

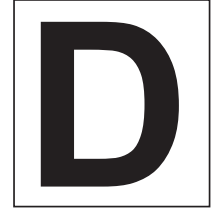
Date : 14/04/2024

Test Code  
01140424



**NEXT IAS**

Test Booklet Series



परीक्षण पुस्तिका अनुक्रम

**अनुभव-2024**

**ALL INDIA OPEN MOCK TEST-4**  
**GENERAL STUDIES (Paper-I)**

**Answer Key**

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

## General Studies

## (Paper-I)

1. (c)

- **Article 3 of Constitution of India authorizes the Parliament to:**

- (a) form a new state by separation of territory from any state or by uniting two or more states or parts of states or by uniting any territory to a part of any state;
- (b) increase the area of any state;
- (c) diminish the area of any state;
- (d) alter the boundaries of any state; and
- (e) alter the name of any state.

- **Statement 1 is correct:** Supreme court of India recently upheld the carving out of Union Territory of Ladakh out of the State of J&K in view of Article 3(a) of the Constitution of India ( read with Explanation I) which permits forming a Union Territory by separation of a territory from any State. However, due to the assurance given by the Union government that J&K's statehood would be restored soon, the court did not go into the issue of whether the conversion of J&K into a Union Territory was valid or not.
- **Statement 2 is correct:** This involved the creation of a new state (Jharkhand) and the alteration of areas and boundaries of an existing state (Bihar). Both come under the purview of Article 3.
- **Statement 3 is correct:** Parliament has the power to change the name of any state under Article 3.

2. (a)

- **Statement 1 is correct:** Article 80 of the Constitution lays down the maximum strength of Rajya Sabha as 250, out of which 12 members are nominated by the

President and 238 are representatives of the States and of the three Union Territories.

- **Statement 2 is not correct:** Article 84 of the Constitution sets the minimum age for membership of Parliament. It requires candidates to be **at least 30 years** old for the Rajya Sabha (upper house) and 25 years old for the Lok Sabha (lower house).
- **Statement 3 is not correct:** When a state undergoes bifurcation, a specific reorganization act defines how Rajya Sabha seats are to be divided between the newly formed states. It is not contained under the fourth schedule of the Constitution.

3. (a)

- **Statement 1 is not correct:** The process of obtaining Indian citizenship through naturalization has been expedited for the eligible applicants under CAA 2019. Unlike other foreigners, they are eligible to get citizenship after a total residency period of six (1+5) years. For other foreigners, this period is twelve (1+11) years like earlier.
- **Statement 2 is not correct:** A Hindu, Sikh, Buddhist, Jain, Parsi or Christian from Pakistan, Bangladesh and Afghanistan, who entered India before December 31, 2014, can now seek Indian citizenship without producing a valid passport of these countries or a valid visa from India, according to the Citizenship (Amendment) Act, 2019. Instead, birth or educational institution certificate; "identity document of any kind"; "any licence or certificate"; "land or tenancy records", or "any other document" issued by these countries, which proves the applicant was their citizen, would suffice as proof of citizenship.

- **Statement 3 is correct:** Citizenship under the CAA will be granted retrospectively in accordance with the law. Individuals granted citizenship via registrar neutralization under Section 6B of the Citizenship Act 1955 will be considered citizens of India from the date of their entry into the country
4. (a)
- **Option (a) is correct:** Under Article 244(2) of the Constitution, the Sixth Schedule makes special arrangements for the administration of Tribal Areas in the States of Assam, Meghalaya, Mizoram and Tripura. One of the most important provisions of the Sixth Schedule is that the included tribal areas are to be administered as Autonomous Districts and Autonomous Regions. Under the provision of the Sixth Schedule, the Governor of the State is empowered to determine the area or areas as administrative units of the Autonomous Districts and Autonomous Regions. The Governor has the power to create a new Autonomous District/Region or alter the territorial jurisdiction or the name of any Autonomous District or Autonomous Regions.
  - **Option (b) is not correct :** Tribal Advisory council is constituted under the fifth schedule of the Constitution of India.
  - **Option (c) is not correct:** PESA, 1996 is applicable to fifth schedule areas, and not to Sixth schedule areas.
  - **Option (d) is not correct:** Inclusion under Sixth schedule does not have any direct bearing on funding pattern under centrally sponsored schemes.
5. (d)
- **Statement I is not correct, but statement II is correct:** : Article 312 (1) provides for creation of All India services. It says if Rajya sabha (council of States) declares by resolution supported by not less than two-thirds of the members present and voting that it is necessary or expedient in the national interest to create an All India service then , **Parliament may by law provide for the creation of one or more all-India services (including an all-India judicial service)** common to the Union and the States, Article 312(4) also says **the law providing for the creation of the all-India judicial service shall not be deemed to be an amendment of this Constitution for the purposes of article 368.**
6. (c)
- **Statement 1 is correct:** Mediation Act, 2023, lays down the legislative framework for mediation to be adopted by disputing parties, especially institutional mediation. It provides for voluntary pre-litigation mediation in matters of civil or commercial dispute before parties approach a court or Tribunal. While the initial version of the Bill had proposed to make pre-litigation mediation mandatory, the Parliamentary Standing Committee's recommendation to make it voluntary was later on accepted.
  - **Statement 2 is correct:** Mediated Settlement Agreement resulting from mediation is final, binding and enforceable in accordance with the provisions of Code of Civil Procedure, 1908, in the same manner as if it were a judgment or decree of a Court.
7. (c)
- **1 is not correct:** The Constitution of India provides for parity of representation between the states as a whole and the Union in the election of the President. So, it does not indicate federalism with a strong center.
  - **2 is correct:** Amendments to most parts of the Constitution require a special majority in both houses of Parliament. Only In some cases, ratification by a majority of state legislatures is necessary. Therefore, it does indicate federalism with a strong center.

- **3 is correct:** The Constitution of India provides for a Bicameral Parliament — Directly elected lower house (Lok Sabha, representing the people) and an indirectly elected upper house (Rajya Sabha, representing the states). While this does offer States a voice, the Lok Sabha holds more power than the House representing States (Rajya Sabha) in matters like passing a money bill, and joint sitting. So, a bicameral Parliament setup as adopted by the Constitution of India does indicate federalism with a strong center.
  - **4 is correct:** The All-India services are common to the entire territory of India and officers chosen for these services serve in the administration of the States. But the States can neither take disciplinary action nor can they remove these officers from service. So, this also indicates federalism with a strong center.
8. (b)
- **Statement 1 is correct:** Governor cannot return a money bill for the reconsideration of the state legislature, but Governor can reserve the money bill for the consideration of the President.
  - **Statement 2 is not correct:** There is no bar on a former Governor contesting elections immediately after demitting the office.
  - **Statement 3 is correct:** The Governor can not give assent to a bill passed by the state legislature that endangers the position of the state high court, and he must reserve it for the consideration of the president.
  - **Statement 4 is not correct:** Former Governors do not enjoy any immunity from civil proceedings or criminal proceedings. Even for the sitting Governors, civil proceedings can be started against them during their term of office in respect of their personal acts after giving two months' advance notice.
9. (c)
- **Statement 1 is correct:** According to Article 239 of the Constitution of India; every Union territory shall be administered by the President acting, through an administrator to be appointed by him with such designation as he may specify.
  - **Statement 2 is correct:** The Chief Minister of UT with a Legislative assembly (Delhi and Puducherry) is appointed by the President.
  - **Statement 3 is correct:** Parliament can make laws on any subject matter (including state list) for the union territories. However, note that the legislative assembly of Puducherry can also make laws on matters of the State List and the Concurrent List. Similarly, the legislative assembly of Delhi can make laws on any matter of the State List (except public order, police and land) and the Concurrent List.
10. (c)
- **Pair 1 is correctly matched:** Default Bail, also known as compulsive bail, is provided under Section 167(2) of the Criminal Procedure Code. Default bail is a bail granted to an accused under arrest upon failure of the investigating agency to file a chargesheet within the stipulated timelines.
  - **Pair 2 is correctly matched:** According to Model Prisons Act 2023, Furlough means short leave granted to a convict, after undergoing a prescribed period of sentence, as an incentive for maintaining good conduct in prison.
  - **Pair 3 is correctly matched:** According to Model Prisons Act 2023, Parole means temporary release of a convict for a short period of time for attending to familial and social obligations.

11. (c)

- **Statement 1 is correct:** Bharatiya Nyaya Sanhita (BNS) 2023, which replaces Indian Penal Code 1860, has added community service as a form of punishment. It extends this punishment to offences such as: (i) theft of property worth less than Rs. 5,000, (ii) attempt to commit suicide with the intent to restrain a public servant, and (iii) appearing in a public place intoxicated and causing annoyance. The BNS2 does not define what community service will entail and how it will be administered.
- **Statement 2 is correct:**
  - BNS adds terrorism as an offence which was earlier absent in IPC. It is defined as an act that intends to threaten the unity, integrity, security or economic security of the country, or strike terror in the people.
  - Organised crime has also been added as an offence. It includes crimes such as kidnapping, extortion and cyber-crime committed on behalf of a crime syndicate. Petty organised crime is also an offence now.
- **Statement 3 is correct:** BNSS, which replaces the CrPC, prescribes a time-limit for the initiation of criminal proceedings, arrest, investigation, filing of chargesheet, and proceedings before the magistrate, which is aimed at speedy delivery of justice and a high conviction rate. It has a provision that the promulgation of judgment should not exceed 45 days after the conclusion of trial in any criminal court.
- **Statement 4 is not correct:** BNS retains most of the the provisions of the IPC on rape and sexual harassment. It does not consider recommendations of the Justice Verma Committee (2013) such as making the offence of rape gender neutral and including marital rape as an offence.

12. (d)

- **Statement I is not correct:** According to the provisions of Section 20A of the Representation of People Act, 1950, an NRI settled in foreign land can become an elector in the electoral roll in India. Once enrolled, the Indian national living abroad will be able to cast vote in the election in the particular constituency for which one would have to be physically present on the day of election at the polling station along with the original passport
- **Statement II is correct:** Option of proxy voting is currently available to only service voters in India. Service voters belonging to either of the following two categories, have an option to vote through a proxy at their home constituency:
  - Armed forces of the Union
  - Assam Rifles, Central Reserve Police Force, Border Security Force, Seema Sashastra Bal, Indo-Tibetan Border Police, Central Industrial Security Force, General Engineering Reserve Force and Border Roads Organisation under Border Roads Development Board

13. (a)

- **Statement 1 is correct:** 73rd Constitutional Amendment Act (CAA) provides the foundation for Panchayati Raj Institutions (PRIs) in India. It mandates a minimum of one-third reservation for women in Panchayat seats. However, it also allows state legislatures to make laws for further reservations, including going beyond the mandated one-third.
- **Statement 2 is not correct:** This landmark judgment was about sexual harassment in the workplace and led to the establishment of the Vishakha Guidelines. It is not directly related to reservations in Panchayats.

- **Statement 3 is not correct:** While state governments have some discretion in implementing provisions of the 73rd CAA, they cannot violate the Constitutional provisions. Hence, State governments' discretionary powers **can not be the sole basis** for ensuring women's representation in Panchayats.

14. (a)

- **Statement 1 is correct:** National Human Rights Commission (NHRC) of India was established on 12 October, 1993. The statute under which it is established is the Protection of Human Rights Act (PHRA), 1993 as amended by the Protection of Human Rights (Amendment) Act, 2006. The Commission's decisions are only recommendatory. The Governments are not bound to implement them. It is open for them to challenge NHRC recommendations in High Courts.
- **Statement 2 is not correct:** National Commission for Women (NCW) was set up as a statutory body in January 1992 under the National Commission for Women Act, 1990. NCW has the mandate to investigate cases of domestic violence regardless of the perpetrator's profession. Domestic violence is a violation of women's rights, and the NCW can take up such cases irrespective of whether the accused is a government official or a private individual.

15. (c)

- **Manipur:** Manipur became part of the Union of India in 1949. Following merger into the Indian Union, Manipur became a centrally administered area, and remained so till October 31, 1956.
- **Dadra and Nagar Haveli:** On 11 August 1961, it became a part of India and was announced to be a Union Territory.
- **Goa, Daman & Diu:** After Liberation on 19th December, 1961 from Portuguese Rule, Goa, Daman and Diu were constituted into the Union Territory of Goa, Daman and Diu.

- **Sikkim:** Sikkim became part of the Union of India and its 22nd state in 1975.

16. (a)

- Current Account Deficit (CAD) occurs when a country's total imports of goods, services, and transfers exceed its total exports. This requires the country to borrow money or attract foreign investment to cover the difference.
- **Statement 1 is not correct:** Shrinking CAD (i.e. Lowering CAD) typically leads to lesser need for foreign currency to pay for imports, which can lead to an increase in foreign exchange reserves.
- **Statement 2 is correct:** As a current account deficit decreases, it implies that a country is either exporting more, importing less, or both. This leads to a decrease in the demand for foreign currencies and an increase in the supply of foreign currencies. With lower demand for foreign currency relative to its supply, the domestic currency's value increases (appreciates).
- **Statement 3 is not correct:** A shrinking current account deficit generally indicates that a country is becoming less dependent on foreign financing, including short-term capital inflows, to fund its external balance.
- Hence, only one statement is correct.

17. (d)

- Household Consumption Expenditure Survey (HCES) is a survey generally conducted every five years to collect information about the consumption of goods and services by the households. The latest survey was conducted during August 2022 to July 2023. The previous officially released survey was conducted in 2011-12.
- **Statement 1 is not correct:** According to the survey, the monthly per capita consumption expenditure (MPCE) was

₹3,773 for rural areas and ₹6,459 for urban areas in 2022-23. Compared to the last survey in 2011-12, rural MPCE has increased at a CAGR of 9.2 per cent from ₹1,430 while the urban MPCE has increased at an annual rate of 8.5 per cent from ₹2,630. This suggests rural consumption spending has risen more than urban consumption spending during the 11 year period.

- **Statement 2 is not correct:** Among the States, the MPCE is the highest in Sikkim for both rural (₹7,731) and urban areas (₹12,105). It is the lowest in Chhattisgarh, where it was ₹2,466 for rural households and ₹4,483 for urban household members.
- Hence, option (d) is the correct answer.

18. (c)

- Internationalisation of INR is a process that involves increasing the use of the rupee in cross-border transactions. It involves promoting the rupee for import and export trade and then other current account transactions, followed by its use in capital account transactions.
- **Statement 1 is correct:** If the rupee is widely accepted for international transactions, Indian importers and exporters can transact directly in INR instead of converting it to dollars or other currencies. This reduces the demand for foreign currencies and thus the need to maintain large forex reserves as a buffer.
- **Statement 2 is correct:** The ability to open accounts outside the country of the currency is a foundational element of the internationalisation of a currency. Allowing overseas bank accounts in INR makes it easier for foreign traders and investors to transact in INR, thereby promoting its use outside India.
- **Statement 3 is not correct:** Infact, internationalisation of any country's currency allows the country's exporters and importers to limit exchange rate risk.

As the internationalisation of a country's currency broadens and deepens its financial market, domestic firms may be able to settle their exports/imports in their currency, thus shifting exchange rate risk to their foreign counterparts.

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

19. (b)

- **Statement 1 is correct:** DAP, or di-ammonium phosphate, is the second most commonly used fertiliser in India after urea. It is high in phosphorus (P) that stimulates root establishment and development — without which plants cannot grow to their normal size, or will take too long to mature. It is thus applied just before, or at the time of sowing.
- **Statement 2 is correct:** IFFCO's Nano DAP has an advantage in terms of surface area to volume as its particle size is less than 100 Nanometre (nm). This unique property enables it to enter easily inside the seed surface or through stomata and other plant openings. Nano clusters of Nitrogen and Phosphorus in Nano DAP are functionalized with bio-polymers and other excipients. Better spread ability and assimilation of Nano DAP inside the plant system leads to higher seed vigour, more chlorophyll, photosynthetic efficiency, better quality and increase in crop yields.
- **Statement 3 is not correct:** Nano-DAP is more pocket-friendly than its conventional counterpart. A 500 ml bottle of Nano DAP, equivalent to a 50-kg bag of conventional DAP, is priced at only Rs 600 (compared to Rs 1,350 for the bag). Moreover, Nano DAP is also significantly more convenient, as they are easier to transport, store, and use than bags of conventional DAP.

20. (b)

- The introduction of a Global Minimum Tax (GMT) is a significant development in international corporate taxation, aimed

at curbing tax avoidance by multinational corporations (MNCs) by setting a minimum corporate tax rate globally.

- **Option (b) is the correct answer:** Since the tax advantage of investing in low-tax jurisdictions would diminish after introduction of GMT, companies might prioritize investing based on the intrinsic economic strengths or market potential of a region rather than its tax environment.

21. (c)

- **Statement is correct:** Minimum price that sugar mills have to pay to farmers for sugarcane is known as Fair and Remunerative Price (FRP) of sugarcane. FRP is decided by the Central government based on recommendations of the Commission for Agricultural Costs and Prices (CACP) and in consultation with State governments and the sugar industry.
- **Statement 2 is correct:** Minimum Selling Price for sugar was introduced by the Centre under the Sugar Price (Control) Order, 2018. Minimum selling price is the minimum price at which sugar mills can sell sugar to the market. It was introduced by the Centre to ensure that the industry gets at least the minimum cost of production of sugar, allowing them to clear sugarcane dues of farmers.

22. (c)

- **Option (c) is the correct answer:** Unlike the previous quinquennial surveys by the NSSO, which gathered data every five years, the PLFS collects data on a continuous basis throughout the year. This allows for quarterly urban employment estimates and annual estimates for both rural and urban areas, providing more timely labor market insights.

23. (d)

- **Option (d) is the correct answer:** A gig economy is a labor market that relies heavily on temporary and part-

time positions filled by independent contractors and freelancers rather than full-time permanent employees. Gig jobs typically do not provide the same level of job security or traditional benefits (such as health insurance, paid leave, and pensions) that permanent employment offers. The temporary and flexible nature of gig work means that job security is inherently lower

24. (c)

- **Context:** JPMorgan has announced that it will include Indian government bonds in its Government Bond Index-Emerging Markets (GBI-EM) from June 2024. The inclusion would result in index tracking managers allocating money to India, which is expected to be in tens of billions of dollars.
- **Statement 1 is correct:** Indian Government bond yield is expected to go down. When India's government bonds are included in a major global index like JP Morgan's GBI-EM, it typically leads to increased demand for these bonds from international investors. As demand for bonds increases, their prices rise, and their yields decrease. This reduction in yield can also lower the government's borrowing costs.
- **Statement 2 is correct:** Anticipated larger debt inflows are likely to strengthen the Rupee. The inclusion in the index usually results in larger inflows of foreign capital into the bond market as global funds allocate more money towards these bonds. This influx of foreign currency can lead to an appreciation of Indian Rupee.

25. (a)

- The correct answer is (b) Only two.
- **Statement 1 is not correct:** Scheduled banks typically have a higher capital adequacy ratio requirement compared to non-scheduled cooperative banks. This ensures greater financial stability.



- **Statement 2 is correct:** Scheduled cooperative banks gain the privilege of directly borrowing funds from the Reserve Bank of India (RBI) through the repo window. This allows them to manage liquidity more effectively.
- **Statement 3 is not correct:** Scheduled banks don't necessarily enjoy relaxed provisioning norms for bad loans. RBI regulations on bad loan provisioning apply to both scheduled and non-scheduled banks.

26. (d)

- **Statement 1 is not correct:** The global benchmark for logistics costs is 8%, while India's logistics costs was estimated to be 14-18% of GDP. But in a recent study by the National Council of Applied Economic Research (NCAER), commissioned by the Department for Promotion of Industry and Internal Trade (DPIIT), it was revealed that India's logistics costs for the financial year 2021-22 fall within the range of 7.8% to 8.9% of GDP. This is significantly lower than previous estimates from private surveys, which placed the cost at over 10% of GDP.
- **Statement 2 is correct:** The vision of the National Logistics Policy is "To develop a technologically enabled, integrated, cost efficient, resilient, sustainable and trusted logistics ecosystem in the country for accelerated and inclusive growth." **Targets for achieving the vision of the National Logistics Policy are to:**
  - (i) Reduce cost of logistics in India to be comparable to global benchmarks by 2030;
  - (ii) **Improve the Logistics Performance Index ranking - endeavor is to be among top 25 countries by 2030; and**
  - (iii) Create data driven decision support mechanism for an efficient logistics ecosystem.

27. (b)

- **Statement 1 is correct:** The size of a country's quota directly correlates to its voting power in the IMF. Countries with larger quotas have more votes, giving them greater influence on the organization's decisions. This ensures countries with a significant stake in the global economy have a stronger voice.
- **Statement 2 is correct:** Quotas influence the amount a country can borrow from the IMF. Quotas determine the maximum amount of loans a member can obtain from the IMF under normal access.
- **Statement 3 is not correct:** IMF quota does not have any direct correlation with the exchange rate stability.

28. (d)

- **Statement 1 is not Correct:** The Asian premium is actually an extra **charge** levied on crude oil sold to Asian buyers, not a discount. OPEC countries may set different prices for oil depending on the destination region, and Asia typically pays a premium due to factors like high demand and limited alternative suppliers.
- **Statement 2 is not Correct:** A reduction in the Asian premium can lead to lower oil prices for India. As such, it does not have a direct correlation with Monetary Policy of the economy or interest rates. However, due to lower oil prices, there can be reduction in inflation, which can lead to lowering of the interest rates by central bank.

29. (d)

- **PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi)** is a special Micro-credit Facility launched by **Ministry of Housing and Urban Affairs**, for providing affordable loans to street vendors.

- **Features of the scheme:-**
  - Facilitates collateral free working capital loans upto ₹ 10,000 for one year tenure
  - Interest subsidy on timely or early repayment @ 7%
  - Monthly cashback incentives on digital transactions upto ₹ 100 on undertaking prescribed number of digital transactions
  - On timely repayment of the first loan, higher loan eligibility of ₹ 20,000 and ₹ 50,000 in the second and third tranches respectively.

30. (c)

- Jal Jeevan Mission aims to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.
- **Option (c) statement is not correct:** As Jal Jeevan Mission (JJM) focuses on decentralized approaches, it aims to provide tap water connections at the household level, primarily through reviving existing water sources or utilizing local groundwater sources. Large-scale centralized plants are expensive and impractical for supplying far-flung rural areas.
- **Components under JJM:** The following components are supported under JJM:
  - ◆ **Development of in-village piped water supply infrastructure to provide tap water connection to every rural household**
  - ◆ **Development of reliable drinking water sources and/ or augmentation of existing sources to provide long-term sustainability of water supply system**
  - ◆ Wherever necessary, bulk water transfer, treatment plants and distribution network to cater to every rural household

- ◆ Technological interventions for removal of contaminants where water quality is an issue
- ◆ **Retrofitting of completed and ongoing schemes to provide FHTCs at minimum service level of 55 lpcd;**
- ◆ Greywater management
- ◆ **Support activities, i.e. IEC, HRD, training, development of utilities, water quality laboratories, water quality testing & surveillance, R&D, knowledge centre, capacity building of communities, etc.**
- ◆ Any other unforeseen challenges/ issues emerging due to natural disasters/ calamities which affect the goal of FHTC to every household by 2024, as per guidelines of Ministry of Finance on Flexi Funds

31. (d)

- Under the Liberalised Remittance Scheme, all resident individuals, including minors, are allowed to freely remit up to USD 2,50,000 per financial year for any permissible current or capital account transaction or a combination of both.
- **The remittance facility under the Scheme is not available for the following:**
  - Remittance for any purpose specifically prohibited under Schedule-I (like purchase of lottery tickets/sweep stakes, proscribed magazines, etc.) or any item restricted under Schedule II of Foreign Exchange Management (Current Account Transactions) Rules, 2000.
  - Remittance from India for margins or margin calls to overseas exchanges / overseas counterparty.

- Remittances for purchase of FCCBs issued by Indian companies in the overseas secondary market.
- **Remittance for trading in foreign exchange abroad.**
- Capital account remittances, directly or indirectly, to countries identified by the Financial Action Task Force (FATF) as “non-cooperative countries and territories”, from time to time.
- Remittances directly or indirectly to those individuals and entities identified as posing significant risk of committing acts of terrorism as advised separately by the Reserve Bank to the banks.
- Gifting by a resident to another resident, in foreign currency, for the credit of the latter’s foreign currency account held abroad under LRS.

32. (c)

- The above graph represents high precipitation during winters and low precipitation during summers. This perfectly fits the description of the Mediterranean climate, which is characterized by hot, dry summers and cool, wet winters.

33. (d)

- Arctic amplification describes the phenomenon where the Arctic warms at a rate faster than the global average, largely due to feedback loops that exacerbate warming effects. A positive feedback loop occurs in nature when the product of a reaction leads to an increase in that reaction.
- **Option (d) is the correct answer:** Snow and ice are highly reflective (high albedo). When they melt, darker surfaces (land or ocean) are exposed, absorbing more solar radiation and leading to further warming. This accelerates the original warming effect.

34. (b)

- **Statement-I is correct:** The eastern coast of India, including states like West Bengal, Odisha, and Andhra Pradesh, has higher rice production compared to the western coast.
- **Statement II is correct:** As compared to the western coastal plain, the eastern coastal plain is broader and is an example of an emergent coast. This broader expanse provides more land for cultivation.
- **Statement II is not the correct explanation for statement I:** More land is not the sufficient condition for the higher production of any crop. The major reason for higher production in the eastern coastal plain is the presence of well developed deltas here, formed by the rivers flowing eastward into the Bay of Bengal. These include the deltas of the Mahanadi, the Godavari, the Krishna and the Kaveri. These deltas are rich in alluvial soil, which is highly fertile due to the regular deposit of silt and nutrients brought by the rivers.

35. (c)

- **Option (d):** This is one of the primary reasons for sustained low oxygen levels in the deeper waters. Black Sea has a strong halocline: a distinct boundary between the denser, saltier bottom layer and the fresher surface layer. This poor mixing prevents oxygen from being replenished in the depths, exacerbating existing oxygen depletion.
- **Option (a):** Nutrients such as nitrogen and phosphorus from agricultural runoff fuel algal blooms. When these algae die and decompose, they consume oxygen, leading to lower oxygen levels in deeper waters.
- **Option (b):** Warmer water holds less dissolved oxygen than colder water. As the Black Sea warms due to climate change, the low oxygen level of deep layers further declines.

- **Option (c):** Bosphorus Strait facilitates water exchange between the Black Sea and the Mediterranean Sea. Bosphorus Strait is a crucial passage connecting the Black Sea to the Sea of Marmara, which then leads to the Aegean and Mediterranean Seas. In 2010, scientists discovered a current of saline water flowing from the Mediterranean Sea/Aegean Sea, through the Bosphorus Strait, and along the seabed of the Black Sea. This dense saline inflow from the Mediterranean happens at the bottom of the basin. While the Bosphorus Strait does play a role in the overall hydrography of the Black Sea, its primary impact is on salinity levels. **Therefore, option (c) is the correct answer.**

36. (a)

- **Option (a) is the correct answer:** Arabian Sea experiences higher levels of wind shear compared to the Bay of Bengal, which often disrupts the development and intensification of cyclones in this region.
- **Relation between Tropical cyclone and wind shear:**
  - **Wind shear:** It refers to the change in wind speed and direction with altitude.
  - **How a tropical cyclone gets its energy:** The immense energy required for the development of a tropical cyclone are mainly derived from the release of latent heat energy during condensation of water vapour. Those heat energy generally concentrate in the core region of a tropical cyclone, causing the temperature at the storm centre to be higher than the outer region, and this structure is known as “warm-core”. If the warm-core structure is damaged, the development of the tropical cyclone will be impacted.

- **Impact of vertical shear on intensity of tropical cyclones:** When the wind shear is weak, the storms that are part of the cyclone grow vertically, and the latent heat from condensation is released into the air directly above the storm, aiding in development. When there is stronger wind shear, the storms become more slanted and the latent heat release is dispersed over a much larger area. If a tropical cyclone is being affected by rather strong vertical wind shear for a sustained period of time, the storm structure will be damaged.

- **Option (b) is not correct:** Coriolis effect acts similarly in both the Arabian Sea and the Bay of Bengal. Both seas are in the northern hemisphere where the Coriolis effect causes cyclonic systems to rotate counterclockwise.

- **Option (c) is not correct:** While this can be a factor, it’s not the primary reason for weaker cyclones compared to the Bay of Bengal. Dry air can reduce moisture supply, but it doesn’t directly disrupt the storm’s organized structure as wind shear does.

- **Option (d) is not correct:** Arabian Sea does not generally have significantly shallower bathymetry compared to the Bay of Bengal. The Arabian Sea does have regions of shallower water, but does not directly impact the intensity of cyclones.

37. (b)

- **Statement 1 is correct:** Historically, the Levant includes the region along the eastern Mediterranean shores stretching from Turkey to Egypt, covering all the countries mentioned.

- **Statement 2 is correct:** Sykes-Picot Agreement was an agreement between Britain and France during World War I, that partitioned the territories of the Ottoman Empire and heavily influenced the modern borders of many countries in the Levant region.

- **Statement 3 is not correct:** The countries within the Levant region do not share a unified economic policy. While there are some agreements for trade and movement, they do not constitute a unified economic policy similar to entities like the European Union.
38. (a)
- **Statement I is correct:** The west-flowing rivers of the Indian Peninsula, such as the Narmada and Tapi, typically form estuaries.
  - **Statement II is correct:** Rivers like the Narmada and Tapi flow through rift valleys, leading to a relatively steep gradient as they approach the sea.
  - **Statement II is the correct explanation for Statement I:** The steep gradient contributes to the faster flow of the rivers, preventing extensive sediment deposition that is necessary for delta formation. Instead, they are more prone to carve out estuaries where they meet the sea.
39. (c)
- **Option (c) is the correct answer:** Grapes are the most appropriate alternative crop for the described conditions. Grapes thrive in climates with long, hot summers and mild winters. The described conditions align well with their requirements. Moreover, Grapes prefer well-drained soils, and the described soil characteristics indicate good drainage and moisture retention capabilities.
  - **Option (a):** Saffron requires cool winters and specific soil conditions that does not match the described environment.
  - **Option (b):** The long, hot summers and abundant sunshine throughout the year might prove detrimental to coffee cultivation, which prefers partial shade.
  - **Option (d):** Apples typically require a cooler climate and are sensitive to extreme heat, particularly during the flowering and fruit setting stages.
40. (b)
- Barberton Greenstone Belt, located in South Africa, is one of the world's oldest geological structures. Gold is the primary resource actively mined in the Barberton Greenstone Belt. This region is historically significant for its gold deposits, which were among the first to be mined in South Africa
41. (c)
- **Statement 1 is correct:** PSCs form at altitudes of approximately 15 to 25 kilometers within the stratosphere during the colder winter months, when temperatures are sufficiently low (below about  $-78^{\circ}\text{C}$ ) to allow for their formation.
  - **Statement 2 is correct:** PSCs provide surfaces for chemical reactions that convert inactive forms of chlorine into active forms, leading to ozone depletion. The reactions occur within the clouds during winter, and the most severe depletion usually happens when sunlight returns in the polar spring.
  - **Statement 3 is correct:** PSCs, especially those known as nacreous or mother-of-pearl clouds, can reflect sunlight in spectacular ways at twilight, leading to iridescent and vibrant colors that make them visible from the ground.
42. (c)
- **Statement 1 is correct:** Oxbow lakes form when a river meander becomes very curved. As meanders grow into deep loops, the same may get cut-off due to erosion at the inflection points and are left as ox-bow lakes.
  - **Statement 2 is correct:** Alluvial fans are formed at the base of mountain ranges where a stream's velocity decreases rapidly as it exits a narrow valley and spreads out over a broader, flatter area. The sudden reduction in gradient causes the river to deposit larger sediments it was carrying, creating a fan-shaped deposit.

- **Statement 3 is correct:** Levees are naturally formed by the deposition of sediments along the sides of a river during floods. As the river overflows its banks, the heaviest sediments are deposited closest to the river edge, gradually building up natural embankments which can help contain subsequent floodwaters.
43. (b)
- **Statement 1 is not correct:** A state-of-the-art Earth System Model (ESM) known as the IITM-ESM has been recently developed indigenously at Centre for Climate Change Research (CCCR), Indian Institute of Tropical Meteorology (IITM) under the Ministry of Earth Sciences.
  - **Statements 2 and 3 are correct:** This is the first Earth System Model from India and the climate change assessment carried out using IITM-ESM, was used in the latest Sixth Assessment Report prepared by the Intergovernmental Panel on Climate Change (IPCC).
44. (b)
- Among the given organizations, the International Hydrographic Organization (IHO) would be the most directly involved in updating world maps. IHO is the intergovernmental body responsible for setting standards and coordinating the efforts of national hydrographic offices. These offices produce nautical charts and maps used for safe navigation at sea.
45. (b)
- Ten Degree Channel — Andaman and Nicobar Islands
  - Nine Degree Channel — Main Lakshadweep archipelago and Minicoy Island
  - Six Degree Channel — Indira Point, India and Indonesia
  - Eight Degree Channel — Minicoy islands and Maldives
46. (d)
- **Statement 1 is correct:** One of the major advantages of mRNA vaccines is their adaptability to new strains of a virus. The genetic code in mRNA vaccines can be easily modified to target new strains of a virus. This allows for faster adaptation to mutation, making them crucial in responding to evolving pandemic threats.
  - **Statement 2 is correct:** Large-scale development of whole virus vaccines or sub-unit vaccines requires cell culture (growing of cells under controlled conditions) and takes time. Whereas, mRNA vaccines are produced synthetically, and does not rely on traditional cell cultures. This speeds up production considerably.
  - **Statement 3 is correct:** mRNA vaccines work by instructing cells to produce a protein that is part of the virus, triggering an immune response. They do not use a live virus, unlike some traditional vaccines, reducing the risk of vaccine-induced disease.
47. (b)
- **Option (b) is the correct answer:** Many fitness bands and wearable devices use optical sensors, known as photoplethysmography (PPG) sensors, to measure blood volume changes in the microvascular bed of tissue. This method involves shining a light into the skin and measuring the amount of light either absorbed or reflected by the blood. Changes in blood volume can be analyzed to estimate blood pressure
48. (c)
- **Context:** CERN has announced plans to build the Future Circular Collider, a particle accelerator that will dwarf the Large Hadron Collider.

- **Particle colliders / Particle accelerators:** They are designed to speed up charged particles, such as protons or electrons close to the speed of light. They are then smashed either onto a target or against other particles circulating in the opposite direction. By studying these collisions, physicists are able to probe the world of the infinitely small. **Therefore, option (c) is the correct answer.**

- When the particles are sufficiently energetic, a phenomenon that defies the imagination happens: the energy of the collision is transformed into matter in the form of new particles, the most massive of which existed in the early Universe. This phenomenon is described by Einstein's famous equation  $E=mc^2$ , according to which matter is a concentrated form of energy, and the two are interchangeable.

49. (c)

- **Context:** Recently, few states had deferred a proposal, approved by the Centre's Genetic Engineering Appraisal Committee (GEAC), to test a new kind of transgenic cotton seed that contains a gene, Cry2Ai.
- "Cry2Ai" is a gene derived from *Bacillus thuringiensis* and incorporated into certain genetically modified cotton varieties to make them resistant to pests like the pink bollworm. The cotton seed with Cry2Ai has been developed by the Hyderabad-based Bioseed Research India.

50. (a)

- **Context:** Operated by the National Centre for Radio Astrophysics (NCRA), India's Giant Metrewave Radio Telescope (GMRT) located in Pune recently became first Indian facility to detect gravitational waves.
- **Option (a) is the correct answer:** The presence of gravitational waves was detected using pulsar observations.

- **How pulsar observations helped in detecting gravitational waves:**

- Nicknamed as cosmic clocks, pulsars are rapidly spinning neutron stars that send out radio signals at regular intervals which are seen as bright flashes from the Earth. As these signals are accurately timed, there is a great interest in studying these pulsars.
- In order to detect gravitational wave signals, scientists explore several ultra-stable pulsar clocks randomly distributed across our Milky Way galaxy and create an 'imaginary' galactic-scale gravitational wave detector.
- When gravitational waves pass through the space between Earth and a pulsar, they subtly distort spacetime. This causes slight variations (nanosecond level changes) in the arrival time of the radio pulses from the pulsar. By observing these time aberrations across a network of pulsars, scientists can detect the presence of gravitational waves.

51. (c)

- **Statement I is correct:** Antibiotics are designed to target bacteria, not viruses. They work by attacking bacterial structures or functions that are absent in viruses, such as cell walls. Viruses, which rely on host cells to replicate, do not respond to antibiotics, which is why medications specific to viruses, like antivirals, are needed to treat viral infections.
- **Statement II is not correct:** Viruses do not have cell walls; instead, they have a protein coat called a capsid, and sometimes an additional lipid envelope.

52. (b)

- **Statement 1 is correct:** An eSIM (embedded SIM) is a type of SIM card that is directly embedded into the device's hardware and cannot be physically removed like a traditional SIM.
- **Statement 2 is correct:** One of the key features of an eSIM is its ability to be reprogrammed to switch network operators without the need for a physical SIM card swap.
- **Statement 3 is not correct:** While eSIMs enhance global connectivity by making it easier to switch between network providers, they do not inherently allow devices to connect to multiple networks simultaneously. They still require selecting one network at a time, though switching is more flexible and simpler.

53. (b)

- Aspartame is widely used as an artificial sweetener. It is a low-calorie sweetener used in various food and beverage products.

54. (c)

- **Statement 1 is correct:** Non-Governmental Entities shall be allowed to undertake end-to-end activities in space sector through establishment and operation of space objects, ground-based assets and related services, such as communication, remote sensing, navigation, etc. This would be subject to such guidelines/regulations as prescribed by IN-SPACE.
- **Statement 2 is correct:** As per the policy, ISRO will transition out from the existing practice of being present in the manufacturing of operational space systems. Hereafter, mature systems shall be transferred to industries for commercial exploitation. ISRO shall focus on R&D in advanced technology, proving newer systems and realization of space objects for meeting national prerogatives.

- **Statement 3 is correct:** Indian National Space Promotion and Authorisation Centre (IN-SPACE) functions as an autonomous agency in the Department of Space (DOS). IN-SPACE will act as the single window agency for the authorisation of space activities (including space launches) by government entities as well as NGEs, subject to relevant Government directives, keeping in mind safety, national security, international obligations and/or foreign policy considerations.

55. (c)

- **Statement I is correct:** Fast breeder reactors are designed to produce more fissile material than they consume. They achieve this by converting fertile materials (like thorium-232 or uranium-238) into fissile materials (like plutonium-239 or uranium-233) through a process called "breeding".
- **Statement II is not correct:** Initially, Uranium-238 "blanket" surrounding the fuel core will undergo nuclear transmutation to produce more fuel (Plutonium-239). The use of Thorium-232 as a blanket is also envisaged in this stage. By transmutation, Thorium will create fissile Uranium-233 which will be used as fuel in the third stage.

56. (c)

- Union Cabinet, approved the National Quantum Mission (NQM) in 2023 at a total cost of Rs.6003.65 crore from 2023-24 to 2030-31, aiming to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology.
- **Objectives of mission include:**
  - Developing intermediate-scale quantum computers with 50-1000 physical qubits in 8 years in various platforms like superconducting and photonic technology. (**Hence, statement 1 is correct**)



- Satellite-based secure quantum communications between ground stations over a range of 2000 kilometers within India, long-distance secure quantum communications with other countries (**Hence, statement 2 is correct**)
- Support the design and synthesis of quantum materials such as superconductors, novel semiconductor structures, and topological materials for the fabrication of quantum devices. (**Hence, statement 3 is correct**)
- Developing magnetometers with high sensitivity in atomic systems and Atomic Clocks for precision timing, communications, and navigation.

57. (b)

- Visceral leishmaniasis (VL), also known as kala-azar is caused by a protozoa parasite from over 20 Leishmania species. Leishmania parasites are transmitted through the bites of infected female phlebotomine sandflies, which feed on blood to produce eggs.

58. (b)

- **Statement 1 is not correct:** Rooftop solar panels typically use photovoltaic (PV) technology, to convert sunlight directly into electricity. Solar thermal technology captures heat from the sun, which can then be used for heating purposes or, in large-scale applications, to generate electricity.
- **Statement 2 is correct:** Solar panels generate direct current (DC) electricity, whereas most home appliances in India run on alternating current (AC). An inverter is required to convert the DC electricity from solar panels into AC electricity, making it usable for typical household appliances.
- **Statement 3 is correct:** Gujarat currently leads among the states in installed rooftop solar capacity.

59. (c)

- **Statement 1 is correct:** The Great stupa (Stupa no. 1) at Sanchi had gone through various stages of development. It was built with bricks during the time of Ashoka. This brick stupa was just half of the present time. After Mauryan, the stupa was developed during the time of Sunga period and the vedika around the anda and medhi, harmika was added to the early Mauryan stupa. In the 100 BCE, the Stupa was further enhanced by the great Satavahana rulers by adding four toranas on four cardinal direction
- **Statement 2 is not correct:** While the Toranas do have intricate carvings depicting scenes from Buddha's life, the Buddha himself has been depicted symbolically (as per Hinayana tradition) and not in image form.
- **Statement 3 is correct:** Great Stupa at Sanchi has both a lower and an upper pradakshina patha (circumambulatory path). The upper circumambulatory path is a unique feature of this site.
- **Statement 4 is correct:** This site includes a motif of a woman surrounded by lotuses and elephants which seem to be sprinkling water on her as if performing an abhisheka or consecration. While some historians identify the figure as Maya, the mother of the Buddha, others identify her with a popular goddess, Gajalakshmi – literally, the goddess of good fortune – who is associated with elephants.
- Hence, only three statements are correct.

60. (c)

- The passage provides a description of Humayun's tomb.
- **About Humayun's tomb:**
  - Commissioned by Humayun's first wife Empress Bega Begum (also known as Haji Begum), in 1569-70.

- It is a well-developed specimen of the double-domed elevation. This building tradition culminated in the Taj Mahal, constructed a century later.
- Represents the synthesis of Persian architecture and Indian traditions.
- The tomb itself is in the centre of a large garden, laid out in char bagh (four-fold) style, with pools joined by channels.
- Called as ‘dormitory of the Mughals’ (and necropolis of the Mughal dynasty ) as over 150 Mughal family members are buried in the cells here.
- Last Mughal emperor Bahadur Shah II was captured by Lieutenant Hudson here.
- First structure to use red sandstone at such a scale.
- A UNESCO world heritage site.

61. (d)

- **Agrahara:** An agrahara was land granted to a Brahmana, who was usually exempted from paying land revenue and other dues to the king, and was often given the right to collect these dues from the local people.
- **Agrahaarika:** They were the officials who looked after such land given as part of charity.

62. (d)

- Bankim Chandra Chatterjee’s Anandmath novel first featured Indian National song “Vande Mataram”. His epic Anandamath was set in the background of the Sanyasi Rebellion (late 18th century), when Bengal was facing a famine too. The disastrous famine of 1770 and the harsh economic order of the British compelled a group of sanyasis in Eastern India to revolt against the British.

63. (c)

- **Statement 1 and 3 are correct:** The shore temple at Mahabalipuram was built probably in the reign of Narasimhavarman II, also known as Rajasimha who reigned from 700 to 728 CE. It is specially known because of its location on the sea-shore. It houses three shrines, two to Shiva, one facing east and the other west, and a middle one to Vishnu who is shown as Anantashayana. This is unusual, because temples generally have a single main shrine and not three areas of worship.
- **Statement 2 is not correct:** Shore temple though very similar stylistically to the Dharmaraja ratha of Mahabalipuram, differs from it in an important respect that it is a structural temple and not a rock-cut one.
- **Additional information:**
  - Shore temple recently became India’s first-ever green energy archaeological site.

64. (c)

- **Statement 1 is correct, but statement 2 is not correct:** Powerful left wing groups developed in India in 1920s and 1930s contributing to the radicalisation of the Indian National movement. Socialist ideas began to spread rapidly because many young persons who had participated actively in the Non Cooperation Movement were unhappy with its outcome and were dissatisfied with Gandhian ideas and policies as well as alternative Swarajist programmes.

65. (c)

- **Context:** Famous Bharatanatyam dancer Padma Subrahmanyam was awarded Padma Vibhushan in 2024.
- Bharatnatyam Dance is considered to be over 2000 years old. Several texts beginning with Bharata Muni’s Natya Shastra (200 B.C.E. to 200 C.E.)

- **Statement 1 is correct:** Bharatnatyam dance is known to be ekaharya, where one dancer takes on many roles in a single performance.
- **Statement 2 is correct:** Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance.

66. (b)

- **Pair 1 is correct:** Ayodhya stone inscription of king Dhana refers to Pushyamitra as a performer of two ashvamedha sacrifices.
- **Pair 2 is not correct:** While Uttaramerur has multiple inscriptions spanning centuries, the most famous one is from the reign of Parantaka I (907-953 AD). These provide a detailed description about the village's self-governance and have been cited by historians and political leaders alike as evidence of India's history of democratic functioning.
- **Pair 3 is correct:** Rummindei pillar inscription by Ashoka refers to the villagers of Lumbini being exempted from bali (this may have been a tax on the area of land) and the bhaga being reduced to 1/8th (from 1/6th).
- Hence, only two pairs are correctly matched.

67. (b)

- **Statement I is correct:** India gained independence on August 15th, 1947, but remained a dominion until it became a full republic on January 26, 1950 when Constitution of India came into effect
- **Statement II is correct:** Government of India functioned under the provisions of Government of India Act, 1935 from 15th August 1947 to 26th January 1950. The Constitution of India replaced the Government of India Act 1935 as the country's fundamental governing document and the Dominion of India became the Republic of India.

- **Statement-II is not the correct explanation for Statement-I:** The two statements highlight important aspects of India's transition from independence to a republic, but they don't directly explain each other. India's status between 15th August 1947 and 26th January 1950 was of dominion because it was technically under the British crown till the Constitution of India came into effect. Whereas, the use of the Government of India Act, 1935 was only a practical solution for immediate governance. Moreover, please note that it was Indian Independence Act 1947 that had provided for the independent dominions of India and Pakistan.

68. (c)

- **Bhukti:** Gupta empire was divided into provinces known as deshas or bhuktis, administered by governors who were usually designated as uparikas. Bhukti was the largest unit among the given options.
- **Vishaya:** The provinces of the Gupta empire were divided into districts known as vishayas, under officers known as vishayapatis.
- **Vithi:** Administrative units below district level included clusters of settlements known variously as vithi, patta, bhumi, pathaka, and petha.
- **Gram:** This was the smallest unit and referred to a village.

69. (d)

- Solar geoengineering refers to a set of emerging technologies that seeks to reflect a small fraction of sunlight back into space or increase the amount of solar radiation that escapes back into space to cool the planet.
- **Stratospheric Aerosol Injection (SAI):** It is a type of solar geoengineering that involves injecting aerosols into the stratosphere to reflect sunlight and thus

cool the Earth. This method aims to mimic the natural cooling effect that occurs following large volcanic eruptions. When volcanoes erupt, they release massive amounts of sulfur dioxide (SO<sub>2</sub>) into the stratosphere, which -converts into sulfuric acid aerosols. These aerosols reflect incoming solar radiation away from the Earth, leading to a temporary cooling effect on the Earth's surface.

70. (a)

- **Statement 1 is correct:** Methane has a shorter atmospheric life than Carbon dioxide, but a higher Global warming potential. Methane lasts about 12 years in the atmosphere, whereas carbon dioxide can persist for centuries. Despite its shorter lifespan, methane is much more effective at trapping radiation compared to carbon dioxide. On a 100-year timescale, methane has around 28 times greater global warming potential than carbon dioxide, making it a significant target for climate mitigation efforts.
- **Statement 2 is correct:** Methane emissions lead to ground-level ozone pollution. Methane is a precursor to ground-level ozone, which is created when methane reacts with oxides of nitrogen and sunlight. Ground-level ozone is harmful to human health and vegetation, contributing to respiratory issues and crop damage.
- **Statement 3 is not correct:** Global Methane Pledge is proposed by the European Union and the United States of America to target 30% reduction in global methane emissions from 2020 levels by 2030. The Pledge is outside the ambit of the UNFCCC and its Paris Agreement. India has refused to the sign the pledge because of the following reasons:
  - The two predominant sources of methane emissions in India are enteric fermentation and paddy cultivation.

The Global methane pledge can threaten the livelihood of small, marginal, and medium farmers.

- In the context of food security, the methane emissions are 'survival' emissions and not luxury emissions. In addition to impacting farmers' income, this can impact agricultural production, especially that of paddy.
- Agriculture was not included in the emission intensity target as per India's pre-2020 voluntary commitments.

71. (b)

- Ambergris is a waxy substance formed in the intestines of Sperm Whales and is a highly valued product used in perfumery. It is directly extracted from the whale (body ambergris), found floating in the ocean (floatsam) or washed up on the shore (jetsam). Due to its high value in the market, ambergris is often called the 'floating gold' and 'treasure of the sea'.
- Buying and selling ambergris is illegal in India as sperm whales are a protected species under Schedule-I of the Wildlife Protection Act of 1972.

72. (d)

- **Statement 1 is not correct:** Bio-fertilizers are live microbial products which do not contain any nutrients. The microorganisms present in the bio-fertilizer ensure availability of nutrients from non-available form present within soil and air to available form which plants can uptake. So, biofertilizers do increase nutrient availability for the plants but they do not contain nutrients like nitrogen and phosphorus inherently.
- **Statement 2 is not correct:** Mycorrhizae are a symbiotic association between plant roots and fungi. Their major role is to enhance nutrient and water uptake by the host plant by exploiting a larger volume of soil than roots alone can do. In return,

the roots provide essential nutrients for the growth of the fungi. (**Note:** Lichen is symbiotic association between a fungus and algae / cyanobacteria).

73. (b)

- **Statement 1 is not correct:** While coal-fired power plants can contribute to arsenic pollution through emissions that deposit on the ground and may leach into groundwater, they are not the primary source of arsenic in groundwater, particularly in the context of India. Arsenic contamination in India is understood to be of geogenic origin, resulting from release of Arsenic from soil/aquifer matter under conducive conditions.
- **Statement 2 is correct:** Arsenic is a naturally occurring element found in rocks. Arsenic is introduced into soil and groundwater during weathering of rocks and minerals followed by subsequent leaching and runoff.

74. (c)

- **Statement 1 is correct:** National Board for Wildlife (NBWL) is a statutory board constituted under the Wild Life (Protection) Act, 1972 (wildlife act). NBWL is headed by the Prime Minister. The wildlife act, as originally enacted in 1972, did not provide for the NBWL. It was only through an amendment of the wildlife act in 2002 that the NBWL was constituted.
- **Statement 2 is correct:** National Tiger Conservation Authority (NTCA) is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation. It is chaired by the Minister in charge of the Ministry of Environment, Forest and Climate Change of India.

- **Statement 3 is correct:** Central Pollution Control Board (CPCB), statutory organisation, was constituted in 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

75. (a)

- **Statement 1 is correct:** On the basis of proposals and recommendations of the State Government, the Ministry of Environment, Forest and Climate Change notifies the ESZs under the Environment (Protection) Act, 1986.
- **Statement 2 is not correct:** ESZs are buffer zones around National Parks and Wildlife Sanctuaries, not within them. The very purpose of declaring ESZ is to create some kind of “Shock Absorber” for the specialized Ecosystem, such as protected areas or other natural sites, to act as a transition zone from areas of high protection to areas involving lesser protection.

76. (a)

- GLOF (Glacial Lake Outburst Flood) is a flood resulting from the sudden and rapid release of water from a glacial lake, often caused by the failure of a moraine dam or ice dam
- **Option (a) is correct:**
  - Retreating glaciers forming numerous proglacial lakes is the most significant factor contributing to the vulnerability to GLOFs, particularly in the Himalayan region.
  - Himalayan region is experiencing accelerated glacial retreat due to climate change. As glaciers retreat, they often leave behind proglacial lakes that are dammed by moraines. These lakes are often dammed by fragile moraines (debris left behind by glaciers), which are prone to failure,

especially under additional pressures like earthquakes or further melting of the ice.

- When these moraine dams fail, a massive volume of water is released, leading to devastating downstream flooding - known as a GLOF.

77. (d)

- International Solar Alliance (ISA) is guided by its 'Towards 1000' strategy which aims to mobilize USD 1,000 billion of investments in solar energy solutions by 2030, while delivering energy access to 1,000 million people using clean energy solutions and resulting in installation of 1,000 GW of solar energy capacity. This would help mitigate global solar emissions to the tune of 1,000 million tonnes of CO<sub>2</sub> every year.

78. (a)

- **Context:** There is an ongoing global push to declare ecocide a crime.
- Ecocide, derived from Greek and Latin, translates to 'killing one's home' or 'environment'. Ecocide is defined as: "unlawful or wanton **acts committed with knowledge** that there is a substantial likelihood of severe and either widespread or long-term **damage to the environment being caused by those acts**". Therefore, option (a) is the correct answer.
- **Additional information:** Currently, Ecocide – or deliberate environmental harm – is a crime in 11 countries. Recently, European Parliament had also voted unanimously to enshrine ecocide in law

79. (b)

- Carbon Border Adjustment Mechanism (CBAM), a carbon levy on high-carbon products imported into the European Union (EU). It is set to be implemented as a component of the European Green Deal in 2026.

- **Statement 1 is correct:** CBAM is the EU's tool to put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries.
- **Statement 2 is not correct:** CBAM aims to cover a wide range of carbon-intensive products, including both raw materials and finished products.
- **Statement 3 is correct:** CBAM is being viewed as a trade barrier by many developing countries; while the EU is pitching it as an environmental measure. In fact, Government of India has said that it is going to take up the issue of CBAM with World Trade Organization (WTO).

80. (c)

- **Context:** During the G20 Environment and Climate Sustainability Ministerial Meeting, the Prime Minister of India had said Project lion and Project Dolphin are India's next priorities after the success of Project tiger.
- **Statement 1 is correct:** Asiatic lions were once distributed upto the state of West Bengal in east and Rewa in Madhya Pradesh, in central India. At present Gir National Park and Wildlife Sanctuary is the only abode of the Asiatic lion.
- **Statement 2 is correct:** Difference between Asiatic lion and African lion is as follows:
  - Asiatic lions are slightly smaller than African lions.
  - Male Asiatic lions usually have a shorter and thinner mane compared to their African counterparts.
  - The most striking morphological character, which is always seen in Asiatic lions, and rarely in African lions, is a longitudinal fold of skin running along its belly.

- **Statement 3 is correct:** Recently, the Government of India had launched the International Big Cat Alliance (IBCA) for conservation of seven big cats. The alliance aims to reach out to 97 range countries covering the natural habitats of Tiger, Lion, Snow Leopard, Puma, Jaguar, and Cheetah. It does cover all lion species, including both Asiatic and African lions. IBCA will be headquartered in India

81. (a)

- **Statement 1 is correct:**
  - All dolphins are whales but not all whales are dolphins.
  - The scientific name for all groups (Order) of whales is called Cetacea. Cetaceans are divided into two suborders, Mysticeti and Odontoceti. Mysticetes includes all baleen whales (ex. blue whales, humpbacks, right whales). Odontocetes comprises toothed whales (including orcas, sperm whales, dolphins and porpoises).
- **Statement 2 is correct:** All Dolphins are mammals. They breathe air, give live birth, and nurse their young with milk from mammary glands. They are warm-blooded and have complex brains.
- **Statement 3 is not correct:** Not all species of Dolphins are blind. In fact, many oceanic dolphins are known for their good eyesight. Only some fresh water Dolphins are functionally blind. For example, Ganges river dolphins are essentially blind, and hunt by emitting ultrasonic sounds, which bounces off of fish and other prey, enabling them to “see” an image in their mind.

82. (d)

- Bidriware is a renowned metal handicraft that derives its name from Bidar, presently in Karnataka. The art form also has obtained a GI tag from the region.

- **More about Bidriware:**

- Bidriware is an ancient craft of inlaying pure silver and gold wires in metal.
- It was believed to have originated in the 14th century AD during the reign of Bahamani Sultans.
- Bidriware was first practised in ancient Persia and then it was brought to India by Khwaja Moinuddin Chisti’s followers.

83. (a)

- The following monuments have been depicted on Indian currency notes currently in circulation:
  - Red fort: Rs. 500 notes
  - Sanchi Stupa: Rs. 200 notes
  - **Rani ki Vav:** Rs. 100 notes
  - **Hampi with Chariot:** Rs. 50 notes
  - Ellora caves: Rs. 20 notes
  - **Sun Temple, Konark:** Rs. 10 notes

84. (b)

- **Statement 1 is not correct:** Vande Bharat trains do not use magnetic levitation technology. They run on conventional railway tracks. It has faster acceleration and deceleration due to its lightweight design and regenerative braking system, but it does not use maglev technology.
- **Statement 2 is correct:** Vande Bharat has an indigenously developed Anti Viral System.
- **Statement 3 is correct:** Vande Bharata trains have Light-weight Lithium Chemistry Batteries (LiFePO4) with advanced Battery Management System (BMS) used for 3 hr backup
- **Statement 4 is not correct:** Vande Bharata trains are India’s first-ever indigenously designed and manufactured semi-high speed trains.

85. (d)

- **Statement 1 is correct:** United Nations Convention Against Corruption (UNCAC) is a legally binding international instrument adopted by the UN in 2003 and ratified by 187 states. It is the only legally binding universal anti-corruption instrument.
- **Statement 2 is correct:** Article 7(3) of the United Nations Convention against Corruption (UNCAC) requires States parties to enhance transparency in the funding of political parties and public office candidates.
- **Statement 3 is correct:** India is a signatory to UNCAC and ratified it in 2011.

86. (b)

- **Amrit Dharohar Capacity Building Scheme:** It is launched by MoEF&CC to promote unique conservation values of the Ramsar Sites in the country. Wetlands are important habitats for biodiversity, so this scheme has a direct impact.
- **MISHTI scheme:** MISHTI (Mangrove and Species Recovery) aims to restore mangroves, critical coastal ecosystems that support rich biodiversity. This scheme also has a direct impact.
- **PM-DevINE Scheme:** PM-DevINE is aimed at rapid and holistic development of the North- East Region by funding infrastructure and social development projects, based on felt needs of the States. It does not

87. (b)

- **Statement 1 is correct:** India shares a land border with seven countries — Afghanistan and Pakistan to the north-west; China, Bhutan and Nepal to the north; Myanmar to the east; and Bangladesh to the east of West Bengal. Therefore, Myanmar is the only ASEAN country that shares a land boundary with India.

- **Statement 2 is not correct:** Four North-Eastern States viz. Arunachal Pradesh, Nagaland, Manipur and Mizoram share an international boundary with Myanmar.
- **Statement 3 is correct:** Treaty of Yandabo 1826 formally ended the First Anglo-Burmese War. The current India-Myanmar border was established after the treaty of Yandabo. However, note that the formal delimitation of India Myanmar boundary was done as per the provisions of 1967 India Myanmar Boundary Agreement.
- **Statement 4 is not correct:** India does share maritime boundary with Maldives and Indonesia, but not with Mauritius.

88. (c)

- **Colombia - Panamá - Costa Rica - Nicaragua:** This route follows a clear and linear path along the Central American coast from South to North, which is geographically practical and logical.
- **Barbados - Martinique - Guadeloupe - Haiti:** This route also makes sense geographically as it follows a northward path through the Eastern Caribbean islands, moving from Barbados up to Martinique and Guadeloupe, ending in Haiti.
- **Belize - Puerto Rico - Jamaica - Dominican Republic:** This is the least practical geographical route among the given options. Belize is located in Central America, quite far from the other Caribbean islands. The sequence starts in Belize (located on the western edge of the Caribbean), moves to Puerto Rico (to the east), back westward to Jamaica, and then eastward again to the Dominican Republic. This back-and-forth sailing makes it least practical geographically.
- **Cuba - The Bahamas - Turks and Caicos Islands - Haiti:** This route is also geographically practical, progressing through locations that are generally north of Cuba and aligned in a reasonably straight sequence from west to east.



89. (d)

- **Option (d) is the correct answer:** World Food Programme (WFP) is the UN’s lead agency responsible for distributing food in response to emergency situations worldwide. WFP is headquartered in Rome. Whereas, the Food and Agriculture Organization focuses on long-term solutions to food insecurity and is less likely to be the frontline organization in a rapidly unfolding humanitarian emergency.

90. (d)

- **Both statements are not correct:** Uttar Poorva Transformative Industrialization Scheme (UNNATI, 2024) aims to promote Industrial Development in the North Eastern Region. The nodal ministry for the implementation of the scheme is the Ministry of Commerce and Industry.

91. (c)

- **Statement 1 is correct:** IPEF was launched jointly by the USA and other partner countries of the Indo-Pacific region in 2022 at Tokyo. The framework is structured around four pillars relating to Trade (Pillar I); Supply Chains (Pillar II); Clean Economy (Pillar III); and Fair Economy (Pillar IV). India has joined Pillars II to IV of IPEF while it has an observer status in Pillar-I.
- **Statement 2 is correct:** IPEF has 14 partner countries including **Australia, Brunei, Fiji, India, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam & USA.** So, all members of QUAD (India, USA, Japan and Australia) are part of it.

92. (c)

- The correct matching of the Reports/Indices to their publishing organizations:

List I (Report / Index)	List II (Organization publishing the report)
A. Global Innovation Index	4. World Intellectual Property Organization (WIPO)
B. Global Financial Stability Report	1. International Monetary Fund (IMF)
C. Gender Inequality Index	3. United Nations Development Programme (UNDP)
D. Global Risks Report	2. World Economic Forum (WEF)

93. (b)

- The country being described in the question is Israel. Here’s the breakdown of the geographical clues provided:
  - **Located on the southeastern shore of the Mediterranean Sea** - Israel fits this description, as it is located along the eastern coast of the Mediterranean Sea.
  - **At its southern tip lies the Gulf of Aqaba, which connects it to the Red Sea** - The Gulf of Aqaba borders Israel’s southernmost city, Eilat, and connects to the Red Sea.
  - **Diverse geography that includes desert landscapes in the south, courtesy of the Negev Desert** - The Negev Desert covers the southern part of Israel, aligning with the description.
  - **Fertile lands in the north and coastal plains along its Mediterranean coast** - Israel’s northern region, including areas like Galilee, and the

coastal plains along the Mediterranean are known for their fertility and are significant agricultural zones.

- **On the eastern border, lies the water body which has the lowest point on the earth** - The Dead Sea, located on Israel's eastern border with Jordan, is the lowest point on Earth's surface.

94. (a)

- **Pair 1 is correctly matched:** Ramakien is one of Thailand's national epics. It is a Thai version of the ancient Indian epic Ramayana.
- **Pair 2 is correctly matched:** In Indonesia, particularly in Java and Bali, the Ramayana takes the form of the "Ramayana Kakawin," an old Javanese rendering of the epic
- **Pair 3 is not correctly matched:** The "Yama Zatdaw" is actually the Burmese version of the Ramayana, not the Korean.

95. (a)

- **Statement 1 is not correct:** Sun temple at Konark was constructed by the eastern Ganga ruler Narasimha Varmana, in around 1250 A.D.
- **Statement 2 is correct:** The temple was designed as a chariot of Sun God driven by twenty four beautifully carved wheels and pulled by seven horses.
- **Statement 3 is not correct:** Martand Temple was built by the Karkota dynasty king Lalitaditya Muktapida, who ruled Kashmir from 725 AD to 753 AD. So, Martand sun temple in Kashmir was built much earlier than the Sun temple at Konark (Around 1250 AD).

96. (d)

- **Option (d) is the correct answer:** Swami Vivekananda was more inclusive in his acceptance of various forms of worship, including idol worship, as valid paths to spirituality. Whereas, Swami Dayanand opposed idol worship, considering it a deviation from Vedic teachings.

- **Option (a) is not the correct answer:** Both Vivekananda and Dayanand Saraswati emphasized the importance of both Bhakti and Karma. While their interpretations might have differed slightly, it wasn't a major point of divergence.

- **Option (b) is not the correct answer:** Both leaders were involved in social reforms and spiritual practices.

- **Option (c) is not the correct answer:** This statement inaccurately represents Dayanand Saraswati's views. He also worked for upliftment of women and the downtrodden.

97. (d)

- **Santhal Hul of 1855-57:** The revolt took place in present day Jharkhand and part of West Bengal (at the foothills of Rajmahal). It was a rebellion against the British colonial authority and against the zamindars. In 1855, the Santhals gathered in the Bhagnadihi Village under the leadership of the brothers - **Sidhu and Kanhu Murmu** - and declared themselves free from colonial rule.

- **Rampa Rebellion:** Alluri Sitarama Raju led the "Rampa Rebellion" of 1922-24 in the Rampa regions of present-day Godavari district in Andhra Pradesh. The uprising was against the exploitative British policies and oppressive forest laws that threatened the lives of tribes in the region.

- **Paika rebellion:** Paikas were essentially the peasant militias of the Gajapati rulers of Odisha who rendered military service to the king during times of war while taking up cultivation during times of peace. They unfurled the banner of rebellion against the British under the leadership of Baxi Jagandhu Bidyadhara as early as 1817 to throw off the British.

- **Ulgulan:** Birsa Munda took up arms and launched a movement called ‘Ulgulan’, or ‘The Great Tumult’ in 1899. The rebellion which began as a religious movement gathered political force to fight against introduction of feudal, zamindari tenures, and exploitation by money-lenders and forest contractors.

98. (c)

- Mahanavami Dibba was the massive structure where the kings of the Vijayanagara Empire once sat upon their gem studded golden throne and watched processions pass by. The structure is also embellished with densely carved bands of horses, soldiers and depictions of various aspects of courtly life. Rituals associated with the structure probably coincided with Mahanavami (literally, the great ninth day) of the ten-day Hindu festival during the autumn months of September and October.

99. (c)

- Mihir Bhoja of the Gurjara Pratihara dynasty was a devout follower of Vishnu. He adopted the title “Adivaraha” which refers to the primeval boar incarnation of Vishnu.

100. (a)

Recently, a 500-yr-old manuscript of Rig Veda in Sharda script was presented in the G-20 summit. Written on Kashmiri birch bark some 500 years ago, this Rigveda manuscript was originally retrieved by Johann Georg Bühler, a German scholar of ancient Indian languages. This manuscript is recognised as one of the most ancient and genuine copies of Rigveda and has been pivotal in Rigvedic studies.

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