This patch becomes more prominent as the male matures and is a clear indicator of its age and dominance, making it visually distinct from females and younger males.

11) With reference to the Sunflower Sea Star, consider the following statements:

1. It is a slow-moving, herbivorous creature that primarily feeds on kelp and algae.
2. The mass die-off of this species was caused by a viral pathogen that thrived in colder ocean temperatures.
3. The decline of the Sunflower Sea Star has led to a trophic cascade, resulting in the collapse of kelp forests.

How many of the above statements are incorrect?

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

Solution: B

- **Statement 1 is incorrect.** The Sunflower Sea Star (*Pycnopodia helianthoides*) is a large and **fast-moving predator**, not a slow herbivore. It plays the role of a top predator in its ecosystem, feeding on a variety of invertebrates, most notably **sea urchins**. Its ability to move quickly (up to 1 meter per minute) makes it an effective hunter.
- **Statement 2 is incorrect.** The cause of the Sea Star Wasting Disease (SSWD) was identified as a **bacterium**, specifically *Vibrio pectenicida*, not a virus. This pathogen thrives in **warmer ocean conditions**, which raises concerns about the impact of climate change on marine diseases. The warming waters exacerbate the spread and lethality of the disease.
- **Statement 3 is correct.** The Sunflower Sea Star is a **keystone species** because its predation on sea urchins kept their populations in check. With the massive decline of the sea stars, the sea urchin population exploded. These urchins graze heavily on kelp, leading to the devastation of vast **kelp forests**, particularly in areas like Northern California. This is a classic example of a **trophic cascade**, where the removal of a top predator leads to drastic changes in the ecosystem structure.

- 12) Which of the following statements regarding the Sakkarakottai Bird Sanctuary, recently designated as a Ramsar site, is correct?
- It is part of the Western Ghats Biosphere Reserve.
 - It was designated as a protected site primarily due to its population of the Lion-tailed Macaque.
 - It is a wetland ecosystem supporting diverse flora and fauna, including migratory birds.
 - It is located in Kerala and is known for its extensive mangrove forests.

Solution: c)

Sakkarakottai Bird Sanctuary is not part of the Western Ghats Biosphere Reserve, as it lies outside the designated area (Option a - Incorrect).

Although home to diverse wildlife, it is not primarily designated due to the presence of the Lion-tailed Macaque (Option b - Incorrect).

It is a significant wetland ecosystem hosting various species of birds, making it an important conservation site (Option c - Correct).

Sakkarakottai Bird Sanctuary is located in Tamil Nadu, not Kerala (Option d - Incorrect).

- 13) Consider the following statements regarding global glacier meltdown:

- Glacier retreat leads to the expansion of high-altitude ecosystems, promoting biodiversity.
- The loss of glacial ice contributes to the reduction of Earth's albedo, accelerating global warming.
- Glacier melting is primarily influenced by volcanic activity rather than climate change.

How many of the above statements are incorrect?

- Only one
- Only two
- All three
- None

Solution: B

Statement 1 is incorrect because while **glacier retreat exposes new land, it does not necessarily lead to an expansion of high-altitude ecosystems or promote biodiversity**. Instead, it disrupts fragile alpine ecosystems, endangers species that rely on glacial habitats, and alters freshwater availability, often leading to biodiversity decline rather than expansion.

Statement 2 is correct as the **loss of glacial ice reduces Earth's albedo (reflectivity)**. Glaciers and ice sheets reflect a significant portion of solar radiation, helping regulate global temperatures. When they melt, darker surfaces such as land and water absorb more heat, intensifying global warming in a **positive feedback loop**.

Statement 3 is incorrect because while **volcanic activity can contribute locally to glacier melting**, the **primary driver of global glacier retreat is climate change**. Rising global temperatures, increased CO₂ levels, and black carbon deposits from human activities are the major contributors.

- 14) What is the major limitation of using bacteria for large-scale plastic degradation?

- No bacteria have been discovered that can degrade plastics.
- Plastic degradation by bacteria is extremely slow under natural conditions.
- Bacteria only degrade plastic in the presence of high oxygen levels.
- Bacteria cannot survive in landfill environments.

Solution: B

The **major limitation of using bacteria for large-scale plastic degradation** is the **extremely slow rate of degradation under natural conditions**. Plastics are synthetic polymers designed for durability, making them resistant to microbial breakdown.

- Statement (a) is incorrect** because scientists have identified **several plastic-degrading bacteria**, such as *Ideonella sakaiensis*, which breaks down PET (polyethylene terephthalate), but the process is slow.

- **Statement (c) is incorrect** as some **bacteria can degrade plastics anaerobically** (without oxygen), though the process is less efficient compared to aerobic conditions.
- **Statement (d) is incorrect** because bacteria **can survive in landfill environments**, but they struggle to efficiently degrade plastics due to unfavorable conditions like low moisture and oxygen.

15) Consider the following statements about the Sea of Galilee:

1. It is a saltwater lake located entirely within Syrian territory.
2. The recent red coloration of the lake has been attributed to industrial chemical spills.
3. The lake is primarily fed by the Yarmouk River.

How many of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The Sea of Galilee is a **freshwater lake**, not saltwater, and it is located in **northern Israel**, though bordered by the Golan Heights to the east.
- **Statement 2 is incorrect.** The red color was caused by a natural phenomenon: a bloom of the green algae **Botryococcus braunii**. This alga produces red carotenoid pigments as a protective response to high sunlight exposure, a condition exacerbated by climate change and rising temperatures, not industrial spills.
- **Statement 3 is incorrect.** The Sea of Galilee is fed **mainly by the Jordan River**. The Yarmouk River is a tributary that forms a boundary to the southeast of the lake.

16) Consider the following statements regarding Nilgiri Tahr.

Statement-I: The synchronized bi-annual survey of the Nilgiri Tahr is conducted exclusively by the Tamil Nadu Forest Department.

Statement-II: The habitat of the Nilgiri Tahr is confined to the montane grasslands of the Anamalai Tiger Reserve and Mukurthi National Park.

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

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

Solution: D

- **Statement-I is incorrect.** The synchronized survey for the Nilgiri Tahr is a collaborative effort. It is conducted jointly by the **Forest Departments of both Tamil Nadu and Kerala**. This is because the habitat of the species spans across the border of these two states in the Southern Western Ghats. A coordinated survey is essential to get an accurate population estimate across its entire range and avoid double-counting.
- **Statement-II is incorrect.** While the Anamalai Tiger Reserve and Mukurthi National Park are crucial habitats with high population densities of the Nilgiri Tahr, its habitat is not confined exclusively to these two areas. The species is found across a **400 km stretch** of the Southern Western Ghats, from the Nilgiri Hills down to the Kanyakumari hills, encompassing several other forest divisions and protected areas in both Tamil Nadu and Kerala.

17) Consider the following statements regarding elephants:

Statement I: The population of Asian elephants is larger than that of African elephants.

Statement II: The International Union for Conservation of Nature (IUCN) has classified the Asian Elephant as 'Endangered'.

Statement III: In Asian elephants, both males and females have tusks.

Which of the above statements is/are correct?

- a) I only
- b) II only
- c) I and III only
- d) II and III only

Solution: B

- **Statement II is correct.** The IUCN Red List categorizes the Asian Elephant (*Elephas maximus*) as Endangered due to threats like habitat loss and poaching.
- **Statement I is incorrect.** The total population of African elephants (both savanna and forest species) is significantly larger than the Asian elephant population.
- **Statement III is incorrect.** While both male and female African elephants have tusks, in Asian elephants, only some males possess tusks. Female Asian elephants have rudimentary tusks or no tusks at all.

18) With reference to the conservation of elephants, consider the following statements:

1. The gestation period of an elephant is approximately 22 months.
2. Human-elephant conflict is primarily caused by poaching for ivory.
3. Project Elephant is a centrally sponsored scheme launched by the Ministry of Environment, Forest and Climate Change.

How many of the above statements are incorrect?

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

Solution: A

- **Statement 1 is correct;** the gestation period of an elephant is the longest among all mammals, lasting about 22 months.
- **Statement 3 is also correct;** Project Elephant is a key centrally sponsored scheme launched by the MoEF&CC to provide financial and technical support to states for elephant conservation.
- **Statement 2 is incorrect.** While poaching is a major threat to elephants, human-elephant conflict is primarily driven by habitat loss, fragmentation, and the encroachment of human settlements into elephant corridors. Poaching is a direct threat of a different nature.

19) Consider the following statements regarding Jellyfish:

1. They belong to the phylum Cnidaria and possess basic organs such as a heart and bones.
2. Jellyfish blooms are a phenomenon of rapid population explosion that can disrupt coastal industrial operations.
3. The scientific name for most common jellyfish species is *Aurelia aurita*.

Which of the above statements are correct?

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

Solution: C

- **Statement 1 is incorrect.** While jellyfish do belong to the phylum Cnidaria, a key characteristic is their lack of complex organs. They **lack bones, a brain, or a heart**. Their body is a simple gelatinous structure, composed of about 95% water.
- **Statement 2 is correct.** Jellyfish can form "blooms," which are massive, rapid increases in their population under favourable environmental conditions. The shutdown of the Gravelines Nuclear Power Station in

France—is a prime example of how these swarms can clog cooling water intake systems of coastal power plants and other industrial facilities, causing operational disruptions.

- **Statement 3 is correct.** While "jellyfish" is a common term, a prominent and representative species is **Aurelia aurita**, commonly known as the Moon Jellyfish.

20) With reference to the Cauvery Wildlife Sanctuary, consider the following statements:

1. It is located in the state of Karnataka and shares boundaries with the forests of Tamil Nadu.
2. The sanctuary is characterized by a semi-arid climate and receives rainfall from both the southwest and northeast monsoons.
3. It is home to several endangered species, including the grizzled giant squirrel and the smooth-coated otter.
4. The sanctuary's landscape is dominated by evergreen sholas, with very few deciduous forests.

How many of the above statements are correct?

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

Solution: C

- The **Cauvery Wildlife Sanctuary** is located in **Karnataka** and shares a boundary with the forests of **Tamil Nadu**.
- It experiences a **semi-arid climate** and benefits from both the **southwest and northeast monsoons**.
- The sanctuary is a biodiversity hotspot and provides a habitat for several endangered species, including the **grizzled giant squirrel, smooth-coated otter, and hump-backed mahseer fish**.
- However, **statement 4 is incorrect**. The landscape of the sanctuary is predominantly **dry deciduous and thorn forests**, with some riverine patches and evergreen sholas.

21) With reference to the Indian polyvalent antivenom, which of the following are considered the "Big Four" snakes?

- a) Indian cobra, Russell's viper, Saw-scaled viper, and King cobra
- b) Indian cobra, Russell's viper, Saw-scaled viper, and Spectacled cobra
- c) Monocled cobra, Common krait, Russell's viper, and Banded krait
- d) Common krait, Indian cobra, Russell's viper, and Saw-scaled viper

Solution: D

- The Indian polyvalent antivenom is traditionally derived from the venom of the "**Big Four**" snakes, which are responsible for the majority of snakebite fatalities in India. These four species are the **Indian cobra (Naja naja)**, the **common krait (Bungarus caeruleus)**, the **Russell's viper (Daboia russelii)**, and the **saw-scaled viper (Echis carinatus)**.
- The King cobra, while highly venomous, is not included in the "Big Four" for the purpose of creating the polyvalent antivenom.
- The effectiveness of this antivenom is based on its ability to neutralize the venom of these four widespread and medically significant snakes.
- This broad-spectrum approach aims to provide a single, widely available treatment for snakebites across most of India, reducing the complexity and cost of treatment.
- However, the geographical distribution of venomous snakes in India is not uniform, leading to challenges in regions where other species are more prevalent.

22) Dibru–Saikhowa National Park is the only known habitat in India for which of the following animals?

- a) Pygmy hog
- b) Hispid hare
- c) Feral horses

d) Golden langur

Solution: C

- Dibru–Saikhowa National Park is unique as it is the only known habitat in India for a population of about 200 **feral horses**. These horses are the descendants of animals that were abandoned during **World War II**.
- The park's unique landscape, dominated by wetlands, grasslands, and semi-evergreen forests, provides a suitable environment for these wild horses.
- The pygmy hog and hispid hare are found in the grasslands of the Himalayan foothills, and the golden langur is found in the semi-evergreen and mixed-deciduous forests of Bhutan and Assam.

23) Consider the following statements regarding the benefits of Sustainable Aviation Fuel (SAF):

1. It can reduce lifecycle carbon emissions by up to 80% compared to conventional jet fuel.
2. It requires significant modifications to existing aircraft engines for its use.
3. It helps airlines comply with international carbon offsetting schemes.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** One of the major benefits of SAF is its potential to significantly reduce the carbon footprint of the aviation industry. It can cut **lifecycle greenhouse gas emissions by up to 80%** compared to fossil-based aviation turbine fuel (ATF).
- **Statement 2 is incorrect.** SAF is chemically similar to conventional jet fuel and can be **blended and used in existing aircraft engines** without the need for major modifications. Major aircraft manufacturers like Airbus have approved blends of up to 50% SAF.
- **Statement 3 is correct.** The use of SAF helps airlines meet the requirements of international agreements like the **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)**, which aims to stabilize CO2 emissions from international civil aviation.

24) Consider the following statements about the ecological role of Arctic Reindeer:

1. Their grazing habits contribute to the overgrowth of shrubs in the tundra.
2. They play a role in regulating the carbon cycle by influencing plant dominance.
3. Their presence has a negative impact on the biodiversity of other Arctic species.
4. They are a keystone species in the Arctic ecosystem.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The grazing of Arctic Reindeer **maintains the balance** in tundra vegetation and **prevents shrub overgrowth**, rather than contributing to it. This grazing activity is crucial for the health of the tundra ecosystem.
- **Statement 2 is correct.** By controlling plant dominance through their feeding habits, Arctic Reindeer indirectly **regulate soil carbon release**, thus influencing the carbon cycle.
- **Statement 3 is incorrect.** Their influence on plant diversity **benefits other Arctic species**, such as birds and small mammals, by creating a more varied habitat. They do not have a negative impact on overall biodiversity.

- **Statement 4 is correct.** Due to their significant impact on the structure and function of the Arctic ecosystem, Arctic Reindeer are considered a **keystone species**. Their decline could have cascading effects on the entire ecosystem.

25) Match the following regarding the conservation status of elephants:

	Elephant Species		IUCN Status
A.	Asian Elephant	1.	Critically Endangered
B.	African Forest Elephant	2.	Endangered
C.	African Savanna Elephant	3.	Vulnerable

Select the correct answer using the code given below:

- A-2, B-1, C-2
- A-2, B-1, C-3
- A-3, B-1, C-2
- A-2, B-3, C-1

Solution: A

- **Asian Elephant (*Elephas maximus*) (A)** is listed as **Endangered (2)**.
- **African Forest Elephant (*Loxodonta cyclotis*) (B)** is listed as **Critically Endangered (1)**.
- **African Savanna Elephant (*Loxodonta africana*) (C)** is listed as **Endangered (2)**.

26) Consider the following statements about Ranthambore National Park:

1. It is located at the confluence of the Aravalli and the Deccan Plateau.
2. The park was one of the original reserves declared under Project Tiger in 1973.
3. The entire area of the national park is designated as a core tiger habitat, with no buffer zones.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** Ranthambore National Park is situated at the junction of the **Aravalli and Vindhya hill ranges**, not the Deccan Plateau. This unique geographical location contributes to its rich biodiversity, as it represents a transition zone between two distinct geological and ecological systems.
- **Statement 2 is correct.** The area was declared the Sawai Madhopur Game Sanctuary in 1955 and became one of the first nine reserves to be included in **Project Tiger when it was launched in 1973**. This historical significance marks it as a crucial site for tiger conservation in India from the very beginning of the national conservation effort. It was later upgraded to a National Park in 1980.
- **Statement 3 is incorrect.** Ranthambore National Park, like other Project Tiger reserves, has a well-defined structure of core and buffer zones. The total area of **1,334 sq. km with a core area of approximately 275 sq. km**. The surrounding forests, including the Sawai Mansingh and Kailadevi Sanctuaries, act as important buffer zones that help in managing the tiger population and reducing human-wildlife conflict.

27) Consider the following statements.

1. Grasslands and savannahs cover nearly 10% of the Earth's landmass.
2. Woody encroachment is the phenomenon where there is increased tree cover in areas like savannahs and grasslands.
3. Higher atmospheric CO₂ levels due to climate change majorly inhibit the growth of deep-rooted woody plants.

How many of the above statements is/are correct?

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

Solution: A

Only Statement 2 is correct.

India's open ecosystems, such as savannahs and grasslands, face an unusual threat from increased tree cover, a phenomenon known as woody encroachment.

- This encroachment, driven by human activities that disrupt the natural disturbance regimes (like grazing and fire), is changing these ecosystems and threatening their biodiversity.
- A study highlighted that increased tree cover in areas like the African savannah has significantly reduced native grassland bird populations by more than 20%.
- Grasslands and savannahs, covering nearly 40% of the Earth's landmass, are home to many endemic and at-risk species.
- However, threats like conversion to agriculture, large-scale development projects, and overgrazing are contributing to their decline, with trees now emerging as a significant threat.
- Higher atmospheric CO2 levels due to climate change promote the growth of deep-rooted woody plants, exacerbating the problem.

28) Consider the following statements regarding Sea Weeds.

1. It is the common name for countless species of marine plants and algae.
2. Sea weeds does not grow in flowing waters like rivers and streams.
3. Seaweed cultivation is not part of aquaculture in India.

How many of the above statements are correct?

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

Solution: A

Seaweeds are various types of marine plants and macroalgae found in water bodies like rivers and lakes. **Seaweed cultivation** is part of aquaculture, with the fishing and aquaculture sector contributing 1.5% to India's GDP.

Seaweed is chock-full of vitamins, minerals, and fiber.

29) The recent decision by the National Tiger Conservation Authority (NTCA) to limit the definition of tiger corridors is significant because:

- (a) it will lead to an increase in the number of protected corridors.
- (b) it may make it easier for industrial projects to get clearance in areas that were previously considered corridors.
- (c) it will result in increased funding for tiger conservation.
- (d) it is in line with the recommendations of the Wildlife Institute of India (WII).

Solution: B

- The recent decision by the NTCA to restrict the definition of tiger corridors to a limited number of pathways is a cause for concern among conservationists. By excluding corridors identified in more recent scientific studies, the NTCA is effectively reducing the area that would be subject to strict scrutiny for development projects. This could make it easier for mining and infrastructure projects to obtain environmental clearances in areas that are crucial for tiger movement and gene flow, but are not officially recognized as corridors under the new, narrower definition.

30) Consider the following statements regarding the expansion of Sundarbans Tiger Reserve.

Statement-I: The recent expansion has made the Sundarbans Tiger Reserve the second-largest tiger reserve in India.

Statement-II: The expansion was approved by the National Board for Wildlife to increase the core habitat available for the unique mangrove-adapted tiger population.

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

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

Solution: A

- **Statement-I is correct.** The National Board for Wildlife approved West Bengal's proposal to add 1,044.68 sq km to the Sundarbans Tiger Reserve (STR). This expansion increased the total area to 3,629.57 sq km, elevating its rank to become **India's second-largest tiger reserve**.
- **Statement-II is correct.** The primary conservation rationale for expanding any tiger reserve is to provide more protected area for the tiger population. In the case of the Sundarbans, the expansion aims to increase the **core and buffer areas**, which is crucial for a viable population of its unique mangrove-dwelling tigers. This provides them with more space for movement, reduces human-animal conflict at the fringes, and protects the fragile mangrove ecosystem upon which they depend.
- Statement-II provides the direct and logical reason for the action mentioned in Statement-I.

31) Consider the following statements about the Great Nicobar Project:

1. The project is being implemented by NITI Aayog and primarily aims to enhance India's maritime trade and security in the Indian Ocean Region.
2. It involves the diversion of forest land that is part of a UNESCO designated Biosphere Reserve.
3. The Galathea Bay, the site for the proposed transshipment port, is also a significant nesting ground for the Leatherback sea turtle.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** The Great Nicobar Project is a strategic initiative driven by **NITI Aayog** in collaboration with the A&N Administration. Its stated objectives are multi-pronged, focusing on economic development through a transshipment hub to tap into global shipping routes, and enhancing India's **geostrategic presence and maritime security** in the crucial Indo-Pacific region.
- **Statement 2 is correct.** The Great Nicobar Island, where the project is located, was designated as the **Great Nicobar Biosphere Reserve by UNESCO in 2013**. The project involves the diversion of a significant area of forest land within this ecologically sensitive and protected area, which has been a major point of concern for environmentalists.
- **Statement 3 is correct.** **Galathea Bay**, on the southeastern coast of Great Nicobar, is the proposed site for the international transshipment port. This bay is also globally recognized as an **iconic and one of the most important nesting sites for the Giant Leatherback turtle**, the world's largest sea turtle. The potential impact of port construction and dredging on this nesting habitat is a critical environmental concern raised against the project.

32) Consider the following statements regarding Ethanol Blended Petrol (EBP) Programme:

Statement-I: The Ethanol Blended Petrol (EBP) Programme is primarily aimed at enhancing India's energy security and achieving environmental benefits.

Statement-II: The programme encourages the diversion of surplus foodgrains and sugarcane for ethanol production, which provides an assured market and income stability for farmers.

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

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

Solution: B

- **Statement-I is correct.** The EBP Programme's core objectives are twofold: enhancing energy security by **reducing dependence on imported crude oil** and achieving environmental goals by **lowering vehicular emissions**. Blending petrol with ethanol, a renewable fuel, directly contributes to these outcomes.
- **Statement-II is also correct.** The programme relies on feedstocks like sugarcane and surplus foodgrains. By creating a dedicated industrial demand for these agricultural products, it provides farmers with an **alternative and assured market**. This helps in stabilising their income, especially when there is a surplus production that could otherwise lead to price crashes.

33) Which of the following most accurately describes the primary reason why Invasive Alien Species (IAS) pose a significant threat to India's biodiversity and economy, as highlighted by recent studies?

- (a) They primarily cause health hazards such as allergies, which increases public health expenditure.
- (b) Their management costs are transparently reported, revealing a massive drain on the national exchequer.
- (c) They are introduced mainly through illegal trade, making their management a law-and-order problem.
- (d) They thrive due to the absence of natural predators in new habitats, allowing them to outcompete and displace native species.

Solution: D

- **Option (d) is the most accurate description.** The fundamental characteristic of an invasive species is its ability to flourish in a new environment, often because the natural checks and balances (like **predators, parasites, or diseases**) that controlled its population in its native habitat are absent. This gives them a competitive advantage over native species for resources like light, water, and nutrients, leading to biodiversity loss and ecosystem degradation, which in turn causes economic harm.

34) Consider the following characteristics related to Invasive Alien Species (IAS):

1. They often exhibit aggressive growth patterns and outcompete native species for essential resources.
2. Their proliferation is frequently aided by the absence of natural predators and diseases in the new ecosystem.
3. They can alter the chemical and physical properties of the ecosystems they invade, such as soil chemistry and hydrology.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** A defining trait of IAS is their **aggressive growth**. They often grow faster and more densely than native flora, monopolizing resources like sunlight, water, and soil nutrients, thereby **outcompeting and displacing native species**. *Lantana camara* is a classic example in Indian forests.
- **Statement 2 is correct.** This is a key reason for their success. In their native habitats, their populations are kept in check by natural enemies (predators, herbivores, pathogens). When introduced to a new region without these controls, they can reproduce and spread unchecked, a phenomenon known as "**enemy release hypothesis**".
- **Statement 3 is correct.** The impact of IAS extends beyond simple competition. They can be 'ecosystem engineers' that fundamentally alter their environment. For instance, some invasive plants can change **soil chemistry** (e.g., by fixing nitrogen), alter water cycles (**hydrology**), or increase the frequency and intensity of forest fires.

35) Consider the following statements regarding the conservation challenges in Dibru–Saikhowa National Park:

1. The grassland ecosystem is expanding due to the decline of shrubland.
2. The park is free from anthropogenic pressures as there are no human settlements inside its boundaries.
3. The biodiversity of the park is threatened by both native and invasive plant species.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The grassland area in Dibru–Saikhowa National Park is **shrinking**, not expanding. This is due to the **expansion of shrubland** and forest degradation, which is altering the habitat of grassland-dependent species.
- **Statement 2 is incorrect.** The park faces significant **anthropogenic pressure** from villages located inside its boundaries. This leads to human-wildlife conflict and increased stress on the park's resources.
- **Statement 3 is correct.** The park's biodiversity is under threat from the growth of both **native trees** (like *Bombax ceiba* and *Lagerstroemia speciosa*) and **invasive species** (like *Chromolaena*, *Parthenium*, and *Mikania*). This alteration of the natural vegetation balance is a major conservation challenge, impacting the habitat of endangered species like the Bengal Florican and hog deer.

36) Article 6 of the Paris Agreement is significant primarily because it:

- a) Makes it mandatory for all signatory nations to establish a domestic carbon tax.
- b) Establishes a global fund to finance climate adaptation projects in developing nations.
- c) Sets up a framework for the international transfer of emission reduction credits between countries.
- d) Requires developed countries to achieve carbon neutrality by 2030.

Solution: C

- The central purpose and significance of **Article 6 of the Paris Agreement is to establish rules for international cooperation through carbon markets**. It allows countries that overachieve their climate targets (Nationally Determined Contributions or NDCs) to sell their excess emission reductions to countries that are struggling to meet their own goals. This creates a market-based mechanism to lower the overall global cost of mitigation and encourage more ambitious climate action.
- Option (a) is incorrect as carbon taxes are a domestic policy choice, not a mandate under Article 6.
- Option (b) relates more to other climate finance mechanisms like the Green Climate Fund.
- Option (d) is incorrect as Article 6 does not set specific neutrality deadlines; these are set by individual countries in their NDCs.

37) Consider the following statements regarding Keoladeo National Park:

1. It is located in Bharatpur, Rajasthan, and is a UNESCO World Heritage Site.
2. Keoladeo National Park was declared the first Ramsar Site in India along with Vembanad Lake.
3. The Gambhir and Banganga rivers flow through the park, supporting its ecosystem.

Which of the above statements are correct?

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

Solution: D

- Keoladeo National Park, also known as **Bharatpur Bird Sanctuary**, is located in **Bharatpur, Rajasthan**, and is recognized as a **UNESCO World Heritage Site** due to its **rich biodiversity and significance as a bird habitat**, making **Statement 1 correct**.
- **Statement 2 is incorrect** because Keoladeo National Park, along with **Chilika Lake**, was declared **India's first Ramsar Site in 1981**, not **Vembanad Lake**. Vembanad Lake in Kerala is also a Ramsar site but was not among the first designated ones.
- **Statement 3 is correct**, as the **Gambhir and Banganga rivers** provide **essential water sources** that support the **wetland ecosystem** of the park, making it an important breeding ground for migratory birds, including the rare **Siberian crane**.

3. Geography

- 1) Which of the following most accurately describes the geographical and geological context of the Klyuchevskoy volcano?
 - (a) It is a dormant shield volcano located on the Kuril Islands, known for its basaltic lava flows.
 - (b) It is an active stratovolcano situated on Russia's Kamchatka Peninsula, forming part of the Pacific Ring of Fire.
 - (c) It is the tallest active volcano in the Southern Hemisphere, located near the Bering Sea on a stable continental plate.
 - (d) It is a caldera-type volcano in Eastern Siberia, listed as a UNESCO site for its unique geyser fields.

Solution: B

- (a) is incorrect because Klyuchevskoy is a **stratovolcano**, not a shield volcano, and it is **constantly active**, not dormant. It is located on the Kamchatka Peninsula, not the Kuril Islands.
- (b) is correct. Klyuchevskoy is described as a **stratovolcano** (known for its steep conical shape). It is located on the **Kamchatka Peninsula** in Russia and is part of the "**Ring of Fire**," a zone known for intense seismic and volcanic activity.
- (c) is incorrect. It is the tallest active volcano in the **Northern Hemisphere** (and Eurasia), not the Southern Hemisphere. It is located in a highly active tectonic zone, not a stable plate.
- (d) is incorrect. It is a stratovolcano, not a caldera. While the Kamchatka Peninsula has geysers, the UNESCO status is for the "**Volcanoes of Kamchatka**," with Klyuchevskoy being a core part, not specifically for geyser fields linked to this single volcano.
- 2) Consider the following statements regarding the coastal erosion in Chile:
 1. The erosion is a localized phenomenon affecting only the tourist beaches in the capital city, Santiago.
 2. The primary cause of this environmental issue is large-scale sand mining for construction purposes.
 3. The ecological implications are limited to the loss of beachfront, with minimal impact on coastal biodiversity.

How many of the above statements are correct?

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

Solution: D

- **Statement 1 is incorrect.** The erosion is a widespread issue affecting **86% of monitored beaches along Chile's central and southern coast**, not a localized phenomenon. Furthermore, Santiago is the inland capital; the affected beaches are in coastal cities like **Valparaiso and Vina del Mar**.
- **Statement 2 is incorrect.** While human activities are a cause, the primary drivers are a combination of **climate-induced forces (stronger swells, sea-level rise) and unregulated development (urbanization near dunes/wetlands)** that hampers natural sand replenishment. Sand mining is not mentioned as the primary cause.
- **Statement 3 is incorrect.** The implications go far beyond just the loss of beachfront. The severe ecological degradation, including **saltwater intrusion into freshwater sources and collapsing cliffs that threaten coastal forests and biodiversity**. This indicates a significant and broad ecological impact.

3) With reference to the geography of Iran, consider the following statements:

1. Iran shares a land border with Turkey and Iraq.
2. The Lut Desert, a major geographical feature, dominates its northern region.
3. Mount Damavand, Iran's highest peak, is part of the Zagros Mountains.

Which of the above statements are correct?

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

Solution: D

- **Statement 1 is correct.** Iran is located in Southwestern Asia and shares extensive land borders with several countries. To its west, it is bordered by **Turkey and Iraq**. It also shares borders with Armenia, Azerbaijan, Turkmenistan, Afghanistan, and Pakistan.
- **Statement 2 is incorrect.** The **Lut Desert (Dasht-e Lut)**, along with the Dasht-e Kavir, dominates the **central and eastern interior** of the country, not the northern region. The northern region is characterized by the Alborz mountain range.
- **Statement 3 is incorrect.** **Mount Damavand**, a stratovolcano and the highest peak in Iran, is part of the **Alborz mountain range** in the north, not the Zagros Mountains. The Zagros Mountains form a separate, extensive range running along the country's western and southwestern borders.

4) With reference to the geographical features of Slovenia, match List-I with List-II:

List-I (Region)	List-II (Dominant Characteristic)
A. Slovene Littoral	1. Characterized by sinkholes, caves, and underground rivers
B. Alpine Highlands	2. Major agricultural zone with rich alluvial soils from the Sava and Drava rivers
C. Karst Plateau	3. Contains the nation's highest peak and notable glacial lakes like Bled and Bohinj
D. Subpannonian Plains	4. Provides coastal access to the Adriatic Sea via the Gulf of Venice

Select the correct answer code:

- (a) A-4, B-1, C-3, D-2
- (b) A-2, B-1, C-4, D-3
- (c) A-2, B-3, C-1, D-4
- (d) A-4, B-3, C-1, D-2

Solution: D

- **A. Slovene Littoral:** This is the coastal region, providing access to the Gulf of Venice on the Adriatic Sea. So, **A matches 4.**
 - **B. Alpine Highlands:** This region contains the Julian Alps and the country's highest peak, Mount Triglav, along with famous lakes like Bled. So, **B matches 3.**
 - **C. Karst Plateau:** This region is globally famous for its karstic topography, which includes sinkholes, caves, and underground river systems. So, **C matches 1.**
 - **D. Subpannonian Plains:** This eastern region has rich alluvial soils deposited by major rivers and is the primary agricultural heartland. So, **D matches 2.**
- 5) Slovenia, recently in the news, is a Central European nation. Which of the following countries does it NOT share a land border with it?
- (a) Austria
 - (b) Croatia
 - (c) Hungary
 - (d) Serbia

Solution: D

Slovenia's neighbours as **Austria, Hungary, Croatia, and Italy**. While Slovenia was part of the former Yugoslavia, as was Serbia, they do not share a direct land border. Croatia lies between Slovenia and Serbia.



INSIGHTSIAS
SIMPLIFYING IAS EXAM PREPARATION

- 6) Match the geographical feature with its location and characteristic.
- | Column I (Feature) | Column II (Location) | Column III (Characteristic) |
|------------------------|------------------------|--------------------------------------|
| 1. Klyuchevskaya Sopka | A. Chile | P. World's highest active volcano |
| 2. Ojos del Salado | B. Kamchatka Peninsula | Q. Eurasia's tallest active volcano |
| 3. Atacama Desert | C. South America | R. One of the driest places on Earth |

Select the correct combination:

- (a) 1-A-Q, 2-B-P, 3-C-R
- (b) 1-B-Q, 2-A-P, 3-C-R
- (c) 1-B-P, 2-A-Q, 3-C-R
- (d) 1-A-Q, 2-C-P, 3-B-R

Solution: B

- **Klyuchevskaya Sopka (1):** This is another name for the Klyuchevskoy volcano. It is located on the **Kamchatka Peninsula (B)** and is the **tallest active volcano in Eurasia (Q)**. This gives the combination **1-B-Q**.
- **Ojos del Salado (2):** It is located in **Chile (A)** on the continent of South America and is the **world's highest active volcano (P)**. This gives the combination **2-A-P**.
- **Atacama Desert (3):** This desert is in northern Chile, which is in **South America (C)**. It is famous for being **one of the driest places on Earth (R)**. This gives the combination **3-C-R**.

- 7) Consider the following statements:

Statement-I: Chile is experiencing accelerated and severe coastal erosion along its Pacific coastline.

Statement-II: The phenomenon stated in Statement I is driven exclusively by natural, climate-change-induced factors such as rising sea levels and more frequent storm swells.

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

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

Solution: C

- **Statement-I is correct.** Chile is facing a severe environmental crisis with **86% of its monitored beaches shrinking** and some projected to vanish within a decade. This accurately reflects a state of accelerated and severe coastal erosion.
- **Statement-II is incorrect.** There are two types of causes: **climate-induced forces** (swells, sea-level rise) and **human activities** (unregulated urbanization, construction near dunes, degradation of river basins).

8) With reference to the Mahanadi River, consider the following statements:

1. It originates in the Eastern Ghats in Odisha and flows westward into the Arabian Sea.
2. The Hirakud Dam, located in Chhattisgarh, is the primary source of the water-sharing dispute with Odisha.
3. The river forms a large delta, which it shares with the Brahmani river system.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The Mahanadi River originates in the **Nagri Sihawa hills of the Dandakaranya range** in the Dhamtari district of **Chhattisgarh**, not the Eastern Ghats of Odisha. It is an **east-flowing river** that drains into the **Bay of Bengal**, not the Arabian Sea.
- **Statement 2 is incorrect.** The Hirakud Dam, one of the world's longest earthen dams, is located in **Odisha**, not Chhattisgarh. While the dam's water level is a central point of the dispute, the conflict primarily arises from Odisha's objection to the numerous barrages and industrial projects constructed **upstream by Chhattisgarh**, which Odisha claims reduces the water flow into the Hirakud reservoir and downstream areas.
- **Statement 3 is correct.** The Mahanadi River forms one of India's most extensive and fertile deltas in its lower course in Odisha. This **deltaic system is shared with the Brahmani River**, and together they create a vast, agriculturally rich region that is also ecologically significant before emptying into the Bay of Bengal near Paradip.

9) Which of the following best describes the nature of Dacite?

- a) An intrusive igneous rock with low silica content, typically found in mid-ocean ridges.
- b) A sedimentary rock formed from the cementation of volcanic ash and other fine-grained debris.
- c) A metamorphic rock formed under high pressure, primarily composed of quartz and mica.
- d) An extrusive igneous rock with high silica content, commonly associated with explosive eruptions in subduction zones.

Solution: D

- Dacite is an **extrusive igneous (volcanic) rock**, meaning it forms from the rapid cooling of lava on or near the Earth's surface. Its key characteristic is a **high silica content** (typically 63-69%), which makes the lava very viscous.

- This viscosity prevents gases from escaping easily, leading to a buildup of pressure that often results in **explosive eruptions**. Dacite is commonly found in volcanic arcs located at **subduction zones**, where an oceanic plate sinks beneath a continental plate.
- This process melts the crust and generates the silica-rich magma that forms dacite.

10) With regard to the South China Sea, consider the following statements:

1. It is a marginal sea of the Indian Ocean.
2. The Mekong River is one of the major rivers that drains into it.
3. It is bordered by China, the Philippines, Vietnam, Malaysia, and Brunei.
4. The Strait of Hormuz connects it to the Indian Ocean.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The South China Sea is a marginal sea of the **western Pacific Ocean**, not the Indian Ocean.
- **Statement 2 is correct.** The **Mekong River**, along with others like the Pearl River and the Red River, drains into the South China Sea, contributing significant freshwater and sediment.
- **Statement 3 is correct.** These nations, along with Taiwan and Indonesia, are the littoral states bordering the South China Sea and are involved in the complex territorial claims in the region.
- **Statement 4 is incorrect.** The South China Sea is connected to the Indian Ocean via the **Strait of Malacca**, not the Strait of Hormuz. The Strait of Hormuz connects the Persian Gulf to the Arabian Sea.

11) Consider the following statements regarding bomb cyclones:

1. They are a type of tropical cyclone that forms in equatorial waters.
2. They weaken rapidly once they reach the ocean surface due to cooling temperatures.
3. They are named based on wind speeds rather than changes in atmospheric pressure.

How many of the above statements is/are incorrect?

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

Solution: C

Statement 1 (Incorrect): Bomb cyclones are extratropical systems, not tropical cyclones. They form in mid-latitudes, not near the equator.

Statement 2 (Incorrect): They do not weaken immediately upon reaching the ocean. In fact, warm ocean surfaces enhance their strength.

Statement 3 (Incorrect): Bomb cyclones are defined by pressure changes, not wind speeds. They undergo bombogenesis when the central pressure drops rapidly.

12) Consider the following statements regarding Lake Victoria:

1. Lake Victoria is the second-largest freshwater lake by volume in the world.
2. The Kagera River is the longest tributary that drains into Lake Victoria.
3. Lake Victoria's outflow contributes to the formation of the Congo River.

How many of the above statements are correct?

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

Solution: A

Statement 1 (Incorrect): Lake Victoria is the second-largest freshwater lake by surface area, but it is not the second-largest by volume. That title belongs to Lake Tanganyika.

Statement 2 (Correct): The Kagera River is the longest river that drains into Lake Victoria and is one of the main sources of the White Nile.

Statement 3 (Incorrect): Lake Victoria's outflow contributes to the White Nile River, not the Congo River.

- 13) Which of the following conditions is most critical in determining whether a cyclone undergoes bombogenesis?
- The presence of multiple storm systems merging over the ocean
 - A rapid drop in temperature at the Earth's surface
 - A sharp temperature contrast between cold and warm air masses
 - The presence of a stationary high-pressure system nearby

Solution: C

Bombogenesis, or explosive cyclogenesis, occurs when a mid-latitude cyclone rapidly intensifies, with its central pressure dropping by at least 24 millibars within 24 hours. **The most critical factor in this process is a sharp temperature contrast between cold and warm air masses.** When frigid Arctic air clashes with warm, moisture-rich air, particularly over the ocean, it creates a highly unstable atmosphere. This contrast fuels the storm, intensifies wind speeds, and leads to rapid deepening of the cyclone.

While a stationary high-pressure system (option a) may influence the cyclone's path, it does not drive its intensification. A rapid drop in surface temperature (option b) is not as crucial as the upper-atmosphere dynamics in bombogenesis. The merging of multiple storm systems (option d) can contribute to storm strength but is not a requirement.

- 14) Consider the following statements regarding cloudbursts and their contributing factors:
- An increase in global atmospheric temperatures allows the atmosphere to hold more water vapour, potentially increasing the intensity of rainfall events.
 - Lightning activity within cumulonimbus clouds can inhibit the process of droplet coalescence, leading to a delay in rainfall and allowing more moisture to accumulate.
 - The presence of aerosols like black carbon in the Himalayas reduces cloud density, thereby decreasing the likelihood of cloudbursts.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: B

- Statement 1 is correct.** According to the principles of thermodynamics, specifically the Clausius-Clapeyron relation, a warmer atmosphere has a higher capacity to hold moisture. For every 1°C rise in temperature, the atmosphere can hold approximately **7% more water vapour**. This increased moisture content provides more "fuel" for precipitation, enhancing the potential for extreme, short-duration rainfall events like cloudbursts, especially during the monsoon season.
- Statement 2 is correct.** Research suggests a complex relationship between lightning and rainfall. Intense electrical activity within towering cumulonimbus clouds can create electrical disturbances that **inhibit the process of droplet coalescence** (the merging of smaller water droplets to form larger raindrops). This delay in the release of rain allows the cloud to continue accumulating a massive volume of water, held aloft by strong updrafts. When the updrafts weaken, this huge volume of water is released suddenly, resulting in a cloudburst.

- **Statement 3 is incorrect.** Aerosols like black carbon, originating from sources such as forest fires and pollution, act as **Cloud Condensation Nuclei (CCN)**. Instead of reducing cloud density, these particles **increase the number of cloud droplets**, which can lead to denser clouds. In the Himalayan region, this altered cloud microphysics, combined with orographic pressure, can actually contribute to conditions that are more favorable for cloudburst-like events, not decrease their likelihood.

15) The term 'Mud Waves' recently in the news, refers to:

- (a) A meteorological phenomenon causing dust storms in arid regions near large water bodies.
- (b) Surface patterns on Mars created by the seasonal flow of liquid brine.
- (c) A type of seismic wave that travels through the Earth's mantle, indicating volcanic activity.
- (d) Ancient, large sedimentary bedforms discovered on the ocean floor, created by deep-water currents.

Solution: D

- The term 'Mud Waves' refers to **large, rhythmic sedimentary bedforms found on the ocean floor**. A recent study discovered 117-million-year-old examples buried beneath the Atlantic seabed off the coast of Guinea-Bissau.
- These structures were not formed by atmospheric or volcanic processes but were created by **powerful, persistent bottom currents** in the ocean. Specifically, they were formed during the Cretaceous period when dense, saline water from the young North Atlantic spilled into southern basins, triggering massive underwater sediment flows that were then shaped into these wave-like patterns by deep-water currents. These geological features provide valuable insights into historic ocean circulation and paleoclimates.

16) With respect to the geography of Nepal, consider the following statements:

1. It is a landlocked nation that shares a border with the Tibet Autonomous Region of China to its north and India to its east, west, and south.
2. The country is home to eight of the world's ten highest mountains, including Mount Everest and Kanchenjunga.
3. Major river systems like the Karnali and the Kosi originate in its Himalayan region and flow southwards into India.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** Nepal is a **landlocked country**, a crucial geopolitical feature. Its geographical position is sandwiched between two major powers: **Tibet Autonomous Region of China to the north and India**, which surrounds it on the east, west, and south.
- **Statement 2 is correct.** Nepal is renowned for its Himalayan mountain range. It contains **8 of the world's 10 highest peaks**.
- **Statement 3 is correct.** Nepal's major rivers are glacial-fed and originate in the high Himalayas. The **Kosi, Narayani (Gandak), and Karnali** as major river systems. These rivers are transboundary and flow southwards from Nepal's steep terrain into the Gangetic plains of India.

17) With reference to the geography of the Kishtwar district, consider the following statements:

1. It is located in the Kashmir division of Jammu & Kashmir.
2. The district shares a border with the state of Himachal Pradesh.
3. The terrain is predominantly plain-like, similar to the Jammu region.
4. The Machail Mata shrine is located on the banks of the Jhelum river.

How many of the above statements are correct?

- (a) Only one
- (b) Only two

- (c) Only three
- (d) All four

Solution: A

- **Statement 1 is incorrect.** Kishtwar is situated in the **Jammu division** of the Union Territory of Jammu & Kashmir, not the Kashmir division.
- **Statement 2 is correct.** The geography of the region places Kishtwar in a position where its southeastern border is shared with the state of **Himachal Pradesh**.
- **Statement 3 is incorrect.** The district is characterized by **mountainous terrain**, with high altitudes and significant snowfall in winter. Its geography is explicitly compared to Himachal and Ladakh, which are mountainous, not the plains of Jammu.
- **Statement 4 is incorrect.** The Machail Mata shrine is situated near the tributaries of the **Chenab River**, not the Jhelum river. The Jhelum river's course is predominantly through the Kashmir valley.

18) Nigeria is located on the western coast of Africa, bordering the Gulf of Guinea. Its economy is heavily reliant on the export of:

- (a) diamonds and gold.
- (b) uranium and bauxite.
- (c) cocoa and coffee.
- (d) petroleum and natural gas.

Solution: D

- **(d) is correct.** Nigeria is one of Africa's largest oil producers and a member of OPEC. Its economy is overwhelmingly dependent on its vast reserves of **petroleum and natural gas**, found predominantly in the Niger Delta region. These commodities constitute the vast majority of its export earnings and government revenue, making the economy highly sensitive to global oil price fluctuations.
- 19) With reference to the geography of Nigeria, consider the following statements:
1. It is a landlocked country located in the Sahel region of West Africa.
 2. The Niger River and its main tributary, the Benue River, converge within Nigeria and form the country's primary drainage system.
 3. The Jos Plateau, located in the central part of the country, is a region characterized by high mountains and active volcanoes.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** Nigeria is not landlocked. It has a significant coastline along the **Gulf of Guinea**, which is part of the Atlantic Ocean. Its southern region, including the Niger Delta, is coastal. While its northern part touches the Sahel, it is not exclusively a Sahelian country.
- **Statement 2 is correct.** This is a defining geographical feature of Nigeria. The **Niger River** flows into the country from the northwest, and its largest tributary, the **Benue River**, flows from the east. They meet at the city of Lokoja in central Nigeria and flow southwards to form the vast Niger Delta before emptying into the Atlantic Ocean.
- **Statement 3 is incorrect.** The Jos Plateau is a prominent feature in central Nigeria, but it is a plateau, not a high mountain range in the Himalayan sense. While it does contain some peaks and is of volcanic origin, its volcanoes are **extinct**, not active. Nigeria's highest peak, Chappal Waddi, is located in the Shebshi Mountains near the Cameroon border, not on the Jos Plateau.

20) Consider the following statements about the geography of Uganda:

1. It is a coastal country with a long shoreline on the Indian Ocean.
2. It is home to the source of the White Nile.
3. The Rwenzori Mountains, located on its western border, are the highest mountains in Africa.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** Uganda is a landlocked country in East Africa. It has no coastline.
- **Statement 2 is correct.** The White Nile is considered to originate from Lake Victoria at Jinja in Uganda.
- **Statement 3 is incorrect.** The Rwenzori Mountains are on the western border of Uganda, but the highest mountain in Africa is Mount Kilimanjaro in Tanzania, followed by Mount Kenya. Mount Stanley in the Rwenzoris is the third highest.

21) Consider the following pairs:

	Geographical Feature	Location in Algeria
1.	Tell Atlas	Southern desert region
2.	Mount Tahat	Ahaggar Mountains
3.	M'zab Valley	Along the Mediterranean Coast

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

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

Solution: B

- **Pair 1 is incorrectly matched.** The **Tell Atlas** is a mountain range located in the **northern part of Algeria**, running parallel to the Mediterranean coast. This region experiences a Mediterranean climate and is one of the country's most fertile areas. The southern desert region is dominated by the Sahara Desert and the Saharan Atlas range, which lies south of the Tell Atlas.
- **Pair 2 is correctly matched.** The **Ahaggar (or Hoggar) Mountains** are a highland region located in the central Sahara, in southern Algeria. **Mount Tahat**, with an elevation of 3,003 meters, is the highest peak in Algeria and is situated within this mountain range. This area is known for its dramatic, rocky landscape.
- **Pair 3 is incorrectly matched.** The **M'zab Valley** is a limestone plateau located in the **northern Sahara Desert**, not along the Mediterranean coast. It is a UNESCO World Heritage site renowned for its traditional and well-preserved fortified settlements (ksour) built by the Mozabite Berbers in the 10th century.

22) With reference to the geography of Algeria, consider the following statements:

1. It is a landlocked country located in the Maghreb region of North Africa.
2. The country's climate is uniformly arid desert type due to the dominance of the Sahara.
3. It shares land borders with Morocco, Mauritania, and Niger.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** Algeria has a long coastline along the **Mediterranean Sea** to its north. Therefore, it is **not a landlocked country**. Its capital, Algiers, is a major port on this coast. The Maghreb region itself is defined by its proximity to the Mediterranean.
- **Statement 2 is incorrect.** Algeria's climate is not uniform. The northern coastal region has a **Mediterranean climate** characterized by mild, wet winters and hot, dry summers. Further south, a semi-arid or **steppe climate** prevails in the high plateaus. The vast southern part, which is the Sahara Desert, experiences an **arid desert climate**.
- **Statement 3 is correct.** Algeria shares extensive land borders with several countries. In the west and southwest, its neighbours include **Morocco, Western Sahara, and Mauritania**. To the south and southeast, it borders **Mali and Niger**. To the east, it borders **Libya and Tunisia**.

23) Consider the following statements about the geography and demography of Fiji:

1. Fiji is an archipelago located in the South Pacific Ocean, belonging to the subregion of Polynesia.
2. The majority of Fiji's population resides on its two largest islands, Viti Levu and Vanua Levu.
3. The islands are primarily of coral atoll origin, with limited geothermal activity.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** While Fiji has Polynesian influences, it is geographically and anthropologically part of **Melanesia**, not Polynesia. Oceania has three major subregions: Melanesia, Micronesia, and Polynesia.
- **Statement 2 is correct.** The two main islands, **Viti Levu and Vanua Levu**, are home to approximately 87% of the nation's population. They are the economic and administrative hubs of the country.
- **Statement 3 is incorrect.** The islands of Fiji are of **volcanic origin**, not coral atolls. This volcanic geology is responsible for the significant geothermal activity observed on islands like Vanua Levu and Taveuni.

24) Consider the following statements:

Statement I: Tropical cyclones like Typhoon Kajiki derive their energy primarily from the latent heat released during the condensation of moist air.

Statement II: Unlike tropical cyclones, extra-tropical or synoptic cyclones are powered by the temperature contrast between different air masses along weather fronts.

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

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

Solution: B

- **Statement-I is correct.** Tropical cyclones are essentially massive heat engines. They form over warm ocean waters. The warm, moist air rises, and as it cools, the water vapor condenses into clouds and rain, releasing enormous amounts of **latent heat of condensation**. This heat warms the surrounding air, causing it to rise further, which in turn leads to lower pressure at the surface and strengthens the storm.
- **Statement-II is also correct.** Extra-tropical cyclones, also known as mid-latitude or synoptic cyclones, form in regions outside the tropics. Their primary energy source is **baroclinic instability**, which arises from the horizontal temperature gradient or contrast between cold and warm air masses that meet along fronts (like a cold front or a warm front).

- While both statements are correct descriptions of their respective cyclone types, Statement-II describes a different weather system and does not explain the mechanism mentioned in Statement-I.

25) With respect to the geography of Oman, consider the following statements:

1. It shares land borders with Saudi Arabia, the United Arab Emirates, and Iran.
2. The country has a coastline on both the Arabian Sea and the Gulf of Oman.
3. The Rub' al-Khali, or the Empty Quarter, is a vast desert region that covers part of Oman's interior.
4. The Dhofar region in southern Oman experiences a unique monsoon climate, known as the Khareef.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is incorrect.** Oman shares land borders with **Yemen to the southwest, Saudi Arabia to the west, and the United Arab Emirates to the northwest.** It does not share a land border with Iran. It shares a maritime border with Iran across the Strait of Hormuz.
- **Statement 2 is correct.** Oman is strategically located on the southeastern coast of the Arabian Peninsula. Its coastline stretches along the **Arabian Sea** in the south and east, and the **Gulf of Oman** in the northeast, which leads to the Persian Gulf.
- **Statement 3 is correct.** The central interior of Oman is a vast gravel desert plain, which forms a part of the **Rub' al-Khali (the Empty Quarter)**, one of the largest sand deserts in the world, primarily located in Saudi Arabia but extending into Oman, Yemen, and the UAE.
- **Statement 4 is correct.** The southern region of Dhofar, with its capital Salalah, has a distinct climate from the rest of the country. It is directly influenced by the Indian Ocean monsoon from June to September, a phenomenon locally known as the **Khareef**, which brings drizzle and transforms the arid landscape into a lush green zone.



26) Consider the following statements regarding tropical cyclones:

Statement I: The nomenclature of a revolving tropical storm as a 'Hurricane', 'Typhoon', or 'Cyclone' depends on its intensity and wind speed.

Statement II: Tropical storms are named based on a pre-decided list maintained by the World Meteorological Organization's regional bodies to facilitate clear communication and public warnings.

Statement III: The eye of a mature tropical cyclone is a region of calm weather with light winds and often clear skies.

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

- (a) Only one of the Statements II and III is correct and that explains Statement I
- (b) Both Statement II and Statement III are correct but neither of them explains Statement I
- (c) Neither Statement II nor Statement III is correct
- (d) Statement I is incorrect but both Statement II and Statement III are correct.

Solution: D

- **Statement I is incorrect.** The terms 'Hurricane', 'Typhoon', and 'Cyclone' refer to the same meteorological phenomenon—a tropical cyclone. The difference in name is based on **geographical location**, not intensity. Storms in the Atlantic and Northeast Pacific are called 'Hurricanes'; in the Northwest Pacific, they are 'Typhoons'; and in the South Pacific and Indian Ocean, they are 'Cyclones'.
- **Statement II is correct.** To avoid confusion, tropical storms are given names from lists that are curated and maintained by regional specialized meteorological centers (RSMCs) and tropical cyclone warning centers (TCWCs) under the purview of the World Meteorological Organization (WMO). This systematic naming helps in disaster management and communication.
- **Statement III is correct.** The 'eye' is a characteristic feature at the center of a strong, mature tropical cyclone. It is a region of sinking air, resulting in calm conditions, light winds, and often a lack of clouds or rain, starkly contrasting with the violent eyewall surrounding it.

27) With reference to the National Designated Authority (NDA) for Carbon Markets in India, consider the following statements:

1. The formation of the NDA is a discretionary policy measure taken by India to boost its renewable energy sector.
2. The NDA is chaired by the Union Minister for Environment, Forest and Climate Change.
3. One of its key functions is to evaluate and authorize projects that can generate emission reduction units for international trading.

How many of the above statements are correct?

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

Solution: A

Only statement 3 is correct.

- A primary and crucial function of the NDA is to serve as the **gatekeeper for carbon market projects**, ensuring they meet national criteria and authorizing them to generate carbon credits (Emission Reduction Units) that can be traded internationally under the mechanisms of the Paris Agreement.
- **Statement 1 is incorrect** because the establishment of an NDA is not discretionary; it is a **mandatory statutory requirement for any country wishing to participate in the international carbon markets under Article 6 of the Paris Agreement**.
- **Statement 2 is incorrect** because the 21-member committee is chaired by the **Environment Secretary**, not the Union Minister.

28) Consider the following statements:

1. The East China Sea is a marginal sea of the Indian Ocean.
2. It is connected to the South China Sea through the Korea Strait.
3. The sea is generally deep, with an average depth exceeding 2000 meters.

How many of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The East China Sea is a marginal sea of the **Western Pacific Ocean**, not the Indian Ocean.
- **Statement 2 is incorrect.** It is connected to the South China Sea via the **Taiwan Strait**. The Korea Strait connects it to the Yellow Sea and the Sea of Japan to the north.

- **Statement 3 is incorrect.** The East China Sea is known for being **generally shallow**, as it is situated over a continental shelf. Its average depth is around 350 meters, not 2000 meters.

29) Regarding the Mercator Projection map, consider the following statements:

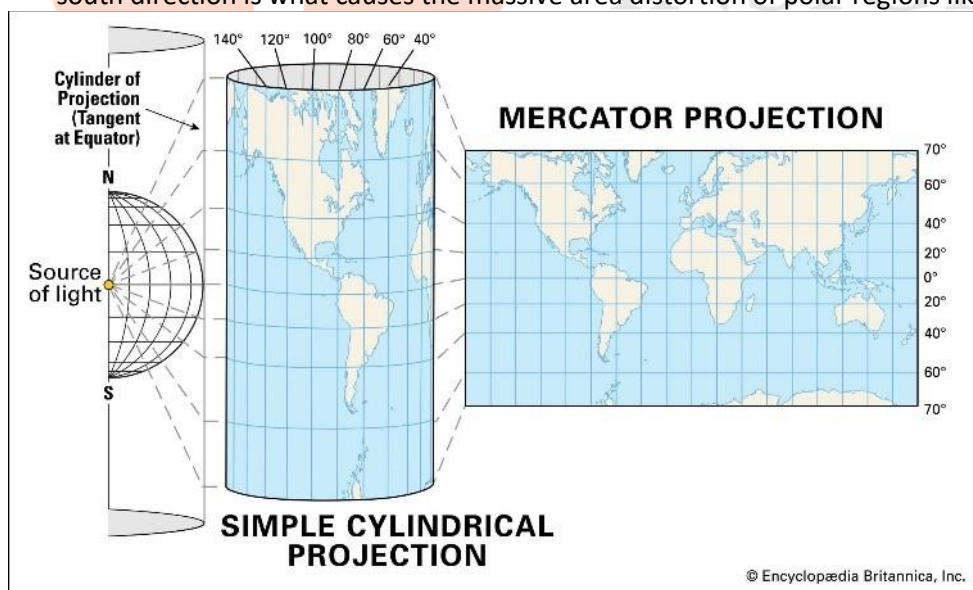
1. It is a conformal projection, which means it accurately preserves the relative sizes of landmasses at the expense of distorting their shapes.
2. A straight line drawn on a Mercator map represents a rhumb line, a path of constant compass bearing, which was invaluable for maritime navigation.
3. The spacing between parallels of latitude decreases as one moves from the Equator towards the poles, leading to the compression of polar regions.

How many of the above statements are incorrect?

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

Solution: B

- **Statement 1 is incorrect.** A conformal projection, like the Mercator, **preserves local shapes and angles**, not area. The primary trade-off is that it **grossly distorts the size (area)** of landmasses, especially at higher latitudes. For example, Greenland appears as large as Africa, which is factually incorrect.
- **Statement 2 is correct.** This is the defining feature and the original purpose of the Mercator projection. A straight line on this map is a **loxodrome or rhumb line**, which represents a course of constant bearing. This allowed navigators in the Age of Exploration to plot a course with a simple compass direction.
- **Statement 3 is incorrect.** To maintain conformality (preserving angles), the spacing between parallels of latitude **must increase** as one moves away from the Equator towards the poles. This stretching in the north-south direction is what causes the massive area distortion of polar regions like Greenland and Antarctica.



4. Government Schemes and Programmes

- 1) Which of the following best describes the primary mandate of the National Cooperative Development Corporation (NCDC)?
- To regulate the functioning of cooperative banks in India.
 - To provide agricultural subsidies directly to farmers.
 - To plan, promote, and finance programs for the development of cooperatives.
 - To conduct elections for cooperative societies at the state level.

Solution: C

- The National Cooperative Development Corporation (NCDC) is a statutory corporation established under an Act of Parliament in 1963. Its core mandate is to act as a promotional and developmental financing institution for cooperative societies.
- Its primary function is the **planning, promotion, and financing of programs** related to the production, processing, marketing, storage, import, and export of agricultural produce, foodstuffs, and certain other notified commodities and services on cooperative principles.
- It provides financial assistance in the form of loans and grants to state governments and directly to eligible cooperatives.
- It does not regulate cooperative banks (which is primarily the RBI's role), provide direct subsidies to farmers, or conduct elections for cooperative societies.

- 2) Consider the following statements:

- The National Cooperative Development Corporation (NCDC) was established under the Ministry of Agriculture and Farmers' Welfare.
- It is empowered to provide both grants and loans directly to eligible cooperative societies.
- Its functions are restricted to financing agricultural production and do not include allied sectors like fisheries or textiles.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: A

- Statement 1 is incorrect.** The NCDC, though established in 1963, currently functions under the **Ministry of Cooperation**, which was formed in 2021. This places it under the direct purview of the new ministry dedicated to strengthening the cooperative movement.
- Statement 2 is correct.** A key function of the NCDC is to provide financial assistance to boost the cooperative sector. This assistance can be in the form of both **grants and loans**, which can be channeled through State Governments or provided **directly to eligible cooperative societies**, enhancing their access to capital.
- Statement 3 is incorrect.** The scope of NCDC's functions is broad and extends well beyond just agricultural production. It supports a wide range of **allied sectors and income-generating activities**, including dairy, poultry, **fisheries**, handloom, **textiles**, and rural infrastructure, to promote holistic rural development.

- 3) Consider the following statements regarding the 'Apna Ghar' initiative:

- It is a central sector scheme launched by the Ministry of Road Transport and Highways to provide permanent housing to truck drivers.
- The initiative is implemented exclusively by Public Sector Oil Marketing Companies (OMCs) at their retail outlets.
- It integrates a mobile application to facilitate bookings and gather user feedback for service improvement.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The initiative provides **resting facilities**, not permanent housing. Furthermore, the nodal ministry is the **Ministry of Petroleum and Natural Gas**, not the Ministry of Road Transport and Highways.
- **Statement 2 is incorrect.** The implementation is primarily by OMCs. The scheme's core nature is about resting infrastructure, not just OMC-led implementation.
- **Statement 3 is correct.** The launch of the 'Apna Ghar' mobile app is for booking, feedback, and driver engagement. This tech integration is a key feature for ensuring the user-centric design and continuous improvement of the facilities.

4) Consider the following statements regarding Pradhan Mantri National Dialysis Programme (PMNDP):

Statement I: The Pradhan Mantri National Dialysis Programme (PMNDP) has significantly improved access to dialysis care across India, especially for economically weaker sections.

Statement II: The programme mandates a Public-Private Partnership (PPP) model for all states and offers services exclusively for Haemodialysis.

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

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

Solution: C

- **Statement-I is correct.** The programme's objective is to provide equitable and affordable dialysis care, reducing the financial burden on BPL families. Its expansion to 751 districts with over 1,700 centres demonstrates its role in improving access.
 - **Statement-II is incorrect.** The implementation is not exclusively through a PPP model; the states use **PPP, in-house, and hybrid models**. Secondly, the programme covers both **Haemodialysis (HD) and Peritoneal Dialysis (PD)**, not just Haemodialysis.
- 5) With respect to the FSSAI's initiative on 'Ayurveda Aahara', which of the following statements is incorrect?
- a) The regulations for Ayurveda Aahara were formulated exclusively by the Ministry of Ayush.
 - b) The initiative provides a definitive list of products based on recipes from classical Ayurvedic texts.
 - c) It aims to bridge traditional food wisdom with modern food safety standards.
 - d) Food Business Operators can request the inclusion of new products if they provide valid scriptural references.

Solution: A

- **Statement (a) is incorrect.** The Food Safety and Standards (Ayurveda Aahara) Regulations, 2022, and the subsequent definitive list were a **collaborative effort**. The **Food Safety and Standards Authority of India (FSSAI)**, under the Ministry of Health and Family Welfare, worked in conjunction with the **Ministry of Ayush**. This partnership ensures that the products meet both traditional Ayurvedic principles and modern food safety and manufacturing benchmarks.
- Statement (b) is correct. A key feature of this initiative is its **authenticity**, which is ensured by validating all formulations against classical Ayurvedic texts listed in Schedule A of the regulations. This provides a credible and standardized reference for manufacturers and consumers.

- Statement (c) is correct. The overarching goal is to **mainstream traditional knowledge** by aligning it with contemporary regulatory frameworks. This enhances public trust and credibility, allowing ancient dietary practices to be integrated into modern lifestyles under a system of quality control.
 - Statement (d) is correct. The framework includes a **structured mechanism for expansion**. Food Business Operators (FBOs) are permitted to apply for the inclusion of new Ayurveda Aahara products, provided they can furnish authentic evidence and references from the prescribed classical Ayurvedic scriptures, which would then be validated.
- 6) Consider the following statements related to the regulations for 'Ayurveda Aahara':
1. The regulations permit the fortification of Ayurveda Aahara products with synthetic vitamins and minerals to enhance their nutritional value.
 2. All food products, including staple items like rice and flour, are covered under these regulations by default.
 3. Manufacturers are prohibited from making claims that their Ayurveda Aahara products can treat or cure any human disease.
 4. The National Institute of Ayurveda (NIA) is the designated nodal agency for validating the formulations.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The Food Safety and Standards (Ayurveda Aahara) Regulations, 2022, explicitly **prohibit the addition of synthetic vitamins, minerals, and amino acids** to these products. The nutritional value must come from the natural ingredients as prescribed in the classical texts. A declaration on the natural presence of vitamins and minerals is required.
 - **Statement 2 is incorrect.** The regulations **do not cover** staple food items like pulses, rice, flour, and vegetables in their regular form. Such items only fall under the Ayurveda Aahara category if they are prepared and formulated according to the specific recipes and processes mentioned in the Ayurvedic texts and meet all other requirements of these regulations.
 - **Statement 3 is correct.** A key regulatory control is the **prohibition of medicinal claims**. Labels and advertisements for Ayurveda Aahara products cannot claim to treat, mitigate, or cure any human disease. Any health benefit claims must be substantiated by evidence from Ayurvedic texts, and claims of disease risk reduction require prior approval from FSSAI.
 - **Statement 4 is correct.** The **National Institute of Ayurveda (NIA)**, an autonomous body under the Ministry of Ayush, serves as the **nodal agency**. Its role is to curate and validate the formulations from classical texts to ensure they maintain both scientific rigor and traditional fidelity, providing an authoritative basis for the definitive list.
- 7) Consider the following statements regarding the 'Apna Ghar' initiative and the Pradhan Mantri National Dialysis Programme (PMNDP):
1. Both initiatives are implemented by the Ministry of Health and Family Welfare.
 2. Both initiatives primarily target the welfare of vulnerable sections of the population.
 3. Both initiatives extensively leverage a Public-Private Partnership (PPP) model for implementation.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The **PMNDP** is under the **Ministry of Health and Family Welfare**, but the '**Apna Ghar**' initiative is launched by the **Ministry of Petroleum and Natural Gas**.
 - **Statement 2 is correct.** Both schemes target vulnerable groups. The PMNDP focuses on **economically vulnerable patients** (especially BPL families) with end-stage renal disease. The 'Apna Ghar' initiative aims to improve the living and working conditions for **truck drivers**, who are crucial to the logistics sector and often belong to the informal economy.
 - **Statement 3 is correct.** Both schemes utilize the PPP model. The PMNDP is implemented via **PPP, in-house, and hybrid models**. The 'Apna Ghar' initiative is described as having "**Public-Private Implementation**" as it is built and managed by Oil Marketing Companies at their retail stations, which often involves private dealers.
- 8) The "Haat on Wheels" initiative is significant primarily because it:
- (a) Provides subsidies to weavers for purchasing raw materials.
 - (b) Focuses on exporting handloom products to international markets.
 - (c) Aims to connect weavers directly with urban consumers, enhancing their livelihood.
 - (d) Promotes the use of power looms over traditional handlooms for greater efficiency.

Solution: C

- The primary significance of the "**Haat on Wheels**" initiative lies in its innovative **direct-to-consumer model**. By using mobile vans to take authentic handloom products to markets, residential areas, and cultural spaces in urban centers like Delhi NCR, the initiative addresses a key challenge for weavers: market access.
 - It effectively **cuts out middlemen**, allowing weavers to get a better price for their products and thus enhancing their **livelihood security**. While it promotes the "vocal for local" theme and boosts awareness of cultural heritage, its core function and impact are centered on creating a direct and profitable linkage between the producers (weavers) and the buyers (urban consumers).
 - It does not focus on subsidies for raw materials, exports, or promoting power looms; in fact, its purpose is to preserve and promote the traditional handloom sector.
- 9) Consider the following statements regarding the practice of polyandry among the Hatti tribe and its legal standing in India:
1. Polyandry is a customary practice aimed at preventing the division of agricultural land holdings.
 2. The Hindu Marriage Act, 1955, explicitly validates customary practices like polyandry for all Hindu communities.
 3. The Bharatiya Nyaya Sanhita (BNS) provides a specific exemption for Scheduled Tribes to practice bigamy or polyandry.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is correct.** One of the primary socio-economic reasons for the practice of fraternal polyandry among the Hattis and other similar communities is the **preservation of ancestral agricultural land**. By having brothers share a single wife, the family's land holdings remain consolidated and are not fragmented through inheritance with each generation.
- **Statement 2 is incorrect.** The Hindu Marriage Act, 1955, establishes monogamy as the legal norm for Hindus and does not validate polyandry. It makes bigamy a punishable offense. While it contains a provision **excluding Scheduled Tribes** from its ambit (unless notified otherwise), this is an exclusion, not an explicit validation of their customs.
- **Statement 3 is incorrect.** The Bharatiya Nyaya Sanhita (BNS), like its predecessor the Indian Penal Code, **criminalizes bigamy** (Section 82 of BNS). There is no specific provision in the BNS that grants a blanket exemption to Scheduled Tribes from the laws on bigamy or polyandry.

- 10) The 'Meri Panchayat' mobile application, which recently won the WSIS Champion Award 2025, primarily aims to:
- Provide a platform for e-commerce for rural artisans.
 - Facilitate direct cash transfers from the central government to Panchayat accounts.
 - Enhance transparency and citizen participation in the governance of Panchayati Raj Institutions.
 - Replace the functions of the National Informatics Centre (NIC) at the district level.

Solution: C

- The core objective of the 'Meri Panchayat' application is to strengthen grassroots democracy through digital means. It is an m-Governance platform designed to make the functioning of Panchayati Raj Institutions (PRIs) more **transparent and accountable**. It achieves this by providing citizens with real-time access to information about Panchayat budgets, expenditures, and development plans (GPDs).
- Furthermore, it actively promotes **citizen participation** by allowing users to propose projects, give feedback, and view Gram Sabha decisions.

- 11) Which of the following initiatives is a key part of India's efforts to secure a supply of critical minerals from overseas?
- Atal Innovation Mission
 - Mineral Conservation and Development Rules, 2017
 - Khanij Bidesh India Limited (KABIL)
 - National Mineral Policy 2019

Solution: C

- Khanij Bidesh India Limited (KABIL) is a joint venture formed by three public sector undertakings to secure overseas supply of critical minerals for India.**
- KABIL has been engaged with mineral-rich countries, and in 2024, it signed its first major agreement for lithium exploration and mining in Argentina.
- This venture is part of India's broader strategy to ensure access to essential resources like lithium, which is crucial for battery manufacturing and the transition to renewable energy.

- 12) What does "PDS leakage" refer to in the context of the National Food Security Act (NFSA) 2013?
- The over-allocation of food grains to non-eligible households
 - The amount of food grains released by the FCI that fail to reach the consumers
 - The amount of money lost in maintaining the PDS system
 - The wastage of food grains during transportatio

Solution: B

"PDS leakage" refers to the proportion of food grains, such as rice and wheat, released by the Food Corporation of India (FCI) that fail to reach consumers, usually due to inefficiencies or corruption in the distribution process. This issue was one of the major concerns addressed by the NFSA 2013, and reforms have significantly reduced leakages across many states.

- 13) With reference to the Pradhan Mantri Ujjwala Yojana (PMUY), which of the following statements is correct?
- The scheme is implemented by the Ministry of Rural Development.
 - The scheme provides free LPG connections to all rural households.
 - The identification of beneficiaries is primarily based on the Socio-Economic Caste Census (SECC) 2011 data.
 - The scheme was launched in 2018.

Solution: C

- Statement (a) is incorrect. The Pradhan Mantri Ujjwala Yojana (PMUY) is a flagship scheme of the **Ministry of Petroleum and Natural Gas (MoPNG)**.
- Statement (b) is incorrect. The scheme provides deposit-free LPG connections, not entirely free connections, and it is targeted at women from **economically weaker households**, not all rural households. The primary objective is to make clean cooking fuel accessible to those who cannot afford the initial connection cost.
- Statement (c) is correct. The identification of eligible BPL families is done on the basis of **Socio-Economic Caste Census (SECC) 2011** data. This ensures that the benefits of the scheme are targeted towards the most deserving households.
- Statement (d) is incorrect. The scheme was launched in **May 2016** in Ballia, Uttar Pradesh.

14) Consider the following statements regarding the S.H.I.N.E. (Science, Health and Innovation for Nextgen Explorers) initiative:

1. It is a scholarship program for students pursuing postgraduate studies in biomedical research.
2. The initiative is a collaboration between the Indian Council of Medical Research (ICMR) and the Ministry of Education.
3. The program aims to inspire school students to pursue careers in health and biomedical research through outreach activities.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** S.H.I.N.E. (Science, Health and Innovation for Nextgen Explorers) is not a scholarship program but a **nationwide science outreach programme**. It focuses on engagement and inspiration rather than financial aid.
- **Statement 2 is incorrect.** The initiative is organized by the **Indian Council of Medical Research (ICMR)** in collaboration with the **Department of Health Research (DHR)**, not the Ministry of Education. The focus is specifically on health and medical science.
- **Statement 3 is correct.** The primary aim of the S.H.I.N.E. initiative is to **spark curiosity and inspire school students** (grades 9-12) to consider careers in health and biomedical research. It achieves this through immersive experiences like lab tours, interactions with scientists, and demonstrations.

15) Consider the following statements regarding Special Assistance to States for Capital Investment (SASCI) scheme:

Statement-I: The SASCI scheme is an example of cooperative federalism in action.

Statement-II: Under the scheme, the central government provides financial assistance, while the state governments are empowered to propose, manage, and execute the tourism development projects.

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

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

Solution: A

- **Statement-I is correct.** The SASCI scheme for tourism exemplifies **cooperative federalism**, a governance model where the central and state governments work together in partnership.
- **Statement-II is also correct** and provides the direct explanation for Statement-I.

- The structure of the scheme defines the collaborative roles: the **Centre's role is to provide financial assistance** (as part of its 'Special Assistance to States for Capital Investment' initiative), while the **States are given the autonomy and responsibility to lead** the projects. This includes identifying iconic sites, preparing project proposals, and managing the implementation on the ground. This division of responsibility and partnership between the Centre and States is the very definition of cooperative federalism.
- Therefore, Statement-II is the correct explanation for Statement-I.

16) Consider the following statements regarding the National Commission for Safai Karamcharis (NCSK):

1. NCSK is a constitutional body established under Article 338 of the Indian Constitution.
2. The commission has a judicial wing that handles cases of human rights violations against sanitation workers.
3. The NCSK has the power to enforce penalties on municipalities that fail to implement the Prohibition of Manual Scavenging Act, 2013.

How many of the above statements is/are incorrect?

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

Solution: C

The **National Commission for Safai Karamcharis (NCSK)** is a **statutory body**, not a **constitutional body**, meaning **Statement 1 is incorrect**. It was established under an **executive resolution** and later given statutory status under the **Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013**. Unlike commissions under **Article 338**, such as the **National Commission for Scheduled Castes (NCSC)**, the NCSK does not derive authority from the Constitution.

Statement 2 is incorrect because **NCSK does not have a judicial wing** and **cannot adjudicate** cases of human rights violations. It primarily **monitors** the implementation of laws related to sanitation workers and **recommends policy changes**.

Statement 3 is incorrect as the **NCSK does not have enforcement powers** to penalize municipalities. It can only **issue recommendations** and **review** the implementation of the **Prohibition of Manual Scavenging Act, 2013**.

17) With reference to the India Semiconductor Mission (ISM), consider the following statements:

1. The mission only focuses on establishing new 'greenfield' semiconductor fabrication plants to attract foreign investment.
2. A key strategic goal of the mission is to develop a skilled workforce by training a substantial number of professionals in the semiconductor domain.
3. The establishment of India's first commercial Silicon Carbide (SiC) compound semiconductor fab is one of the projects approved under this mission.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The mission supports both 'greenfield' (new) and '**brownfield**' (**expansion of existing**) projects.
- **Statement 2 is correct.** A critical component of creating a self-reliant semiconductor ecosystem is human capital. The mission explicitly includes a **talent development program** with the ambitious goal of training over 60,000 skilled professionals, addressing the need for a specialized workforce in design, manufacturing, and testing.

- **Statement 3 is correct.** One of the recently approved projects under the ISM is the establishment of India's **first commercial Silicon Carbide (SiC) compound semiconductor fab** by SiCSem Pvt. Ltd. in Odisha. This is a significant step towards diversifying India's semiconductor capabilities beyond traditional silicon.

18) Consider the following statements regarding the "Nasha Mukta Bharat Abhiyaan" (NMBA):

Statement I: The NMBA is primarily a supply-reduction campaign, coordinated by the Narcotics Control Bureau (NCB) to intercept drug trafficking networks.

Statement II: The Abhiyaan adopts a targeted approach by focusing its interventions on districts identified as having a high prevalence of substance abuse.

Statement III: The implementation of the program relies solely on government agencies, without the involvement of community organizations or NGOs.

Which of the above statements is/are correct?

- (a) Only II
- (b) I and II only
- (c) II and III only
- (d) I, II and III

Solution: A

- **Statement I is incorrect.** The NMBA follows a **three-pronged approach**. While supply reduction, led by the NCB, is one component, the primary focus of the Abhiyaan, which is driven by the Ministry of Social Justice & Empowerment (MoSJE), is on **demand reduction**. This includes awareness campaigns, prevention education, and community outreach. The third prong is treatment and rehabilitation, handled by the Health Department.
- **Statement II is correct.** The Abhiyaan is not a generalized, nationwide campaign but employs a **targeted strategy**. It is implemented in **272 high-risk districts** that were specifically identified based on data from national surveys on substance use and inputs from the Narcotics Control Bureau. This allows for focused and more effective utilization of resources.
- **Statement III is incorrect.** A key feature of the NMBA is its emphasis on **community-based implementation and mass mobilization**. The program actively involves a wide range of stakeholders, including youth groups, women's organizations, and civil society partners like the Art of Living, Brahma Kumaris, and ISKCON, to enhance public awareness and outreach.

19) The CBSE will introduce Open-Book Assessments (OBE) in Class 9 from 2026–27. In this context, Consider the following statements:

Statement I: The primary objective of Open-Book Assessments (OBE) is to reduce the academic burden on students by allowing them to copy answers directly from textbooks.

Statement II: OBE is aligned with the National Education Policy (NEP) 2020's vision for competency-based learning.

Statement III: The format tests a student's ability to quickly locate information rather than their conceptual understanding.

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

- (a) Only Statement II is correct.
- (b) Both Statement I and Statement III are correct.
- (c) Both Statement II and Statement III are correct.
- (d) None of the statements are correct.

Solution: A

- **Statement I is incorrect.** The primary goal of OBE is not to facilitate copying but to shift the focus from rote memorization to higher-order thinking skills. It is designed to assess a student's ability to **apply knowledge, analyze information, and solve problems**, using reference materials as a tool rather than a source for direct answers.
- **Statement II is correct.** The introduction of OBE by the CBSE is a deliberate step to align the assessment system with the principles of the **National Education Policy (NEP) 2020**. The NEP emphasizes moving away from rote learning and towards **competency-based education**, which prioritizes critical

thinking, problem-solving, and the practical application of concepts—all of which are core to the philosophy of Open-Book Assessments.

- **Statement III is incorrect.** While the ability to quickly reference materials is helpful, it is not the main skill being tested. The questions in an OBE are typically designed to be application-oriented, requiring students to **interpret, connect, and synthesize information** from their resources to construct an answer. Success depends more on deep **conceptual clarity** and analytical skills than on the simple ability to locate facts.

20) With reference to the India Semiconductor Mission (ISM), consider the following statements:

1. It aims to reduce India's heavy reliance on imported semiconductor chips.
2. The mission includes support for the design ecosystem, targeting startups and MSMEs.
3. Financial incentives under the ISM are available only to domestic companies.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** A primary strategic driver for the ISM is to enhance India's economic and national security by **reducing its significant dependence on imported semiconductors**. By fostering a domestic manufacturing ecosystem, the mission supports the goal of self-reliance under the **Atmanirbhar Bharat** initiative.
- **Statement 2 is correct.** The mission recognizes that a robust ecosystem requires strong design capabilities. Therefore, it includes specific provisions for a **Design Linked Incentive (DLI) scheme** that provides financial assistance and infrastructure support to domestic **startups, MSMEs, and academic institutions** working on semiconductor chip design.
- **Statement 3 is incorrect.** The mission actively encourages foreign investment and technology collaboration to build the ecosystem. For instance, the approved projects include joint ventures and collaborations with international firms like **Clas-SiC Wafer Fab Ltd. (UK)** and **APACT Co. Ltd. (South Korea)**, indicating that incentives are available to projects with foreign partnership.

21) The 'SabhaSaar' tool, an initiative of the Union Ministry of Panchayati Raj, is designed to enhance governance efficiency at the local level. Which of the following correctly describes its primary function?

- (a) It is a financial management software for tracking fund utilization in Gram Panchayats.
- (b) It is a GIS-based platform for mapping and managing Panchayat assets.
- (c) It is a grievance redressal portal for citizens to directly report issues to the Panchayat.
- (d) It is an AI-powered tool that automatically transcribes and generates structured minutes from Gram Sabha meeting recordings.

Solution: D

- Its primary function is to use **Artificial Intelligence (AI) and Natural Language Processing (NLP)** to process audio and video recordings of Gram Sabha meetings.
- The tool automatically transcribes the spoken content into text and then summarizes it to generate **structured, official-ready minutes**. This process identifies key decisions, resolutions, and action items discussed during the meeting.
- By automating this task, 'SabhaSaar' aims to reduce the manual workload on Panchayat officials, ensure accuracy and transparency in record-keeping, and promote inclusivity through its multi-language support integrated with the **Bhashini mission**.

22) Consider the following statements regarding the new Export Promotion Mission announced by the Government of India:

1. The mission is an initiative of the Ministry of Commerce and Industry.

2. One of its core components, 'NIRYAT PROTSAHAN', is focused on exploring untapped international markets and product diversification.
3. The mission was developed partly in response to protectionist measures, such as high tariffs imposed by the United States on Indian goods.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The **Ministry of Commerce and Industry** is the nodal ministry for this mission, which was announced with an outlay of ₹2,250 crore.
- **Statement 2 is incorrect.** The mission has two components. 'NIRYAT PROTSAHAN' is for providing **Trade Finance Support** to exporters. The component focused on international market access and diversification is 'NIRYAT DISHA' (Driving International Holistic Market Access).
- **Statement 3 is correct.** The background for the mission's development explicitly includes the need to safeguard Indian industries from global trade shocks. A specific trigger mentioned is the **high US tariffs (50%)** on Indian goods in sectors like textiles, chemicals, and leather, highlighting the mission's role as a protective and proactive measure.

23) Consider the following statements regarding the Telecom Regulatory Authority of India (TRAI):

1. TRAI was established by an Act of Parliament, making it a statutory body.
2. The recommendations of TRAI led to the establishment of the Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT).
3. TRAI's functions are limited to issuing regulations on tariffs and do not extend to ensuring quality of service.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** TRAI is a **statutory body**, not an executive or constitutional one. It was established on 20 February 1997, under the **Telecom Regulatory Authority of India Act, 1997**.
- **Statement 2 is correct.** To separate its regulatory and adjudicatory functions, TRAI's powers were amended. Its recommendations led to the creation of the **Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT) in 2000** to handle disputes between licensees, licensors, and consumers.
- **Statement 3 is incorrect.** TRAI has a broad mandate that goes beyond just tariffs. One of its key functions is to safeguard consumer interests by setting and enforcing **quality-of-service (QoS) benchmarks**. It regularly monitors service providers' performance against these benchmarks and can impose penalties for non-compliance.

24) Consider the following statements regarding the Property Rating Framework for Digital Connectivity launched by TRAI:

1. This framework is a voluntary guide intended for use by Digital Connectivity Rating Agencies to evaluate properties.
2. It primarily assesses indoor network performance, addressing signal loss for high-frequency bands like 4G and 5G caused by building materials.
3. The framework was created under the direct executive authority of the Ministry of Electronics and Information Technology.

How many of the above statements are incorrect?

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

Solution: A

- **Statement 1 is correct.** The framework's manual is a "uniform guide" for rating agencies. Regulatory frameworks of this nature are typically introduced as standards or guides rather than being immediately mandatory for all builders. It helps create a market-driven incentive system.
- **Statement 2 is correct.** A key feature is its **focus on indoor networks**. Modern building materials can significantly weaken mobile signals, especially for higher frequency 4G/5G bands. The framework aims to measure and rate how well a building is designed to overcome this challenge, ensuring reliable indoor connectivity.
- **Statement 3 is incorrect.** The framework was created by TRAI, which is a statutory body under the Ministry of Communications, not MeitY. More importantly, it was created under the "**Rating of Properties for Digital Connectivity Regulations, 2024**," deriving its authority from the TRAI Act, 1997, not from an executive order.

25) Which of the following statements best captures the primary significance of the Aarohan Programme?

- (a) It aims to provide vocational training and employment opportunities to tribal youth in metropolitan cities.
- (b) It is designed to promote indigenous sports and cultural festivals of the Andaman & Nicobar Islands on a national platform.
- (c) It serves as an instrument of national integration by exposing tribal youth from isolated regions to mainland India's heritage and development.
- (d) It is a scholarship program to fund the higher education of meritorious tribal students in central universities.

Solution: C

- **(a) is incorrect.** While exposure to opportunities is a goal, the programme's primary focus is not on direct vocational training or employment provision. It is more of an exposure and inspirational tour.
- **(b) is incorrect.** The programme's objective is to expose the island's youth to the mainland culture, not the other way around. It doesn't primarily focus on promoting indigenous sports and festivals nationally.
- **(c) is correct.** Its main aim is to foster **national integration** and a **sense of belonging**. It achieves this by bridging the physical and cultural distance between the remote island communities and the Indian mainland, exposing the youth to the country's diverse **heritage, culture, and developmental progress**. This aligns directly with its stated aims of social inclusion and youth empowerment.
- **(d) is incorrect.** The Aarohan Programme is an exposure tour, not a scholarship scheme for higher education.

26) With respect to the National Deep Water Exploration Mission, consider the following statements:

1. The mission is designed to operate in a mission mode to accelerate offshore exploration for oil and gas.
2. It is primarily focused on exploring the untapped hydrocarbon reserves in the Andaman-Nicobar basin and the deep waters off the Andhra coast.
3. The Directorate General of Hydrocarbons (DGH) is the nodal agency for the implementation of this mission.
4. The mission is linked with the Open Acreage Licensing Policy (OALP) and aims to encourage public-private collaboration in the exploration sector.

How many of the above statements are correct?

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

Solution: C

- The National Deep Water Exploration Mission is a flagship initiative designed to operate in a **mission mode**, reflecting the government's urgency to enhance India's energy security. Its primary geographical focus is on the hitherto unexplored deep-water regions, including the promising **Andaman-Nicobar basin and the offshore areas of the Andhra coast**.
- The mission is also intrinsically linked to recent policy reforms like the **Open Acreage Licensing Policy (OALP)**, which aims to create a more investor-friendly environment and encourage both domestic and global private players to participate in exploration activities.
- However, **statement 3 is incorrect**. While the **Directorate General of Hydrocarbons (DGH)** provides support, the **nodal ministry for the mission is the Ministry of Petroleum and Natural Gas**.

27) Regarding the National Deep Water Exploration Mission, which of the following statements are correct?

1. It aims to reduce India's dependence on crude oil and natural gas imports.
2. The mission will utilize advanced technologies like seismic surveys and AI-enabled exploration tools.
3. It is a collaborative effort between the Ministry of Petroleum and Natural Gas and the Ministry of Earth Sciences.
4. The mission is part of the broader 'Aatmanirbhar Bharat' initiative in the energy sector.

Select the correct answer code:

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

Solution: A

- The National Deep Water Exploration Mission is a strategic initiative with the primary objective of **reducing India's significant dependence on imported crude oil and natural gas**. To achieve this, the mission will employ **cutting-edge technologies, including advanced seismic surveys and artificial intelligence-based tools**, to identify and explore new hydrocarbon reserves.
- The mission is also a key component of the government's '**Aatmanirbhar Bharat**' (**self-reliant India**) vision, as it seeks to enhance domestic energy production and strengthen the country's energy security.
- However, **statement 3 is incorrect**. The **nodal ministry for this mission is the Ministry of Petroleum and Natural Gas**. While it may collaborate with other ministries and institutions, it is not a joint initiative with the Ministry of Earth Sciences in the way the statement implies.

28) The Sarvottam Yudh Seva Medal (SYSM) is awarded for:

- a) Distinguished service of the most exceptional order during peacetime.
- b) Distinguished service of the most exceptional order during war, conflict, or hostilities.
- c) Gallantry in the face of the enemy during wartime.
- d) Acts of valor or self-sacrifice away from the battlefield.

Solution: B

- The Sarvottam Yudh Seva Medal (SYSM) is India's **highest wartime distinguished service decoration**. It is awarded for "**distinguished service of the most exceptional order during war, conflict or hostilities**."
- It is the wartime equivalent of the **Param Vishisht Seva Medal (PVSM)**, which is awarded for distinguished service during peacetime. The SYSM is not a gallantry award like the Param Vir Chakra, which is awarded for acts of valor in the face of the enemy.
- The SYSM recognizes extraordinary leadership and operational planning at the highest level during a conflict. Its rarity, with only a handful of recipients since its institution in 1980, underscores its prestige.

29) Which of the following best describes the primary objective of establishing the Maritime State Development Council (MSDC) under the Indian Ports Bill, 2025?

- (a) To privatize all major ports and encourage Foreign Direct Investment (FDI).
- (b) To create a centralized authority for setting tariffs across all Indian ports.
- (c) To act as an apex body for dispute resolution between port authorities and private operators.
- (d) To strengthen cooperative federalism and ensure integrated planning between the Centre and maritime States.

Solution: D

- The primary objective of the Maritime State Development Council (MSDC) is to **strengthen cooperative federalism and ensure integrated planning between the Centre and maritime States**. The MSDC is envisioned as a coordinating body where the Union government and state governments can collaborate on the holistic development of the port sector. This includes aligning national priorities with state-level port management, especially for non-major ports which fall under state jurisdiction.

30) Consider the following statements.

Statement I: The long-term vision of India's crewed lunar mission is aligned with the national goal of 'Viksit Bharat by 2047'.

Statement II: The mission mentioned in Statement I emphasizes indigenous development of launch vehicles and life support systems to strengthen India's position in the global space economy.

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

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

Solution: A

- Statement I correctly states that the plan to land an Indian astronaut on the Moon by 2040 is part of the broader '**Viksit Bharat by 2047**' vision. This national goal aims for India to become a developed nation by its 100th year of independence, and achieving advanced capabilities in frontier sectors like space exploration is a key indicator of this status.
- Statement II explains *how* the space mission contributes to this vision. By focusing on **indigenous development** of critical technologies like launch vehicles, life support, and surface exploration systems, India is not just aiming for a symbolic achievement.
- This strategy builds self-reliance, fosters a high-tech manufacturing ecosystem, and creates intellectual property. These capabilities are essential for capturing a larger share of the projected **\$45 billion space economy**, thereby directly contributing to the economic and technological advancement central to the 'Viksit Bharat' goal.
- The emphasis on self-reliance is the core mechanism through which the space program becomes an engine for national development.

31) With reference to the Online Gaming Regulation Bill, 2025, consider the following statements:

1. The Bill imposes a blanket ban on all forms of online gaming, including e-sports.
2. It prohibits any online game that involves a user depositing money with the expectation of monetary returns.
3. The Bill establishes a statutory authority tasked with both the promotion of e-sports and the regulation of safe gaming.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The Bill does not impose a blanket ban. It makes a clear distinction between different types of online gaming. It specifically targets **real money gaming** while simultaneously seeking to **promote e-sports** as a creative and recreational activity. A blanket ban would contradict the stated objective of promoting e-sports.
- **Statement 2 is correct.** This is the core of the prohibition clause. The Bill's definition of banned games hinges on the financial transaction: any game where a user **deposits money for the purpose of earning monetary returns** falls under the ban. This covers fantasy sports, online card games for stakes, and other similar models.
- **Statement 3 is correct.** A key feature of the bill is the establishment of a **statutory authority**. This body has a dual mandate: to foster the growth of the e-sports sector and to regulate the broader gaming environment to ensure it is safe and free from the harms associated with real money gaming.

- 32) The primary stated objective of the 130th Constitution (Amendment) Bill, 2025, is to uphold constitutional morality and public trust by:
- (a) introducing educational qualifications for individuals holding the office of a Minister.
 - (b) ensuring Ministers under prolonged detention for serious criminal charges vacate their office.
 - (c) barring individuals with any pending criminal case from being appointed as a Minister.
 - (d) creating a special judicial mechanism for the swift trial of Ministers accused of corruption.

Solution: B

- **(b) is correct.** The 'Objects and Reasons' of the Bill explicitly state that its goal is to protect **constitutional morality, good governance, and public trust**. It aims to achieve this by ensuring that a Minister who is arrested and detained for a significant period (30 days) in connection with a serious criminal charge (punishable with 5+ years) cannot continue to hold their high constitutional office. This directly addresses the issue of ministers potentially misusing their office while under custody.
- 33) Consider the following statements about the Fortified Rice Scheme:
1. It is a centrally sponsored scheme with cost-sharing between the Centre and the states.
 2. The scheme aims to fortify rice with Iron, Folic Acid, and Vitamin B12.
 3. The Food Safety and Standards Authority of India (FSSAI) is the nodal agency for implementing the scheme.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The scheme is a central sector scheme with 100% central funding. The entire cost of fortification is borne by the Government of India.
- **Statement 2 is correct.** The scheme involves the fortification of rice with three key micronutrients: Iron, Folic Acid, and Vitamin B12. This is aimed at combating anaemia and other micronutrient deficiencies.
- **Statement 3 is incorrect.** The Department of Food and Public Distribution (DFPD) under the Ministry of Consumer Affairs, Food and Public Distribution is the nodal ministry for the scheme. The FSSAI's role is to frame the technical standards for fortified rice, not to implement the scheme.

- 34) With reference to the National Organ and Tissue Transplant Organisation (NOTTO), consider the following statements:
1. It is a statutory body established under the Transplantation of Human Organs and Tissues Act, 1994.
 2. It functions under the administrative control of the Indian Council of Medical Research (ICMR).
 3. It is responsible for maintaining a national registry of organ donors and recipients.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** NOTTO was established in 2014 under the mandate of the Transplantation of Human Organs and Tissues Act, 1994 (as amended in 2011), making it a statutory body.
- **Statement 2 is incorrect.** NOTTO functions under the Ministry of Health and Family Welfare, not the ICMR. It operates under the Director General of Health Services (DGHS).
- **Statement 3 is correct.** One of the key functions of NOTTO is to maintain a national database of organ and tissue donations, including a waiting list of recipients, to ensure transparent and equitable allocation.

35) With reference to the Central Consumer Protection Authority (CCPA), consider the following statements:

1. It is a non-statutory body under the Ministry of Commerce and Industry.
2. It has the power to impose penalties on companies for misleading advertisements.
3. It is headed by a retired judge of the Supreme Court.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The CCPA is a statutory body established under the Consumer Protection Act, 2019. It functions under the Ministry of Consumer Affairs, Food and Public Distribution.
- **Statement 2 is correct.** As demonstrated by the penalty imposed on Rapido, the CCPA has the power to impose penalties on companies and celebrities for misleading advertisements and unfair trade practices.
- **Statement 3 is incorrect.** The CCPA is headed by a Chief Commissioner, who is assisted by two Commissioners. The Act does not specify that the Chief Commissioner must be a retired judge of the Supreme Court.

36) Which of the following is/are the intended benefits of the Fortified Rice Scheme?

1. To combat hidden hunger and malnutrition.
2. To promote the cultivation of specific varieties of rice.
3. To reduce the fiscal burden of food subsidies on the central government.

Select the correct answer code:

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

Solution: C

- **Statement 1 is correct.** The primary objective of the Fortified Rice Scheme is to address the problem of "hidden hunger," which is a deficiency of micronutrients, and to combat malnutrition, particularly anaemia.
- **Statement 2 is incorrect.** The scheme does not focus on promoting the cultivation of specific varieties of rice. Instead, it involves adding micronutrients to regular rice during the milling process.
- **Statement 3 is incorrect.** The scheme, in fact, increases the fiscal burden on the central government as it bears the entire cost of fortification. The aim is to improve the nutritional value of the food distributed through government schemes, not to reduce subsidies.

37) Which of the following are the functions of National Organ and Tissue Transplant Organisation (NOTTO)?

1. To set up a national biomaterial centre for tissue banking.
2. To conduct research on xenotransplantation.
3. To monitor and prevent the commercial trade of human organs.
4. To provide financial assistance to patients undergoing organ transplantation.

Select the correct answer code.

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

Solution: D

- **Statement 1 is correct.** NOTTO's structure includes a National Biomaterial Centre for tissue banking, which deals with corneas, bones, skin, etc.
- **Statement 2 is incorrect.** While NOTTO is involved in promoting organ and tissue transplantation, its primary focus is on human-to-human transplantation. Research on xenotransplantation (transplantation of organs from one species to another) is not a stated function of NOTTO.
- **Statement 3 is correct.** NOTTO is responsible for monitoring compliance with the Transplantation of Human Organs Act (THOA), 1994, to prevent organ trafficking and commercial trade.
- **Statement 4 is incorrect.** NOTTO's mandate is to coordinate and regulate the process of organ donation and transplantation. It does not provide financial assistance to patients. Financial assistance schemes are typically run by other government departments or are part of broader health insurance programs.

38) Which of the following fall within the powers and functions of the Central Consumer Protection Authority (CCPA)?

1. To conduct investigations into violations of consumer rights.
2. To issue advisories to consumers.
3. To initiate class action suits.
4. To set the maximum retail price (MRP) of products.

Select the correct answer code.

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

Solution: C

- **Statement 1 is correct.** The CCPA has an Investigation Wing, headed by a Director-General, which is responsible for conducting inquiries into alleged violations of consumer rights.
- **Statement 2 is correct.** The CCPA can issue safety notices and advisories to alert consumers against dangerous or hazardous goods and services.
- **Statement 3 is correct.** The CCPA is empowered to initiate class action suits in cases where a large number of consumers have been affected by an unfair trade practice or a misleading advertisement.
- **Statement 4 is incorrect.** The setting of MRP is governed by the Legal Metrology (Packaged Commodities) Rules, and the CCPA does not have the power to set the MRP of products. Its role is to ensure that consumers are not charged more than the MRP and that the MRP itself is not deceptive.

39) With reference to the NITI Aayog, consider the following statements:

1. It is a statutory body established through an Act of Parliament to promote cooperative federalism.
2. The Governing Council of NITI Aayog comprises the Prime Minister of India, Chief Ministers of all the States and Union Territories with Legislatures, and Lieutenant Governors of other Union Territories.
3. Its policy frameworks are binding on both the Central and State governments to ensure rapid economic transformation.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** NITI Aayog was established by an executive resolution of the Union Cabinet on January 1, 2015, not through an Act of Parliament. Therefore, it is a non-statutory or an executive body, which serves as a policy think-tank for the government. Its predecessor, the Planning Commission, was also formed by an executive resolution.
- **Statement 2 is correct.** The Governing Council is the primary body for developing a shared national agenda and is composed of the Prime Minister as the Chairperson, all Chief Ministers of states, Chief Ministers of Union Territories with legislatures, and Lieutenant Governors of other Union Territories.
- **Statement 3 is incorrect.** The role of NITI Aayog is primarily advisory. It acts as a think-tank and provides strategic policy inputs. Its recommendations and policy frameworks are not binding on the governments.

40) Consider the following statements regarding the legal framework governing tribal rights in the Andaman and Nicobar Islands:

1. The Forest Rights Act (FRA), 2006, mandates the settlement of individual and community forest rights before any forest land is diverted for non-forest purposes.
2. The Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956, prohibits the acquisition of land in tribal areas by outsiders.

Which of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** A cornerstone of the **Forest Rights Act (FRA), 2006**, is the empowerment of the Gram Sabha (village assembly). Section 4(5) of the Act requires that no member of a forest-dwelling Scheduled Tribe or traditional forest dweller shall be evicted or removed from forest land under their occupation till the recognition and verification procedure is complete. Furthermore, consent from the Gram Sabha is required for any diversion of forest land.
- **Statement 2 is correct.** The **PAT Regulation of 1956** is a specific piece of legislation for the Andaman & Nicobar Islands designed to protect its indigenous tribes. It creates tribal reserves and explicitly prohibits outsiders from settling, acquiring land, or carrying on business in these areas without permission, thereby safeguarding their land and resources.

41) Which one of the following is the most crucial and immediate objective behind the Government of India launching the "Veterinary Blood Transfusion Guidelines 2025"?

- (a) To promote the export of veterinary blood products to neighbouring countries.
- (b) To establish a commercial market for animal blood and its components.
- (c) To mandate blood transfusion for all domesticated animals as a preventive healthcare measure.
- (d) To standardise protocols for animal blood donation and transfusion to ensure safety and animal welfare.

Solution: D

- **Option (a) is incorrect.** The guidelines are focused on addressing a domestic gap in animal healthcare. There is no mention of exporting blood products; the primary goal is self-sufficiency and safety within India.

- **Option (b) is incorrect.** While a regulated system might have economic aspects, the core principle is **voluntary donation** and a "Donor Rights Charter," which counters the idea of a purely commercial market. The main objective is healthcare, not commerce.
- **Option (c) is incorrect.** Blood transfusions are a therapeutic, not a preventive, measure. They are required for specific conditions like trauma, anaemia, or surgical blood loss, not as a routine procedure for all animals. Mandating it would be medically unnecessary and impractical.
- **Option (d) is correct.** Until now, transfusions were done in emergencies **without standardised protocols**. The new guidelines aim to create a national framework for scientific protocols covering donation, storage, blood typing, cross-matching, and transfusion to ensure the **safety, biosafety, and welfare** of animals. This is the central and most pressing need the policy addresses.

42) With reference to the Veterinary Blood Transfusion Guidelines 2025, consider the following statements:

1. The guidelines introduce a mandatory 'Donor Rights Charter' to protect the welfare of donor animals.
2. One of the key features is the integration of the 'One Health' approach to mitigate risks of zoonotic diseases.
3. The framework mandates the establishment of at least one state-regulated veterinary blood bank in every district of India by 2025.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The guidelines encourage voluntary donation and include a '**Donor Rights Charter**'. This is a significant step towards ensuring the ethical treatment and welfare of animals that are part of the donation program, preventing their exploitation.
- **Statement 2 is correct.** The integration of the '**One Health**' concept is explicitly mentioned as a feature. This approach recognizes the link between animal health, human health, and the environment. By implementing rigorous screening and biosafety protocols for blood transfusion, the guidelines aim to manage and prevent the transmission of zoonotic diseases (diseases that can spread from animals to humans).
- **Statement 3 is incorrect.** While the guidelines call for the establishment of state-regulated veterinary blood banks, there is no mention of a mandate for setting one up in **every district** by a specific deadline of 2025. Such a target would be overly ambitious and is not stated in the policy's features. The focus is on creating a regulatory framework for such banks to be established.

5. Science and Technology

- 1) Consider the following statements about the ICAR's AI-Powered Agromet Advisory system:
1. It is a joint initiative of ICAR and ISRO to enhance crop yields.
 2. The system provides generalized weather advisories for entire states.
 3. A key feature is its delivery mechanism through a WhatsApp bot in regional languages.
 4. It is being implemented nationwide as part of the Monsoon Mission-III.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The advisory system is a joint initiative of the **Indian Council of Agricultural Research (ICAR)** and the **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)**, not ISRO. While it uses satellite data, ISRO is not the primary developing partner.
- **Statement 2 is incorrect.** The core strength of this system is its ability to provide **hyper-local, real-time, and personalized** advisories, not generalized ones. It considers factors like crop cycle, soil type, and the specific location of a farmer to offer tailored advice.
- **Statement 3 is correct.** To ensure accessibility and last-mile delivery, the system utilizes an **AI-powered WhatsApp bot**. This allows for the easy dissemination of complex advisories in various regional languages, making the information comprehensible and actionable for smallholder farmers.
- **Statement 4 is incorrect.** The project is currently being implemented on a **pilot basis in select districts of Maharashtra**. While it is supported by the government's Monsoon Mission-III, it is not yet a nationwide program. The plan is to scale it up after the pilot phase.

- 2) The Human Outer Planetary Exploration (HOPE) station has been established in Ladakh's Tso Kar region. What is the primary reason for choosing this location?
- (a) Its proximity to ISRO's satellite launch facilities.
 - (b) Its geothermal springs which can be used to power the research station.
 - (c) Its status as a major astronomical observation site with clear skies.
 - (d) Its high-altitude, cold-desert terrain that simulates lunar and Martian environments.

Solution: D

- The primary reason for selecting the **Tso Kar basin in Ladakh** for the Human Outer Planetary Exploration (HOPE) station is its unique geography.
- The region is a **high-altitude, cold-desert landscape** with sparse vegetation and extreme temperature fluctuations. This terrain and environment bear a strong resemblance to the conditions found on the **Moon and Mars**.
- The aim of the project is to simulate off-Earth conditions to study the psychological and physiological impacts on humans in extreme isolation.
- Therefore, the choice of location is driven by its fidelity as an **analogue environment** for future crewed interplanetary missions, not its proximity to launch sites, astronomical observatories, or geothermal resources.

- 3) Consider the following statements about India's first indigenously developed 1 MW green hydrogen plant:
1. It is located at Jawaharlal Nehru Port, Mumbai.
 2. The technology uses imported electrolyzers to produce green hydrogen.
 3. The project is a collaboration between the Deendayal Port Authority and Larsen & Toubro (L&T).

How many of the above statements are incorrect?

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

Solution: B

- **Statement 1 is incorrect.** The plant is located at **Deendayal Port, Kandla, in Gujarat**, not Jawaharlal Nehru Port, Mumbai. This makes it the first such facility at a major Indian port.
- **Statement 2 is incorrect.** The project is a "Make-in-India" initiative and crucially uses **indigenously manufactured electrolyzers**. This demonstrates India's growing self-reliance in the critical technology required for the green hydrogen ecosystem.
- **Statement 3 is correct.** The project was executed by the **Deendayal Port Authority (DPA)** in collaboration with its engineering partner, **Larsen & Toubro (L&T)**. This partnership highlights a public-private collaboration model for developing advanced clean energy infrastructure.

4) Consider the following statements regarding Human Outer Planetary Exploration (HOPE) project:

Statement I: The Human Outer Planetary Exploration (HOPE) project is a critical step for India's future crewed interplanetary missions.

Statement II: The project is being conducted in an environment analogous to that of the Moon and Mars.

Statement III: The research focuses on the psychological and physiological adaptation of humans to extreme isolation.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I.
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I.
- (c) Only one of the Statements II and III is correct and that explains Statement I.
- (d) Both Statement II and Statement III are correct, but they are not the primary explanation for Statement I.

Solution: A

- Statement I makes a claim about the significance of the HOPE project for India's space ambitions.
- **Statement II is correct.** The project's location in Ladakh's Tso Kar basin was chosen specifically because it **simulates the harsh, isolated terrain of the Moon and Mars**.
- **Statement III is also correct.** The core objective of the research is to study how humans respond **psychologically and physiologically to prolonged stays in confined and extreme environments**. Both statements II and III together provide the complete rationale for why HOPE is critical for future crewed missions (Statement I).
- A successful interplanetary mission requires not just technological capability, but also ensuring that the human crew can withstand the journey and environment. By conducting research on human adaptation (Statement III) in a simulated off-world environment (Statement II), the project directly generates the data needed to plan and execute such missions safely.

5) Consider the following statements about India's first 5G Captive Non-Public Network (CNPN):

1. It is being deployed in the telecom manufacturing sector to test new equipment.
2. The network infrastructure relies entirely on imported components from global 5G leaders.
3. A key feature of this network is its operation in isolation from public networks, ensuring enhanced security.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The CNPN is being deployed in the **refinery sector**, specifically at Numaligarh Refinery Limited (NRL) in Assam. The objective is to digitalize industrial operations under the Industry 4.0 framework, not to test telecom equipment.
 - **Statement 2 is incorrect.** The project emphasizes self-reliance and security by using a **fully India-built** (indigenous) 5G infrastructure. This aligns with the 'Atmanirbhar Bharat' mission and is a key feature highlighted in the announcement, aimed at creating a secure, trusted network for critical infrastructure.
 - **Statement 3 is correct.** A Captive Non-Public Network is, by definition, a private, dedicated network for a single enterprise. It **operates in isolation from public 5G networks**. This separation is crucial for mission-critical industrial applications as it prevents interference and provides a highly secure environment for sensitive operational data, which is a primary requirement for sectors like oil and gas.
- 6) Consider the following statements regarding Captive Non-Public Networks (CNPNS):
1. A CNPN is a shared public network infrastructure that enterprises can lease for private use.
 2. The only primary advantage of a CNPN is its ability to provide ultra-low latency, which is critical for real-time industrial automation.
 3. Network slicing, a feature of public 5G, is not applicable to CNPNs.

Which of the statements given above is/are correct?

- a) 2 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) None

Solution: D

- **Statement 1 is incorrect.** A Captive Non-Public Network (CNPN) is a **dedicated, standalone private network** deployed for the exclusive use of a single enterprise. It is not part of a shared public network infrastructure. Its key characteristic is its isolation from public networks to ensure security, reliability, and customized performance.
 - **Statement 2 is incorrect.** While providing **ultra-low latency** is a key capability of 5G technology, which is used to build CNPNs, it is not its only primary advantage. Other critical advantages include **high throughput** (for handling massive IoT data), **enhanced privacy and security** (as data remains within the enterprise), and the ability to have a **customized architecture** tailored to specific industrial needs.
 - **Statement 3 is incorrect.** **Network slicing** is highly applicable and a significant feature for CNPNs. This technology allows a single physical network to be partitioned into multiple virtual networks. Within a CNPN, an enterprise can use network slicing to create separate, dedicated virtual networks for different operations—for instance, one slice for critical safety systems requiring ultra-high reliability, another for high-bandwidth video surveillance, and a third for general logistics communication.
- 7) Which of the following is the primary objective of Dhruva Space's LEAP-1 Mission?
- a) To conduct a manned mission to the Moon.
 - b) To deploy a constellation of communication satellites for rural India.
 - c) To launch a space telescope to study distant galaxies.
 - d) To demonstrate real-time geospatial AI processing in space and provide a platform for hosted payloads.

Solution: D

- The **LEAP-1 (Launch, Experiment, Analyze, Progress) mission** by Dhruva Space is a commercial satellite mission with specific technological and business objectives. Its primary goal is not a lunar mission, rural communication, or deep-space observation. Instead, it is focused on demonstrating cutting-edge capabilities like **real-time geospatial AI processing** in orbit.

- This involves testing an AI/ML module that can analyze data directly in space. Additionally, the mission serves to showcase Dhruva Space's **P-30 satellite platform** as a viable and cost-effective option for carrying hosted payloads for international clients, thereby paving the way for future commercial ventures in the space sector.
- 8) Regarding the BrahMos missile, which one of the following statements is correct?
- (a) It is a subsonic cruise missile developed jointly by India and Israel.
 - (b) The missile has a uniform flight trajectory, making it predictable for enemy air defence systems.
 - (c) It can only be launched from land-based mobile launchers and naval warships.
 - (d) The missile's high kinetic energy upon impact is a result of its supersonic speed throughout its flight.

Solution: D

- The BrahMos is a **supersonic cruise missile**, not subsonic, and it was jointly developed by India's DRDO and Russia's NPOM. Its high speed (Mach 2.8–3.0) gives it a significant tactical advantage.
- One of its key features is its **multiple flight trajectories**, which can be high, low, or mixed, making it less predictable for enemy radar and air defence systems. This flexibility allows it to adapt to different tactical scenarios.
- The missile is a versatile platform and can be launched from **land, air, sea, and sub-sea platforms**, making it a truly universal missile.
- Due to its high mass and supersonic speed, the BrahMos missile possesses immense kinetic energy (nine times more than subsonic missiles), which contributes significantly to its destructive power upon impact, even with a conventional warhead. This high kinetic energy ensures a high kill probability against hardened and high-value targets.

- 9) Regarding the BrahMos missile system, consider the following statements:
1. It is a two-stage missile with a solid propellant booster and a liquid-fueled ramjet engine.
 2. The name BrahMos is a portmanteau derived from the names of the Brahmaputra river of India and the Moskva river of Russia.
 3. Its "fire-and-forget" capability means it can be remotely guided to a new target after launch.
 4. The Indian Air Force has integrated the BrahMos missile exclusively with its Mirage 2000 fighter jets.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The BrahMos missile has a **two-stage propulsion system**. The first stage is a **solid propellant booster engine** that accelerates it to supersonic speed. After the booster separates, the second stage, a **liquid-fueled ramjet engine**, ignites and sustains the missile at supersonic speeds (Mach 2.8 to 3.0) throughout its flight path to the target.
- **Statement 2 is correct.** The name **BrahMos** is a symbolic fusion of the two countries involved in its joint development. It is derived from the names of two major rivers: the **Brahmaputra** of India and the **Moskva** of Russia, representing the partnership between India's Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya (NPOM).
- **Statement 3 is incorrect.** The "**fire-and-forget**" principle means that the missile does **not require any further guidance** from the launch platform after it has been launched. It relies on its own on-board guidance system (like inertial navigation system and active radar homing for the terminal phase) to navigate to and strike the pre-designated target. It cannot be remotely guided to a new target mid-flight.
- **Statement 4 is incorrect.** The Indian Air Force has successfully integrated the air-launched version of the BrahMos missile with its frontline **Sukhoi Su-30MKI** fighter jets, not the Mirage 2000. This integration gives the IAF a formidable stand-off strike capability, allowing it to hit high-value targets from a safe distance over both land and sea.

10) Consider the following statements regarding Amplitude Modulation (AM):

1. AM provides better sound quality than Frequency Modulation (FM).
2. AM changes the frequency of the carrier wave to encode signals.
3. AM is widely used for Wi-Fi and digital transmissions.

How many of the above statements is/are incorrect?

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

Solution: C

- Signal modulation involves adjusting wave properties—amplitude (AM), frequency (FM), or phase (PM)—to carry information.
- **AM (Amplitude Modulation) changes the wave height to encode signals**, while FM (Frequency Modulation) alters the wave's frequency.
- **PM (Phase Modulation) shifts the wave's phase for clear digital transmissions like Wi-Fi**, being less affected by interference.
- **FM offers better sound quality than AM, but its range is shorter.**
- However, as technology advances, digital broadcasting is replacing analog due to its efficiency and resistance to interference.

11) Consider the following statements regarding food irradiation:

1. Food irradiation prevents spoilage by slowing down decay and delaying premature ripening.
2. Irradiation processing usually requires multiple treatments to achieve food safety.
3. It reduces the need for chemical preservatives, contributing to a more sustainable food supply chain.
4. The Codex Alimentarius Commission played a key role in setting global standards for food irradiation.

Which of the above statements is/are correct?

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

Solution: B

Statement 1 is correct because food irradiation prevents spoilage by slowing down the process of decay and delaying ripening, sprouting, or germination.

Statement 3 is also correct, as irradiation reduces the need for chemical preservatives, promoting a more sustainable food supply chain.

Statement 2 is incorrect because **irradiation typically requires just one exposure treatment to achieve the desired food safety effects, simplifying food safety practices.**

Statement 4 is also correct, as the Codex Alimentarius Commission established global standards for food irradiation.

12) With reference to India's planned Third Launch Pad (TLP) at Sriharikota, consider the following statements:

1. The TLP is being developed primarily to support the operational continuity of the PSLV program.
2. One of the key objectives of the TLP is to provide strategic redundancy for launching heavy-lift and human spaceflight missions.
3. The development of the TLP involves the participation of private sector players and MSMEs.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The Third Launch Pad (TLP) is designed specifically for **next-generation rockets**, such as the Next Generation Launch Vehicle (NGLV), not for the Polar Satellite Launch Vehicle (PSLV). The NGLV is envisioned to be a much larger and more powerful rocket.
- **Statement 2 is correct.** A crucial objective of the TLP is to provide **strategic redundancy**. Currently, heavy-lift rockets like the LVM3 can only be launched from a single pad. The TLP will serve as a backup, preventing mission disruptions in case of any issues with the existing pad and ensuring continuity for critical missions like Gaganyaan.
- **Statement 3 is correct.** The project incorporates a **"Make in India" push**, with significant involvement of **private players and Micro, Small & Medium Enterprises (MSMEs)** in the development of its infrastructure. This approach aims to boost the domestic space manufacturing ecosystem and enhance national capabilities.

13) Consider the following statements about Bird Flu transmission in humans:

1. Human infection with Bird Flu occurs primarily through direct contact with infected birds, poultry products, or contaminated environments.
2. Bird Flu can be easily transmitted from human to human, increasing the risk of pandemics.
3. Infected humans often develop severe respiratory illness, multi-organ failure, and neurological complications.

Which of the above statements is/are correct?

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

Solution: C

- **Bird Flu, also known as Avian Influenza, is primarily transmitted to humans through direct contact with infected birds, poultry products, or contaminated surfaces.** This typically happens in live bird markets or farms where the virus is prevalent.
- However, **human-to-human transmission of Bird Flu is extremely rare and not sustained**, meaning it does not easily spread among people like seasonal flu viruses do.
- **Most recorded cases of human infection have been linked to prolonged exposure to infected poultry** rather than community transmission.
- Infected individuals often experience severe symptoms, including high fever, respiratory distress, pneumonia, and, in critical cases, multi-organ failure.
- Some strains of Bird Flu, such as H5N1 and H7N9, have been particularly deadly, with high mortality rates among infected individuals.
- Preventive measures include avoiding contact with infected birds and maintaining good hygiene.

14) Consider the following statements regarding TRISO (TRi-structural ISOtropic) fuel:

1. It is a type of nuclear fuel designed for use in conventional pressurized water reactors (PWRs).
2. Each TRISO particle has a kernel of uranium, carbon, and oxygen, encased in a single protective layer of ceramic.
3. The primary advantage of TRISO fuel is its ability to operate at much higher temperatures than traditional nuclear fuels, enhancing safety and efficiency.

How many of the above statements are correct?

- (a) Only one
- (b) Only two

- (c) All three
- (d) None

Solution: A

- **Statement 1 is incorrect.** TRISO (TRi-structural ISOTropic) particle fuel is designed for **advanced reactors**, such as high-temperature gas-cooled reactors (HTGRs) and molten salt reactors, not conventional pressurized water reactors (PWRs). Its unique structure and properties make it suitable for these next-generation reactor designs.
- **Statement 2 is incorrect.** The name TRISO itself refers to its tri-structural nature. Each particle consists of a fuel kernel (uranium, carbon, and oxygen) encased in **three protective layers** of carbon-ceramic materials. These layers act as a robust containment system, preventing the release of radioactive fission products even at very high temperatures.
- **Statement 3 is correct.** A key feature of TRISO fuel is its **extreme durability and resistance to high temperatures**. It can withstand temperatures far exceeding those in traditional reactors without melting, which significantly enhances the safety profile of the reactor. This "meltdown-proof" characteristic is a major advantage. The higher operating temperatures also allow for more efficient electricity generation.
- The recent push for the development and commercialization of TRISO fuel in the United States is partly driven by geopolitical considerations. By developing a domestic supply chain for TRISO fuel, the U.S. aims to **reduce its dependence on Russian uranium** and other nuclear fuel services. This move is part of a broader strategy to enhance energy security and promote nuclear innovation.

15) Which of the following is the most accurate description of Human African Trypanosomiasis?

- (a) A water-borne bacterial infection primarily affecting urban populations in sub-Saharan Africa, causing severe dehydration.
- (b) A viral illness transmitted by mosquitoes that leads to chronic fatigue and muscle wastage, commonly known as "wasting sickness".
- (c) A vector-borne parasitic disease transmitted by the tsetse fly, which is fatal if untreated as it progresses to the central nervous system.
- (d) An airborne fungal infection endemic to Central Africa that causes respiratory distress and neurological symptoms in its advanced stages.

Solution: C

- Human African Trypanosomiasis, also known as **sleeping sickness**, is a **vector-borne disease**. This means it is transmitted by an intermediate organism, in this case, the **tsetse fly** (*Glossina* species). The causative agent is not a bacterium or virus, but a **protozoan parasite** of the species *Trypanosoma brucei*.
- The disease progresses in two stages. In the first stage, the parasites are in the bloodstream and lymphatic system. If left untreated, it enters the second, neurological stage by crossing the blood-brain barrier into the **central nervous system**, causing the characteristic sleep disturbances and other neurological symptoms. This second stage is invariably **fatal without treatment**.
- The disease is primarily found in rural areas of sub-Saharan Africa where agriculture and fishing are common, not urban centers.

16) Consider the following statements regarding Rabies:

1. It is a Neglected Tropical Disease that is preventable through timely post-exposure prophylaxis.
2. The primary mode of transmission to humans is through the bite of infected bats.
3. The disease has a very short incubation period, with symptoms always appearing within one week of exposure.
4. Once clinical symptoms manifest, the disease has a high survival rate with intensive medical care.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three

(d) All four

Solution: A

- **Statement 1 is correct.** Rabies is classified by the WHO as a **Neglected Tropical Disease (NTD)**. Despite its severity, it is **100% preventable** if Post-Exposure Prophylaxis (PEP), which includes a course of rabies vaccine and, in some cases, Rabies Immunoglobulin (RIG), is administered promptly after exposure.
- **Statement 2 is incorrect.** While bats and other mammals can carry and transmit rabies, the vast majority of human cases—approximately **99% globally**—are caused by the bites or scratches of **infected dogs**. Dogs are the primary vector for human rabies transmission.
- **Statement 3 is incorrect.** The incubation period for rabies is highly variable. While it can be as short as a week, it commonly ranges from **1 to 3 months**, and in rare cases, it can be even longer. The time it takes for symptoms to appear depends on factors like the location of the bite and the viral load.
- **Statement 4 is incorrect.** Rabies is one of the deadliest infectious diseases. Once clinical symptoms (like hydrophobia or paralysis) appear, the disease is **almost invariably fatal**. The mortality rate is nearly 100%, and there is no effective treatment at this stage.

17) With reference to India's first private Earth Observation (EO) satellite constellation under the PPP model, consider the following statements:

1. The project is a collaborative effort with the entire financial investment being provided by the Government of India to the private consortium.
2. PixxelSpace India, the lead partner of the consortium, specializes in building hyperspectral imaging satellites.
3. The data from this constellation is intended for diverse applications, including climate change monitoring, disaster management, and national security.

How many of the above statements are incorrect?

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

Solution: A

- **Statement 1 is incorrect.** The project involves a **₹1,200 crore private sector investment** over five years. The PPP model here means the government facilitates and collaborates, but the financial investment is from the private consortium, not the government.
- **Statement 2 is correct.** PixxelSpace India is identified as a Bengaluru-based space technology startup whose **core focus is building a global constellation of hyperspectral EO satellites**. This specialization is a key reason for its leadership role in the consortium.
- **Statement 3 is correct.** The applications listed for the satellite constellation are broad and critical. Its use for **climate change monitoring, disaster management, agriculture analytics, marine surveillance, national security, and urban planning**, reflect the strategic importance of indigenous EO data.

18) Consider the following statements regarding Bioactive Peptides:

Statement I: The consumption of fermented foods like yogurt and kimchi can contribute to enhanced immune-modulatory functions in the human body.

Statement II: Fermentation processes break down complex proteins in food into short protein fragments known as bioactive peptides, which possess properties like antimicrobial and antioxidant effects.

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

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

Solution: A

- **Statement I is correct.** It states that fermented foods can enhance immune-modulatory functions. This is a well-established health benefit associated with foods such as yogurt, kimchi, and miso, which are rich in beneficial microorganisms and compounds derived from fermentation.
- **Statement II is also correct.** It accurately describes the origin and properties of bioactive peptides. During fermentation, microbial action breaks down larger proteins into these **short protein fragments (2–20 amino acids)**. These peptides are known to exhibit several beneficial properties, including **antimicrobial, antihypertensive, antioxidant, and immune-modulatory activities**.
- Statement II provides the scientific mechanism that explains the health benefit mentioned in Statement I.

19) With reference to Bioactive Peptides, consider the following statements:

1. They are naturally occurring long-chain protein molecules found in unfermented dairy products.
2. Their formation is a result of enzymatic hydrolysis during food processing or gastrointestinal digestion.
3. All bioactive peptides exhibit both antihypertensive and antioxidant properties simultaneously.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Statement II alone is correct.
- (c) Both Statement I and Statement II are correct.
- (d) Neither Statement I, II nor III is correct.

Solution: B

- **Statement 1 is incorrect.** Bioactive peptides are **short protein fragments (2–20 amino acids)**, not long-chain molecules. They are typically formed during fermentation, not naturally present in large quantities in unfermented products like plain milk.
- **Statement 2 is correct.** Bioactive peptides are formed when parent proteins are broken down. This process, known as enzymatic hydrolysis, can occur during **food processing (like fermentation)** by microbial enzymes or within the body during **gastrointestinal digestion** by digestive enzymes.
- **Statement 3 is incorrect.** While bioactive peptides are known for various properties like antimicrobial, antihypertensive, antioxidant, and immune-modulatory effects, it is not necessary that a single peptide will exhibit all these properties simultaneously. Different peptides have different functionalities.

20) With reference to the Golden Dome Missile Defense System, which of the following statements is correct?

- a) It is a joint initiative between the United States and Israel to upgrade the existing Iron Dome system.
- b) The system is designed to primarily counter threats from hypersonic and cruise missiles, with a limited capability against Intercontinental Ballistic Missiles (ICBMs).
- c) The architecture of the Golden Dome system relies exclusively on a space-based intercept layer for missile destruction.
- d) It represents a multi-layered defense strategy, integrating space-based, ground-based, and advanced sensor networks to neutralize a wide range of missile threats.

Solution: D

- The Golden Dome Missile Defense System is a comprehensive, next-generation U.S. missile defense program. Its core strength lies in its **multi-layered defense architecture**, which is designed to provide a robust shield against a wide spectrum of aerial threats.
- This includes not just a single layer of defense but a combination of **space-based interceptors**, an **enhanced Ground-Based Midcourse Defense (GMD)** system, and a **limited area defense layer**. This layered approach is a significant technological leap, aiming to counter not only traditional ballistic missiles but also advanced threats like **hypersonic weapons and cruise missiles**.
- Unlike the Iron Dome, which is a joint U.S.-Israeli project for short-range threats, the Golden Dome is a U.S.-led initiative with a global reach. The system is not limited to space-based interception; it integrates various

platforms to create a resilient and effective defense network, enhancing U.S. national security against emerging missile technologies.

21) The recently discovered new type of supernova is significant because:

- It demonstrated a new mechanism of stellar death, where a black hole companion triggers the supernova by siphoning material from a massive star.
- It was caused by the merger of two neutron stars, leading to an exceptionally bright explosion.
- It was the first supernova to be detected using artificial intelligence algorithms.
- It occurred in our own Milky Way galaxy, providing an unprecedented opportunity for close-up observation.

Solution: A

- The key significance of this new type of supernova lies in the **novel mechanism of stellar death** it has revealed. For the first time, astronomers have observed a supernova being directly triggered by a **black hole companion in a binary system**.
- The black hole's immense gravity siphoned material from the massive star over a long period, eventually causing the star to collapse and explode. This is a departure from the previously known mechanisms of supernova explosions.
- While **artificial intelligence algorithms were instrumental in its detection**, they have been used to find other cosmic events as well. The supernova was not caused by a neutron star merger, and it occurred about **700 million light-years away**, not in the Milky Way.
- Therefore, the discovery of a new pathway for the death of massive stars, driven by their interaction with a black hole, is the most profound aspect of this astronomical finding.

22) How does the E. coli based mercury sensor convert the presence of mercury into a readable signal?

- The bacteria change color in the presence of mercury.
- The bacteria emit a fluorescent light when they detect mercury.
- The bacteria produce an electrical current in response to mercury.
- The bacteria release a specific enzyme that can be detected by a chemical test.

Solution: C

The engineered E. coli bacteria function as a living biosensor that converts the presence of mercury into an **electrical signal**. The process begins when the bacteria sense mercury in the water. This triggers a special protein, **MerR**, to switch on. This switch activates the bacteria to produce molecules called **phenazines**. These phenazines then interact with an electrode, creating an electric current. The strength of the electric current is directly proportional to the concentration of mercury in the water. This electrical signal can be read by simple electronic devices, making it a practical and portable solution for real-time water quality monitoring. This innovative approach combines synthetic biology with electronics to create a low-cost and efficient biosensor.

23) Consider the following statements about India's space program milestones:

- The 'Bharat Antariksh Station' is planned to be a collaborative project with an advanced space agency for technology sharing.
- The Gaganyaan Mission will be India's first mission to place an astronaut on the lunar surface.
- The Vyommitra Mission involves sending a humanoid robot into space to test life support and control systems before the crewed mission.

How many of the above statements are incorrect?

- Only one
- Only two
- All three
- None

Solution: B

- **Statement 1 is incorrect.** While global collaboration is a feature of India's broader space ambitions, the establishment of the '**Bharat Antariksh Station**' by 2035 is presented as an indigenous project to create India's own space station for long-duration experiments. The focus is on building self-reliant capabilities in space.
- **Statement 2 is incorrect.** The **Gaganyaan Mission (planned for 2027)** is India's first human spaceflight mission, but its objective is to send astronauts into **Low Earth Orbit (LEO)**, not to the lunar surface. The crewed lunar landing is a separate, more ambitious goal set for 2040. Gaganyaan is a crucial precursor to test and validate technologies for human space travel.
- **Statement 3 is correct.** The **Vyommitra Mission, scheduled for 2026**, is an uncrewed flight that will feature a humanoid robot named Vyommitra. This mission is a critical technology demonstrator, designed to test the efficacy of the crew module's systems, including life support, navigation, and control, in a space environment before risking human lives on the Gaganyaan mission.

24) With reference to the removable solar panel system launched by Indian Railways, consider the following statements:

1. The system is designed to be installed on the roofs of railway coaches to generate power during transit.
2. The primary objective of this initiative is to utilize vacant land parcels owned by the railways for large-scale solar farms.
3. The panels are designed to be removable to facilitate track maintenance and to handle emergencies without disrupting the power generation system.

How many of the above statements are incorrect?

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

Solution: B

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- **Statement 1 is incorrect.** The innovation of this specific system is its placement **between the railway tracks**, not on the roofs of coaches. This design specifically aims to use the underutilized space on the ground level within the railway infrastructure network.
- **Statement 2 is incorrect.** The primary objective is to utilize the narrow, otherwise unused space **between the tracks**, which avoids the need for large land acquisitions required for traditional solar farms. This makes it a space-efficient solution for generating clean energy directly within the operational area of the railways, rather than on separate, larger land parcels.
- **Statement 3 is correct.** A key feature of this system is its **removable design**. The panels can be easily lifted or detached. This is crucial for practical implementation on a live railway network, as it allows for routine track maintenance, inspections, and swift clearance in case of emergencies or derailments, ensuring that the solar installation does not impede essential railway operations.

25) Consider the following statements regarding Genetic screening.

1. Genetic screening is a tool used to identify individuals at higher risk for developing certain disorders or carrying specific genes for these disorders.
2. It offers insights into personal traits like food allergies, vitamin and mineral needs of a person.
3. Genetic screening can help in increasing the performance of athletes.

Which of the above statements are correct?

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

Solution: D

Athletes worldwide are increasingly turning to genetic screening to enhance their performance.

- This emerging science offers valuable insights into personal traits like food allergies, vitamin and mineral needs, and other physiological factors.
- The Board of Control for Cricket in India has been using genetic tests since 2017 to improve players' physical capabilities, including speed, endurance, recovery time, and muscle-building.
- Genetic screening is a tool used to identify individuals at higher risk for developing certain disorders or carrying specific genes for these disorders.
- It involves testing genetic material—chromosomes, genes, or proteins—to detect changes that might increase disease risk.
- By identifying altered genes, genetic screening helps determine risk and offers preventive measures and early treatment options.

26) Match the Agni missile with its correct range category and a distinguishing feature.

List-I (Missile)	List-II (Range Category)	List-III (Key Feature)
1. Agni-I	A. Intermediate-Range	X. Three-stage, solid-fuelled, canister-based launch
2. Agni-III	B. Short-Range	Y. Two-stage missile designed for deeper penetration
3. Agni-V	C. Intercontinental-Range	Z. Single-stage, solid-fuel missile

Select the correct answer code:

- (a) 1-B-Z, 2-A-Y, 3-C-X
- (b) 1-A-Y, 2-C-X, 3-B-Z
- (c) 1-B-X, 2-A-Z, 3-C-Y
- (d) 1-C-Z, 2-B-Y, 3-A-X

Solution: A

- **Agni-I (1)** is a **Short-Range** Ballistic Missile (SRBM) with a range of approximately 700-1,200 km. It is a **single-stage, solid-fuel** missile. Therefore, the correct combination is **1-B-Z**.
- **Agni-III (2)** is an **Intermediate-Range** Ballistic Missile (IRBM) with a range of about 3,000-3,500 km. It is a **two-stage** missile and was a significant step up, designed for reaching deeper into adversary territory. Therefore, the correct combination is **2-A-Y**.
- **Agni-V (3)** is India's longest-range missile (5,000+ km), placing it in the **Intercontinental-Range** Ballistic Missile (ICBM) class. It is a **three-stage, solid-fuelled** missile known for its **canister-based launch system**, which allows for greater mobility and quicker deployment. Therefore, the correct combination is **3-C-X**.

27) The primary reason for the widespread adoption of the Mercator projection in the Age of Exploration was its ability to:

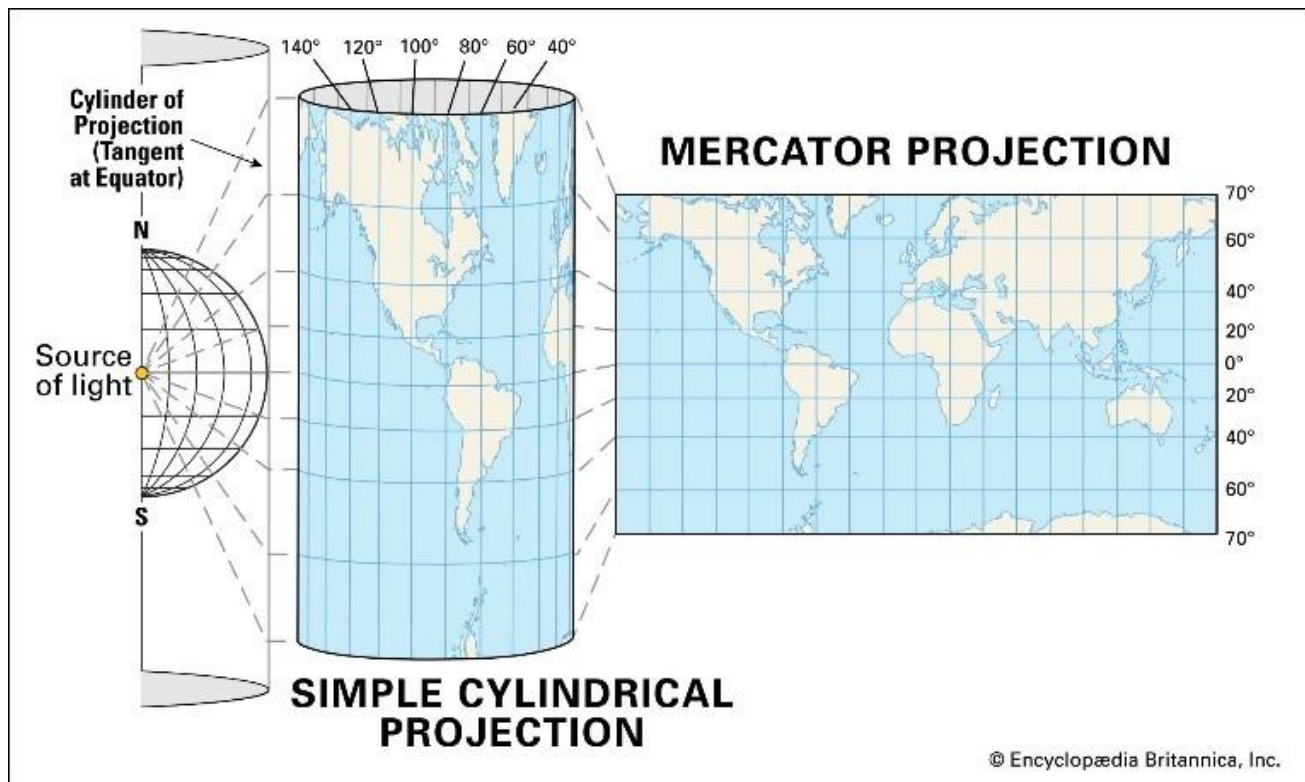
- (a) represent the true size of continents, aiding in resource estimation.
- (b) depict polar regions with high accuracy for Arctic and Antarctic voyages.
- (c) allow navigators to plot a course of constant compass bearing as a straight line.
- (d) minimize distortion of distances uniformly across the entire map.

Solution: C

About **Mercator Projection Map**:

- **What it is?**
 - A **cylindrical map projection**, introduced in **1569**.
 - Designed for **navigation** — allows sailors to follow a straight line of constant compass bearing.
- **Developed by:** Gerardus Mercator (1512–1594), Flemish mathematician and cartographer.
- **Key Features:**
 - **Type:** A **cylindrical projection** mathematically derived to project the spherical Earth on a flat surface.
 - **Straight-line Navigation (Rhumb Lines):**

- Any straight line drawn represents a **line of constant compass bearing** (loxodrome).
- Made it ideal for **maritime navigation** in the Age of Exploration.



- **(c) is correct.** This is the fundamental and most significant feature of the projection. Any straight line on the map is a **rhumb line (loxodrome)**, which represents a line of constant compass bearing. This unique property made it exceptionally useful for sailors, who could set a compass bearing and follow it in a straight line on the map to reach their destination.

28) Consider the following statements about the Agni-V missile:

1. It is a three-stage missile that exclusively uses liquid fuel for higher thrust.
2. The missile's range of over 5,000 km covers the entirety of Asia and parts of Africa.
3. Its canister-launch system enhances its shelf life and reduces the time required for launch.
4. Agni-V has been successfully tested with Multiple Independently Targetable Re-entry Vehicle (MIRV) technology.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is incorrect.** Agni-V is a three-stage missile, but it uses **solid fuel** in all its stages. Solid propellants are preferred for ballistic missiles because they are stable, easy to store, and allow for a much faster launch sequence compared to liquid fuels, which need to be loaded before launch.
- **Statement 2 is correct.** With a range of 5,000–5,500 km, the Agni-V's operational footprint is extensive. It can reach targets across all of China and other parts of Asia, as well as reaching into parts of Eastern Europe and Africa, forming a credible pillar of India's strategic deterrence.
- **Statement 3 is correct.** The **canisterised launch system** is a significant technological advantage. The missile is hermetically sealed within a climate-controlled canister, which protects it from environmental factors, thereby increasing its **longevity (shelf life)**. It also allows the missile to be launched directly from the canister, dramatically **reducing the launch preparation time** and improving its operational readiness and survivability.

- **Statement 4 is correct.** India successfully conducted the first flight test of the Agni-V missile with **MIRV technology** in March 2024. This capability allows a single missile to carry multiple warheads, each capable of striking a different target, significantly enhancing its effectiveness and ability to bypass missile defense systems.

29) Consider the following statements regarding the limitations of India's polyvalent antivenom:

1. It shows limited efficacy in Northeast India due to the prevalence of different venomous snake species.
2. The one-size-fits-all approach of the polyvalent antivenom addresses the regional diversity of snakes in India.
3. The use of polyvalent antivenom can lead to delayed recovery and long-term complications in some cases.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The current polyvalent antivenom is developed using venom from the "Big Four" snakes, which are not the dominant venomous species in **Northeast India**. This leads to a mismatch between the antivenom and the venom of the snakes responsible for bites in that region, resulting in **limited efficacy**.
- **Statement 2 is incorrect.** The one-size-fits-all approach **ignores the regional diversity** of snakes in India. Different regions have different snake populations, and an antivenom effective in one region may not be as effective in another. This highlights the need for region-specific antivenoms.
- **Statement 3 is correct.** When the polyvalent antivenom is not fully effective against the venom of a particular snake species, its administration can result in **delayed recovery, long-term complications, or even death**. This underscores the importance of developing and using antivenoms that are tailored to the specific snake species found in different geographical areas.

30) Consider the following statements regarding the applications of the genetically engineered E. coli mercury sensor:

1. It can be used for real-time detection of heavy metals in drinking water.
2. It can monitor pollution in rivers, lakes, and industrial effluents.
3. It serves as an early warning system for communities exposed to contaminated water.
4. It can be integrated with portable electronic devices for on-site analysis.

How many of the above statements are correct?

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

Solution: D

The E. coli mercury sensor has a wide range of applications.

1. **Water Safety:** Its primary application is to detect toxic heavy metals like **mercury in drinking water**, ensuring its safety for consumption.
2. **Environmental Monitoring:** It can be used to track pollution levels in various water bodies, including **rivers, lakes, and industrial discharge**, providing valuable data for environmental management.
3. **Public Health:** By providing real-time data on water contamination, it can act as an **early warning system** for communities, helping to prevent public health crises.
4. **Low-cost Electronics:** The sensor is designed to be compatible with **portable devices**, enabling its use for on-site analysis in the field, which is crucial for rapid response and decision-making. This technology is a significant step forward in the field of programmable bioelectronics and smart diagnostics.

31) Match the following ISRO launch vehicles with their key characteristic or mission:

Launch Vehicle	Characteristic / Mission
1. SLV-3	Placed the first Rohini satellite in orbit
2. PSLV	Launched the Mangalyaan mission
3. LVM-3	Introduced indigenous cryogenic engines to ISRO
4. LMLV	Designed for a payload capacity of ~80 tonnes to GTO

How many of the pairs given above are correctly matched?

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

Solution: B

- **Pair 1 is correctly matched.** The Satellite Launch Vehicle (SLV-3) was India's first indigenous satellite launch vehicle, and its first successful flight in 1980 placed the **Rohini satellite RS-1** into orbit.
- **Pair 2 is correctly matched.** The Polar Satellite Launch Vehicle (PSLV) is known as ISRO's workhorse and has been used for numerous historic missions, including **Chandrayaan-1 (2008) and the Mars Orbiter Mission (Mangalyaan, 2013)**.
- **Pair 3 is incorrect.** The **GSLV (Geosynchronous Satellite Launch Vehicle)**, particularly the GSLV Mk-II, was the vehicle on which ISRO first successfully flew its indigenous cryogenic upper stage. LVM-3 (GSLV Mk-III) uses a more powerful indigenous cryogenic engine (CE-20) but did not 'introduce' the technology to ISRO.
- **Pair 4 is incorrect.** The planned Lunar Module Launch Vehicle (LMLV) is designed for a payload capacity of ~80 tonnes to **Low Earth Orbit (LEO)**, not Geostationary Transfer Orbit (GTO). Its payload to the Moon is planned to be around 27 tonnes.

32) With reference to Wastewater-Based Epidemiology (WBE), consider the following statements:

1. WBE serves as a predictive tool, capable of providing community-level insights into disease prevalence before clinical diagnoses become widespread.
2. The methodology involves testing treated sewage water for pathogens, as the treatment process concentrates viral RNA.
3. The planned expansion of this surveillance in India includes tracking pathogens responsible for acute encephalitis syndrome.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** The core advantage of WBE is its function as an **early warning system**. By detecting pathogen fragments in sewage, it can identify rising community transmission often days or weeks before people show symptoms and seek clinical help, thus being a predictive tool for public health officials.
- **Statement 2 is incorrect.** Samples for wastewater surveillance are taken from **untreated sewage or raw sewage** entering a treatment plant. The purpose is to capture the complete profile of pathogens shed by the community. Testing treated water would be ineffective as the treatment process is designed to remove or deactivate these very pathogens.
- **Statement 3 is correct.** The ICMR's planned expansion aims to move beyond just COVID-19 and Polio. It intends to track 10 viruses in total, including those linked to a range of illnesses such as **fever, diarrhoea, respiratory illnesses, and acute encephalitis syndrome**, making the surveillance system more comprehensive.

- 33) The most significant public health advantage of employing Wastewater Surveillance as an epidemiological tool is its ability to:
- Identify the exact individuals who are infected within a community.
 - Exclusively track novel viruses for which no clinical tests have been developed.
 - Replace the need for clinical testing and individual diagnosis entirely.
 - Provide a cost-effective, non-invasive, and near real-time snapshot of community-wide disease trends.

Solution: D

- Option (a) is incorrect.** WBE is an anonymized, community-level tool. It detects the presence of pathogens in the collective sewage of a population but cannot trace infections back to specific individuals or households.
- Option (b) is incorrect.** While WBE can be a powerful tool for detecting emerging or novel viruses, its application is not exclusive to them. It is widely used to track known and re-emerging pathogens like the Poliovirus, Influenza virus, and Norovirus.
- Option (c) is incorrect.** WBE is a surveillance and early-warning tool; it complements, but does not replace, clinical testing. Clinical diagnosis is still essential for individual patient care, contact tracing, and confirming outbreaks.
- Option (d) is correct.** This statement captures the multifaceted advantages of WBE. It is **cost-effective** because one sample can represent thousands of people. It is **non-invasive** as it does not require individual testing. Most importantly, it provides a **near real-time signal** of the prevalence of a pathogen across an entire community, including asymptomatic and pre-symptomatic cases, making it an excellent tool for tracking trends.

34) Consider the following statements regarding the Project 17A Nilgiri-class frigates:

- These are the first major Indian warships to be built using an integrated construction methodology.
- The propulsion system used is Combined Diesel or Gas (CODOG), which allows for selection between diesel engines for cruising and gas turbines for high-speed transit.
- The primary long-range air defence for these ships is provided by the indigenously developed Akash missile system.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: B

- Statement 1 is correct.** Project 17A is notable for its use of **integrated construction methodology**, where hull blocks are pre-outfitted with machinery, pipes, and wiring before being assembled. This technique reduces construction time and is a significant advancement in Indian shipbuilding.
- Statement 2 is correct.** The frigates are equipped with a **Combined Diesel or Gas (CODOG)** propulsion system. This arrangement provides flexibility and fuel efficiency: the diesel engines are used for normal cruising speeds, while the powerful gas turbines can be engaged for high-speed operations, such as in combat scenarios.
- Statement 3 is incorrect.** The primary long-range air defence is provided by the **Long-Range Surface-to-Air Missile (LRSAM) system, also known as Barak-8**. The Barak-8 is a joint development between India's DRDO and Israel Aerospace Industries (IAI). The Akash missile system is a medium-range surface-to-air missile primarily used by the Indian Army and Air Force for land-based air defence.

35) Consider the following statements regarding brown dwarfs and red dwarfs:

- Brown dwarfs are considered "failed stars" because they cannot sustain the fusion of hydrogen into helium in their cores.
- Red dwarfs are the most common type of star in the Milky Way and have extremely long lifespans.
- Both brown dwarfs and red dwarfs are similar in size to the planet Jupiter.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct; brown dwarfs occupy the mass range between gas giants and the lowest-mass stars, and their core temperature and pressure are insufficient to trigger sustained hydrogen fusion, hence the term "failed stars."**
- **Statement 2 is also correct; red dwarfs are small, cool, and faint stars, but they are incredibly numerous and burn their fuel so slowly that their lifespans can extend to trillions of years, far longer than the current age of the universe.**
- **Statement 3 is incorrect.** While **brown dwarfs are roughly the size of Jupiter**, red dwarfs are significantly larger. A typical red dwarf, though small for a star, is still many times the size of Jupiter.

36) A Study finds that dark patterns exist in the online space. Which of the following are kinds of dark patters?

1. False urgency
2. Deliberate misdirection
3. Drip pricing
4. Interface interference
5. Privacy deception

How many of the above options is/are correct?

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

Solution: D

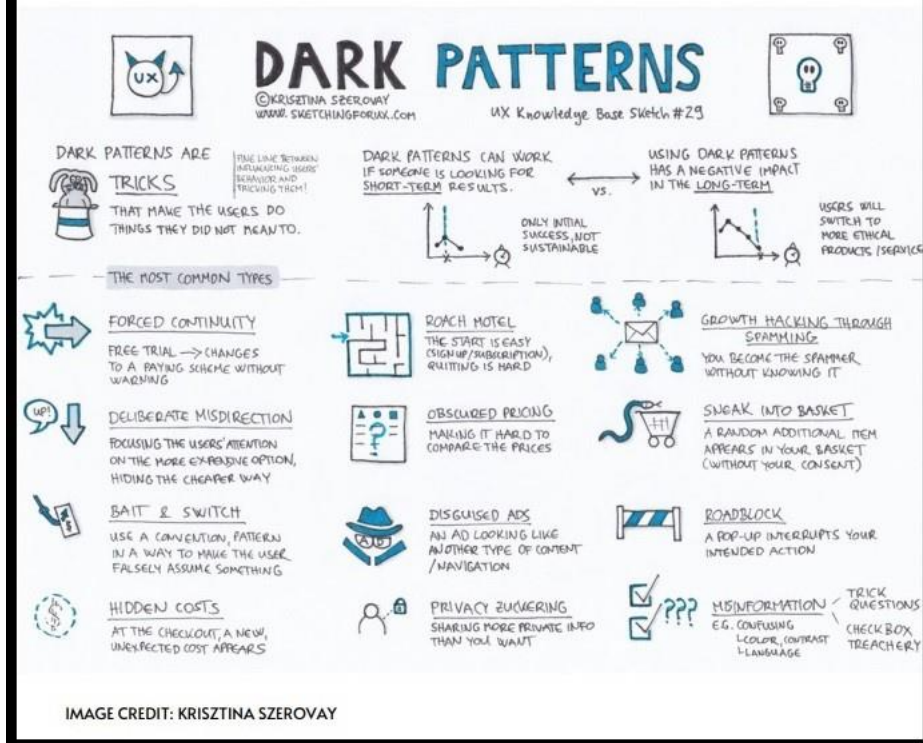
INSIGHTSIAS
SIMPLIFYING IAS EXAM PREPARATION

A study revealed that **52 out of the top 53 Indian apps use deceptive design practices called dark patterns, affecting **user autonomy and informed decision-making.****

- These apps, including popular ones like Netflix, Ola, and Swiggy, employ tactics such as **privacy deception, interface interference, drip pricing, and false urgency.**

KINDS OF DARK PATTERNS

Several kinds of dark patterns exist in the online space, and many have been identified as causing some consumer harm. Here are some examples of commonly seen dark patterns.



HTSIAS
EXAM PREPARATION

37) Consider the following statements regarding Quantum Theory and General Relativity:

1. Quantum Theory explains the behavior of matter and energy at small scales, such as subatomic particles.
2. General Relativity describes the motion of large objects in gravitational fields, such as planets and stars.
3. Quantum Theory and General Relativity are fully compatible and have been unified under a single theory of quantum gravity.

How many of the above statements are correct?

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

Solution: B

Statements 1 and 2 are correct. Quantum Theory deals with microscopic particles and their interactions, while General Relativity describes gravitational forces affecting large-scale objects.

Statement 3 is incorrect because Quantum Theory and General Relativity have not yet been fully unified, and the conflict between them is a central issue in modern physics, often referred to as the problem of quantum gravity.

Aspects	Quantum Theory	General Relativity by Albert Einstein
Scope	Deals with microscopic particles and their interactions	Describes the motion of bigger objects in a gravitational field
Scale	Operates at the quantum (subatomic) level	Applies to cosmological (large-scale) phenomena like Planets, Stars
Fundamental Theory	Explains the behavior of matter and energy at small scales	Describes the force of gravity at a cosmic level
Key Phenomena	Superposition, Entanglement, Wave-particle duality	Time dilation, Gravitational waves, Curved spacetime
Examples	Superposition: A particle can exist in multiple states simultaneously. E.g., Schrödinger's cat , which can be both alive and dead at once	Time Dilation: Time passes slower in a stronger gravitational field e.g., Clocks on GPS satellites run slightly faster than on Earth

38) Consider the following statements about blockchain technology:

- Each block in the blockchain contains encrypted data, which makes it tamper-proof.
- Blockchain operates on a decentralized network, which means no single entity controls the data.
- Smart contracts are used in blockchain to enable self-executing contracts, which automatically enforce agreements.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Solution: C

Statement 1 describes the core feature of blockchain technology, where each block is encrypted and tamper-proof.

Statement 2 refers to the decentralized nature of blockchain, where control is distributed across a network.

Statement 3 highlights the role of smart contracts, which are self-executing contracts embedded within the blockchain that enforce the terms of an agreement automatically.

39) Why is helium considered a non-renewable resource on Earth?

- It is only found in meteorites
- It is continuously consumed in nuclear fusion on Earth
- Once released into the atmosphere, it escapes into space
- It is chemically reactive and bonds with other elements easily

Solution: C

Helium is a non-renewable resource on Earth because once it is released into the atmosphere, it escapes into space due to its low atomic mass and inert nature. Helium is primarily obtained from natural gas deposits where it is produced through the radioactive decay of elements like uranium. Because Earth does not have the capacity to retain helium in its atmosphere, the supply of helium is finite, and it cannot be easily replenished, making it a non-renewable resource.

40) Consider the following statements regarding Silicon Carbide (SiC):

- SiC is known for its excellent thermal conductivity and mechanical strength.
- It is commonly used in semiconductor devices, heat exchangers, and ballistic armor.
- SiC is a natural crystalline compound found in Earth's crust.

How many of the above statements is/are incorrect?

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

Solution: A

- Silicon Carbide (SiC) is a **synthetic compound** known for its **high thermal conductivity, mechanical strength, and excellent resistance to oxidation and wear**. These properties make it an ideal material for **semiconductor devices, heat exchangers, high-power electronics, and ballistic armor**, making **Statements 1 and 2 correct**.
- However, **Statement 3 is incorrect** because SiC is **not a naturally occurring crystalline compound** in Earth's crust. While extremely rare **natural SiC (moissanite)** does exist in meteorites and some limited terrestrial deposits, the vast majority of SiC used in industries is **synthetically produced** through the **Acheson process**.

41) Consider the following statements about Industrial Biotechnology:

1. It focuses solely on producing pharmaceutical products.
2. It has no role in environmental sustainability.
3. It does not involve biofuel production.

How many of the above statements is/are incorrect?

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

Solution: C

Industrial biotechnology is used for pharmaceutical production but also extends to biofuels, biodegradable plastics, enzyme production, and sustainable materials. It plays a vital role in environmental sustainability by reducing industrial waste and developing eco-friendly alternatives.

42) Consider the following statements regarding Distributed Denial-of-Service (DDoS) attacks:

1. A DDoS attack is characterized by overwhelming a server with traffic from multiple sources, making it difficult for legitimate users to access the service.
2. DDoS attacks are typically easier to counter than traditional Denial-of-Service (DoS) attacks because they originate from a single source.
3. DDoS attacks can result in slow loading times or complete inaccessibility of online services.

How many of the above statements are correct?

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

Solution: B

Statement 1 is correct as a **DDoS attack involves overwhelming a server with traffic from multiple sources, making it challenging for legitimate users to access the service**.

Statement 2 is incorrect because DDoS attacks are harder, not easier, to counter compared to traditional DoS attacks due to the multiple sources involved, often using botnets or spoofed IP addresses.

Statement 3 is correct as DDoS attacks can indeed result in slow loading times or complete inaccessibility of online services.

6. International Relations and Organisations

1) Consider the following statements regarding the 25% tariff on Indian imports announced by the U.S. President:

1. The tariff exclusively targets India's textile, pharma, and engineering sectors to protect American industries.
2. The tariff is linked to the proposed Russia Sanctions Act 2025, which primarily aims to penalize nations trading defence equipment with Russia.
3. The action was taken unilaterally by the U.S. administration without any preceding bilateral trade negotiations with India.

How many of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The tariff is on "all eligible goods shipped from India to the U.S.," not exclusively on specific sectors. While sectors like textiles and pharma may be heavily impacted, the tariff is broad-based. The use of the word "exclusively" makes the statement inaccurate.
- **Statement 2 is incorrect.** The Russia Sanctions Act 2025 is mentioned in the context of penalizing nations trading oil with Russia.
- **Statement 3 is incorrect.** The announcement of the tariff explicitly followed the fifth round of failed trade talks between India and the U.S. in Washington. This indicates that the action was not taken in a vacuum but was preceded by unsuccessful negotiations.

2) Consider the following statements regarding the 1st-ever BIMSTEC Traditional Music Festival:

1. The festival was hosted in Colombo, Sri Lanka.
2. The theme of the festival was "SaptaSur: Seven Nations, One Melody".
3. The festival was organized by the Ministry of Culture, Government of India.
4. The festival is a follow-up to a commitment made at the BIMSTEC Summit in Thailand.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect** as the festival was hosted in **New Delhi, India**, at Bharat Mandapam.
- **Statement 2 is correct**; the theme was indeed "**SaptaSur: Seven Nations, One Melody**", which aptly captures the spirit of unity in diversity among the seven BIMSTEC nations.
- **Statement 3 is incorrect** because the festival was organized by the **Indian Council for Cultural Relations (ICCR)** under the Ministry of External Affairs, not the Ministry of Culture.
- **Statement 4 is correct**; the festival was an implementation of a commitment made by the Prime Minister of India at the **BIMSTEC Summit in Thailand in April 2025**.

3) Consider the following statements about the 1st-ever BIMSTEC Traditional Music Festival:

1. All seven BIMSTEC member countries participated in the festival.
2. The festival was held to commemorate the 25th anniversary of BIMSTEC's foundation.
3. The event was a ticketed concert to raise funds for future cultural initiatives.

How many of the above statements are correct?

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

Solution: A

- **Statement 1 is correct.** The festival featured participation from artists from all **seven BIMSTEC member nations**: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.
- **Statement 2 is incorrect.** The festival's origin is traced back to a commitment made by the Indian Prime Minister at the **April 2025 BIMSTEC Summit**, not a specific anniversary.
- **Statement 3 is incorrect.** The event was **free and open to all**, with no entry fee. The goal was to maximize public engagement and cultural outreach, not to generate revenue.

- 4) Consider the following statements regarding the consequences of French colonization in Africa.
1. Suppression of traditional African governance structures.
 2. Introduction of French language and culture in the colonies.
 3. Development of industrial hubs in African territories.
 4. Extensive resource extraction and forced labor practices.

Which of the above statements is/are correct?

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

Solution: C

French colonization in Africa had profound socio-political and economic consequences. **Statement 1 is correct** as the **French administration often dismantled traditional African governance structures**, replacing them with centralized colonial rule to ensure control.

Statement 2 is correct because the policy of assimilation promoted the French language, culture, and legal systems, suppressing indigenous identities.

Statement 4 is also correct, as France extensively extracted natural resources such as rubber, gold, and timber, often relying on forced labor under harsh conditions.

However, **Statement 3 is incorrect** since **industrial development in African colonies was largely neglected**. Instead of fostering local industries, France prioritized extracting raw materials and shipping them to metropolitan France for processing. Infrastructure, such as railways and ports, was built primarily to facilitate resource extraction rather than to develop independent industrial hubs.

- 5) Consider the following statements regarding the International Criminal Court (ICC):
1. The ICC was established by the Rome Statute.
 2. The United Nations Security Council has the authority to dismiss cases before the ICC.
 3. The ICC can prosecute crimes committed before its establishment in 2002 if they are of significant international concern.

How many of the above statements are correct?

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

Solution: B

The **International Criminal Court (ICC)** is a **permanent international tribunal** that prosecutes individuals for **genocide, war crimes, crimes against humanity, and aggression**.

Statement 1 is correct: The ICC was **established by the Rome Statute**, which was **adopted in 1998 and entered into force in 2002**. It functions **independently** of the United Nations, though it often works in collaboration with the UN.

Statement 2 is correct: The **United Nations Security Council (UNSC)** has **authority over ICC proceedings under Article 16 of the Rome Statute**. It can **refer cases** to the ICC (even if the country is not a signatory) and **defer proceedings for up to 12 months**, renewable indefinitely.

Statement 3 is incorrect: The ICC **does not have retroactive jurisdiction**. It can **only prosecute crimes committed on or after July 1, 2002**, when the Rome Statute came into effect.

- 6) Which of the following statements best describes the role of United States Agency for International Development (USAID) in global economic development?
- USAID's role is limited to emergency humanitarian aid and disaster response.
 - USAID works exclusively with governments and does not engage with private sector organizations or NGOs.
 - USAID focuses on development programs aimed at promoting economic growth, governance, health, and climate resilience.
 - USAID primarily provides military aid to strengthen U.S. strategic partnerships in developing countries.

Solution: C

Option a is incorrect: While USAID provides disaster relief, it is not limited to emergency aid; it has long-term development programs in over 100 countries.

Option b is incorrect: USAID works with a wide range of partners, including governments, NGOs, private sector players, and multilateral institutions.

Option c is correct: USAID funds economic development, democracy promotion, health initiatives, climate resilience programs, and humanitarian relief.

Option d is incorrect: USAID is a civilian development agency, not a military aid provider (military aid is provided by the U.S. Department of Defense).

- 7) Consider the following statements regarding India's role in the Indian Ocean Region (IOR):
- The SAGAR (Security and Growth for All in the Region) Initiative was launched by India to strengthen its leadership in the IOR.
 - The Colombo Security Conclave (CSC) is a military alliance between India, Sri Lanka, and China for Indian Ocean security.
 - India is a founding member of the Indian Ocean Rim Association (IORA), an intergovernmental organization promoting regional cooperation.

How many of the above statements is/are incorrect?

- Only one
- Only two
- All three
- None

Solution: A

Statement 1 is correct: The **SAGAR (Security and Growth for All in the Region) initiative** was launched by **India in 2015** to enhance maritime security, foster economic collaboration, and strengthen India's leadership in the IOR. It emphasizes **cooperation in maritime governance, disaster response, and the Blue Economy**.

Statement 2 is incorrect: The Colombo Security Conclave (CSC) is not a military alliance and does not include China. It was initially formed in 2011 between India, Sri Lanka, and the Maldives, with Mauritius joining in 2022. CSC focuses on counterterrorism, maritime security, cybersecurity, and humanitarian assistance.

Statement 3 is correct: India is a founding member of the Indian Ocean Rim Association (IORA), established in 1997 to promote economic and security cooperation among Indian Ocean littoral states.

- 8) Consider the following statements about the geopolitical significance of the Indian Ocean Region (IOR):
1. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is primarily a security alliance.
 2. The Djibouti Code of Conduct (DCoC) is an agreement between China and African nations for military cooperation.
 3. The Quadrilateral Security Dialogue (Quad) is an economic trade bloc in the Indian Ocean.

How many of the above statements are correct?

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

Solution: D

- The Indian Ocean Region (IOR) is a strategically significant area due to its trade routes, energy corridors, and geopolitical alliances.
- **Statement 1 is incorrect** as BIMSTEC is an economic and technical cooperation organization aimed at fostering trade, connectivity, and regional development rather than military security.
- **Statement 2 is incorrect** because the Djibouti Code of Conduct (DCoC) is an anti-piracy framework aimed at enhancing maritime security among countries in the western Indian Ocean, including Africa, the Middle East, and South Asia. It does not involve China in military cooperation.
- **Statement 3 is incorrect** because the Quadrilateral Security Dialogue (Quad) is a strategic alliance, not a trade bloc. It focuses on maritime security, freedom of navigation, and countering China's influence in the Indo-Pacific rather than economic integration.

- 9) With reference to the Falepili Union Treaty, consider the following statements:

1. It is a bilateral agreement between Tuvalu and New Zealand for climate-related migration.
2. The treaty provides a pathway for the entire population of Tuvalu to migrate to Australia immediately.

Which of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The Falepili Union Treaty is a bilateral agreement between Tuvalu and Australia, not New Zealand. This treaty is a landmark agreement that addresses the issue of climate-induced migration.
- **Statement 2 is incorrect.** The treaty does not provide for the immediate migration of Tuvalu's entire population. It establishes a **gradual and planned migration pathway**, allowing up to 280 Tuvaluans to migrate to Australia annually. The selection is based on a ballot system. While the long-term prospect is the migration of a significant portion of the population, it is not an immediate, mass relocation. The aim is to provide "mobility with dignity."
- Beyond the climate mobility component, the Falepili Union Treaty also includes a significant **security and defense dimension**. Under the treaty, Australia has committed to assisting Tuvalu in response to major natural disasters, health pandemics, and military aggression. In return, Tuvalu has agreed to mutually decide

with Australia on any security or defense-related arrangements it may have with other countries. This security guarantee is a crucial aspect of the treaty.

10) Consider the following statements regarding the 18th International Olympiad on Astronomy and Astrophysics (IOAA):

1. It is a competition specifically for university-level students pursuing degrees in astrophysics.
2. The event is being organized solely by an international body with no collaboration from Indian institutions.
3. The Olympiad's scope is limited to theoretical examinations and does not include practical or observational tasks.

How many of the above statements are incorrect?

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

Solution: C

- **Statement 1 is incorrect.** The IOAA is a premier global competition specifically for **high-school students**, not university students. Its aim is to encourage and challenge young talent in the fields of astronomy and astrophysics before they enter higher education.
- **Statement 2 is incorrect.** While it is an international event, the 18th IOAA is being hosted by India, and its organization is a collaborative effort. It is being organized by prominent Indian institutions: the **Homi Bhabha Centre for Science Education (HBCSE)** and the **Tata Institute of Fundamental Research (TIFR)**, in partnership with the Union Ministry of Education.
- **Statement 3 is incorrect.** The IOAA is designed to be a comprehensive test of a student's abilities. It features a **blend of both theory and practice**. The competition includes not only written exams on theoretical knowledge but also tests **data analysis skills and practical observational abilities**, such as night-sky observations.

11) In a recent trade policy measure, India has restricted the import of certain jute products from Bangladesh through land routes. What is the stated primary reason for allowing their entry only through the Nhava Sheva Seaport?

- (a) To reduce logistical costs and transit time.
- (b) To centralize customs duty collection at a single port.
- (c) To promote maritime trade as per a bilateral agreement.
- (d) To ensure quality control and safeguard the domestic industry.

Solution: D

- India has banned imports of certain jute products from Bangladesh through all land routes. The decision to channel these imports exclusively via the **Nhava Sheva Seaport in Maharashtra** is not random.
- The explicitly stated purpose of this measure is to **ensure quality control and safeguard the domestic industry**. Directing all imports to a single major seaport allows for more rigorous and standardized inspection and testing of the products to ensure they meet Indian quality standards.
- This also helps in monitoring the volume of imports to prevent dumping or other practices that could harm the domestic jute industry, which is a significant employer in states like West Bengal.

12) The Sakura Science Programme is implemented by which of the following agencies?

- a) Japan International Cooperation Agency (JICA)
- b) Japan Science and Technology Agency (JST)
- c) Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
- d) Japan Society for the Promotion of Science (JSPS)

Solution: B

- The Sakura Science Programme, officially known as the **Japan-Asia Youth Exchange Program in Science**, is implemented by the **Japan Science and Technology Agency (JST)**. JST is a core institution responsible for implementing Japan's science and technology policy.
- The program was launched in 2014 by Japan to promote interest in science and technology among young people from Asia and other parts of the world. India has been an active participant in this program since 2016.
- The programme provides short-term educational visits to Japan, allowing students to interact with leading scientific institutions, universities, and research centers. This exposure to Japan's advanced scientific landscape and unique culture aims to foster a global outlook and build a network of future innovators.

13) Consider the following statements regarding the United Nations High Commissioner for Refugees (UNHCR):

1. The UNHCR was established by a binding resolution of the UN Security Council.
2. Its mandate is strictly limited to protecting refugees who have crossed international borders and does not extend to internally displaced people.
3. The organization is funded entirely through mandatory contributions from UN member states.

How many of the above statements are incorrect?

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

Solution: C

- **Statement 1 is incorrect.** The UNHCR was created in 1950 by a resolution of the **UN General Assembly**, not the Security Council. It began its operations in 1951 with an initial three-year mandate to address the refugee crisis in post-World War II Europe, which was later made permanent.
- **Statement 2 is incorrect.** While the UNHCR's core mandate is to protect refugees, its work also extends to other groups of displaced persons. The agency is mandated to protect and support **refugees, stateless persons, and internally displaced people (IDPs)** worldwide. Its involvement with IDPs has grown significantly over the decades as internal conflicts have become more prevalent.
- **Statement 3 is incorrect.** The UNHCR is funded almost entirely by **voluntary contributions**, not mandatory payments from UN member states. The vast majority of its budget comes from governments, with significant contributions also coming from private donors, corporations, and foundations. This funding model means the agency's resources can fluctuate based on donor priorities and global economic conditions.

14) Consider the following statements regarding the International Criminal Court (ICC):

1. The ICC can conduct trials in absentia if an accused individual refuses to appear.
2. The ICC's rulings are legally binding on all UN member states.
3. The ICC can prosecute individuals accused of crimes even if their national government refuses to cooperate.

How many of the above statements is/are incorrect?

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

Solution: B

Only Statement 3 is correct.

- **The International Criminal Court (ICC) is governed by the Rome Statute and operates independently of the United Nations.**

- **It does not conduct trials in absentia, meaning an accused individual must be physically present during proceedings.** This ensures that the rights of the accused, including the right to a defense, are upheld.
- The ICC's rulings are legally binding only on the 120+ countries that have ratified the Rome Statute, not on all UN member states, as several major countries, including the United States, China, and India, are not party to the treaty.
- Despite this, the **ICC has mechanisms to prosecute individuals even if their national government does not cooperate.** If a case is referred by the UN Security Council or if the alleged crimes occurred in a country under ICC jurisdiction, the Court can proceed with investigations and issue arrest warrants, relying on international cooperation for enforcement.

15) Consider the following statements regarding World Trade Organization (WTO).

1. World Trade Organization (WTO) is a member-driven, consensus-based intergovernmental organisation.
2. It officially began operations on January 1, 1995, in accordance with the 1994 Marrakesh Agreement.
3. Governments use the organization to establish, revise, and enforce the rules that govern international trade in cooperation with the United Nations System.

How many of the above statements is/are incorrect?

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

Solution: D

World Trade Organization (WTO) is a member-driven, consensus-based intergovernmental organisation that regulates and facilitates international trade between nations. It officially began operations on January 1, 1995, in accordance with the 1994 Marrakesh Agreement.

WTO's Agreement on TRIPS promotes IP rights enforcement.

Governments use the organization to establish, revise, and enforce the rules that govern international trade in cooperation with the United Nations System.

16) Consider the following statements regarding Global Alliance for Improved Nutrition.

1. The Global Alliance for Improved Nutrition (GAIN) is a non-profit foundation based in Geneva, Switzerland.
2. It collaborates with governments, businesses, and civil society to improve nutrition outcomes, particularly for vulnerable populations.
3. GAIN has offices in all countries with high levels of malnutrition.

How many of the above statements is/are correct?

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

Solution: B

Statement 3 is incorrect.

The Global Alliance for Improved Nutrition (GAIN) is a non-profit foundation based in Geneva, Switzerland. GAIN was developed during the UN 2002 Special Session of the General Assembly on Children.

It collaborates with governments, businesses, and civil society to improve nutrition outcomes, particularly for vulnerable populations.

GAIN has headquarters in Geneva, Switzerland, along with offices in countries with high levels of malnutrition: Bangladesh, Ethiopia, India, Indonesia, Kenya, Mozambique, Nigeria, Pakistan, and Tanzania.

17) Consider the following statements regarding the declaration of a famine:

1. A famine is declared by the Integrated Food Security Phase Classification (IPC) when the mortality rate exceeds 2 deaths per 1,000 people per day.
2. The Integrated Food Security Phase Classification (IPC) is an independent body managed exclusively by the Food and Agriculture Organization (FAO).
3. A famine declaration legally obligates member states of the United Nations to provide humanitarian aid.

How many of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The threshold for mortality rate for a famine declaration is **over 2 deaths per 10,000 people per day**. The other two criteria are: at least 20% of households facing extreme food shortages and acute malnutrition in children exceeding 30%.
- **Statement 2 is incorrect.** The Integrated Food Security Phase Classification (IPC) is a multi-partner initiative, not exclusively managed by the FAO. It is a collaborative effort jointly managed by several **UN agencies (like FAO, WFP, UNICEF), international bodies, and non-governmental organizations**. This partnership ensures a consensus-based and analytically rigorous classification of food security situations.
- **Statement 3 is incorrect.** While a famine declaration carries immense moral and political weight and is a powerful tool for mobilizing international attention and aid, it does not create a direct, automatic **legal obligation** on UN member states to provide aid under international law. It significantly strengthens the political and ethical pressure on nations and warring parties to allow humanitarian access and provide assistance, often citing principles of International Humanitarian Law, but it is not a direct legal trigger for compulsory aid.

18) Consider the following statements about the Sakura Science Programme:

1. The primary objective of the programme is to provide long-term scholarships for higher education in Japan.
2. The programme is exclusively for students from Asian countries.
3. The programme aims to promote scientific curiosity and cultural understanding among young learners.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** The Sakura Science Programme focuses on **short-term educational visits**, not long-term scholarships. The goal is to provide a brief but intensive exposure to Japan's scientific and technological advancements.
- **Statement 2 is incorrect.** While the programme initially focused on Asian countries, it has expanded to include nations from other continents. Participating countries now include those from **Africa, such as Egypt, Ghana, Kenya, Nigeria, South Africa, and Zambia**.
- **Statement 3 is correct.** The core objective of the Sakura Science Programme is to **promote scientific curiosity and a global outlook** among young learners. It also aims to encourage **cultural understanding** and strengthen

bilateral ties with Japan by providing participants with exposure to both Japan's scientific achievements and its cultural traditions.

19) Consider the following statements regarding the dispute in the East China Sea:

1. The dispute primarily involves overlapping claims to the Exclusive Economic Zone (EEZ) between China and Japan.
2. Japan adheres to the 'continental shelf' principle to define its maritime boundary.
3. China advocates for the 'median line' principle in the delimitation of the sea.
4. The Senkaku/Diaoyu Islands, administered by China, are claimed by Japan and Taiwan.

How many of the above statements are correct?

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

Solution: A

- Only statement 1 is correct. The core of the geopolitical tension in the East China Sea is the **dispute over the extent of the Exclusive Economic Zones (EEZ)** and the continental shelf, which are believed to hold significant hydrocarbon reserves.
- Statements 2 and 3 are incorrect. **Japan advocates for the median line principle**, which draws a boundary equidistant from the coastlines of the two countries. In contrast, **China argues for the continental shelf principle**, claiming that its EEZ extends to the natural prolongation of its continental shelf, up to the Okinawa Trough.
- Statement 4 is incorrect because the **Senkaku/Diaoyu Islands are administered by Japan**, not China, though they are claimed by both China and Taiwan. This administrative control is a key point of contention.

20) Which of the following functions falls under the primary mandate of the United Nations High Commissioner for Refugees (UNHCR)?

1. Prosecuting individuals responsible for war crimes leading to displacement.
2. Ensuring the principle of non-refoulement is respected by states.
3. Providing long-term development loans to countries hosting large refugee populations.
4. Leading global efforts to eliminate statelessness.

Select the correct answer code:

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

Solution: D

- **Statement 2 (Correct):** A core protection function of the UNHCR is to ensure that states adhere to the principle of **non-refoulement**. This fundamental principle of international refugee law prohibits countries from returning refugees or asylum seekers to a territory where they would be at risk of persecution.
- **Statement 4 (Correct):** The UNHCR has a specific mandate to lead international efforts to **prevent and reduce statelessness** and to protect stateless persons. This involves working with governments to reform nationality laws and assist individuals in acquiring citizenship.
- **Statement 1 (Incorrect):** Prosecuting individuals for war crimes is the mandate of international judicial bodies like the **International Criminal Court (ICC)** or other ad-hoc tribunals, not the UNHCR. The UNHCR is a humanitarian and protection agency.
- **Statement 3 (Incorrect):** Providing long-term development loans is the function of international financial institutions like the **World Bank** or regional development banks. While the UNHCR engages in humanitarian assistance, it does not operate as a development finance institution.

7. Polity

- 1) With reference to President's Rule in India, consider the following statements:
1. A proclamation of President's Rule must be approved by both Houses of Parliament by a special majority.
 2. Once approved, the rule can be extended for a maximum period of one year with parliamentary approval.
 3. The S.R. Bommai case judgement by the Supreme Court has limited the scope of judicial review over the imposition of Article 356.
 4. The State Assembly is either dissolved or kept in suspended animation upon the imposition of President's Rule.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** A proclamation of President's Rule requires approval by both the Lok Sabha and the Rajya Sabha within two months by a **simple majority**, not a special majority. A simple majority means a majority of the members of that House present and voting.
- **Statement 2 is incorrect.** President's Rule can be extended for a maximum period of **three years**, subject to parliamentary approval every six months. However, for any extension beyond one year, two specific conditions must be met: a National Emergency must be in operation in India or the Election Commission must certify that holding elections to the state assembly is difficult.
- **Statement 3 is incorrect.** The landmark **S.R. Bommai vs. Union of India (1994)** case significantly **expanded the scope of judicial review** over the imposition of President's Rule. The Supreme Court ruled that the President's satisfaction is subject to judicial scrutiny and can be struck down if it is found to be mala fide or based on irrelevant or extraneous grounds.
- **Statement 4 is correct.** When President's Rule is imposed, the Council of Ministers in the state is dismissed. The **State Legislative Assembly is either dissolved**, which means fresh elections must be held, or it is kept in **suspended animation**, which allows for the possibility of its revival later.

- 2) Consider the following statements regarding the legal and constitutional framework of President's Rule:
1. Article 365 of the Constitution authorizes the President to impose direct rule if a state's elected government loses its majority in the assembly.
 2. A proclamation of President's Rule ceases to operate after two months if not approved by the Rajya Sabha, even if the Lok Sabha has approved it.
 3. The President can revoke the proclamation of President's Rule at any time without the need for parliamentary approval.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** **Article 356** is the primary article that authorizes the President to assume control of a state's administration when there is a failure of constitutional machinery (which can include the loss of a majority). **Article 365** is a supporting provision; it states that if a state fails to comply with any directions given by the Union government, it shall be lawful for the President to hold that a situation has arisen in which the

government of the state cannot be carried on in accordance with the provisions of the Constitution. It is about non-compliance with central directives, not directly about losing a majority.

- **Statement 2 is incorrect.** For a proclamation of President's Rule to continue, it must be approved by **both Houses of Parliament** within two months. If either House (be it the Lok Sabha or the Rajya Sabha) fails to approve it, the proclamation ceases to operate. The approval of one House is not sufficient.
- **Statement 3 is correct.** A proclamation of President's Rule can be **revoked by the President at any time** through a subsequent proclamation. Such a revocation **does not require the approval of Parliament**. This allows for flexibility, for instance, if a stable government can be formed in the state before the end of the six-month period.

3) With reference to the resignation of the Vice President of India, consider the following statements:

1. The Vice President must address the resignation letter in writing to the Chief Justice of India.
2. The resignation becomes effective once submitted, and no formal acceptance process is needed.
3. V.V. Giri is a historical example of a Vice President who resigned mid-term to contest the Presidential election.

Which of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** As per **Article 67(a)** of the Constitution, the Vice President must address the resignation letter in writing **to the President of India**, not the Chief Justice of India.
- **Statement 2 is correct.** The constitutional provision states the Vice President may "resign his office by writing under his hand addressed to the President." The resignation takes effect **once it is submitted** and does not require a formal acceptance to be valid, unlike in some other constitutional positions.
- **Statement 3 is correct.** **V.V. Giri resigned from the office of Vice President in 1969** to stand as a candidate in the Presidential election that year, which he subsequently won. This is a prominent historical precedent for a mid-term resignation of a Vice President. Bhairon Singh Shekhawat (2007) is another example.

4) Consider the following statements about the Election Commission of India (ECI):

1. The Chief Election Commissioner (CEC) enjoys a tenure of five years or until the age of 65, whichever is earlier.
2. The Election Commission functions as a quasi-judicial body in resolving electoral disputes.
3. The appointment process of Election Commissioners changed after the 2023 Supreme Court ruling.
4. ECI has the power to remove a political party's recognition for violating electoral laws.

Which of the above statements are correct?

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

Solution: B

Statement 1 is incorrect because the Chief Election Commissioner (CEC) does not have a fixed five-year tenure. Instead, the CEC serves for **six years or until the age of 65, whichever is earlier**. This ensures continuity and experience in overseeing electoral processes.

Statement 2 is correct, as the ECI functions as a **quasi-judicial body** while resolving disputes related to elections. It has the authority to adjudicate matters concerning electoral malpractices, disputes over election symbols, and violations of the Model Code of Conduct.

Statement 3 is correct because the **2023 Supreme Court ruling altered the appointment process of Election Commissioners**, ensuring greater transparency and reducing executive control. The ruling emphasized an independent selection process.

Statement 4 is correct as ECI has the power to **deregister or withdraw recognition of political parties** that violate electoral laws or fail to comply with mandatory guidelines.

- 5) Consider the following statements regarding the significance of the State Emblem of India:
1. The emblem was designed by Nandalal Bose, a renowned Indian artist.
 2. It is mandatory for all government buildings, passports, and currency notes to display the emblem.
 3. The Dharma Chakra in the emblem has 24 spokes, representing the 24 hours of the day.

Which of the above statements are correct?

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

Solution: A

The **State Emblem of India**, adopted on **January 26, 1950**, is an adaptation of the **Lion Capital of Ashoka** at Sarnath, symbolizing power, courage, and confidence.

Statement 1 is incorrect because the emblem was designed by **Dinanath Bhargava**, not **Nandalal Bose**. Bhargava, a student of Bose, was responsible for sketching the emblem when India adopted it.

Statement 2 is incorrect because while the emblem is used on **official documents, government seals, and passports**, it is **not mandatory** for all government buildings and currency notes. Its use is regulated under **The State Emblem of India (Prohibition of Improper Use) Act, 2005**.

Statement 3 is correct because the **Dharma Chakra in the emblem has 24 spokes**, representing **righteousness (Dharma), justice, and virtue**. It is also seen on the Indian national flag, symbolizing continuous progress and motion.

- 6) Which one of the following statements is correct regarding Article 85 and Article 174 of the Indian Constitution?
- a) The Governor has the discretionary power to refuse the convening of a legislative session in the state.
 - b) It states that the President can dissolve the House of People only on the advice of the Chief Justice of India.
 - c) It specifies that the gap between two parliamentary sessions must not exceed six months.
 - d) It mandates that the Parliament must meet at least thrice a year.

Solution: C

Article 85 (for Parliament) and Article 174 (for State Legislature) of the Constitution do not mandate a minimum number of sittings, but they do state that the **gap between two sessions cannot exceed six months**. This ensures regular legislative scrutiny of government actions. The President dissolves the House of People (Lok Sabha) on the advice of the Prime Minister, not the Chief Justice of India. Similarly, the Governor acts on the aid and advice of the Council of Ministers when convening legislative sessions, and cannot refuse unless advised by the state cabinet.

- 7) Consider the following statements regarding the constitutional provisions related to the office of the Vice President of India:
1. Article 63 mandates the office of the Vice President.
 2. Article 64 states that the Vice President is the ex-officio Chairman of the Lok Sabha.
 3. Article 65 allows the Vice President to act as President during a casual vacancy.

4. Article 68 prescribes that the Vice President shall continue in office until a successor assumes charge, even after the expiration of the five-year term.

How many of the above statements are correct?

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

Solution: C

- **Statement 1 is correct.** Article 63 of the Constitution of India explicitly states, "There shall be a Vice-President of India."
- **Statement 2 is incorrect.** Article 64 specifies that the Vice President shall be the **ex-officio Chairman of the Council of States (Rajya Sabha)**, not the House of the People (Lok Sabha). The Lok Sabha is presided over by the Speaker.
- **Statement 3 is correct.** Article 65 outlines the functions of the Vice President, including the provision that he or she shall act as President in the event of a casual vacancy in the office of the President by reason of death, resignation, or removal.
- **Statement 4 is correct.** Article 67(c) contains a proviso stating that the Vice President, notwithstanding the expiration of his term, shall **continue to hold office until his successor enters upon his office**. This ensures there is no gap in the office.

8) Consider the following statements.

Statement-I: The imposition of President's Rule in a state can be extended beyond one year only if a National Emergency is in operation.

Statement-II: The 44th Amendment Act of 1978 introduced safeguards to prevent the misuse of Article 356 for political purposes.

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

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

Solution: D

Statement-I is incorrect. The extension of President's Rule beyond one year requires one of two conditions to be met, not just a National Emergency. The two conditions laid down by the 44th Amendment Act are:

1. A proclamation of **National Emergency** is in operation in the whole of India or in the whole or any part of the state.
2. The **Election Commission** certifies that the continuation of the President's rule is necessary on account of difficulties in holding general elections to the legislative assembly of the state concerned.

Statement-II is correct. The **44th Amendment Act, 1978**, was a significant piece of legislation aimed at reversing some of the distortions introduced by the 42nd Amendment. It introduced several safeguards to prevent the misuse of power by the executive, including the provisions related to the extension of President's Rule beyond one year. These provisions were specifically designed to curb the practice of extending central rule in states for political reasons by making it subject to stringent conditions, thereby strengthening the federal structure of the Constitution.

9) Consider the following statements regarding the Public Accounts Committee (PAC)'s relationship with the Comptroller and Auditor General (CAG):

1. The CAG acts as the advisor to the PAC, providing reports on government expenditure.
2. The PAC has the power to summon government officials but not ministers.

3. The PAC can recommend penalties and criminal action against officials violating financial norms.

How many of the above statements are correct?

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

Solution: B

The **Public Accounts Committee (PAC)** plays a crucial role in ensuring accountability in government expenditure, with support from the **Comptroller and Auditor General (CAG)**.

- **Statement 1 is correct:** The **CAG acts as an advisor** to the PAC by submitting audit reports on government spending. However, the **CAG does not influence PAC decisions**; its role is limited to assisting the committee in examining financial irregularities and ensuring transparency.
- **Statement 2 is correct:** The **PAC has the authority to summon government officials** to explain discrepancies found in audit reports. However, it **cannot summon ministers**, as this would interfere with the principle of ministerial responsibility to the legislature, not to committees.
- **Statement 3 is incorrect:** While the PAC can **point out financial irregularities and recommend corrective action**, it **does not have judicial or enforcement powers**. It **cannot impose penalties or initiate criminal proceedings**, but it can suggest reforms or further investigation.

10) Consider the following statements regarding the demand for the inclusion of Ladakh in the Sixth Schedule of the Constitution:

1. The Sixth Schedule is applicable to all Union Territories in India.
2. The primary rationale for this demand is to safeguard the cultural and environmental heritage of the region.
3. The Governor has no role in the administration of areas under the Sixth Schedule.

How many of the above statements are correct?

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

Solution: A

- The demand for Ladakh's inclusion in the Sixth Schedule is a significant issue with constitutional implications.
- **Statement 2 is correct**, as the core reason for this demand is to ensure local representation, control over resources, and the protection of Ladakh's unique cultural and fragile environmental heritage.
- **Statement 1 is incorrect**; the Sixth Schedule currently applies only to certain tribal areas in Assam, Meghalaya, Tripura, and Mizoram, not all Union Territories.
- **Statement 3 is also incorrect**; the Governor has a significant role in the administration of Sixth Schedule areas, including the power to include or exclude areas, alter boundaries, and approve laws made by the Autonomous Councils.

11) Consider the following statements.

Statement-I: The establishment of the Union Public Service Commission in 1950 marked the beginning of merit-based recruitment for civil services in India.

Statement-II: The Macaulay Reforms introduced the system of open competitive examinations for entry into the Indian Civil Service.

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

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

- (c) Statement-I is correct but Statement-II is incorrect
 (d) Statement-I is incorrect but Statement-II is correct

Solution: D

- **Statement-I is incorrect.** The establishment of the Union Public Service Commission in 1950 under the Constitution of India was a continuation and constitutional strengthening of an existing system. The principle of **merit-based recruitment** through competitive examinations had been introduced much earlier. The Public Service Commission itself was first established in 1926. Therefore, 1950 did not mark the *beginning* of this system but rather its culmination into a constitutionally-mandated body for the independent Republic of India.
- **Statement-II is correct.** The **Macaulay Reforms**, prompted by the Northcote-Trevelyan Report and enacted through the Charter Act of 1853, were a landmark in the history of Indian civil services. In **1854**, these reforms formally ended the patronage-based nomination system of the East India Company and introduced an **open competitive examination** for recruitment into the Indian Civil Service (ICS), which was held for the first time in London in 1855. This laid the foundation for a meritocratic bureaucracy.

12) Consider the following statements regarding the Overseas Citizens of India (OCI) Scheme:

1. OCI cardholders possess the same economic and educational rights as Non-Resident Indians (NRIs), including the right to acquire agricultural land.
2. The Ministry of Home Affairs (MHA) is the nodal ministry responsible for the administration of the OCI scheme.
3. As per the recent amendments, an OCI registration can be cancelled if the cardholder is charge-sheeted for an offence punishable with imprisonment of seven years or more, irrespective of the jurisdiction where the charge sheet is filed.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** While OCI cardholders enjoy several economic and educational rights at par with NRIs, they do not have the right to own **agricultural or plantation land**.
- **Statement 2 is correct.** The OCI scheme is administered by the **Ministry of Home Affairs (MHA)**. The MHA handles all matters related to citizenship, visas, and foreign nationals' registration in India, including the OCI card.
- **Statement 3 is correct.** The new rules introduced under the MHA notification specify clear grounds for cancellation. One such ground is being **charge-sheeted for an offence punishable with seven years or more**. The rule explicitly states that this applies whether the offence occurs in India or abroad, making the jurisdiction irrelevant.

13) Consider the following statements regarding the removal process of the Chief Election Commissioner (CEC) of India:

1. The CEC can be removed from office on the grounds of 'proved misbehaviour or incapacity', which are explicitly defined in the Constitution of India.
2. The procedure for the removal of the CEC is identical to the procedure for the removal of a judge of the Supreme Court.
3. An Election Commissioner (EC) can be removed from office by the President without the recommendation of the CEC.

How many of the above statements are incorrect?

- (a) Only one
- (b) Only two
- (c) All three

(d) None

Solution: B

- **Statement 1 is incorrect** because while the grounds for removal are 'proved misbehaviour or incapacity', these terms are **not explicitly defined in the Constitution**. Their interpretation is left to the judicial inquiry committee that investigates the allegations. This ambiguity allows for a case-by-case examination based on the evidence presented.
- **Statement 2 is correct**. The process for the removal of the Chief Election Commissioner (CEC) is same as that for a Supreme Court judge, as stipulated under **Article 324(5)** of the Constitution. This provides a significant safeguard to ensure the independence and autonomy of the Election Commission.
- **Statement 3 is incorrect**. An Election Commissioner or a Regional Commissioner cannot be removed from office except on the **recommendation of the CEC**. This provision is crucial as it fortifies the institutional integrity of the Election Commission, protecting other commissioners from arbitrary removal by the executive and ensuring that the CEC's authority is maintained within the commission's structure.

14) With reference to the nominations to Union Territory (UT) Assemblies, consider the following statements:

Statement I: The legislative power of Union Territory Assemblies is derived from statutes enacted by the Parliament of India.

Statement II: The President of India or the Lieutenant Governor, in certain UTs, can nominate members to the legislative assembly without the aid and advice of the elected Council of Ministers.

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

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct but Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Solution: A

- **Statement I is correct**. Unlike State Legislatures, which draw their powers directly from the Constitution, the Legislative Assemblies of Union Territories are created by and derive their powers from **Acts of Parliament**. For example, the assemblies for Puducherry and Jammu & Kashmir are governed by the Government of Union Territories Act, 1963, and the J&K Reorganisation Act, 2019, respectively.
- **Statement II is also correct** and provides a clear explanation for Statement I. Because UTs are under the direct administration of the Union, the Parliament can create provisions that grant nomination powers directly to the Central Government or its representative, the Lieutenant Governor. This was affirmed in judicial rulings like the **K. Lakshminarayanan case (2018)** for Puducherry.
- The Union's primacy in these matters reflects the constitutional status of UTs, where the LG is not always bound by the aid and advice of the local Council of Ministers, especially in matters of nominations specified by a Parliamentary statute.

15) Consider the following statements regarding nominations in legislative bodies in India:

- The provision for nominating Anglo-Indian members to Parliament and State Legislatures was discontinued in 2020.
- In State Legislative Councils, the Governor nominates members based on the direct recommendation of the President of India.
- The legislative assembly of every Union Territory in India has a provision for nominated members.

How many of the above statements are incorrect?

- Only one
- Only two
- All three
- None

Solution: B

- **Statement 1 is correct.** The practice of nominating members from the Anglo-Indian community to the Lok Sabha and certain State Legislative Assemblies was ended by the **104th Constitutional Amendment Act, 2019**, which came into effect in January 2020.
- **Statement 2 is incorrect.** The Governor nominates about **1/6th of the members** to a State Legislative Council from among persons having special knowledge or practical experience in fields like literature, science, art, cooperative movement, and social service. This is done on the **aid and advice of the State's Council of Ministers**, not on the recommendation of the President.
- **Statement 3 is incorrect.** Not all UTs with a legislative assembly have nominated members. For example, the **Legislative Assembly of Delhi has no provision for nominated MLAs**; it consists only of 70 elected members.

16) Consider the following actions:

1. Introduction of a motion supported by at least 50 MPs in either House of Parliament.
2. Presidential order for removal.
3. Passing of the motion by a two-thirds majority of members present and voting in both Houses.
4. Examination of charges by a judicial inquiry committee.

What is the correct sequence of the above actions for the removal of the Chief Election Commissioner (CEC) of India?

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

Solution: C

The correct sequence for the removal of the Chief Election Commissioner (CEC), which is the same as for a Supreme Court Judge, is as follows:

1. **Initiation (1):** A motion alleging misbehaviour or incapacity is introduced in either the Lok Sabha or the Rajya Sabha. It requires the support of at least 100 members in the Lok Sabha or **50 members in the Rajya Sabha** for admission.
2. **Inquiry (4):** Once the motion is admitted by the Presiding Officer, a **three-member judicial inquiry committee** is constituted to investigate the charges and validate the evidence. This committee comprises a Supreme Court judge, a Chief Justice of a High Court, and a distinguished jurist.
3. **Voting in Parliament (3):** If the inquiry committee finds the CEC guilty, the motion is taken up for consideration and voting in Parliament. It must be passed in each House by a special majority, which is a **majority of the total membership of that House and a majority of not less than two-thirds of the members of that House present and voting.**
4. **Presidential Action (2):** After the motion is passed by both Houses of Parliament with the requisite majority, an address is presented to the President, who then issues an **order for the removal** of the CEC.

17) Consider the following statements regarding the Public Accounts Committee (PAC):

1. The PAC mainly examines cases of financial mismanagement in public sector enterprises (PSUs).
2. The PAC's recommendations are binding on the government.
3. The PAC submits its reports to the President of India.
4. PAC members are elected annually by proportional representation.

How many of the above statements are correct?

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

Solution: B

Statements 1 and 3 are incorrect.

- The **Public Accounts Committee (PAC)** is a crucial parliamentary committee responsible for auditing government expenditures to ensure they align with parliamentary approvals.
- The primary and dedicated committee for examining Public Sector Undertakings (PSUs) is the Committee on Public Undertakings (COPU).
- However, the **PAC's recommendations are not binding**; they serve as advisory suggestions to improve financial accountability and governance. The government may accept or reject these recommendations at its discretion.
- **The PAC submits its reports to the Speaker of the Lok Sabha rather than the President of India.** This aligns with its role as a parliamentary oversight body. The committee consists of members from both houses of Parliament, but ministers cannot be part of it. Members are elected annually through a system of proportional representation, ensuring fair representation of political parties. This process helps maintain neutrality and effectiveness in scrutinizing public expenditures.

18) Consider the following statements regarding the Gram Sabha:

1. Gram Sabha elects the members of the State Legislative Assembly directly.
2. Gram Sabha meetings are chaired by the District Collector.
3. The Governor of the state is responsible for approving Gram Sabha resolutions.

How many of the above statements is/are incorrect?

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

Solution: C

- The Gram Sabha is a crucial institution of local self-governance in India, consisting of all registered voters within a village panchayat area. It functions as a direct democracy where people collectively make decisions regarding local development and governance.
- **Statement 1 is incorrect because the Gram Sabha does not elect members of the State Legislative Assembly.** Instead, it is a grassroots body that discusses and approves local development plans, monitors the work of the Gram Panchayat, and ensures transparency in governance.
- **Statement 2 is incorrect since Gram Sabha meetings are chaired by the Sarpanch, who is the elected head of the Gram Panchayat, not the District Collector.** The District Collector has an administrative role but does not preside over Gram Sabha meetings.
- **Statement 3 is incorrect because Gram Sabha resolutions do not require approval from the Governor.** These resolutions are primarily implemented at the local level by the Gram Panchayat.

19) Consider the following statements regarding the role of Constitutional Morality in India:

1. It strengthens constitutional governance by upholding fundamental rights over customs or traditions.
2. It was explicitly mentioned in the original Constitution as a guiding principle.
3. It has been invoked in cases related to personal liberty, gender justice, and equality.
4. It allows judicial activism in cases where constitutional values are threatened.

Which of the above statements are correct?

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

Solution: B

- Constitutional morality is a judicially recognized principle that ensures governance aligns with constitutional values, even when societal norms or traditions conflict with fundamental rights. It emphasizes justice, liberty, equality, and fraternity over regressive customs.

- **Statement 1 is correct** because constitutional morality strengthens governance by ensuring that practices violating fundamental rights, such as caste discrimination or gender inequality, do not prevail over constitutional principles.
- **Statement 2 is incorrect** since **constitutional morality was not explicitly mentioned in the original Constitution**. Instead, it has been interpreted and developed by courts over time, particularly in landmark judgments concerning social justice and fundamental rights.
- **Statement 3 is correct**, as courts have applied constitutional morality in cases such as *Navtej Singh Johar v. Union of India* (decriminalization of homosexuality), *Shayara Bano v. Union of India* (Triple Talaq case), and *Indian Young Lawyers Association v. State of Kerala* (Sabarimala temple entry case).
- **Statement 4 is correct** because constitutional morality allows judicial activism in cases where constitutional values are under threat. The judiciary has used this principle to challenge practices that undermine equality, liberty, or dignity.

20) The Election Commission of India's primary justification for discontinuing the provision of machine-readable electoral rolls is rooted in concerns regarding:

- (a) the high cost and technical complexity of generating text-based files.
- (b) the inaccuracy of data generated through Optical Character Recognition.
- (c) the lack of a legal framework under the Representation of the People Act.
- (d) the potential for data privacy violations and misuse of voters' personal information.

Solution: D

- **(d) is correct.** The EC's official position, reinforced by an internal order in 2018 and its arguments in the Supreme Court, is centered on **protecting voter data privacy and security**. The concern is that providing a large, searchable database of names and addresses could be misused by various entities, including foreign actors, for profiling, surveillance, commercial exploitation, or targeted political manipulation, thereby compromising the integrity of the electoral process and the privacy of citizens.

21) In the context of electoral rolls in India, consider the following statements:

1. Optical Character Recognition (OCR) technology can be used to convert machine-readable rolls into image-only formats for security.
2. The Supreme Court, in the *Kamal Nath v. EC* case, directed the Election Commission to provide electoral rolls in a text-searchable format to political parties.

Which of the above statements are correct?

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

Solution: D

- **Statement 1 is incorrect.** The function of Optical Character Recognition (OCR) is the reverse. OCR technology is used to **convert non-machine-readable formats (like scanned images or image-PDFs) into machine-readable text**. It does not convert machine-readable text back into an image for security.
- **Statement 2 is incorrect.** The outcome of the *Kamal Nath v. Election Commission (2018)* case was the opposite. The **Supreme Court refused to issue a directive** to compel the Election Commission to share voter lists in a text-searchable format. The court upheld the EC's discretion in this matter, which reinforced the EC's policy of providing only image-PDFs.

22) Which of the following constitutional or statutory provisions grants a higher degree of security of tenure to the Chief Election Commissioner (CEC) as compared to the other Election Commissioners (ECs)?

- (a) The CEC's salary and emoluments are charged upon the Consolidated Fund of India, unlike those of the ECs.
- (b) The CEC can only be removed through a process of impeachment similar to that of a Supreme Court Judge, whereas ECs can be removed on the CEC's recommendation.

- (c) The CEC is appointed by the President in consultation with the Chief Justice of India, while ECs are appointed solely on the advice of the Prime Minister.
- (d) The grounds for the removal of the CEC ('proved misbehaviour or incapacity') are explicitly defined in the Constitution, while no such grounds are specified for the ECs.

Solution: B

The most significant difference in the security of tenure between the Chief Election Commissioner (CEC) and other Election Commissioners (ECs) lies in their respective removal procedures.

Option (b) is correct because it accurately describes this difference. The **CEC enjoys a high degree of protection**, as they can only be removed from office in the same manner and on the same grounds as a judge of the Supreme Court. This involves a rigorous process of impeachment by Parliament. In contrast, **Election Commissioners can be removed by the President based on the recommendation of the CEC**. This distinction clearly places the CEC in a more secure position, making them the institutional head whose recommendation is necessary to remove colleagues.

- 23) Consider the following statements about delimitation powers of the State Election Commissions (SEC)s:
1. SECs are responsible for delimiting constituencies for local elections every five years.
 2. Delimitation powers of the SEC extend to state assembly constituencies.
 3. SECs rely on the voter list prepared by the Election Commission of India for delimitation purposes.

How many of the above statements is/are incorrect?

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

Solution: B

Statement 1 is correct, as SECs are responsible for delimiting constituencies before local elections, such as those for Panchayats and Municipalities, which typically occur every five years. This process ensures equitable representation at the grassroots level.

Statement 2 is incorrect because the delimitation of state assembly constituencies falls under the purview of the Election Commission of India (ECI), not the SECs. The ECI handles this process as per the Delimitation Commission's recommendations, ensuring uniformity across states.

Statement 3 is also incorrect since SECs do not rely on voter lists prepared by the ECI for delimitation purposes. While ECI voter lists may be used for electoral rolls in local elections, delimitation is based on demographic and administrative factors, not just electoral roll data.

- 24) Consider the following statements regarding the powers and functions of Lokpal:
1. Lokpal has the power to order prosecution directly without reference to any other authority.
 2. Lokpal can attach and confiscate assets acquired through corrupt practices.
 3. The Central Bureau of Investigation (CBI) functions under the direct supervision of Lokpal.
 4. Lokpal has the power to recommend disciplinary action against public officials.

Which of the above statements are correct?

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

Solution: C

The **Lokpal** is an anti-corruption ombudsman established to investigate corruption cases against public officials in India. It has various powers and functions to ensure accountability in governance.

- **Statement 1 is correct** because **Lokpal can order prosecution** of public servants based on its investigations. It does not need prior approval from any other authority to proceed with prosecution.
- **Statement 2 is correct** as **Lokpal has the authority to attach and confiscate assets** that have been acquired through corrupt practices, ensuring that illicit wealth is recovered.
- **Statement 3 is incorrect** because **the Central Bureau of Investigation (CBI) does not function directly under Lokpal**. However, Lokpal can direct the CBI to investigate corruption cases and monitor their progress.
- **Statement 4 is correct** since **Lokpal has the power to recommend disciplinary action** against government officials found guilty of corruption.

8. History, Art and Culture

1) Consider the following statements:

Statement-I: The Indian harmonium can produce sound with varying dynamics, such as accents and fades, without the need for an external power source.

Statement-II: The instrument's sound is generated by electrically powered bellows that push air through metal reeds, and the volume is controlled by an electronic amplifier.

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

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

(c) Statement-I is correct but Statement-II is incorrect

(d) Statement-I is incorrect but Statement-II is correct

Solution: C

- **Statement-I is correct.** The Indian harmonium is an acoustic instrument. Its dynamics (volume and tone variation) are controlled **manually by the performer**. By pumping the bellows with varying force—harder for a loud accent, gentler for a soft fade—the player directly manipulates the airflow and thus the sound. Its design is self-contained and **does not require electricity**.
- **Statement-II is incorrect.** This statement completely mischaracterizes the instrument's mechanism. The bellows are **hand-pumped, not electrically powered**. The sound generation is purely mechanical: air pressure vibrates metal reeds. There is **no electronic amplifier** involved; the resonance and timbre are shaped by the wooden body of the instrument itself.

2) Consider the following statements regarding Bal Gangadhar Tilak:

1. He was a proponent of moderate methods of political agitation, focusing on prayer and petition.
2. He launched the Home Rule Movement in collaboration with Annie Besant.
3. He authored the book 'Arctic Home in the Vedas'.

How many of the above statements are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Solution: B

- **Statement 1 is incorrect.** Bal Gangadhar Tilak was a prominent leader of the **Extremist phase** of the Indian National Congress. He strongly opposed the moderate methods of prayer and petition, advocating instead for direct action, mass mobilization, and self-reliance to achieve Swaraj. His approach was a key point of difference that led to the Surat Split in 1907.

- **Statement 2 is correct.** In 1916, Tilak, along with Annie Besant, launched the **Home Rule League Movement**. While they had separate leagues, they collaborated closely to demand self-governance or 'Home Rule' for India within the British Empire, marking his re-entry into active politics after his imprisonment.
- **Statement 3 is correct.** Tilak was a profound scholar in addition to being a political leader. He authored several books, including '**Arctic Home in the Vedas**', where he propounded a theory that the original home of the Aryan people was in the Arctic region. He also wrote 'Gita Rahasya' and 'Orion'.

3) Consider the following statements regarding Bal Gangadhar Tilak.

Statement-I: Bal Gangadhar Tilak was referred to as the "Father of Indian Unrest" by British authorities.

Statement-II: Tilak advocated for constitutional reforms through petitions and appeals to the British Parliament.

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

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Solution: C

- **Statement-I is correct.** The British colonial authorities, particularly Sir Valentine Chirol, labeled Bal Gangadhar Tilak as the "**Father of Indian Unrest.**" This was due to his powerful journalism, mass mobilization techniques (like Ganesh Utsav and Shivaji Jayanti), and his assertive call for Swaraj, which were seen as inciting resistance and challenging British rule.
- **Statement-II is incorrect.** This statement describes the methods of the **Moderate faction** of the Indian National Congress. Tilak, as a leader of the **Extremist faction**, fundamentally disagreed with this approach. He advocated for **direct action, boycott of foreign goods, and passive resistance**, not constitutional reforms through prayers and petitions. His methods aimed at creating pressure on the colonial government, which is why he earned the title mentioned in Statement-I.

4) With reference to the Shiromani Gurdwara Parbandhak Committee (SGPC), consider the following statements:

- The SGPC was founded as a result of the Gurdwara Reform Movement and was subsequently given statutory recognition by the Sikh Gurdwaras Act, 1925.
- Its jurisdiction is limited to the management of historical Gurdwaras located within the states of Punjab, Haryana, and Himachal Pradesh.
- The SGPC functions as the supreme temporal authority in Sikhism, with its decisions being binding on all Sikhs globally.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: A

- **Statement 1 is correct.** The SGPC was founded in 1920 during the Gurdwara Reform Movement, a struggle to free gurdwaras from the control of British-appointed mahants. Its authority was formalized and legally recognized through the **Sikh Gurdwaras Act of 1925**.
- **Statement 2 is incorrect.** The SGPC's functions are not confined to a few states. It is described as an apex body that manages historical gurdwaras "**in India and abroad**", indicating a much wider scope of administration beyond just Punjab and its neighbouring states.
- **Statement 3 is incorrect.** The SGPC is the apex elected body for the management of Gurdwaras and religious affairs. The SGPC acts under the guidance of the Akal Takht Sahib, but is not the supreme authority itself.

- 5) Consider the following statements about the Satavahana dynasty's contribution to the Sanchi Stupa:
1. The Satavahana dynasty is credited with adding the toranas (gateways) around the Great Stupa.
 2. The Satavahana kings constructed new stupas at Sanchi as a sign of their devotion to Buddhism.
 3. The carvings on the Satavahana-built toranas feature scenes of royal conquests and battles.

How many of the above statements is/are correct?

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

Solution: A

Only Statement 1 is correct.

The Satavahana dynasty played a crucial role in enhancing the Sanchi Stupa, one of the most significant Buddhist monuments in India. **Their primary contribution was the construction of the elaborately carved toranas (gateways) around the Great Stupa**, which served as decorative and symbolic entrances.

These gateways, built in the 1st century BCE, are known for their intricate carvings depicting various scenes from the Jataka Tales—stories of the previous lives of the Buddha—rather than military conquests or battles.

The Satavahanas were patrons of Buddhism and supported its expansion, but they did not construct new stupas at Sanchi. Instead, they focused on embellishing existing structures. The toranas reflect a strong artistic tradition and demonstrate the dynasty's commitment to Buddhist ideology.

Their contribution helped transform the Sanchi Stupa into an architectural masterpiece, influencing Buddhist art across India and beyond.

- 6) The Chola dynasty, particularly under Rajendra I, used the Andaman Islands for which purpose?
- a) As a penal colony
 - b) As a trading post
 - c) For naval expeditions against the Srivijaya Empire
 - d) To spread Buddhism

Solution: C

- Rajendra I, one of the greatest rulers of the Chola dynasty, was known for his extensive naval expeditions, particularly against the Srivijaya Empire in Southeast Asia. **The Andaman Islands served as a crucial strategic base for these maritime campaigns.**
- Given their location in the Bay of Bengal, the islands provided a staging point for Chola naval forces to refuel, regroup, and launch attacks against distant territories, including the Srivijaya-controlled regions in present-day Indonesia and Malaysia. This expedition, undertaken around 1025 CE, demonstrated the Cholas' maritime supremacy and their ability to project power far beyond the Indian subcontinent.
- The successful campaign weakened Srivijaya's control over important trade routes and increased Chola influence in the region.
- The historical significance of this connection was later acknowledged when Port Blair was briefly renamed Sri Vijaya Puram, highlighting the legacy of Chola naval dominance.

- 7) Consider the following statements regarding Tamil megalithic culture:

1. Megalithic burial sites in Tamil Nadu contain inscriptions in Sanskrit.
2. The typical burial types include rock-cut chambers and urn burials.
3. The Tamil Megalithic period is contemporaneous with the Harappan Civilization.

Which of the above statements are correct?

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

(d) 1, 2 and 3

Solution: A

The **Tamil Megalithic culture** is significant for its burial practices and early inscriptions, reflecting the socio-cultural aspects of ancient Tamil society.

- **Statement 1 is incorrect** because Tamil Megalithic burial sites do not contain Sanskrit inscriptions. Instead, inscriptions found at these sites are in **Tamil-Brahmi script** and often include symbols that reflect early Tamil language and culture.
- **Statement 2 is correct** as Megalithic burial types in Tamil Nadu include **rock-cut chambers, urn burials, dolmens, and cairn circles**. These burial practices indicate a belief in an afterlife and have been found across the Deccan and South India.
- **Statement 3 is incorrect** because the **Tamil Megalithic period (approximately 1000 BCE - 300 CE)** occurred much **after** the Harappan Civilization (3300 BCE - 1300 BCE). The two cultures were **not contemporaneous**, as the Harappan Civilization declined centuries before the Tamil Megalithic culture emerged.

8) Which of the following are eligible to be considered for the National Anubhav Awards?

1. Retired employees of Central Government ministries.
2. Serving employees of Central Public Sector Undertakings (CPSUs) with more than 10 years of service.
3. Retired employees of Public Sector Banks.
4. Central Government Employees who have retired more than 5 years ago.

Select the correct answer using the code given below:

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

Solution: C

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- The National Anubhav Awards recognize the contributions of government employees by documenting their experiences.
- **Statement 1 is correct** as the awards are for retired Central Government employees.
- **Statement 3 is also correct** because the eligibility for the awards was expanded in 2024 to include employees from Public Sector Banks (PSBs) and Central Public Sector Undertakings (CPSUs).
- **Statement 2 is incorrect** because the awards are for retiring or recently retired employees, not all serving employees.
- **Statement 4 is incorrect** as the eligibility is for employees who are retiring within 8 months or have retired within the last 3 years, not 5 years. This initiative aims to preserve institutional memory and promote good governance.

9) Consider the following statements regarding the National Anubhav Awards:

Statement I: The awards were launched to preserve the institutional memory of retiring Central Government employees.

Statement II: The "Anubhav Awardees' Speak" webinar series is a platform for awardees to share their experiences with their peers.

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

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

Solution: B

- Statement I accurately describes the primary aim of the National Anubhav Awards – to document and preserve the experiences of retiring officials for better governance.
- Statement II correctly identifies a feature of the initiative, the "Anubhav Awardees' Speak" webinar series, which facilitates knowledge sharing.
- However, the webinar series is a *result* or an *activity* under the broader initiative, not the *explanation* for its launch. The reason for launching the awards was the vision to preserve institutional memory, as stated in Statement I.

10) Consider the following statements regarding Mahatma Jyotiba Phule:

1. He founded the Satyashodhak Samaj to promote social justice and oppose Brahmanical dominance.
2. His literary work, 'Gulamgiri', drew a parallel between the caste system in India and racial slavery in America.
3. He opened a school for girls in India and was assisted by his wife, Savitribai Phule, who became the country's first female teacher.

How many of the above statements are incorrect?

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

Solution: D

- Mahatma Jyotiba Phule's founding of the **Satyashodhak Samaj (Society of Truth-Seekers) in 1873** was a pivotal moment in the anti-caste movement, aimed at liberating the Shudras and Ati-Shudras from the exploitation of the Brahmanical system.
- Phule's literary contributions were equally impactful; his book '**Gulamgiri (Slavery), published in 1873, is a powerful critique of the caste system**, drawing a direct and unflinching comparison to the institution of racial slavery in the United States.
- Furthermore, Phule was a pioneer of women's education in India. **In 1848, he, along with his wife Savitribai Phule, established the first school for girls in Pune.** This revolutionary act challenged the patriarchal norms of the time and laid the foundation for the education and empowerment of women in India. Savitribai Phule's role as the first female teacher is a testament to their shared vision and commitment to social equality.

11) Which of the following statements about Sri Aurobindo is correct?

- a) His concept of 'Integral Yoga' emphasizes the spiritual transformation of life on Earth, integrating the material and the spiritual.
- b) His philosophical works primarily focused on the synthesis of Western and Eastern spiritual traditions, with a focus on Advaita Vedanta.
- c) He was a proponent of moderate politics and advocated for constitutional reforms within the British framework.
- d) He founded the Sri Aurobindo Ashram in collaboration with Swami Vivekananda to promote spiritual nationalism.

Solution: A

- Sri Aurobindo's philosophy of '**Integral Yoga**' is his most significant and enduring contribution to spiritual thought. This philosophy is unique in its emphasis on the **spiritual transformation of life on Earth**, rather than an escape from it. It seeks to integrate the material and spiritual aspects of existence, aiming for a divine life in a divine body.

12) Which of the following statements correctly reflects the political ideology of Sri Aurobindo during his involvement in the freedom struggle?

- a) He was a firm believer in the Gokhale school of moderate politics.

- b) He advocated for complete independence from British rule through direct action and was associated with revolutionary societies.
- c) He believed in achieving independence through a gradual process of constitutional reforms and dialogue with the British.
- d) His political activities were primarily focused on social reforms and the upliftment of the depressed classes.

Solution: B

- During his active political life, Sri Aurobindo was a leading figure of the **radical nationalist faction** of the Indian freedom struggle. He was a staunch advocate for **purna swaraj, or complete independence**, from British rule.
- He rejected the moderate politics of petition and prayer, instead calling for **direct action and passive resistance**. His association with revolutionary societies like the **Anushilan Samiti** and his writings in the journal '**Bande Mataram**' clearly indicate his radical stance. His arrest in the **Alipore Bomb Case** further underscores his involvement in revolutionary activities.
- It was only after his spiritual transformation in prison that he withdrew from active politics and dedicated his life to spiritual pursuits.

13) Consider the following statements regarding the Archaeological Survey of India (ASI):

Statement I: The ASI operates as the apex government body for the protection of cultural heritage, exercising regulatory powers over activities near protected sites.

Statement II: It functions under the mandate of the Ancient Monuments and Archaeological Sites and Remains Act, 1958.

Statement III: The present organisational structure of ASI, with its headquarters in New Delhi and regional circles, was established by its founder, Alexander Cunningham.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only Statement II is correct and it explains Statement I
- (d) Neither Statement II nor Statement III is correct

Solution: C

- **Statement I is correct.** It accurately describes the role of the ASI as the primary government agency for heritage protection and its authority to regulate activities, such as construction, near monuments it protects.
- **Statement II is also correct.** The ASI derives its primary legal powers and functions from the **Ancient Monuments and Archaeological Sites and Remains Act, 1958**. This legislation empowers it to declare monuments of national importance and regulate them. This statement directly provides the legal foundation for the functions described in Statement I, thus explaining it.
- **Statement III is incorrect.** While Alexander Cunningham founded the ASI in 1861, its current modern structure with numerous specialised wings, over 36 circles, and a large administrative framework under the Ministry of Culture was **not established by him**. The organisation was significantly restructured and expanded post-Independence to meet the needs of a sovereign nation.

14) With reference to Sardar Vallabhbhai Patel, consider the following statements:

1. He earned the title 'Sardar' from the women of Bardoli during the Kheda Satyagraha.
2. He presided over the Karachi Session of the Indian National Congress in 1931, which endorsed the Gandhi-Irwin Pact.
3. He was the chief architect behind the creation of the Indian Administrative Service (IAS) from the erstwhile Indian Civil Service (ICS).
4. His birthday is celebrated as National Unity Day (Rashtriya Ekta Diwas).

How many of the above statements are correct?

- (a) Only one
- (b) Only two

- (c) Only three
- (d) All four

Solution: C

- **Statement 1 is incorrect.** While he was a key leader in the Kheda Satyagraha (1918), he earned the title 'Sardar' for his exceptional leadership during the **Bardoli Satyagraha (1928)**. Although Mahatma Gandhi also played a role, it was the women of Bardoli who first addressed him as 'Sardar'.
- **Statement 2 is correct.** Sardar Patel was the President of the Indian National Congress during its **Karachi session in 1931**. This session was historically significant as it endorsed the Gandhi-Irwin Pact and passed resolutions on Fundamental Rights and the National Economic Programme.
- **Statement 3 is correct.** As India's first Home Minister, Sardar Patel was instrumental in establishing the All-India Services. He is often called the '**Patron Saint of India's civil services**' for convincing the Constituent Assembly to create the Indian Administrative Service (IAS) and the Indian Police Service (IPS) to provide a strong, unified administrative framework for the newly independent nation.
- **Statement 4 is correct.** In 2014, the Government of India declared his birth anniversary, **October 31**, as **National Unity Day (Rashtriya Ekta Diwas)** to honour his monumental contribution to the integration of India.

15) Consider the following statements regarding Sardar Vallabhbhai Patel:

Statement I: Sardar Vallabhbhai Patel is often called the 'Iron Man of India' for his determined and uncompromising approach to national integration.

Statement II: He successfully persuaded and, where necessary, compelled the rulers of over 500 princely states to accede to the newly independent Indian Union.

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

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

Solution: A

- **Statement-I is correct.** The sobriquet '**Iron Man of India**' is popularly used to describe Sardar Patel. This title reflects his strong will, decisiveness, and unwavering resolve, particularly in matters of national unity and security.
- **Statement-II is also correct.** As India's first Deputy Prime Minister and Home Minister, Sardar Patel was tasked with the monumental challenge of integrating the **562 princely states**. He used a combination of diplomacy ('privy purses'), political persuasion, and decisive action (like the police action in Hyderabad) to achieve their accession to India, a feat critical for the country's territorial integrity.
- Statement-II provides the primary historical justification for the title mentioned in Statement-I.

9. States

- 1) Consider the following statements regarding the 'Framework Agreement' signed in 2015:
1. It was signed between the Government of India and a united front of all Naga National Political Groups (NNPGs).
 2. The agreement definitively settled the issue of a separate Naga flag and constitution.
 3. It acknowledges the unique history of the Nagas and proposes a model of shared sovereignty.
 4. The agreement's implementation has been stalled due to disagreements over the interpretation of 'shared sovereignty' and other core issues.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The Framework Agreement was signed specifically between the Government of India and the **National Socialist Council of Nagalim–Isak-Muivah (NSCN-IM)**, which is the largest and most prominent Naga group. It did not involve a united front of all NNPGs at the time of its signing; rival factions and other groups have had differing stances.
- **Statement 2 is incorrect.** The Framework Agreement is a preamble that lays down the principles for a final accord, but it **did not definitively settle** contentious issues like a separate Naga flag and constitution (Yehzabo). These remain major stumbling blocks in the final negotiations.
- **Statement 3 is correct.** A core tenet of the agreement is the recognition of the **unique history and political identity of the Nagas**. It moves beyond a simple law-and-order perspective to a political solution, proposing a framework of **shared sovereignty** where power would be divided between the Indian union and the Naga entity.
- **Statement 4 is correct.** The final peace accord has been delayed for years precisely because of differing interpretations of the Framework Agreement's terms. The NSCN-IM's insistence on a separate flag and constitution, derived from its understanding of shared sovereignty, has been a key point of contention with the Government of India, leading to a prolonged stalemate.

10. Agriculture

- 1) Consider the following statements:

Statement-I: The Ganga-Brahmaputra delta region is the most significant jute-producing area in India.

Statement-II: Jute cultivation thrives in a warm, humid climate with heavy rainfall and requires alluvial soil, which are the predominant geographical conditions of the Ganga-Brahmaputra delta.

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

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

Solution: A

- **Statement-I is correct.** India is the world's largest producer of jute, and the production is heavily concentrated in the eastern states, with West Bengal, located in the Ganga-Brahmaputra delta, being the dominant producer.

- **Statement-II is also correct.** Jute is a rain-fed crop that requires a warm and wet climate during the monsoon season. The **alluvial soil**, deposited by the rivers Ganga and Brahmaputra, is rich in nutrients and ideal for the crop. The region's high humidity, temperature, and heavy rainfall create a perfect environment.
 - Statement-II directly and accurately explains why the region mentioned in Statement-I is so suitable for jute cultivation.
- 2) Consider the following statements regarding the apricot fruit, recently in the news for its export from Ladakh:
1. It is a temperate fruit belonging to the Rosaceae family, exclusively grown in the Himalayan states of India.
 2. The trees are known for their high drought resistance and are generally short-lived, with a lifespan of around 20-30 years.
 3. High iron content and natural sugars make dried apricots a significant nutritional product.

How many of the above statements are correct?

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

Solution: A

- **Statement 1 is incorrect.** While apricots are temperate fruits of the Rosaceae family and are grown in Himalayan states, their cultivation is not exclusive to India. They are grown globally in temperate regions, including the **Mediterranean, Central Asia, and North America**.
 - **Statement 2 is incorrect.** Apricot trees are drought-resistant, but they are known to be **long-lived**, with some specimens living for up to 100 years.
 - **'Zardalu'** refers to the wild variety of apricots, while **'Khubani'** is the term often used for the cultivated varieties.
 - **Statement 3 is correct.** Dried apricots are particularly noted for their nutritional value. They are a rich source of **natural sugars**, providing quick energy, and have a high concentration of **iron**, making them beneficial for combating anemia. They are also rich in Vitamin A and antioxidants.
- 3) Consider the following statements regarding Agricultural Biotechnology:
1. It enables the development of genetically modified crops with higher yields.
 2. It includes techniques such as CRISPR-based genome editing.
 3. It has led to the development of drought-resistant and pest-resistant crops.
 4. It is exclusively used for increasing the shelf life of fruits and vegetables.

Which of the above statements are correct?

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

Solution: A

- Agricultural biotechnology applies genetic engineering, CRISPR technology, and selective breeding to improve crop yield, pest resistance, and environmental adaptation (statements 1, 2, and 3 are correct).
- However, **it is not exclusively used for increasing shelf life (statement 4 is incorrect)**, though techniques like RNA interference have extended the freshness of some produce.

What is Biotechnology?

- Biotechnology involves **using biological systems, organisms, or derivatives to develop new technologies and products**.
- It enhances **healthcare, agriculture, industrial processes, and environmental sustainability**.

Types of Biotechnology:

- **Medical Biotechnology:** Develops vaccines, gene therapy, and regenerative medicine.

- **Agricultural Biotechnology:** Improves crop yields, pest resistance, and soil health.
- **Industrial Biotechnology:** Creates biofuels, biodegradable plastics, and bio-based chemicals.
- **Environmental Biotechnology:** Focuses on waste management, pollution control, and bioremediation.

11. Defence and Security

1) Regarding the Airbus C-295 aircraft deal, consider the following statements:

Statement I: The induction of the C-295 aircraft is a significant step towards the modernization of the Indian Air Force's tactical airlift capabilities.

Statement II: The entire fleet of C-295 aircraft will be manufactured in Spain and delivered to India, ensuring rapid replacement of the ageing Avro fleet.

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

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Solution: C

- **Statement-I is correct.** The Airbus C-295 is a modern, medium tactical transport aircraft designed to replace the Indian Air Force's (IAF) old HS-748 Avro fleet. Its features, such as the ability to operate from short and unprepared runways, multi-role capability (troop transport, medical evacuation, surveillance), and long endurance, directly enhance the IAF's **tactical airlift capabilities**, which are crucial for operations in forward areas like Ladakh and the North East.
- **Statement-II is incorrect.** The deal for 56 aircraft involves a significant '**Make in India**' component. While the first 16 aircraft are being delivered from Airbus's facility in Spain, the remaining **40 aircraft will be manufactured in India** by Tata Advanced Systems Limited (TASL) in Vadodara. This is a landmark project, being the first time a private Indian company will manufacture a military aircraft in the country, and it involves substantial technology transfer.

2) Consider the following statements:

Statement I: The first-ever India-Philippines joint naval drill in the South China Sea is a direct implementation of the 'Necklace of Diamonds' strategy.

Statement II: The 'Necklace of Diamonds' strategy involves India building a network of alliances and naval bases in the Indo-Pacific to counter China's strategic influence.

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

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Solution: A

- **Statement I** correctly identifies the naval exercise as an application of the '**Necklace of Diamonds**' strategy. This exercise represents a practical step in building stronger maritime partnerships with key countries in the region.
- **Statement II** accurately defines the '**Necklace of Diamonds**' strategy as India's strategic initiative to enhance its maritime presence and partnerships in the Indo-Pacific to counterbalance China's growing influence, often

referred to as the 'String of Pearls' strategy. The joint naval drill with the Philippines perfectly aligns with this strategic objective of fostering security cooperation with like-minded nations in China's maritime periphery.

- 3) Which of the following correctly describes deportation?
- It is a policy to provide work permits to illegal migrants under international human rights law.
 - It is the legal process of granting asylum to refugees.
 - It is the forced removal of a foreign national due to visa violations or threats to public safety.
 - It is the voluntary departure of an immigrant from a country.

Solution: C

Deportation refers to the forced removal of foreign nationals from a country due to reasons such as visa violations, illegal entry, criminal activities, or threats to public security. In the United States, deportation is handled by Immigration and Customs Enforcement (ICE). Deportation does not involve voluntary departure or asylum. While some international agreements influence deportation policies, it is not governed by human rights laws providing work permits to illegal migrants.

- 4) Consider the following statements regarding Operation Falcon:
- It is a joint initiative of the Indian Army and the Border Security Force.
 - The operation focuses on eliminating rhino poaching networks in Assam.

Which of the above statements are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Solution: B

- Operation Falcon is a targeted anti-poaching initiative.
- Statement 2 is correct** as the operation's primary objective is to dismantle rhino poaching gangs and curb the illegal wildlife trade in Assam.
- However, **Statement 1 is incorrect**. Operation Falcon is a joint effort between the Assam Police and the Assam Forest Department, not the Indian Army and BSF.
- The success of this operation highlights the effectiveness of coordinated actions between state law enforcement and forest officials in wildlife conservation.

- 5) With respect to 'Mission Sudarshan Chakra', consider the following statements:
- It is a joint defence initiative between India and Israel, adapting the technology of the 'Iron Dome' for Indian conditions.
 - The mission's primary nodal agency is the Ministry of Home Affairs, which is responsible for the protection of civilian and religious sites.
 - Its scope is limited to providing a shield against aerial threats such as missiles and drones.

How many of the above statements are correct?

- Only one
- Only two
- All three
- None

Solution: D

- Statement 1 is incorrect**. The mission is described as an **entirely indigenous defence initiative**. It is a product of India's push for self-reliance (*Aatmanirbhar Bharat*) and is not a joint venture with any other country.
- Statement 2 is incorrect**. The nodal ministry for this national security mission is the **Ministry of Defence**. While the Ministry of Home Affairs is concerned with internal security, a mission involving multi-domain military capabilities like this falls under the purview of the Defence Ministry.

- **Statement 3 is incorrect.** The mission aims to create a comprehensive, multi-layered shield. Its objective is to neutralize threats from **air, land, sea, and cyber domains**, not just aerial threats. This comprehensive approach is a key feature of the mission.
- 6) Consider the following statements regarding India's Integrated Air Defence Weapon System (IADWS):
1. The system integrates kinetic interceptors like Quick Reaction Surface-to-Air Missile (QRSAM) with non-kinetic weapons such as Directed Energy Weapons (DEW).
 2. Project Sudarshan Chakra, under which IADWS is developed, is a collaborative effort between DRDO and an Israeli defence firm.
 3. The Very Short Range Air Defence System (VSHORADS) component is primarily designed to engage high-altitude, high-speed fighter jets.
 4. The system's Command and Control Centre can track and engage multiple targets simultaneously.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is correct.** IADWS creates a multi-layered shield by combining different types of weapons. It uses **kinetic interceptors** (missiles like QRSAM that physically destroy targets) and **non-kinetic weapons** (like high-power lasers or DEWs that disable targets using energy), providing a comprehensive defence.
- **Statement 2 is incorrect.** The IADWS, developed under Project Sudarshan Chakra, is an **indigenous system** developed by the Defence Research & Development Organisation (DRDO).
- **Statement 3 is incorrect.** The Very Short Range Air Defence System (VSHORADS) is designed for the middle layer of defence, specifically against **low-flying targets** like helicopters, UAVs, and loitering munitions within a range of about 6 km. High-altitude, high-speed jets are engaged by the outer layer, the QRSAM.
- **Statement 4 is correct.** A key feature of this network-centric system is its Centralised Command & Control Centre, which provides a real-time air picture and allows for **simultaneous tracking and engagement of multiple aerial threats**, allocating the most appropriate weapon for each.

7) Consider the following military exercises and participants:

Column A (Exercise)	Column B (Core Hosts)	Column C (Geographic Focus)
1. Super Garuda Shield	A. Indonesia and USA	X. Indo-Pacific Region
2. Malabar	B. India and France	Y. South China Sea
3. Varuna	C. Quad Nations	Z. Arabian Sea

How many of the above combinations are correctly matched?

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

Solution: A

- **Combination 1 (Super Garuda Shield - Indonesia and USA - Indo-Pacific Region):** This is **correctly matched**. The exercise is jointly hosted by the Indonesian National Armed Forces and the U.S. Indo-Pacific Command (1-A). Its explicit aim is to enhance regional security, interoperability, and deterrence amid rising tensions in the Indo-Pacific (A-X).
- **Combination 2 (Malabar - India and France - South China Sea):** This is **incorrectly matched**. Malabar is an exercise involving the **Quad nations (India, USA, Japan, Australia)**, not India and France (so B is wrong). While it has been conducted in various locations including the South China Sea, its host and core participant description is incorrect.

- **Combination 3 (Varuna - Quad Nations - Arabian Sea):** This is **incorrectly matched**. Varuna is a bilateral naval exercise between **India and France**, not the Quad nations (so C is wrong). It is frequently held in the Arabian Sea (Z is plausible), but the core participants are wrongly listed.

12. Reports and Indices

- 1) Consider the following statements regarding the Global Artificial Intelligence (AI) City Index 2025:
1. The index is published by the World Economic Forum.
 2. Bengaluru is the only Indian city to be ranked in the top 30.
 3. The index evaluates cities on their capacity, investment, and innovation in AI.

Which of the above statements are correct?

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

Solution: C

- **Statement 1 is incorrect** as the **Global Artificial Intelligence (AI) City Index 2025** is published by the market research firm **Counterpoint Research**, not the World Economic Forum.
- **Statement 2 is correct**; Bengaluru secured the 26th rank, making it the only Indian city in the top 30 and highlighting its position as a leading hub for AI research and development and data centers in the country.
- **Statement 3 is also correct** as the index's objective is to identify and rank leading global urban centers by evaluating their capabilities across various parameters, including R&D ecosystems, investment inflows, public-private partnerships, and the application of AI in different sectors.

- 2) Consider the following statements about the FAO Food Price Index (FFPI):
1. It is a monthly measure of changes in the domestic retail prices of a basket of food commodities.
 2. The index tracks five commodity groups: cereals, vegetable oils, dairy, meat, and sugar.
 3. The weights used in the composite index are based on average export shares from the period 2014–2016.

How many of the above statements are correct?

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

Solution: B

- **Statement 1 is incorrect.** The FFPI measures changes in **international export prices**, not domestic retail or wholesale prices. It serves as a global benchmark for food price trends.
- **Statement 2 is correct.** The index is composed of the average of five commodity group price indices: **cereals, vegetable oils, dairy, meat, and sugar**.
- **Statement 3 is correct.** The methodology was revised, and the index now uses **average export shares from 2014–2016** as weights. This ensures the index accurately reflects the structure of the global food trade.

13. Maps / Places

- 1) Consider the following strategic maritime chokepoints in the Indian Ocean Region (IOR):
1. Mozambique Channel
 2. Lombok Strait
 3. Sunda Strait
 4. Strait of Hormuz

How many of the above are considered critical chokepoints in the IOR?

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

Solution: D

- Strategic maritime chokepoints in the Indian Ocean Region (IOR) are crucial for global trade and energy supply, as they facilitate the movement of goods and resources between major economies.
- The **Strait of Hormuz** is the world's most critical oil transit chokepoint, through which nearly 30% of global crude oil passes, making it vital for energy security.
- The **Lombok Strait**, located between the Indonesian islands of Bali and Lombok, serves as an important deep-water alternative route to the congested Strait of Malacca, particularly for large ships.
- Similarly, the **Sunda Strait**, lying between Java and Sumatra, is another crucial passage that provides an alternate maritime link between the Pacific and Indian Oceans.
- The **Mozambique Channel**, situated between Madagascar and mainland Africa, is a vital trade route for African nations, facilitating global shipping between the Indian Ocean and South Atlantic.

- 2) Match the following straits with the seas they connect:

	Strait		Seas Connected
A.	Dardanelles Strait	1.	Red Sea and Mediterranean Sea
B.	Bab-el-Mandeb Strait	2.	Aegean Sea and Sea of Marmara
C.	Strait of Hormuz	3.	Persian Gulf and Gulf of Oman

Select the correct answer using the code given below:

- a) A-3, B-1, C-2
- b) A-1, B-2, C-3
- c) A-2, B-3, C-1
- d) A-2, B-1, C-3

Solution: D

- **Dardanelles Strait (A)** connects the **Aegean Sea and the Sea of Marmara (2)**. It is a crucial waterway in northwestern Turkey.
- **Bab-el-Mandeb Strait (B)** connects the **Red Sea and the Mediterranean Sea (1)** via the Suez Canal. It is a vital shipping lane for global trade.
- **Strait of Hormuz (C)** connects the **Persian Gulf and the Gulf of Oman (3)** and is the world's most important oil chokepoint.

- 3) Consider the following statements regarding the Dardanelles Strait:

1. It connects the Aegean Sea to the Black Sea.
2. It separates the Gallipoli Peninsula from Asia Minor.
3. The strait lies entirely within the territorial waters of Greece.
4. It has been historically significant, featuring in events like the Gallipoli Campaign of WWI.

Which of the statements given above are correct?

- a) 1 and 3 only

- b) 2, 3 and 4 only
- c) 1, 2 and 4 only
- d) 2 and 4 only

Solution: D

- **Statement 2 is correct**, as the strait separates the European Gallipoli Peninsula from Asia Minor.
- **Statement 4 is also correct**; the strait has immense historical importance, notably as the site of the Gallipoli Campaign during World War I.
- **Statement 1 is incorrect**. The Dardanelles connects the Aegean Sea to the Sea of Marmara, which in turn is connected to the Black Sea by the Bosphorus Strait.
- **Statement 3 is incorrect**. The Dardanelles Strait lies entirely within the territorial waters of Turkey, not Greece.



- 4) Mount Elbrus, the highest peak in Europe, is located in which mountain range?
- a) The Alps
 - b) The Pyrenees
 - c) The Caucasus Mountains
 - d) The Ural Mountains

Solution: C

Mount Elbrus is a dormant stratovolcano situated in the **Caucasus Mountains** in Southwestern Russia, near the border with Georgia. It is the highest peak in both Russia and Europe, with an elevation of 5,642 meters (18,510 feet).

The Caucasus Mountains form a major mountain range that stretches between the Black Sea and the Caspian Sea, and Mount Elbrus is one of its most prominent features. As the highest peak in Europe, it is part of the **Seven Summits Challenge**, a prestigious mountaineering feat.

- 5) Match List-I with List-II:

List-I (Peak)	List-II (Continent)
A. Mount Everest	1. Africa
B. Aconcagua	2. Antarctica
C. Denali	3. North America
D. Mount Kilimanjaro	4. Asia
E. Vinson Massif	5. South America

Select the correct answer code:

- A B C D E
- a) 4 5 3 1 2
 - b) 4 3 5 1 2
 - c) 5 4 3 2 1
 - d) 4 5 3 2 1

Solution: A

- A. **Mount Everest** is the highest peak in **Asia** and the world. So, A matches with 4.
 B. **Aconcagua** is the highest peak in **South America**. So, B matches with 5.
 C. **Denali** (formerly Mount McKinley) is the highest peak in **North America**. So, C matches with 3.
 D. **Mount Kilimanjaro** is the highest peak in **Africa**. So, D matches with 1.
 E. **Vinson Massif** is the highest peak in **Antarctica**. So, E matches with 2.

14. Miscellaneous

1) Consider the following statements:

Statement I: India's fossil heritage is vulnerable partly because trade in such items is not regulated under any domestic law.

Statement II: Fossils are not covered under the definition of "antiquity" in the Antiquities and Art Treasures Act, 1972.

Statement III: The lack of a national repository system leads to the degradation or illegal export of significant fossil discoveries.

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

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
 (b) Both Statement II and Statement III are correct but only one of them explains Statement I
 (c) Only one of the Statements II and III is correct and that explains Statement I
 (d) Neither Statement II nor Statement III is correct

Solution: A

- **Statement I** is the main assertion. It states that the vulnerability is due to a lack of legal regulation.
- **Statement II** provides a specific legal reason for this vulnerability. The **Antiquities and Art Treasures Act, 1972**, which is India's primary law to prevent smuggling of cultural heritage, defines "antiquity" as items that have been in existence for not less than one hundred years. This definition does not explicitly include natural heritage objects like fossils, creating a significant legal loophole. Thus, **Statement II is correct** and directly explains a major part of the legal vacuum mentioned in Statement I.
- **Statement III** provides an administrative or infrastructural reason for the vulnerability. The absence of a national system of secure repositories or museums dedicated to fossils means that specimens, once discovered, are often improperly stored, left unprotected at excavation sites, or fall into the hands of private collectors and smugglers. This infrastructural gap also directly contributes to the vulnerability mentioned in Statement I.

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