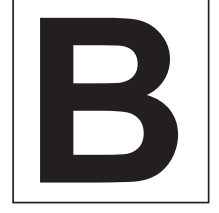


Test Code
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NEXT IAS

Test Booklet Series



परीक्षण पुस्तिका अनुक्रम

अनुभव-2024

ALL INDIA OPEN MOCK TEST-1

GENERAL STUDIES (Paper-I)

Answer Key

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

General Studies

(Paper-I)

1. (b)

1 is not correct: Shahbazgarhi Rock Edicts are ancient rock inscriptions in Kharosthi script that are cut into the surface of two large boulders in the village of Shahbazgarhi in the Khyber Pakhtunkhwa, Pakistan.

2 is correct: Jaugada is located in Ganjam district of Odisha, India. Jaugada is the second place in Odisha where there is a major Ashokan rock edict, also known as Kalinga edict (the other site being Dhauli). The rock edict inscriptions, engraved in Prakrit language in Brahmi script, have information about the better administrative policies based on Ashoka's humanitarian consideration

3 is correct: Maski Ashoka Inscription is located to the south-east of Raichur in Karnataka. The inscription primarily emphasizes Ashoka's commitment to non-violence and the welfare of his subjects. It is written in Prakrit language and Brahmi script, making it accessible to a wide audience of the time. In the inscription, Ashoka proclaims his dedication to the welfare of his people and animals, proclaiming that he sought the happiness of all living beings.

4 is not correct: Dhauli rock inscription is in Odisha. Immediately above the inscription is a terrace, on the right side of which is the forepart of an elephant.

2. (c)

Sangam poems mention the term "Muvendar". The term refers to the heads of three ruling families, the Cholas, Cheras and Pandyas who became powerful in south India around 2300 years ago.

3. (c)

Statement 1 is correct: Kamboja Mahajanapada was extended till parts of present day Afghanistan

Statement 2 is correct: Avanti Mahajanapada had Ujjain as a capital in the northern part and Mahishmati in the Southern part.

Statement 3 is correct: While most mahajanapadas were ruled by kings, some Mahajanapadas were republican. For example, Vajji and Malla Mahajanapadas were Republics..

4. (c)

Fredrich Max Muller was one of the most respected Indologist of the 19th century. With support of East India Company he undertook the job of translation and interpretation of the Indian Religion in English. William Jones, Max Muller, Vincent Smith were others who wrote Indian history extensively.

5. (a)

Statement 1 is correct: Indian Smiths were the first in the world to manufacture steel. Indian steel exported to many other countries of the world and came to be called as WOOTZ in later times. Indian swords were considered the best in the world.

Statement 2 is correct: Varahmihira's Brihatsiddhanta stated that the moon rotates around the earth and earth rotates around the sun. He lived in the 6th century. He utilized Greek works to explain movement of the planets and some other astronomical problems.

Statement 3 is not correct: In the 2nd century B.C Apastambha produced a book called Practical Geometry for the construction of altars in which kings could offer sacrifices. It describes acute angle, obtuse angle, right angle.

Statement 4 is correct: In the book called Sushruta Samhita Sushruta describes the method of operating cataract, stone disease and other ailments.

Hence, only one statement is not correct.
Therefore, option (a) is the correct answer.

6. (c)

Statement 1 is correct: The Act provided for the establishment of an all India federation and new system of government for the provinces on the basis of provincial autonomy. the federation was to be based on a union of Provinces of British India and Princely States. There was to be a Bicameral federal legislature in which Princely states were given disproportionate weightage.

Statement 2 is correct: At provincial level Governors were given special powers. they could veto legislative action and legislate on their own. they retained full control over civil services and the police.

Statement 3 is not correct: Governor General and Governor were to be appointed by the British government and were responsible to the British Government only.

7. (b)

Statement 1 is not correct: In 1921, Chamber of Princes was created to enable princes to meet under British guidance matters of common interest.

Statement 2 is correct: In 1927, All India State Peoples Conference was founded to coordinate political activities in different states.

Statement 3 is not correct: In 1939, Pandit Jawaharlal Nehru became the President of All India State Peoples Conference to express Congress solidarity with state people's struggle.

8. (b)

The administration under the Vijayanagar Empire was well organized. The king enjoyed absolute authority in executive, judicial and legislative matters. He was the highest court of appeal. The king was assisted by a council of ministers in his day to day administration. The

Empire was divided into different administrative units called Mandalams, Nadus, sthalas and finally into gramas (area in decreasing order i.e. Mandalam largest area, gramas smallest). The governor of Mandalam was called Mandaleswara or Nayak. Vijayanagar rulers gave full powers to the local authorities in the administration.

9. (a)

1. **Gujarat Kingdom:** Zafar Khan declared himself independent in 1407 and formally established the Gujarat Sultanate. But the real founder of Kingdom of Gujarat was Ahmed Shah I (1411-43) the grandson of Muzaffar Shah. During his long reign he brought nobility under his control, settled administration and expanded and consolidated the administration.

2. **Lodi dynasty:** After the Timurid Invasion of the Tughlaq dynasty, the new Saiyyad arose in Delhi. At that time a number of Afghans sardars established themselves in Delhi of which Bahlul Lodi was most powerful. He was called in to Delhi by Saiyyid rulers to counter impending attack by ruler of Malwa, Bahlul stayed on. He crowned himself in 1451 and took control of Delhi.

3. **Mughal Empire:** Babur defeated Ibrahim Lodi in the Battle of Panipat in 1526 and established the Mughal Empire in India.

4. **Sur Empire:** Battle of Kanauj was fought between in 1540 and was bitterly contested in which Sher Shah defeated Humayun and his brothers and established Sur Empire.

10. (b)

Balban (1246-87) constantly sought to increase the power and prestige of the Monarchy. To strengthen his claim to the throne he declared himself the descendent of the legendary Iranian King Afrasiyab and to exalt the poor and to win public confidence he administered justice with extreme impartiality.

11. (b)

Statement 1 is correct: In Nagara temple, River goddesses (Ganga and Yamuna) are usually found at the entrance of a garbhagriha in a Nagara temple

Statement 2 is not correct: Dwarapala (doorkeepers) are usually found on the gateways or gopurams of Dravida temples. Similarly, mithunas (erotic images), navagrahas (the nine auspicious planets) and yakshas are also placed at entrances to guard them.

Statement 3 is correct: There are many subdivisions of nagara temples depending on the shape of the shikhara. There are different names for the various parts of the temple in different parts of India; however, the most common name for the simple shikhara which is square at the base and whose walls curve or slope inward to a point on top is called the 'latina' or the rekha-prasada type of shikara .

Statement 4 is correct: The North Indian idea of multiple shikharas rising together as a cluster was not popular in South India. At some of the most sacred temples in South India, the main temple in which the garbhagriha is situated has, in fact, one of the smallest towers. This is because it is usually the oldest part of the temple .

12. (d)

Mrichchhakatika (The Little Clay Cart) is a Sanskrit drama attributed to Sudraka. It is based on the love story between young Brahmana boy Charudatta and the beautiful daughter of courtesans.

13. (b)

Statement 1 is not correct: The Andaman and Nicobar group of Islands are located in the SE of the Bay of Bengal, between 6°-14° N latitude and 91 °-94° E longitude. They are the emerging part of a mountain chain and lie on a ridge which extends southward from the Irrawaddy delta area of Burma, continuing the

trend of the Arakan Yoma range. On the other hand, the Lakshadweep islands consist of coral formations built up on the Laccadive-Chagos submarine ridge rising steeply from a depth of about 1500 m to 4000 m off the west coast of India.

Statement 2 is correct: India's smallest Union Territory Lakshadweep is an archipelago consisting of 36 islands. It comprises of 12 atolls, three reefs, five submerged banks and ten inhabited islands.

Statement 3 is correct: Only 11 of the 36 islands in Lakshadweep are inhabited. They are Andrott, Amini, Agatti, Bangaram, Bitra, Chetlat, Kadmat, Kalpeni, Kiltan, Minicoy and the headquarters at Kavaratti. Minicoy island is separated from the rest of the islands by a 180 km wide stretch of sea known as the nine degree channel.

14. (d)

Statement 1 is not correct: Though rice is considered to be a crop of tropical humid areas, it has about 3,000 varieties which are grown in different agro-climatic regions. These are successfully grown from sea level to about 2,000 m altitude and from humid areas in eastern India to dry but irrigated areas of Punjab, Haryana, western U.P. and northern Rajasthan. In southern states and West Bengal the climatic conditions allow the cultivation of two or three crops of rice in an agricultural year. **But in the Himalayas and northwestern parts of the country, it is grown as a kharif crop during the southwest Monsoon season.**

Statement 2 is not correct: The coarse cereals together occupy about 16.50 per percent of total cropped area in the country. Among these, jowar or sorghum alone accounts for about 5.3 per cent of total cropped area. It is the main food crop in semi-arid areas of central and southern India. **Maharashtra alone produces more than half of the total jowar production of the country.**

Statement 3 is not correct: The cultivation of pulses in the country is largely concentrated

in the drylands of Deccan and central plateaus and northwestern parts of the country. Pulses occupy about 11 per cent of the total cropped area in the country

15. (a)

Statement 1 is not correct: The Indus also known as the Sindhu, is the westernmost of the Himalayan rivers in India. It originates from a glacier near Bokhar Chu (31°15' N latitude and 81°40' E longitude) in the Tibetan region at an altitude of 4,164 m in the Kailash Mountain range. In Tibet, it is known as 'Singi Khamban; or Lion's mouth. After flowing in the northwest direction between the Ladakh and Zaskar ranges, it passes through Ladakh and Baltistan.

Statement 2 is not correct: The Chambal rises near Mhow in the Malwa plateau of Madhya Pradesh and flows northwards through a gorge upwards of Kota in Rajasthan, where the Gandhi Sagar dam has been constructed.

Statement 3 is correct: The Son is a large south bank tributary of the Ganga, originating in the Amarkantak plateau. After forming a series of waterfalls at the edge of the plateau, it reaches Arrah, west of Patna, to join the Ganga.

16. (a)

Statement 1 is not correct: In India, coal occurs in the rock series of two main geological ages namely Gondwana -over 200 million years in age and in tertiary deposits which are over 55 million years in age. Major resources of Gondwana coal are mainly concentrated in Damodar valley, Jharia, Raniganj, Bokaro Coalfields. Tertiary coal deposits occur in North-Eastern States of Assam, Meghalaya, Arunachal Pradesh, Nagaland.

Statement 2 is not correct: Metallurgical coal is the high grade Bituminous coal which has special value for smelting iron in blast furnaces.

Statement 3 is correct: Lignite is a low grade brown coal which is soft with high moisture content. Principle lignite reserves are in Neyveli

in Tamilnadu and is used for generation of Electricity.

17. (d)

All pair are correct matched.

18. (a)

Statement 1 is not correct: British Introduced tea plantation in 1840s in Brahmaputra Valley of Assam. Later on its plantation was introduced in Sub Himalayan Region of West Bengal(Darjeeling, Jalpaiguri, Cooch Behar District)

Statement 2 is not correct and Statement 3 is correct: Tea plantations are usually grown over undulating topography of hilly areas and well drained soils in **humid and sub-humid tropics.**

19. (c)

- **Tropical Evergreen Semi Evergreen Forests** - Species found in these forests include **rosewood, mahogany, aini, ebony,** etc. The semi evergreen forests are found in the less rainy parts of these regions. Such forests have a mixture of evergreen and moist deciduous trees. The under growing climbers provide an evergreen character to these forests. Main species are **white cedar, hollock and kail.**
- **Tropical Deciduous Forests:-** These are the most widespread forests in India. They are also called the monsoon forests . Tendu, palas, amaltas, bel, khair, **axlewood,** etc. are the common trees of these forests

20. (a)

Statement 1 is not correct: Red soil develops on crystalline igneous rocks in areas of **low rainfall** in the eastern and southern part of the Deccan Plateau. Along the piedmont zone of the Western Ghat, a long stretch of the area is occupied by red loamy soil. Yellow and red soils are also found in parts of Odisha and Chhattisgarh and in the southern parts of the middle Ganga plain.

Statement 2 is correct: The laterite soils develop in areas with high temperature and high rainfall. Laterite soils are widely cut as bricks for use in house construction

Statement 3 is not correct: Peaty soils are found in the areas of heavy rainfall and high humidity, where there is a good growth of vegetation. Thus, large quantities of dead organic matter accumulates in these areas, and this gives a rich humus and organic content to the soil.

21. (d)

The Equator passes through 13 countries: Ecuador, Colombia, Brazil, Sao Tome & Principe, Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya, Somalia, Maldives, Indonesia and Kiribati.

22. (c)

All statements are correct except statement 3. Socotra is an island of the Republic of Yemen in the Indian Ocean.

23. (b)

Statement 1 is correct: Cirrus clouds are formed at higher altitudes (8000–12,000 m). They are thin and detached, have a feathery appearance, and are always white in colour.

Statement 2 is not correct: Cumulus clouds look like cotton wool. They are generally formed at a height of 400–7000 m. They exist in patches and are seen scattered on flat bases.

Statement 3 is correct: Nimbus clouds are shapeless masses that are opaque to the rays of the sun. Dark or black grey in colour. formed at middle levels or near to the surface.

Statement 4 is not correct: Mist contains more moisture than fog. In mist, each nucleus contains thicker layers of moisture. Mist is more frequent over mountains, and fog is drier than mist and more frequent over areas where cold and warm currents meet.

24. (b)

Statement 1 is correct:- The periodic rise and fall of the sea level, once or twice a day, mainly

due to the attraction of the sun and moon, is called a tide. The moon's gravitational pull to a great extent and, to a lesser extent, the sun's gravitational pull are the major causes of the occurrence of tides. Another factor is centrifugal force, which acts to counterbalance gravity.

Statement 2 is correct:- Spring tides are formed when the sun, moon, and earth are in a straight line. They occur twice a month, once during the full moon period and again during the new moon period.

Statement 3 is not correct: Surges caused by meteorological effects(winds or atmospheric pressure changes) are not regular and frequent, like tides.

25. (a)

Statement 1 is correct: The Coriolis force is directly proportional to the angle of latitude. Thus, it is maximum at poles and absent at the equator.

Statement 2 is correct: The coriolis force acts perpendicular to the pressure gradient. The pressure gradient force is perpendicular to an isobar. The higher the pressure gradient force, the greater the velocity of the wind. and the larger the deflection of the wind.

Statement 3 is correct: The rotation of the Earth's axis affects the direction of the wind. This force is called the Coriolis force after the French physicist who described it in 1844.

Statement 4 is not correct: The Coriolis force deflects wind in the left direction in the South Hemisphere and in the right direction in the North Hemisphere.

26. (b)

Statement 1 is not correct: Both SDF and Reverse repo are tools of RBI to absorb excess liquidity. In 2018, the amended Section 17 of the RBI Act empowered the Reserve Bank to introduce the SDF – an additional tool for absorbing liquidity without any collateral. SDF will replace the fixed rate reverse repo (FRRR)

as the floor of the liquidity adjustment facility corridor.

Statement 2 is correct: Unlike the FRRR, which typically operates through auctions conducted on specific days, the SDF is an “on-tap” facility. This means banks can deposit funds into the SDF at any time during business hours, offering them greater flexibility in managing their liquidity.

Statement 3 is correct: The SDF operates without the need for collateral, such as government securities. This simplifies the process for banks, eliminates potential collateral shortages, and allows the RBI to absorb liquidity more efficiently.

27. (b)

Option (b) is not correct: In a Perfectly competitive Market Each firm produces and sells a homogenous product. i.e., the product of one firm cannot be differentiated from the product of any other firm.

Other features of perfectly competitive market-

1. The market consists of a large number of buyers and sellers
2. Entry into the market as well as exit from the market are free for firms.
3. Information is perfect.

28. (d)

Statement 1 is correct: Deflation is a decrease in general price levels throughout an economy, Deflation, which is the opposite of inflation, is mainly caused by shifts in supply and demand. Deflation, which is harmful to an economy, can be caused by a drop in the money supply, government spending, consumer spending, and corporate investment.

Statement 2 is correct: Disinflation is what happens when price inflation slows down temporarily. Central banks will fight disinflation by expanding its monetary policy and lowering interest rates. Disinflation can be caused by a recession or when a central bank tightens its monetary policy.

Statement 3 is correct: Reflation is a policy that is enacted after a period of economic slowdown or contraction. The goal is to expand output, stimulate spending and curb the effects of deflation. Policies include tax cuts, infrastructure spending, increasing the money supply, and lowering interest rates.

29. (c)

Statement 1 is correct: Consumer Price Indices (CPI) measure changes over time in the general level of prices of goods and services that households acquire for the purpose of consumption. CPI is widely used as a macroeconomic indicator of inflation, as a tool by governments and central banks for inflation targeting and for monitoring price stability, and as deflators in the national accounts. CPI is also used for indexing dearness allowance to employees for increase in prices.

Statement 2 is not correct: CPI basket does constitute a relatively good measure of price changes in the specific goods in its basket. However, one limitation of the CPI is that the consumer goods it considers do not represent all production or consumption in the economy.

30. (c)

Statement 1 is correct: National MPI measures simultaneous deprivations across the three equally weighted dimensions of health, education, and standard of living that are represented by 12 SDG-aligned indicators.

Statement 2 is correct: 12 indicators of National NPI include nutrition, child and adolescent mortality, maternal health, years of schooling, school attendance, cooking fuel, sanitation, drinking water, electricity, housing, assets, and bank accounts. India's national MPI retained 10 indicators from the Global MPI and has added 2 new indicators, namely Maternal Health (in the dimension of Health) and Bank Account (in the dimension of Standard of Living).

Statement 3 is correct: Headcount ratio of the MPI refers to the proportion of individuals identified as multidimensionally poor in the

population. The headcount ratio is also known as incidence of poverty, and broadly explains 'how many are poor'. The MPI score is the product of the headcount ratio and intensity of poverty. The intensity of poverty is the average proportion of deprivations which is experienced by multidimensionally poor individuals.

31. (b)

Statement 1 is not correct: The Phillips curve is an economic concept developed by A. W. Phillips stating that inflation and unemployment have a stable and inverse relationship. The theory claims that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment.

Statement 2 is correct: The Laffer Curve is a theory formalized by supply-side economist Arthur Laffer to show the relationship between tax rates and the amount of tax revenue collected by governments. The curve is used to illustrate the argument that sometimes cutting tax rates can result in increased total tax revenue.

Statement 3 is correct: The Rahn Curve suggests that there is an optimal level of government spending which maximises the rate of economic growth. Initially, higher government spending helps to improve economic performance. But, after exceeding a certain amount of government spending, government taxes and intervention diminishes economic performance and growth rates.

32. (b)

Statement 1 is not correct: Both CRR and SLR has to be a % of Net Demand and Time Liabilities

Statement 2 is correct: No interest is earned on the CRR while Interest is earned on SLR.

Statement 3 is correct: Banks are required to maintain with the Reserve Bank. CRR is maintained only in cash form. SLR is that percentage of the deposits which the banks have to hold with themselves. SLR can be maintained in the form of Gold, Cash and other securities approved by RBI.

33. (b)

Statement 1 is not correct: Swaran Singh Committee recommended Duty to Pay taxes to be added in the Fundamental Duty-Article 51A. However, this was not included. So, Duty to Pay taxes is not a Fundamental Duty.

Statement 2 is correct: Securities Transaction Tax is a direct tax. It shall apply to taxable securities transactions

34. (c)

Statement 1 is correct: An inverted yield curve shows that long-term interest rates are less than short-term interest rates. With an inverted yield curve, the yield decreases the further away the maturity date is. Sometimes referred to as a negative yield curve, the inverted curve has proven in the past to be a reliable indicator of a recession.

Statement 2 is correct: A soft landing, in economics, is a cyclical slowdown in economic growth that avoids recession. A soft landing is the goal of a central bank when it seeks to raise interest rates just enough to stop an economy from overheating and experiencing high inflation, without causing a severe downturn. Soft landing may also refer to a gradual, relatively painless slowdown in a particular industry or economic sector.

35. (c)

Option C is correct: Moonlighting is the practice of taking up secondary jobs after work hours without informing or taking consent of the current employer. The term shot into prominence in the West where employees started looking for secondary jobs after work hours to earn extra income.

Option A - Tang Ping - Tang ping is a lifestyle and social protest movement in China beginning in April 2021. It is a rejection of societal pressures to overwork, such as in the 996 working hour system, which is often regarded as a rat race with ever diminishing returns.

Option B - Freelancing - A freelancer is an individual who earns money on a per-job or per-task basis, usually for short-term work as an independent contractor. A freelancer is not an employee of a firm and may therefore be at liberty to complete different jobs concurrently by various individuals or firms unless contractually committed to working exclusively until a particular project is completed.

Option D - Quiet Quitting - Quiet quitting is demonstrated by employees who show up to work with the purpose of doing no more than what's required to stay employed.

36. (a)

Statement 1 is correct: Peer-to-peer lending is a direct alternative to a bank loan with the difference that, instead of borrowing from a single source, companies can borrow directly from tens, sometimes hundreds, of individuals who are ready to lend. P2P lending is also known as "social lending" or "crowd lending."

Statement 2 is correct: Reserve Bank of India (RBI) has set a ₹50-lakh cap on the aggregate exposure of a lender to all borrowers across all Non-Banking Financial Company – Peer to Peer (NBFC-P2P) lending platforms at any point of time.

Statement 3 is not correct: In India, peer-to-peer lending is regulated by the Reserve Bank of India (RBI).

37. (b)

Statement 1 is not correct: Double coincidence of wants refers to the simultaneous fulfilment of mutual wants by buyers and sellers.

Statement 2 is correct: A barter system refers to the exchange of goods & services with two or more parties without the use of money. Under the barter system there was the lack of double coincidence of wants, as the mutual wants of buyers and sellers are less likely to be fulfilled simultaneously.

38. (b)

Statement 1 is correct: RoDTEP Scheme was introduced by the Government as a

duty remission scheme on exports and is being implemented from 1st January 2021. The Scheme provides a mechanism for reimbursement of taxes, duties and levies, which are currently not being refunded under any other mechanism, at the central, state and local level, but which are incurred by the export entities in the process of manufacture and distribution of exported products. It primarily addresses indirect taxes, not direct taxes (like income taxes etc) levied on exported goods.

Statement 2 is not correct: National Treatment applies within a country, ensuring imported goods don't receive better treatment than domestic goods. RoDTEP applies to all exported goods, not just those destined for specific countries.

Statement 3 is correct: Countervailing duties (CVDs) can potentially offset the benefits of RoDTEP if other countries deem it a subsidy exceeding tax remission. The US and EU have levied CVDs on some Indian exports under RoDTEP concerns.

39. (b)

- Self Reliant India (SRI) Fund is a fund-of-funds for equity investments in MSMEs.
- Self Reliant India (SRI) Fund has been set up to infuse Rs. 50,000 crore as equity funding in those MSMEs which have the potential and viability to grow and become large units.
- Under this Fund of Rs. 50,000 crore, there is a provision of Rs.10,000 Crore from the Government of India and Rs.40,000 Crore through Private Equity / Venture Capital funds.
- SRI fund operates through a mother-fund and daughter-fund structure for equity or quasi-equity investments.

40. (c)

SEBI has permitted social enterprises registered on Social stock exchanges to raise

funds through zero coupon zero principal bonds (ZCZP). ZCZP bonds do not give any interest, and investors will not get any money back on the maturity of the bond.

Option (c) is correct: ZCZPs prioritize transparency and accountability over financial returns. There are no pecuniary benefits from these instruments. It is akin to a donation made to a charity. But there is greater transparency about the objective of the social enterprise. The end use of the funds can also be monitored since the enterprises have to disclose details of money utilised and balance amount remaining to exchanges.

41. (a)

Statement 1 is not correct: The Hoysaleswara temple (Lord of the Hoysalas) at Halebidu in Karnataka was built in dark schist stone by the Hoysala king in 1150. Hoysala temples are sometimes called hybrid or Vesara as their unique style seems neither completely dravida nor nagara, but somewhere in between.

Statement 2 is correct: They are easily distinguishable from other medieval temples by their highly original star-like ground-plans and a profusion of decorative carvings.

Statement 3 is not correct: Hoysaleswara temple in Halebidu is dedicated to Lord Shiva, but Chennakeshava temple at Belur is dedicated to Lord Vishnu.

42. (a)

Statement 1 is not correct: Adi Shankaracharya was born in Kerala and is believed to have lived between 788 and 820 AD. He became a sanyasin at an early age and left his Brahmin household, where he is said to have made his way to Omkareshwar. Here, he studied under his guru Govinda Bhagavatpada and soon became a proponent of Advaita Vedanta.

Statement 2 is correct: Puranas say that Lord Shiva pierced the world as an endless pillar of light, called the jyotirlinga. There are 12

jyotirlinga sites in India that are considered a manifestation of Shiva. Omkareshwar is one of them.

Statement 3 is not correct: Adi Shankaracharya was propounder of Advaita Vedanta (non-dualism). Ramanuja propounded the doctrine of philosophy of Vishishtadvaita or Qualified Non-dualism.

43. (d)

Under PM Vishwakarma scheme, the artisans and craftspeople will be provided recognition through PM Vishwakarma certificate and ID card, Credit Support upto Rs.1 lakh (First Tranche) and Rs.2 lakh (Second Tranche) with a concessional interest rate of 5%.

Eligibility Criteria

1. An artisan or craftsperson working with hands and tools and engaged in one of the **18 family-based traditional trades** mentioned in the scheme, in the unorganized sector on a self-employment basis, shall be eligible for registration under PM Vishwakarma. **Hence, statement 1 is incorrect.**
2. The minimum age of the beneficiary should be 18 years on the date of registration.
3. The beneficiary should be engaged in the concerned trade on the date of registration and should not have availed loans under similar credit-based schemes of Central Government or State Government for self-employment/ business development, e.g. PMEGP, PM SVANidhi, Mudra, in the past 5 years.
4. **The registration and benefits under the Scheme shall be restricted to one member of the family.** For availing benefits under the Scheme, a 'family' is defined as consisting of the husband, wife and unmarried children. **Hence, statement 2 is incorrect.**
5. A person in government service and their family members shall not be eligible under the Scheme.

The Ministry of MSME is the nodal implementing agency of this scheme. **Hence, statement 3 is incorrect.**

44. (d)

- PM-PRANAM (PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth) scheme aims to reduce use of chemical fertilizers by incentivizing states to adopt alternative fertilizers. The Ministry of Chemical and Fertilizers is the implementing agency.
- The initiative aims to support the mass movement started by States/UTs to save the health of Mother Earth by promoting sustainable and balanced use of fertilizers, adopting alternate fertilizers, promoting organic farming and implementing resource conservation technologies. Under the said scheme, 50% of the fertilizer subsidy saved by a State/UT in a particular financial year by way of reduction in consumption of chemical fertilizers (Urea, DAP, NPK, MOP) compared to previous 3 years' average consumption, will be passed on to that State/UT as Grant.

45. (a)

The APY was launched to create a universal social security system for all Indians, especially the poor, the underprivileged and the workers in the unorganised sector. It is an initiative of the Government to provide financial security and cover future exigencies for the people in the unorganized sector.

Statement 1 is correct: APY is open to all bank account holders in the age group of 18 to 40 years who are not income taxpayers and the contributions differ, based on the pension amount chosen.

Statement 2 is not correct: Subscribers can make contributions to APY on a **monthly/quarterly/half-yearly basis.**

Statement 3 is not correct: APY is administered by Pension Fund Regulatory and Development Authority (PFRDA) under

the overall administrative and institutional architecture of the National Pension System (NPS).

Subscribers would receive the guaranteed minimum monthly pension of Rs. 1000 or Rs. 2000 or Rs. 3000 or Rs. 4000 or Rs. 5000 after the age of 60 years, based on the contributions made by the subscriber after joining the scheme.

46. (d)

NASA's James Webb Space Telescope has recently captured the "antics" of a pair of actively forming young stars, known as Herbig-Haro 46/47, in high-resolution near-infrared light. Herbig-Haro 46/47 is an important object to study because it is relatively young – only a few thousand years old. Star systems take millions of years to fully form. **Targets like this give researchers insight into how much mass stars gather over time.**

47. (b)

The Reserve Bank of India (RBI) came up with a regulatory framework for banks to accept green deposits from customers. Green deposits are not very different from the regular deposits that banks accept from their customers. **The only major difference is that banks promise to earmark the money that they receive as green deposits towards environment-friendly projects.**

48. (c)

Statement 1 is correct: India was elected to be part of the 24 Member Inter-governmental Committee (IGC) of the ICH 2003 Convention in 2022 for a tenure of 4 years.

Statement 2 is not correct: Sangeet Natak Akademi has been appointed as the nodal agency which directly implements the Scheme of Intangible Cultural Heritage of India, under the aegis of Ministry of Culture.

Statement 3 is correct: "Garba of Gujarat" was recently included in the UNESCO Intangible Cultural Heritage List.

49. (a)

Biomagnification refers to increase in concentration of the toxicant at successive trophic levels. This happens because a toxic substance accumulated by an organism cannot be metabolised or excreted, and is thus passed on to the next higher trophic level. This phenomenon is well known for mercury and DDT.

Additional information: Bioaccumulation means an increase in the concentration of a chemical in a biological organism over time.

50. (c)

- Keoladeo National Park, Rajasthan and Loktak Lake, Manipur have been included in the Montreux Record in 1990 and in 1993 respectively.
- Chilika Lake, Orissa, included in the Montreux Record in 1993 was removed in November 2002. It was placed on the Montreux Record due to problems caused by siltation and sedimentation which was choking the mouth of the lake; removed from the Record in 2002 following rehabilitation efforts for which the Chilika Development Authority received the Ramsar Wetland Conservation Award for 2002.

51. (d)

Statement 1 is not correct: In 2019, the Union government declared that Large Hydropower Projects will be redesignated as Renewable Energy source (earlier, only hydropower projects less than 25 MW were categorized as Renewable Energy).

Statement 2 is correct: A dam that creates a reservoir (or a dam that diverts water to a run-of-river hydropower plant) may obstruct fish migration. A dam and reservoir can also change natural water temperatures, water chemistry, river flow characteristics, and silt loads. All of these changes can affect the ecology and

the physical characteristics of the river. These changes may have negative effects on native plants and on animals in and around the river.

52. (a)

The treaty was the result of the Battle of Buxar fought between the East India Company and combined armies of Bengal, Awadh and Mughal Emperor Shah Alam II.

Statement 1 is not correct: As a result of victory at Battle of Plassey (not Buxar), Mir Jafar became the Nawab of Bengal. He gave large sums of money plus the zamindari of 24 parganas to the English.

Statement 2 and 3 are correct: Robert Clive concluded two important treaties at Allahabad in August 1765—one with the Nawab of Awadh and the other with the Mughal Emperor, Shah Alam II.

Nawab Shuja-ud-Daula agreed to:

- **surrender Allahabad and Kara to Emperor Shah Alam II;**
- pay Rs 50 lakh to the Company as war indemnity; and
- give Balwant Singh, Zamindar of Banaras, full possession of his estate.

Shah Alam II agreed to:

- reside at Allahabad, to be ceded to him by the Nawab of Awadh, under the Company's protection;
- **issue a farman granting the diwani of Bengal, Bihar and Orissa to the East India Company in lieu of an annual payment of Rs 26 lakh; and**
- a provision of Rs 53 lakh to the Company in return for nizamat functions (military defence, police, and administration of justice) of the said provinces.

Statement 4 is not correct: The treaty made the Nawab a firm friend of the Company, and turned Awadh into a buffer state. Awadh was annexed in 1856 under the Doctrine of Lapse

53. (a)

A high revenue deficit warns the government either to curtail expenditure or increase in tax and non-tax receipts.

Statement 1 is correct: Increase in corporate tax rate will increase the revenue receipts, thereby reducing the revenue deficit.

Statement 2 is not correct: Increase in salaries and pensions of government employees will increase the revenue expenditure, and hence the revenue deficit.

Statement 3 is not correct: Increased subsidy will result in increased revenue deficit. As it is part of revenue expenditure.

54. (a)

Identical twins (also called monozygotic twins) result from the fertilization of a single egg by a single sperm, with the fertilized egg then splitting into two. Therefore, identical **twins share the same genomes**. Despite this, identical twins can be distinguished through the unique biological identifier of fingerprints.

Identical twins do not have identical fingerprints, even though their identical genes give them very similar patterns. That's because fingerprints are influenced by both genetic and environmental factors during development in the womb. **Hence, both statements are correct and Statement II is the correct explanation of Statement I.**

55. (d)

A neobank is a fintech company that provides financial services through a mobile app or website, including checking and savings accounts, budgeting tools and cash advances. They typically appeal to customers looking for flexibility, convenience and transparency in their banking.

Since neobanks don't carry the costs associated with maintaining physical locations, they can offer lower fees and higher interest rates on savings accounts. They also tend to have more intuitive apps and websites with a

more seamless and user-friendly customer experience.

Most neobanks aren't actually banks—they're not chartered by the Office of the Comptroller of the Currency — so they have to partner with chartered banks to aid in the delivery of products and services and to make sure deposits are insured by the Federal Deposit Insurance Corporation (FDIC).

Hence, (d) is the correct answer.

56. (b)

The Special Category Status (SCS) was a classification provided by the **Central government** to support the development of states facing geographical or socio-economic challenges.

Statement 1 is not correct:

- Instituted in 1969 based on the **5th Finance Commission's recommendations**, SCS aimed to benefit certain disadvantaged states through measures like establishing special development boards and providing reservations in local government jobs and educational institutions. **The Indian Constitution does not have any provision for categorizing states as SCS states.**

Statement 2 is correct:

- **Criteria for granting SCS:** (i) hilly and difficult terrain (ii) **low population density and/or sizeable share of tribal population** (iii) strategic location along international borders (iv) economic and infrastructural backwardness and (v) non-viable nature of state finances

Statement 3 is correct:

- Following the recommendations of 14th Finance Commission, the Special Category States cease to exist and thus, no special category status has been granted to any State.
- Since its bifurcation in 2014, Andhra Pradesh has asked for a grant of SCS on the

grounds of revenue loss due to Hyderabad going to Telangana. However, the Central government citing the 14th FC report, which made a recommendation to the Centre that no State be accorded the SCS, has repeatedly denied their demands.

57. (b)

Statement 1 is correct: As per Article 243(b) of the Constitution of India, there shall be constituted in every State, Panchayats at the village, intermediate and district levels. However, the States having a population not exceeding twenty lakhs need not constitute Panchayats at the intermediate level.

Statement 2 is not correct: Responsibility for conducting elections to the Panchayats is vested in the State Election Commission consisting of a State Election Commissioner to be appointed by the Governor. However, the State Election Commissioner is an **independent officer and is not linked to nor is this office under the control of the Election Commission of India.**

Statement 3 is correct: As per Article 243(C) of the Constitution of India, all the seats in a Panchayat shall be filled by persons chosen by direct election from territorial constituencies in the Panchayat area.

58. (b)

Statement 1 is correct: Zonal councils have been established under State Reorganisation Act 1956 to advise on the matters of common interest to each of these zones within territory of India and to develop the habit of cooperative working.

Statement 2 is not correct: Union territories are also part of the zonal councils. For example, the Southern zonal council consists of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and the Union Territory of Puducherry.

Statement 3 is not correct: The Union Home Minister is the Chairman of each of these Councils. The Chief Ministers of the States included in each zone act as Vice-Chairman of the Zonal Council for that zone by rotation,

each holding office for a period of one year at a time.

Statement 4 is correct: The North Eastern States i.e. (i) Assam (ii) Arunachal Pradesh (iii) Manipur (iv) Tripura (v) Mizoram (vi) Meghalaya and (vii) Nagaland are not included in the Zonal Councils and their special problems are looked after by the North Eastern Council, set up under the North Eastern Council Act, 1972. The State of Sikkim has also been included in the North Eastern Council vide North Eastern Council (Amendment) Act, 2002.

59. (b)

Statement 1 is correct: The Governor appoints the members as well as chairman of the State Public Service Commission. But under Article 317 of the Constitution of India, the Chairman or any other member of a Public Service Commission shall only be removed from his office by order of the President on the ground of misbehavior.

Statement 2 is not correct: As per Article 155 and Article 156 of the Constitution, a Governor of a state is appointed by the President, and he or she holds office “during the pleasure of the President”. If a Governor continues to enjoy the “pleasure of the President”, he or she can be in office for a term of five years. Because the President is bound to act on the aid and advice of the Council of Ministers under Article 74 of the Constitution, in effect it is the central government that appoints and removes the Governors.

Statement 3 is correct: According to Article 165 (3), the Advocate-General shall hold office during the pleasure of the Governor, and shall receive such remuneration as the Governor may determine. Conduct of Government Business.

60. (b)

Statement 1 is correct: EVMs are not deployed in polls to elect the President and Vice President of India, members of the

Rajya Sabha, and members of state legislative councils.

Statement 2 is not correct: Although votes cast as NOTA are counted, they are invalid votes so they will not impact the result of the election process. Therefore, whether NOTA gets more or less votes, it is not taken into account for calculating the total valid votes.

Statement 3 is correct: A political party becomes eligible to be recognised as a national party if it fulfills any of the three following conditions:

- The party has won 2 % of seats in the Lok Sabha (11 seats) from at least three different states in the latest general election.
- In an election to the Lok Sabha or Legislative Assembly, the party has polled 6 per cent of the total valid votes in at least four states, in addition to winning four Lok Sabha seats.
- **A party has got recognition as a state party in at least four states.**

61. (c)

Equal Protection of the Laws means that among the equals, the law should be equal and equally administered, that likes should be treated alike. Substantive equality and Distributive Justice are at the heart of understanding the guarantee of equal protection of law. It also means the right to equal treatment in similar circumstances, both in privileges conferred and in the liabilities imposed. Art. 14 of the Constitution of India proceeds on the premise that equality of treatment is required to be given to persons who are equally circumstanced. On the other hand, States can treat unequals differently to create a level playing field in the social and political sphere.

62. (b)

Statement 1 is correct: The Constitution of India in Article 366 (25) prescribes that the Scheduled Tribes means such tribes or tribal communities as are deemed under Article 342

of the Constitution to be Scheduled Tribes. Article 342 further states that the President may with respect to any State (after consultation with Governor) or Union territory, specify the tribes or tribal communities which shall be deemed to be Scheduled Tribes.

Statement 2 is correct: The Constitution is silent about the criteria for specification of a community as a Scheduled Tribe.

Statement 3 is not correct: According to the Art. 164 of the Constitution of India, states of Chhattisgarh, Jharkhand, Madhya Pradesh and Odisha there shall be a Minister in charge of tribal welfare who may in addition be in charge of the welfare of the Scheduled Castes and backward classes or any other work.

63. (c)

Statement I is correct: National Legal Services Day is observed every year on 9th November, whereby nationwide programmes are organized to make people aware of the various services provided by Legal Services Authorities. The day commemorates the commencement of the Legal Services Authorities Act, 1987. In the year 1987, the Legal Services Authorities Act was enacted by the Parliament which came into force on 9th November, 1995 to establish a nationwide uniform network for providing free and competent legal services to the weaker sections of the society on the basis of equal opportunity.

Statement II is not correct: The first Lok Adalat was organized in Gujarat in 1982 as a voluntary and conciliatory agency with no legal sponsorship for its decision.

64. (c)

Statement 1 is correct: Directorate of Enforcement (ED) is a law enforcement agency and economic intelligence agency responsible for enforcing economic laws and fighting economic crime in India. The Directorate of Enforcement is a multi-disciplinary organization mandated with investigation of

offences of money laundering and violations of foreign exchange laws. The statutory functions of the Directorate include enforcement of following Acts:

- Prevention of Money Laundering Act, 2002 (PMLA)
- Foreign Exchange Management Act, 1999 (FEMA)
- Fugitive Economic Offenders Act, 2018 (FEOA)
- Foreign Exchange Regulation Act, 1973 (FERA)
- Sponsoring agency under COFEPOSA

Statement 2 is correct: It is part of the Department of Revenue, Ministry of Finance, Government Of India.

Statement 3 is correct: Under the Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA), this Directorate is empowered to sponsor cases of preventive detention with regard to contraventions of FEMA.

65. (a)

1 is correct: According to Article 169, Parliament may by law provide for the abolition of the Legislative Council of a State, if the legislative assembly of the concerned state passes a resolution to that effect. No such law shall be deemed to be an amendment of this Constitution for the purposes of article 368.

2 is correct: Parliament may by law amend any of the provisions of Fifth Schedule, and No such law shall be deemed to be an amendment of this Constitution for the purposes of article 368.

3 is not correct: Amendment in Article 51 A is considered to be an amendment of the Constitution for the purpose of Article 368 and requires a special majority.

66. (d)

The correct order from higher to lower is:

- Governors of States within their respective States

- Former Presidents
- Speaker of Lok Sabha
- Cabinet Ministers of the Union
- Chief Election Commissioner

67. (b)

In India's democratic system, the government cannot spend from the Consolidated Fund unless the expenditure is voted in the lower house of Parliament or State Assemblies. However, according to Article 112 (3) and Article 202 (3) of the Constitution of India, the following expenditure does not require a vote and is charged to the Consolidated Fund.

- Salaries, Allowances, of the Chairman and Deputy Chairman of Council of States and the Speaker and Deputy Speaker of the House of the People.

- **Debt charges for which Government of India is liable**

- Salaries, Allowances, and Pensions Payable to or in respect of judges of Supreme Court
- 4) **Pensions payable to Judges of High court**

- The salary, allowances, and pensions payable to or in respect of Comptroller and Accountant General of India.
- Any Sums required to satisfy any judgment, decree, award given by Arbitral Tribunal or court
- Salaries, allowances and pension of the chairman and members of the **Union Public Service Commission (Given in Article-322)**

68. (b)

Statement 1 is correct: Members of the Constituent Assembly were indirectly elected by members of Provincial Legislative Assemblies according to a scheme recommended by Cabinet Delegation.

Statement 2 is correct: The Seats in each British Indian Province were distributed among General, Muslims and Sikhs as per

their respective population. Members of each community in the Provincial Legislative Assembly elected their own representatives by method of proportional representation with single transferable vote.

Statement 3 is not correct: Sardar Patel was Chairman of Provincial Constitution committee.

69. (a)

Statement 1 is not correct: Casgevy is a cell-based gene therapy (not bone marrow transplant) for the treatment of sickle cell disease in patients 12 years of age and older with recurrent vaso-occlusive crises. Casgevy is the first US FDA-approved gene therapy utilizing CRISPR/Cas9, a type of genome editing technology. In this technique, patients' blood stem cells are modified by genome editing using CRISPR/Cas9 technology.

Statement 2 is not correct: So far, the only permanent treatment has been a bone marrow transplant, for which a closely matched donor is required. Casgevy is not the sole treatment available.

Statement 3 is correct: Sickle cell disease and thalassemia are genetic disorders caused by errors in the genes for hemoglobin, a protein contained in red blood cells that is responsible for delivery of oxygen to the tissues. These disorders can cause fatigue, jaundice, and episodes of pain ranging from mild to very severe. They are inherited, and usually both parents must pass on an abnormal gene in order for a child to have the disease. When this happens, the resulting diseases are serious and, at times, fatal.

70. (b)

- NASA's DSOC experiment is the agency's first demonstration of optical communications beyond the Earth-Moon system. The experiment, which is seeking to revolutionise spacecraft communication, is part of the recently launched Psyche spacecraft.

- Currently, most space communication is carried out using radio waves. Whereas, the DSOC utilizes near-infrared laser signals for communication with spacecraft. The DSOC experiment aims to demonstrate data transmission rates 10 to 100 times greater than the state-of-the-art radio frequency systems used by spacecraft today.

71. (a)

Statement 1 is correct: Stem cells and their derivatives fall under definition of 'Drug' as per the Drugs and Cosmetics Act 1940, and are categorized as 'Investigational New Drug (IND)' or 'Investigational New Entity (INE)' when used for clinical application.

Statement 2 is not correct: Totipotent cells can form all the cell types in a body, plus the extraembryonic, or placental, cells. Embryonic cells within the first couple of cell divisions after fertilization are the only cells that are totipotent. Whereas, Pluripotent cells can give rise to all of the cell types that make up the body, but cannot form extra embryonic cells (like the placenta).

72. (c)

- The World Health Organization (WHO) has recommended a new vaccine, R21/Matrix-M, for the prevention of malaria in children. The R21 vaccine is the second malaria vaccine recommended by WHO, following the RTS,S/AS01 vaccine, which received a WHO recommendation in 2021. Both vaccines are shown to be safe and effective in preventing malaria in children and, when implemented broadly, are expected to have high public health impact.
- About Malaria:** Malaria is a life-threatening disease primarily found in tropical countries. It is both preventable and curable. Malaria is not contagious and cannot spread from one person to another; the disease is transmitted through the bites of female Anopheles mosquitoes. Five

species of parasites can cause malaria in humans and 2 of these species – Plasmodium falciparum and Plasmodium vivax – pose the greatest threat.

73. (a)

- In November 2023, the government notified a host of guidelines addressing the regulation of dark patterns to curb the deceptive behaviour of ecommerce companies. The final guidelines have marked 13 types of dark patterns, up from the 10 identified earlier as part of the draft.
- Few of these are; Friend spam, Forced continuity, Disguised ads, Confirm shaming, Bait and switch, Hidden costs, Roach motel, Privacy suckering, Misdirection, Price comparison prevention, Trick questions, Sneak into basket, Nagging etc.
 - ♦ **Basket Sneaking-** Adding extra items or services to a user's shopping exercise without their explicit consent or knowledge. **Hence, pair 1 is incorrectly matched.**
 - ♦ **Nagging-** Persistent and intrusive messages or prompts are employed to pressure users into taking a specific action or making a particular decision. **Hence, pair 2 is incorrectly matched**
 - ♦ **Roach Motel-** Making it easy for users to sign up or subscribe but intentionally creating obstacles or confusion when they try to unsubscribe or delete their account. **Hence, pair 3 is correctly matched**

74. (a)

Statement 1 is not correct: Fast radio bursts (FRBs) are intense blasts of radio waves that can emit as much energy as the sun puts out in three days — but in just thousandths of a second. They appear for a few milliseconds and then vanish.

Statement 2 is correct: FRBs are observed in the radio frequency range, specifically in the GHz range, while Other Stellar Explosions such as supernovae and gamma-ray bursts emit radiation across a broad spectrum, including visible light, X-rays, and gamma-rays.

Statement 3 is not correct: Some FRBs are 'one-off' phenomena: spotted just once and never detected again; others are repeaters, flashing earth intermittently like some ghostly lighthouse in the depths of space. Recently, In a new study, a team led by astronomers from the Canadian Hydrogen Intensity Mapping Experiment (CHIME)/FRB Collaboration and the University of Toronto found 25 new repeating FRBs, bringing the total known to 50.

Additional information: Scientists don't know exactly what causes FRBs. Proposed candidates include magnetars (rapidly rotating neutron stars with powerful magnetic fields); white dwarfs; collapsing neutron stars, or "blitzars"; and colliding galaxies.

75. (d)

- Piezoelectricity is a remarkable phenomenon whereby some materials – including quartz, ceramics such as lead zirconate titanate (PZT), and even certain biological substances like bone and the tendons – can generate an electric charge in response to mechanical stress. This property is the result of their unusual crystal structures. Some materials also display an inverse piezoelectric effect, where the application of an electric current induces a mechanical deformation.
- **All are correct:** Both direct and inverse piezoelectric materials are widely used in pressure sensors, accelerometers, and acoustic devices – where their ability to convert mechanical signals into electrical signals is crucial. The piezoelectric effect is also what made quartz watches so common and, over time, affordable.

76. (c)

Context: A team of researchers from the Indian Institute of Technology (IIT), Ropar has found the presence of tantalum, a rare metal, in the Sutlej river sand in Punjab.

Statement 1 is correct: Tantalum is a rare metal with the atomic number 73. It's grey, heavy, very hard, and one of the most corrosion-resistant metals in use today. One of the main uses of tantalum is in the production of electronic components.

Statement 2 is not correct: The reason for Tantalum being a corrosion resistant metal is its ability to form an oxide layer when exposed to air which is extremely difficult to remove, even when it interacts with strong and hot acid environments.

Additional information about uses of Tantalum:

- The capacitors made from tantalum are capable of storing more electricity in smaller sizes without much leakage than any other type of capacitor. This makes them ideal for use in portable electronic devices such as smartphones, laptops, and digital cameras.
- Being corrosion resistant, it is used in equipment for handling corrosive materials. It has also found uses as electrodes for neon lights, AC/DC rectifiers and in glass for special lenses.
- Tantalum does not react with bodily fluids and is used to make surgical equipment and implants, like artificial joints.
- A composite consisting of tantalum carbide (TaC) and graphite is one of the hardest materials known and is used on the cutting edges of high-speed machine tools

77. (a)

- Lagrange points are positions in space where objects sent there tend to stay put. At Lagrange points, the gravitational pull of two large masses precisely equals the

centripetal force required for a small object to move with them. These points in space can be used by spacecraft to reduce fuel consumption needed to remain in position.

Hence, statement 1 is correct.

Space agencies around the world that have used Lagrange points for missions : NASA (Genesis) , ISRO(Aditya L1) , ESA (EU Vigil). **Hence, statement 2 is not correct.**

For any 2 body system, we have 5 lagrange points. Of the five Lagrange points, three are unstable and two are stable. The unstable Lagrange points - labeled L1, L2 and L3 - lie along the line connecting the two large masses. The stable Lagrange points - labeled L4 and L5 - form the apex of two equilateral triangles that have the large masses at their vertices. L4 leads the orbit of earth and L5 follows. **Hence, statement 3 is not correct.**

78. (a)

- As the name indicates, lab-grown diamonds (LGDs) or synthetic diamonds are created or “synthesized” in laboratories. Lab-grown diamonds combine stunning looks and lower prices with ethical sourcing and cost 30-40% less than natural diamonds with **similar physical and chemical properties. Hence, statement 1 is correct.**
- Natural diamonds form up to 150 miles below the Earth's crust, where carbon is compressed under extremely high temperatures and pressures. Scientists produce synthetic diamonds under the same conditions but in laboratories, **using a variety of methods to compress carbon at high temperatures and high pressures** to make it crystalize. **Hence, statement 2 is not correct.**
- Materials such as Moissanite, Cubic Zirconia (CZ), White Sapphire, YAG, etc. are “**diamond simulants**” that simply attempt to “look” like a diamond, but they lack the sparkle and durability of a diamond and are thus easily identifiable. **But LGDs**

are not the same as “diamond simulants” – LGDs are chemically, physically and optically diamond and thus are difficult to identify as “lab-grown.” Hence, statement 3 is not correct.

79. (a)

Saturated Fats are mainly found in foods that come from animals (such as meat and dairy), but they can also be found in most fried foods and some prepackaged foods. Saturated fats are unhealthy because they increase LDL (“bad” cholesterol) levels in your body and increase your risk for heart disease. Hence, both statements are correct and Statement-II is the correct explanation for Statement-I.

Additional information: On the contrary, HDL (high-density lipoprotein) cholesterol is sometimes called “good” cholesterol, as it absorbs cholesterol in the blood and carries it back to the liver. The liver then flushes it from the body. High levels of HDL cholesterol can lower your risk for heart disease and stroke.

80. (d)

Statement-I is not correct: There has been an increase in jellyfish blooms recorded across the world. While many species are facing extinction due to climate change and other ecologically destructive human activities, jellyfish are not among them. Increases in jellyfish blooms have been recorded across the world, including in the Black Sea, off the Namibian coast, and across the Sea of Japan. In fact, jellyfish populations have grown over the past two decades. **Jellyfish blooms sighted in estuaries in coastal north Kerala have become an increasing cause for concern for the fisherman of kerala.**

Statement-II is correct: Warmer waters with lower oxygen levels can have significant impacts on aquatic ecosystems, affecting various marine organisms. The solubility of oxygen in water decreases as water

temperature increases, leading to lower oxygen concentrations in warmer waters. Additionally, factors such as nutrient runoff and increased microbial activity can contribute to oxygen depletion.

81. (a)

- **Option a is correct:** The Rise of Environmental Crime Report” was released jointly by the United Nations Environment Programme (UNEP) and Interpol.
- **UNEP:** is a leading global environmental authority that works with governments and various stakeholders to address environmental challenges. The 1972 United Nations Conference on the Human Environment led to the formation of UNEP. It is Headquartered in Nairobi, Kenya.
- **Interpol:** It is the International Criminal Police Organization that facilitates international police cooperation. Their collaboration in releasing this report highlights the importance of addressing environmental crimes and the need for coordinated efforts on a global scale.

82. (b)

Certain ant species engage in suicidal behaviors to defend their colonies. Soldier ants, when faced with a threat, may release toxic chemicals from their bodies, engaging in a form of chemical warfare. This act often results in the death of the defending ant but serves to protect the colony. This behavior is often seen in ant species that face threats such as predators or invading insects. The sacrificed soldier ants release their defensive chemicals, which can either deter the threat or cause harm to the attacker, providing the rest of the colony, including the queen, workers, and brood, with a better chance of survival.

83. (b)

Statement 1 is correct: Bats are the only mammals capable of sustained flight due to unique adaptations in their anatomy and

physiology that have evolved over millions of years. Bats have elongated fingers covered by a thin membrane of skin, forming wings. This structure allows them to generate lift and thrust during flight.

Statement 2 is not correct: Bats have relatively long life-spans and are relatively more protected from a variety of diseases, including cancer. Genome studies have revealed a number of genes involved in suppressing tumours and in repairing DNA contained signs of positive selection. According to the researchers, this could contribute to the bats' longer life span and a significantly lower risk of developing cancer.

Statement 3 is correct: Echolocation is a remarkable sensory adaptation that bats use for navigating and hunting in low-light or complete darkness. The ultrasonic pulses produced by bats travel through the air. When these sound waves encounter objects in the environment, they reflect back as echoes.

84. (a)

All mycoplasma infections have one thing in common though. Unlike other bacteria, mycoplasma does not have cell walls. They are also very small compared to other bacteria. That's important because many antibiotics kill bacteria by weakening those walls. Since mycoplasma bacteria don't have them, some antibiotics, like penicillin, won't work against them. **Hence, both statements are correct and Statement-II is the correct explanation for Statement-I.**

85. (b)

Option 1 is not correct: Chameleons are well known for their ability to camouflage to their surroundings, but they are also able to regenerate their tails and limbs. They can also heal damaged nerves and skin during the regenerative process. But it can not regenerate an entirely new body from a severed arm.

Option 2 is correct: Starfish have remarkable regenerative qualities and they can not only

regrow new limbs but can also grow a whole new body from lost limbs. Lots of new starfish can grow from parts of the original one.

Option 3 is not correct: Salamanders have a certain degree of regeneration. But some species have a higher generative capacity than others. Salamanders tend to regrow their tails, weeks after dropping the old one and the new appendage is fully functional. But Salamander can not regenerate an entirely new body from a severed arm

Option 4 is not correct: Sharks can't regenerate organs or other body parts but they can definitely regenerate their dental structures, as sharks can regrow teeth throughout their lifetimes. It can vary from a few days to a few months.

86. (c)

Statement 1 is correct: Under the Kigali Amendment; Parties to the Montreal Protocol will phase down production and consumption of Hydrofluorocarbons, commonly known as HFCs.

Statement 2 is not correct: Hydrofluorocarbons were introduced as non-ozone depleting alternatives to Hydrofluorocarbons (HFCs). While HFCs do not deplete the stratospheric ozone layer, they have high global warming potential ranging from 12 to 14,000, which have adverse impacts on climate.

87. (c)

Fluoride pollution refers to the release or presence of excessive fluoride in the environment, leading to potential adverse effects on ecosystems and human health. Fluoride is a naturally occurring element found in rocks, soil, water, and various minerals.

Statement 1 is correct: Improper disposal of industrial waste, particularly from industries that use or produce fluoride-containing materials, can lead to the release of fluoride into the environment.

- For example, Li-ion batteries release a variety of toxic substances. At elevated

temperature the fluorine content of the electrolyte and, to some extent, other parts of the battery such as the polyvinylidene fluoride (PVdF) binder in the electrodes, may form gases such as hydrogen fluoride HF, phosphorus pentafluoride (PF₅) and phosphoryl fluoride (POF₃). Compounds containing fluorine can also be present as e.g. flame retardants in electrolyte and/or separator, in additives and in the electrode materials, e.g. fluorophosphates, adding additional sources of fluorine.

Statement 2 is correct: Coal contains varying amounts of fluoride, and the combustion of coal in power plants can release fluoride into the air. This can contribute to air pollution and subsequent environmental contamination.

Statement 3 is correct: The research has found that the natural weathering of rocks can indeed influence the release of various elements, including fluoride, into groundwater. However, the extent of fluoride release can depend on geological factors, the mineral composition of rocks, and local hydrological conditions.

88. (a)

Statement 1 is not correct: Fungi are eukaryotic organisms. This means their cells have a true nucleus and membrane-bound organelles. Fungi include microorganisms such as yeasts and molds, as well as macroscopic fungi like mushrooms.

Statement 2 is correct: Fungi reproduce through both sexual and asexual means. Asexual reproduction involves the production of spores, which can be dispersed to new areas. Sexual reproduction involves the fusion of specialized reproductive cells, leading to the formation of new individuals.

Statement 3 is not correct: Fungi are heterotrophic, which means they obtain their nutrients by absorbing organic material from their environment. They secrete enzymes that break down complex organic compounds into simpler forms, which can then be absorbed by the fungus.

89. (b)

- In order to tackle pressing environmental challenges like climate change, pollution and plummeting biodiversity, nations and businesses need to transition towards greener, resilient and climate-neutral economies and societies.
- **A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.**
- A Just Transition involves maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labour principles and rights .
- Ensuring a just transition is important for all countries at all levels of development. It is also important for all economic sectors – by no means limited to energy supply – and in urban and rural areas alike.

90. (a)

- The Bill amends the Forest (Conservation) Act, 1980 to make it applicable to certain types of land. These include land notified as a forest under the Indian Forest Act, 1927 or in government records after the 1980 Act came into effect. The Act will not be applicable for land converted to non-forest use before December 12, 1996.
- As per the Act, the state government requires prior approval of the central government to assign any forest land to a private entity. The Bill extends this to all entities, and allows the assignment to be made on terms and conditions specified by the central government. **Hence, statement 1 is incorrect.**

- The Act specifies some activities that can be carried out in forests, such as establishing check posts, fencing, and bridges. The Bill also allows running zoos, safaris and eco-tourism facilities. **Hence, statement 2 is incorrect.**
- The bill also exempts certain types of land from the purview of the Act. These include land within 100 km of India's border needed for national security projects, small roadside amenities, and public roads leading to a habitation. **Hence, statement 3 is correct.**

91. (b)

Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour. It is maintained by Central Pollution Control Board.

AQ sub-index and health breakpoints are evolved for eight pollutants (PM10, PM2.5, NO2, SO2, CO, O3, NH3, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.

There are six AQI categories, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints).

92. (a)

Homeostasis of the ecosystem is also acknowledged as a biological equilibrium; in other words balance of Nature. **Homeostasis is the state when an ecosystem maintains a biological equilibrium between the different components. It continues to change with the time** and is not stationary yet it maintains a stability which is sustained by a number of

factors including the carrying capacity of the environment and the capacity for recycling of the waste. **Hence, statement 1 is correct but statement 2 is incorrect.**

93. (c)

- The Balfour Declaration was a public statement by the British Government in 1917 during the First World War (1914-1918) declaring its support for a "national home for Jewish people" in Palestine.
- The declaration was made in a letter that was sent to Lionel Walter Rothschild, a prominent member of the British Jewish community, by Britain's then-foreign secretary, Arthur James Balfour.
- After the collapse of the Ottoman Empire, the document was incorporated into the conditions of the British Mandate for Palestine.

Hence, correct option is (c)

94. (a)

Statement 1 is not correct: The L.69 Group of Developing Countries is a **cross regional grouping of 32 developing countries** from Africa, Latin America and the Caribbean, Asia and the Pacific, that is focused on achieving lasting and comprehensive reforms of the UN Security Council.

Statement 2 is not correct: The Group is bound by the firm conviction that expansion in both the permanent and non-permanent categories of membership of the Security Council is imperative to better reflect contemporary world realities, and achieve a more accountable, representative, transparent and more importantly a 'relevant' Security Council. However, the long term objective of the alliance is to abolish veto.

Statement 3 is correct: Some Member States of the L 69 Group of Developing Countries include: India, Brazil, South Africa, Nigeria, Rwanda, Burundi, Papua New Guinea, Palau,

Fiji, Ethiopia, Bhutan, Venezuela, Mongolia etc. Recently, A high-level meeting of members of the L.69 group and other invited like-minded countries on “Reinvigorating Multilateralism and Achieving Comprehensive Reform of the UN Security Council”, was held in New York. It was chaired by the Prime Minister of St. Vincent and Grenadines, Ralph Gonsalves, and **co-hosted by External Affairs Minister Dr. S. Jaishankar.**

95. (a)

- As per Vienna Convention on Diplomatic Relations 1961:
- **Article 29** - The person of a diplomatic agent shall be inviolable. He shall not be liable to any form of arrest or detention. The receiving State shall treat him with due respect and shall take all appropriate steps to prevent any attack on his person, freedom or dignity. **Hence, statement 1 is correct.**
- Article 31(1) - A diplomatic agent shall enjoy immunity from the criminal jurisdiction of the receiving State. **He shall also enjoy immunity from its civil and administrative jurisdiction, except in the case of:**
 - (a) A real action relating to private immovable property situated in the territory of the receiving State, unless he holds it on behalf of the sending State for the purposes of the mission;
 - (b) An action relating to succession in which the diplomatic agent is involved as executor, administrator, heir or legatee as a private person and not on behalf of the sending State;
 - (c) An action relating to any professional or commercial activity exercised by the diplomatic agent in the receiving State outside his official functions. **Hence, statement 2 is incorrect.**
- Article 31(4) - The immunity of a diplomatic agent from the jurisdiction of

the receiving State does not exempt him from the jurisdiction of the sending State.

Hence, statement 3 is incorrect.

96. (b)

Among the given countries, only Saudi Arabia and Yemen share the border with red sea.



97. (d)

Statement 1 is not correct: Recently, On the side-lines of the G20 Summit, held under the Presidency of India, a Memorandum of Understanding (MoU) was signed by **India, the European Union (EU), Germany, Italy, France, the United States, Saudi Arabia, and the United Arab Emirates (UAE) (participants)** in which they committed to work collectively to establish the India–Middle East–Europe Economic Corridor (IMEC), comprising railway lines, sea lines, and road networks.

Statement 2 is incorrect : The Corridor will be supported by the Partnership for Global Infrastructure and Investment (PGII), a US-led initiative to bridge the infrastructure gap in developing countries. The Corridor is seen by many analysts as an alternative to China’s Belt and Road Initiative (BRI), which has left many developing countries in deep debt. It is not related to IPEF.

Additional information: The IMEC will consist of two corridors– the East Corridor connecting India to the Arabian Gulf and the Northern Corridor connecting the Arabian Gulf

to Europe. Upon completion, the corridor will have a cost-effective and reliable cross-border railway network, which will be supplemented by the available road transport and maritime routes, facilitating the movement of goods and services between India, the UAE, Saudi Arabia, Jordan, Israel, Greece, and Italy, France, and Germany.

98. (a)

- Black sea grain deal is a UN plan, which is linked to efforts to ensure Russian food and fertilizer reach global markets, supports the stabilization of spiralling food prices worldwide and stave off famine, affecting millions.
- The Initiative specifically allows for commercial food and fertilizer (including ammonia) exports from three key Ukrainian ports in the Black Sea – Odessa, Chornomorsk, Yuzhny/Pivdennyi. **Hence, statement 1 is correct.**
- The Joint Coordination Centre (JCC) was established to monitor the implementation of the Initiative. The Joint Coordination Centre is hosted in Istanbul and includes representatives from Russia, Türkiye, Ukraine and the United Nations. Therefore, **statement 2 is incorrect.**

99. (c)

1 is correctly matched: Marrakesh, Morocco's fourth-largest city, was rocked by a powerful earthquake in September 2023 that destroyed historic buildings and killed hundreds.

2 is correctly matched: On September 10, a Mediterranean storm(Daniel) made landfall near the Benghazi city in northeast Libya. It brought record-breaking rainfall to the country. Between September 9 and 11, more than 100 mm rainfall was recorded. The Al Bayda station near the coast saw 414 mm of rainfall, the highest ever recorded in 24 hours. Usually, the region receives just around 1.5 mm of rain for the whole of September.

3 is correctly matched: Azerbaijani troops came on the edge of the separatist stronghold of Stepanakert in Azerbaijan's Armenian-populated enclave of Nagorno-Karabakh, prompting residents to hide in basements in fear, according to a rebel envoy.

100.(d)

As of September 2023, the East and Horn of Africa and the Great Lakes (EHAGL) region was hosting around 14.6 million Internally Displaced Persons (IDPs) in five countries – mainly in Burundi, Ethiopia, Somalia, South Sudan and Sudan. Nearly four million refugees are hosted by just four countries in East Africa - that is over 10 percent of the global number of refugees. Uganda, Kenya, Sudan and Ethiopia are countries of asylum for millions of people fleeing conflict and climate change, many of whom are experiencing protracted displacement.

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