

General Studies

(Paper-I)

1. (c)

Statement 1 is correct: Article 1 states that India, that is Bharat, shall be a Union of States.

Statement 2 is not correct: The term "Territory of India" is wider than "Union of India". Union of India only includes only states, whereas the Territory of India includes states, Union territories and territories that may be acquired by the Government of India at any future time.

Thus, option (c) is the correct answer.

2. (d)

Statement 1 is not correct: It seeks to reserve one-third of seats in Lok Sabha (not whole Parliament) and State Legislative Assemblies for women.

Statement 2 is not correct: The seats reserved for women will be rotated after each delimitation exercise.

Statement 3 is not correct: The reservation will be effective once the census conducted after the commencement of this Bill has been published. Based on the census, delimitation will be undertaken to reserve seats for women.

Thus, option (d) is the correct answer.

3. (a)

Statement 1 is not correct: Any person or member may make a complaint relating to unethical conduct of a member of Lok Sabha. Provided if a complaint is made by any person, it shall be forwarded by a member.

Statement 2 is not correct: Ethics committee examines only complaints relating to unethical conduct of a member of Lok Sabha. The Committee of privileges examines the cases related to the breach of privilege of the House. In the case of the Privileges committee, even a non-MP (Member of Parliament) can be

accused of breach of privilege for actions that attack the authority and dignity of the House.

Statement 3 is correct: The Ethics Committee in Rajya Sabha was constituted in 1997, whereas it was constituted in Lok Sabha in 2000.

Thus, option (a) is the correct answer.

4. (d)

The fountain source of law in India is the Constitution which, in turn, gives due recognition to statutes, case law and customary law consistent with its dispensations. Statutes are enacted by Parliament, State Legislatures and Union Territory Legislatures. There is also a vast body of laws known as subordinate legislation in the form of rules, regulations as well as by-laws made by Central and State Governments and local authorities like Municipal Corporations, Municipalities, Gram Panchayats and other local bodies.

Thus, option (d) is the correct answer.

5. (a)

In 1867, Portugal enacted a Portuguese civil code and in 1869 it was extended to Portugal's overseas provinces (that included Goa). After its liberation in 1961, Goa retained the Portuguese Civil Code, making it the only state to have a uniform civil code for all religions. **Therefore, Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

Thus, option (a) is the correct answer.

6. (a)

Statement 1 is correct: Article 262 of the Constitution states that Parliament may by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any inter-state water dispute. Accordingly,

Inter-State River Water Disputes Act, 1956 states that neither the Supreme Court nor any other Court shall have or exercise jurisdiction in respect of any water dispute which may be referred to a Tribunal under this Act.

Statement 2 is not correct: Supreme does accept appeals against the order of the Inter-state water tribunal as Article 136 of the Constitution empowers it to hear appeals against the tribunals and ensure the implementation of the tribunal.

Thus, option (a) is the correct answer.

7. (b)

The terms “Deputy Prime minister” and “National emergency” are not mentioned in the Constitution of India. Article 352 of the Constitution of India deals with the proclamation of emergency on grounds of war, external aggression or armed rebellion. This is popularly known as the National emergency (but the Constitution does not use the same term).

Thus, option (b) is the correct answer.

8. (c)

Cabinet committee	: Currently headed by
Appointments Committee of the Cabinet	: Prime Minister
Cabinet Committee on Economic Affairs	: Prime Minister
Cabinet Committee on Political Affairs	: Prime Minister
Cabinet Committee on Security	: Prime Minister
Cabinet Committee on Investment and Growth	: Prime Minister
Cabinet Committee on Employment and Skill Development	: Prime Minister
Cabinet Committee on Accommodation	: Minister of Home Affairs

Thus, option (c) is the correct answer.

9. (c)

Statement I is correct: Whenever there is a potential conflict of interest, a judge can withdraw from a case to prevent the perception that the judge was biased while deciding a case. The practice stems from the cardinal principle of due process of law — nemo judex in sua causa, that is, no person shall be a judge in his own case.

Statement II is incorrect: India has no codified rules governing recusals, although several Supreme Court judgments have dealt with the issue.

Thus, option (c) is the correct answer.

10. (c)

Statement 1 is not correct: Censure motion can be moved against an individual minister or group of ministers. It is a motion moved against the Government censuring its policy in some direction or an individual minister or ministers of the Government.

Statements 2 and 4 are correct: A motion of no-confidence can be moved against entire council of minister only. In view of the express Constitutional provision regarding collective responsibility of the Council of Ministers to the Lok Sabha, a motion expressing want of confidence in an individual Minister is out of order. Under the Rules, only a motion expressing want of confidence in the Council of Ministers as a body is admissible. . No-confidence motion needs the support of at least 50 members to be admitted

Statement 3 is correct: Adjournment Motion is the procedure for adjournment of the business of the House for the purpose of discussing a definite matter of urgent public importance, which can be moved with the consent of the Speaker. The Adjournment Motion, if admitted, leads to setting aside of the normal business of the House for discussing the matter mentioned in the motion. Its adoption is regarded as a sort of censure of the Government.

Thus, option (c) is the correct answer.

11. (b)

Ways to Renounce Citizenship in India as mentioned in Citizenship act, 1955:**Voluntary Renunciation:**

- An Indian citizen of full age and capacity can relinquish citizenship through their will.
- When an individual gives up citizenship, minor children also lose Indian citizenship but can regain it at 18.

By Termination:

- India follows single citizenship, meaning one can be a citizen of only one country at a time.
- If a person becomes a citizen of another country, Indian citizenship automatically ends, except during war.

Deprivation by Government:

Government can terminate citizenship if a citizen:

- Shows disloyalty to the Constitution of India
- Acquired citizenship through fraud
- Illegally traded or communicated with the enemy during war
- Is sentenced to over 2 years in prison within 5 years of registration or naturalization
- Lives outside India for 7 consecutive years

Thus, option (b) is the correct answer.

12. (a)

Statement 1 is not correct: Britain is an example of Parliamentary form of Government without elected head. Elected head is an essential feature of Republic, but not the Parliamentary form of Government.

Statement 2 is not correct: Britain is an example of Parliamentary form of Government without written constitution.

Statement 3 is correct: Collective responsibility of the minister towards Parliament is very much foundation of Parliamentary form of government. This provision means that a Ministry which loses confidence of the

Lok Sabha is obliged to resign. The principle indicates that the ministry is an executive committee of the Parliament and it collectively governs on behalf of the Parliament. Collective responsibility is based on the principle of the solidarity of the cabinet. It implies that a vote of no confidence even against a single minister leads to the resignation of the entire Council of Ministers.

Thus, option (a) is the correct answer.

13. (a)

Only Education is a concurrent list subject. Whereas, Public health, Police, Agriculture are subjects given the state list

Thus, option (a) is the correct answer.

14. (a)

Statement I is correct: The return an investor receives on a bond, or on a specific government securities, is known as the bond yield. The Reserve Bank of India's monetary policy, particularly the course of interest rates, the government's borrowing program and fiscal condition, international markets, and inflation are the main factors driving the yield.

Statement II is correct and also explains the Statement II: The high bond yields make elevated equity markets less attractive and risk-averse investors are the first ones to change the asset allocation. This makes the stock market slide down.

Thus, option (a) is the correct answer.

15. (c)

Statements 1 and 3 are correct: Government has set up the Urban Infrastructure Development Fund (UIDF) through use of priority sector lending shortfall for creating urban infrastructure in Tier 2 and Tier 3 cities.

Statement 2 is correct: This fund has been operationalized with an initial corpus of Rs. 10,000 crore and will be managed by National Housing Bank.

Eligible Activities for availing loans under the UIDF are aligned with the Missions and

programmes of the Ministry of Housing and Urban Affairs, with a focus on basic services like sewerage and Solid Waste Management, water supply and sanitation, construction and improvement of drains/storm water drains. The minimum size of a project is Rs. 5 crores (Rs. 1 crore for North-East & Hilly States) and the maximum size is Rs. 100 crore.

Thus, option (c) is the correct answer.

16. (d)

Business Ready (B-READY) is the World Bank's new flagship report benchmarking the business environment and investment climate in most economies worldwide. The report assesses the regulatory framework and public services directed at firms, and the efficiency with which regulatory framework and public services are combined in practice. The first B-READY report will be launched in 2024.

Thus, option (d) is the correct answer.

17. (b)

Convertibility refers to the ability to convert domestic currency into foreign currencies and vice versa. Capital account convertibility is the ability or freedom to convert domestic currency for capital account transactions. For example, Cross-border movement of capital through investments and loans.

Statement 1 is correct: Full capital account convertibility will open up India's financial markets to global players, thereby increasing the liquidity.

Statement 2 is not correct: On the contrary, sudden inflow and exit of capital will increase the volatility in Rupee exchange rate in short term.

Statement 3 is correct: Currently, RBI has put certain upper limits on External commercial borrowings of Indian companies. Full capital account convertibility will make the process easier through relaxation of these limits.

Thus, option (b) is the correct answer.

18. (d)

Statement 1 is not correct: Production Linked Incentive (PLI) Schemes for 14 key sectors have been announced with an outlay of Rs. 1.97 lakh crore (over US\$26 billion) to enhance India's Manufacturing capabilities and Exports. However, there is no such target in which export is to be doubled by 2025.

Statement 2 is correct: PLI Schemes are a cornerstone of the Government's push for achieving an Atma Nirbhar Bharat. The objective is to make domestic manufacturing globally competitive and to create global Champions in manufacturing. The Strategy behind schemes to offer companies incentives on incremental sales from products manufactured in India, over the base year.

Thus, option (d) is the correct answer.

19. (b)

Statement 2 is correct: ONDC functions as an intermediary layer between buyers and sellers.

Statement 1 is not correct and Statement 3 is correct: Its primary aim is to "democratise e-commerce". The government wants to change the fundamental structure of the e-commerce market from the current "platform-centric model to an open-network model". The ONDC is modelled after the Unified Payments Interface (UPI) project that is seen as a success by many. The UPI project allows people to send or receive money irrespective of the payments platforms on which they are registered. So under ONDC, a buyer registered on Amazon, for example, may directly purchase goods from a seller who sells on Flipkart.

Statement 4 is not correct: It is by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Union Ministry of Commerce and Industry.

Thus, option (b) is the correct answer.

20. (b)

Statement 1 is not correct: The corporate bond market is regulated by SEBI. The

regulatory jurisdiction between the SEBI and RBI was clarified in 2000 by an amendment to the Securities Contract (Regulation) Act 1956. Under this, RBI's regulatory jurisdiction includes money market and government securities.

Statement 2 is correct: India's debt market is mainly dominated by the Government securities.

Thus, option (b) is the correct answer.

21. (c)

Central Government Liabilities constitutes the three categories: (a) Internal debt, (b) External debt, and (c) Public Account Liabilities.

Public debt in India includes only that debt which is contracted against the Consolidated Fund of India. Hence, it includes only Internal and External Debt incurred by the Central Government. Whereas, the Public Account Liabilities are grouped under the "other liabilities".

Thus, option (c) is the correct answer.

22. (a)

Statement 1 is not correct: Banks Board Bureau (BBB) was formed on the recommendations of 'The Committee to Review Governance of Boards of Banks in India, (Chairman - P. J. Nayak). Delhi High Court in 2020 ruled that the BBB couldn't select the general managers and directors of state-run general insurers, as it was not a competent body. Therefore, the Cabinet Appointment Committee passed a resolution to establish FSIB.

Statement 2 is correct: FSIB is entrusted with making recommendations for the appointment of full-time directors and non-executive chairman of state-run financial services institutions- Public Sector Banks and Insurance Companies.

Statement 3 is incorrect: FSIB would monitor and assess the performance of public sector banks, government-owned financial institutions and insurance companies.

Thus, option (a) is the correct answer.

23. (a)

India adopted a dual GST with the Centre and States simultaneously levying it on a common tax base. The GST to be levied by the Centre on intra-State supply of goods and / or services would be called the Central GST (CGST) and that to be levied by the States/ Union territory would be called the State GST (SGST)/ UTGST.

The Dual GST was required because India is a federal country where both the Centre and the States have been assigned the power to levy and collect taxes through appropriate legislation. Both the levels of Government have distinct responsibilities to perform according to the division of powers prescribed in the Constitution for which they need to raise resources. A dual GST will, therefore, be in keeping with the Constitutional requirement of fiscal federalism. **Hence, both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

Thus, option (a) is the correct answer.

24. (c)

A Non-Banking Financial Company (NBFC) is a company registered under the Companies Act, 1956 engaged in the business of loans and advances, acquisition of shares/stocks/bonds/debentures/securities issued by Government or local authority or other marketable securities etc.

NBFCs lend and make investments and hence their activities are akin to that of banks; however there are a few differences as given below:

- i. NBFC cannot accept demand deposits;
- ii. NBFCs do not form part of the payment and settlement system and cannot issue cheques drawn on itself;
- iii. Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation is not available to depositors of NBFCs, unlike in case of banks.

Thus, option (c) is the correct answer.

25. (b)

Only Statement 1 is not correct: Period of company's existence and operations should not be more than 10 years from the Date of Incorporation.

Statements 2 and 3 are correct:

Definition of Startup under the Startup India initiative:

- (1) Period of existence and operations should not be exceeding 10 years from the Date of Incorporation
- (2) Incorporated as a Private Limited Company, a Registered Partnership Firm or a Limited Liability Partnership
- (3) Should have an annual turnover not exceeding Rs. 100 crore for any of the financial years since its Incorporation
- (4) Entity should not have been formed by splitting up or reconstructing an already existing business
- (5) Should work towards development or improvement of a product, process or service and/or have scalable business model with high potential for creation of wealth & employment

Thus, option (b) is the correct answer.

26. (c)

UPI - Unified Payments Interface is an instant real-time payment system developed by NPCI to facilitate inter-bank transactions through mobile phones.

Thus, option (c) is the correct answer.

27. (c)

Unemployment Rate (UR) is defined as the percentage of persons unemployed among the persons in the labour force. Labour force means persons working or seeking or available for work) in the population.

Other important definitions:

- (1) Labour Force Participation Rate (LFPR): LFPR is defined as the percentage of persons in labour force (i.e. working

or seeking or available for work) in the population.

- (2) Worker Population Ratio (WPR) is defined as the percentage of employed persons in the population.

Thus, option (c) is the correct answer.

28. (c)

Loss aversion describes the tendency for people to feel the pain of losing something more intensely than the pleasure of gaining the same thing.

Option (c) is correct: In this case, the person is facing the potential loss of money if they sell the stock at a lower price than they bought it. But this perceived loss outweighs the potential gain of diversifying their portfolio, even though financial advice recommends it.

Option (a) is not correct: It is related to one's brand preference, and not fear of loss.

Option (b) is not correct: It is about reducing spending and not avoiding loss.

Option (d) is not correct: It focuses on future gains (saving money) rather than avoiding current losses.

Thus, option (c) is the correct answer.

29. (a)

Global stocktake' refers to five-yearly review of the impact of countries' climate change actions. Anchored in Article 14 of the Paris Agreement, it is intended to inform Parties to the Agreement on their progress against its goals, including but not limited to limiting global temperature rise to 1.5°C.

Thus, option (a) is the correct answer.

30. (a)

Statement 1 is correct: Cheetah is the only large carnivore species that went extinct in Independent India.

Statement 2 is not correct: The Cheetahs for release into the Kuno National park are sourced from South Africa and Namibia.

Statement 3 is not correct: The Project Cheetah is being implemented by National Tiger Conservation Authority (NTCA), a statutory body under Ministry of Environment, Forest and Climate Change (MoEF&CC) in collaboration with Madhya Pradesh Forest Department, Wildlife Institute of India (WII).

Thus, option (a) is the correct answer.

31. (d)

Statement 1 is correct: Mangrove forests are found in all the coastal states of India with West Bengal accounting for the highest share of mangrove in India with over 42 percent in 2021.

Statement 2 is correct: Mangrove forests only grow at tropical and subtropical latitudes near the equator because they cannot withstand freezing temperatures.

Statement 3 is correct: Mangrove plants are found in the intertidal zones of sheltered coasts.

Statement 4 is correct: Kharai camels of Kutch are primarily dependent on mangroves for their food.

Thus, option (d) is the correct answer.

32. (d)

The Directorate of Revenue Intelligence (DRI) conducted a successful operation called Kachchhap. This operation resulted in the recovery of the 955 live baby turtles, including species like the Indian Tent Turtle, Indian Flapshell Turtle, Crown River Turtle, Black Spotted/Pond Turtle, and Brown Roofed Turtle.

Thus, option (d) is the correct answer.

33. (c)

Statement 1 is correct: The red panda has a largely herbivorous diet and feeds primarily on bamboo. It also feeds on fruits, blossoms, acorns, eggs, birds and small mammals.

Statement 2 is not correct: Red panda has gastrointestinal tract of a carnivore and therefore cannot properly digest bamboo, which passes

through its gut in two to four hours. Hence, it has to consume large amounts of the most nutritious plant matter. Pandas spend up to 14 hours a day eating, but only digest about 17% of the total, making it necessary to sleep for up to 12 hours to conserve energy.

Thus, option (c) is the correct answer.

34. (c)

New Collective Quantified Goal on Climate Finance is the new climate finance goal to replace the \$100 billion a year commitment to developing countries in 2025.

Background: Developed countries committed to mobilise US \$100 billion in climate finance annually jointly in 2009 at the 15th Conference of Parties (COP15) to the United Nations Framework Convention on Climate Change. At COP21 in Paris, with the developed countries having failed to keep their commitment, it was decided to extend the US\$100 billion per year goal through to 2025. The goal of USD 100 billion per year of climate finance by 2020 and every year thereafter through 2025 is yet to be achieved.

Thus, option (c) is the correct answer.

35. (c)

Both the Statements are correct: The fund was established at the 7th Assembly of the Global Environment Facility (an agency set up in 1991 for protecting the environment) in Vancouver, Canada. It will help countries achieve the 23 targets set under the Kunming-Montreal Global Biodiversity Framework (KMGBF). The fund will be managed by the Global Environment Facility.

Thus, option (c) is the correct answer.

36. (b)

“Pair 1 is incorrectly matched: The explosion and fire at the Chernobyl Nuclear Power Plant in Ukraine resulted in a significant release of radioactive materials, causing immediate deaths and long-term health effects.

Pair 2 is incorrectly matched: The Three Mile Island accident was a partial nuclear meltdown of the Unit 2 reactor (TMI-2) of the Three Mile Island Nuclear Generating Station, Pennsylvania, USA.

Pair 3 is correctly matched: The Fukushima nuclear accident was a major nuclear accident at the Fukushima Daiichi nuclear power plant in Ōkuma, Fukushima, Japan which began on March 11, 2011. The nuclear accident following a massive earthquake and tsunami in Japan led to multiple reactor meltdowns, releasing radioactive materials and causing widespread evacuations.”

Thus, option (b) is the correct answer.

37. (d)

Namoh 108 is a new variety “Lotus” flower developed by Lucknow Institute CSIR-NBRI (National Botanical Research Institute). It has 108 petals.

Thus, option (d) is the correct answer.

38. (a)

Context: Recently, various government and non-governmental organisations in Andhra Pradesh, Odisha, and Punjab have released mosquitofish into local water bodies to address a mosquito menace that locals have complained about.

Statement 1 is correct: Gambusia Affinis also known as mosquito fish, and is widely used as a biological agent for controlling mosquito larvae. A single full-grown fish eats about 100 to 300 mosquito larvae per day.

Statement 2 is not correct: It is native to the waters of the southeastern United States.

Thus, option (a) is the correct answer.

39. (b)

Statement 1 is incorrect: Photochemical smog occurs in warm, dry and sunny climates.

Statement 2 is correct: Ground-level ozone constitutes one of the major components of photochemical smog.

Thus, option (b) is the correct answer.

40. (c)

Statement 1 is correct: Section 2(i) of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 defines a Minor Forest Produce (MFP) as all non-timber forest produce of plant origin and includes bamboo, brushwood, stumps, canes, Tusser, cocoon, honey, waxes, Lac, tendu/kendu leaves, medicinal plants and herbs, roots, tuber and the like.

Statement 2 is not correct: Indian Forest Act 1927 defines only “forest-produce”. Minor Forest Produce (MFP) is a subset of forest produce and got a definition only in 2007 when the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, was enacted.

Thus, option (c) is the correct answer.

41. (c)

Statement 1 is correct: Cloud seeding works only when there are pre-existing clouds in the atmosphere.

Statement 2 is correct: Mainly 8 chemicals are used in cloud seeding- Silver iodide, Potassium iodide, Propane, Calcium carbide, Sodium chloride, Ammonium nitrate, Urea, Dry ice.

Thus, option (c) is the correct answer.

42. (d)

Option 1 is related to SDG 7: Under SDG 7, the target 7.3 calls for doubling the global rate of improvement in energy efficiency by 2030.

Option 2 is related to SDG 16: Under SDG 16, the target 16.1 calls for significant reduction in all forms of violence and related death rates everywhere

Option 3 is related to SDG 17: Under SDG 17, the target 17.14 calls for enhanced policy coherence for sustainable development.

Thus, option (d) is the correct answer.

43. (d)

Statement I is not correct: Pyramid of energy is always upright, can never be inverted, because when energy flows from a particular trophic level to the next trophic level, some energy is always lost as heat at each step.

Statement II is correct: The transfer of energy across trophic levels follows 10 per cent law – only 10 per cent of the energy is transferred to each trophic level from the lower trophic level.

Thus, option (d) is the correct answer.

44. (c)

Statement 1 is correct: The cyanobacteria have chlorophyll a similar to green plants and are photosynthetic autotrophs. Though they are also known as blue-green algae, they are technically bacteria.

Statements 2 and 3 are correct: Many cyanobacteria can fix atmospheric nitrogen, e.g. Anabaena, Nostoc, Oscillatoria, etc. In paddy fields, cyanobacteria serve as an important biofertiliser. Blue green algae also add organic matter to the soil and increase its fertility.

Thus, option (c) is the correct answer.

45. (d)

The origin of the Public Service Commission in India is found in the First Dispatch of the Government of India on the Indian Constitutional Reforms on the 5th March, 1919 which referred to the need for setting up some permanent office charged with the regulation of service matters. Thereafter, Government of India Act, 1919 provided for the establishment in India of a Public Service Commission which should “discharge, in regard to recruitment and control of the Public Services in India.

Thus, option (d) is the correct answer.

46. (c)

Naganika’s inscription in the Naneghat cave describes Satavahana King Satakarni I as lord of Dakshinapatha.

Thus, option (c) is the correct answer.

47. (b)

Statement 1 is not correct: Vajapeya sacrifice included a ritual chariot race in which the rajan raced against his kinsmen and defeated them. The vajapeya sacrifice was connected with the attainment of power and prosperity, and also contained a number of fertility rites. Whereas, rajasuya sacrifice was the royal consecration ceremony. Apart from a number of agrarian fertility rites, it included a ritual cattle raid, in which the rajan raided the cattle of his kinsmen, and also a game of dice, which the king won.

Statement 2 is correct: In Rigveda, the Vitasta refers to River Jhelum. Ministry of culture also organises a “Vitasta-The Festival of Kashmir” showcasing rich culture, arts and crafts of Kashmir.

Statement 3 is correct: The term upaveda (“applied knowledge”) is used in traditional literature to designate the subjects of certain technical works. Gandharva veda is an upaveda associated with Samaveda.

Thus, option (b) is the correct answer.

48. (a)

Sri Ranganathaswamy Temple is a Hindu temple dedicated to Ranganatha (a form of Vishnu), located in Srirangam, Tiruchirapalli, Tamil Nadu, India. Constructed in the Dravidian architectural style, the temple is glorified by

Alvars in their Naalayira Divya Prabhandam and has the unique distinction of being the foremost among the 108 Divya Desams dedicated to the god Vishnu.

Situated in an ethereal setting on the island of Srirangam that is bounded by the two rivers of Cauvery and Kollidam (a tributary of Cauvery), this living temple and sacred centre of pilgrimage is counted as the first and foremost among the 108 Divya Desams dedicated to Bhagwan Vishnu. The main deity worshipped here is Sri Ranganatha Swamy, a reclining form of Bhagwaan Vishnu. Vaishnava scriptures mention the connection between the

idol worshipped in this temple and Ayodhya. Sri Ramanujacharya, the great philosopher and saint, is also deeply associated with this temple's history. Kamba Ramayanam was also first presented publicly by the Tamil poet Kamban in a particular place in this complex.

Thus, option (a) is the correct answer.

49. (b)

Dholavira was divided into three parts — the Citadel, the Middletown and the Lower town. The inhabitants of Dholavira were master water conservationists. No significant rivers were flowing by, just two rivulets — Mansar and Manhar. Nine reservoirs were built around the city to store water.

Thus, option (b) is the correct answer.

50. (c)

Statement 1 is correct: Satavahanas issued coins primarily in Silver and copper and for smaller denominations lead and potin was used however there is no record of issue of gold coins. All the excavated gold coins belong to other dynasties.

Statement 2 is correct: Kushanas (1st–4th centuries CE) were the first dynasty of the subcontinent to mint large quantities of gold coins; their silver coins are rare

Statement 3 is correct: The earliest coins excavated in subcontinent are punch-marked coins in silver, and some copper.

Thus, option (c) is the correct answer.

51. (b)

“Lady with the Myna bird” is considered as one of the most outstanding examples of Golconda school.

Thus, option (b) is the correct answer.

52. (d)

Event	Year
Vellore mutiny	1806
Santhal rebellion	1855
Deccan riots	1875

Event	Year
Rampa rebellion by Alluri Seetharama	1922

Thus, option (d) is the correct answer.

53. (b)

Vinayak Damodar Savarkar	Abhinav Bharat Society
Subhash Chandra Bose	Free Indian Legion
Pritilata Waddadar	Chittagong Armoury Raid
Sachindra Nath Sanyal	Hindustan Republican Association

Thus, option (b) is the correct answer.

54. (b)

Statement 1 is not correct: Red spotted sandstone was the primary material used in Mathura school. Whereas, blue stone and stucco were used in Gandhara school of sculpture.

Statement 2 is correct: The images discovered here belong to all the three religions: Buddhism, Brahmanism and Jainism. Kankali Tila is a famous site from where Jaina sculptures belonging to Mathura school have been discovered. On the other hand, theme of Gandhara school was primarily Buddhism.

Thus, option (b) is the correct answer.

55. (c)

Statement 1 is correct: Sant Kabir belonged to the Nirgun Bhakti tradition. Saguna Bhakti included traditions that focused on the worship of specific deities such as Shiva, Vishnu and his avatars (incarnations) and forms of the goddess or Devi, all often conceptualised in anthropomorphic forms. Nirguna bhakti on the other hand was worship of an abstract form of god.

Statement 2 is correct: The Vaishnava poet-saints of Maharashtra, such as Jnaneshwar, Namadeva, Eknath and Tukaram were

devotees of lord Vitthala. Devotion around lord Vitthala gave rise to the Warkari sect which lay emphasis on an annual pilgrimage to Pandharpur.

Statement 3 is correct: The twelfth century witnessed the emergence of a new movement in Karnataka, led by a Brahmana named Basavanna (1106-68) who was initially a Jain and a minister in the court of a Chalukya king. His followers were known as Virashaivas (heroes of Shiva) or Lingayats (wearers of the linga).

Thus, option (c) is the correct answer.

56. (a)

Pair 1 is not correctly matched - The Amarakosha is the popular name for Namalinganushasanam a thesaurus in Sanskrit written by the ancient Indian scholar Amarasimha who was on the nine gems in the court of Chandragupta Vikramaditya.

Pair 2 is correctly matched - Romaka Sidhhanta is a astronomical treatise by Varahamihira and is a part of a larger corpus called Panch-Sidhhantika by the same author. The treatise is inspired by learnings of Byzantine empire from where it draws its name which literally means "Doctrine of the Romans"

Pair 3 is not correctly matched - Lilavati is a treatise by Indian mathematician Bhaskara II on mathematics, written in 1150 AD. It is the first volume of his main work, the Siddhanta Shiromani, alongside the Bijaganita, the Grahaganita and the Goladhyaya."

Thus, option (a) is the correct answer.

57. (d)

The saranjam system was a form of land revenue settlement in Maratha territories. Under this system, revenue assignments were made to individuals, often nobles or military officers, in exchange for their services to the state. These individuals, known as saranjamdars, were granted the right to collect revenue from

a specific area. In return, they were expected to maintain law and order and provide military support. This system was further refined and extended to wider areas by Rajaram Bhonsle, son of Shivaji."

Thus, option (d) is the correct answer.

58. (b)

During Quit India Movement, in several districts, such as Satara in the west and Medinipur in the east, "independent" governments were proclaimed. In 1943, some of the younger leaders in the Satara district of Maharashtra set up a parallel government (prati sarkar), with volunteer corps (seba dals) and village units (tufan dals). They ran people's courts and organised constructive work. Dominated by kunbi peasants and supported by dalits, the Satara prati sarkar functioned till the elections of 1946.

Thus, option (b) is the correct answer.

59. (d)

Statement 1 is not correct: Theme of India's G20 Presidency- "Vasudhaiva Kutumbakam" or "One Earth, One Family, One Future" – is drawn from the ancient Sanskrit text of the Maha Upanishad. The term is also referred to in the Hitopadesha.

Statement 2 is not correct: "Bharat Mandapam" derives its name from Lord Basaveshwara's idea of Anubhav Mandapam (often referred to as the first Parliament of the world). Anubhav Mandapam was a pavilion for public ceremonies. Lord Basaveshwara was a 12th-century Indian philosopher, poet, and social reformer.

Thus, option (d) is the correct answer.

60. (d)

China-Plus-One is a global business strategy coined back in 2013, wherein companies opt to diversify their investments beyond China to alternative destinations. Over the past three decades, Western companies heavily invested in China due to its low labor and production

costs and the expansive domestic consumer market, leading to an over concentration of their interests there.

As early as 2008, officials and companies in Japan and the United States began contemplating a diversification strategy away from China. However, it was only in the late 2010s, amid heightened US-China trade tensions, that China-Plus-One gained momentum as an alternative approach for multinational corporations.

Thus, option (d) is the correct answer.

61. (b)

Pair 1 is correctly matched: The Ganga - Bhagirathi - Hooghly river system between Haldia (Sagar) and Allahabad (1620 km) was declared as National Waterway-1 (NW-1) in 1986.

Pair 2 is incorrectly matched: The river Brahmaputra having a length of 891 Km between Bangladesh Border and Sadiya was declared as National Waterway no. 2 (NW-2) on 1st September, 1988.

Pair 3 is correctly matched: National waterway no. 3 : West coast canal (Kottapuram – Kollam ; 168 km) Udyogmandal canal (Kochi Pathalam bridge ; 23 km) Champakara canal (Kochi – Ambalamugal; 14 km) Total length; 205 km

Thus, option (b) is the correct answer.

62. (c)

Statement I is correct: Multi State Cooperative Societies ACT, 2002 is an Act to consolidate and amend the law relating to co-operative societies, with objects not confined to one State and serving the interests of members in more than one State, to facilitate the voluntary formation and democratic functioning of co-operatives as people's institutions based on self-help and mutual aid and to enable them to promote their economic and social betterment and to provide functional autonomy ,was being felt necessary by the various cooperative

societies, and federation of various cooperative societies as well as by the Government

Statement II is not correct - Cooperative Societies is a State Subject under Entry 32 of the State List of Seventh Schedule of the Constitution of India but MSCS are regulated by Centre under MSCS Act, 2002.

Thus, option (c) is the correct answer.

63. (b)

Statements 1, and 2 are correct: In the great Chola empire, Sengol was seen as a symbol of the path of service duty and nation. Pandit Jawaharlal Nehru accepted Sengol on August 14, 1947, through the Adhinam of Tamil Nadu, it was a sign of the shift of power from Britishers to the people of our country.

Statement 3 is not correct: Sengol has a hand-carved Nandi, Lord Shiva's sacred bull, on the top, symbolizing justice.

Thus, option (b) is the correct answer.

64. (d)

Both the Statements 1 and 2 are not correct: In a move towards promoting education and the socio-economic development of Scheduled Castes (SCs) in India, the Ministry of Social Justice & Empowerment has launched the "Scheme for Residential Education for Students in High Schools in Targeted Areas" (SHRESHTA).

Thus, option (d) is the correct answer.

65. (b)

The Gulf Cooperation Council (GCC) is a regional political, economic, and intergovernmental union between six Arab countries:

- Bahrain,
- Kuwait,
- Oman,
- Qatar,
- Saudi Arabia,
- United Arab Emirates

Headquarters - Riyadh.

The Gulf Cooperation Council (GCC) was established by an agreement concluded on 25 May 1981 in Riyadh, Saudi Arabia among Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE in view of their special relations, geographic proximity, similar political systems based on Islamic beliefs, joint destiny and common objectives. Presently it encompasses a total area of 2,672,700 sq.km. The official language is Arabic.

Thus, option (b) is the correct answer.

66. (b)

Kyrgyzstan has officially declared the snow leopard as its national symbol, underscoring its commitment to conservation and ecological balance.

In ancient Kyrgyz culture, *Panthera uncia*, or the snow leopard, held significance as a totem animal linked to the legendary hero of the Kyrgyz people, Manas. Within Kyrgyz culture, the snow leopard symbolizes greatness, nobility, courage, bravery, and resilience. Kyrgyzstan has taken a leading role in snow leopard conservation at the international level, hosting the inaugural Global Snow Leopard Forum in 2013 in the capital, Bishkek.

Additionally, the Global Snow Leopard and Ecosystem Protection Programme (GSLEP) was initiated with the collaboration of representatives from 12 snow leopard range countries and the global environmental community to safeguard these majestic mountain cats.

Snow Leopard: Often referred to as the 'ghosts of the mountains,' these elusive creatures effortlessly blend into their surroundings, becoming nearly indistinguishable in their natural habitat. Known for their climbing prowess, snow leopards navigate steep slopes with ease due to their powerful build. Their hind legs grant them the ability to leap six times the length of their bodies, while a long tail provides agility, balance, and acts as

protection against the cold, wrapping around the resting snow leopard.

The habitat of snow leopards spans the mountainous regions of 12 countries in Asia, including Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyz Republic, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan.

IUCN-World Conservation Union's Red List of Threatened Species, the snow leopard is listed as Vulnerable.

In India, the snow leopard is listed under Schedule I of the Wildlife (Protection) Act, 1972, giving it the highest protection status under the country's laws.

Thus, option (b) is the correct answer.

67. (c)

The Bab-el-Mandeb also known as - 'Gate of Lamentation', the Gate of Grief or the Gate of Tears, is a strait between Yemen on the Arabian Peninsula and Djibouti and Eritrea in the Horn of Africa.

It connects the Red Sea to the Gulf of Aden and by extension the Indian Ocean.

Thus, option (c) is the correct answer.

68. (b)

Both the Statements 1 and 3 are correct:

Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN)

Total outlay of Rs.24,104 crore (Central Share:Rs.15,336 crore and State Share: Rs.8,768 crore) It focus on 11 critical interventions through 9 line Ministries.

The scheme is implemented during FY 2023-24 to 2025-26.

Prime Minister announced the Abhiyan on Janjatiya Gaurav Diwas from Khunti.

This will saturate PVTG households and habitations with basic facilities such as safe housing, clean drinking water and sanitation, improved access to education, health and

nutrition, road and telecom connectivity, and sustainable livelihood opportunities.

An amount of Rs. 15,000 crore will be made available to implement the Mission in the next three years under the Development Action Plan for the Scheduled Tribes (DAPST).

Statement 2 is not correct: The scheme does not provide for free internet access. It aims to ensure road and telecom connectivity.

Thus, option (b) is the correct answer.

69. (c)

Statement 1 is correct: An interim budget is presented when time to present a full budget is not sufficient. For example, in case of general elections year. In last year of its office, government presents an interim budget. After the general elections, the new government presents a full budget.

The need for an interim budget arises because a fresh approval is required from Parliament to withdraw money from the Consolidated Fund of India to run the government as the existing Budget is valid only till March 31 that year.

For example,

Lok Sabha elections are scheduled for April-May this year, and the approval from Parliament is till March 31. Funds will be required to run the country till the new government takes over. The interim budget is a practical arrangement that enables the government to fill this gap.

Statement 2 is correct: The constitution does not mention about interim budget, hence statement 2 is correct.

Statement 3 is correct: The Model Code of Conduct is a set of guidelines issued by the Election Commission of India for the conduct of political parties and candidates during elections mainly with respect to speeches, meetings, processions, polling day, polling booths, observers, party in power, election manifestos, and general conduct.

This set of norms has been evolved with the consensus of political parties who have

consented to abide by the principles embodied in the said code in its letter and spirit.

The Model Code of Conduct comes into force immediately on the announcement of the election schedule by the commission for the need of ensuring free and fair elections. Its main purpose is to ensure that ruling parties, at the Centre and in the States, do not misuse their position of advantage to gain an unfair edge. It is designed to avert practices that are deemed corrupt under the model code of conduct.

Hence, Model code of conduct bars announcement of any major schemes in the interim budget.

Thus, option (c) is the correct answer.

70. (b)

Arabic, Chinese, English, French, Russian and Spanish are the six official languages of the United Nations. English and French are the working languages of the United Nations Secretariat and are used in day-to-day professional exchanges. The treaty bodies, in accordance with General Assembly resolution 68/268, may use a maximum of three of the official languages for their work, with the inclusion, on an exceptional basis, of a fourth when necessary to facilitate communication among the members. Each State party also retains the right to interact with the treaty bodies in any of the six official languages.

Thus, option (b) is the correct answer.

71. (b)

Statement 1 is correct: 'Operation Kaveri' is a rescue operation launched by Government of India to evacuate Indian citizens who are stranded in Sudan. It was launched on April 24, 2023 in response to the crisis in Sudan.

Statement 2 is not correct: The Government of India launched 'Operation Ganga' with the aim of safe evacuation of Indian nationals stranded in Ukraine in the month of February-March 2022. Consequent upon the closure of

Ukrainian airspace for international operations from the morning of February 24th 2022, efforts were made to rescue and bring back the stranded Indian nationals by operating flights from Kyiv, Ukraine and cities of neighboring countries of Romania (Bucharest and Suceava), Hungary (Budapest), Poland (Rzeszow) and Slovakia (Kosice).

Statement 3 is correct: Operation Ajay was initiated for the evacuation of Indians from Israel.

Thus, option (b) is the correct answer.

72. (a)

Statement 1 is correct and Statement 2 is not correct: Nari Adalat is initiative for providing women with an alternate Grievance Redressal Mechanism for resolving cases of petty nature (harassment, subversion, curtailment of rights or entitlements) faced by them at local level. It is a part of 'Sambal' sub- scheme of Mission Shakti – an integrated women empowerment programme of Ministry of Women and Child Development.

Thus, option (a) is the correct answer.

73. (c)

Odisha's Mayurbhanj district is renowned for its unique 'Kai Chutney' made from red weaver ants. Recently, this chutney has been awarded the geographical indication (GI) tag.

Thus, option (c) is the correct answer.

74. (c)

Statement 1 is correct: The western cyclonic disturbances which enter the Indian subcontinent from the west and the northwest during the winter months, originate over the Mediterranean Sea and are brought into India by the Sub-tropical westerly jet stream.

They cause the much-needed winter rains over the plains and snowfall in the mountains. Although the total amount of winter rainfall locally known as 'mahawat' is small, they are of immense importance for the cultivation of 'rabi' crops.

Statement 2 is correct: Tropical easterly jet stream, also known as sub-tropical easterly jet stream blows over peninsular India, during summer month. It blows over approximately over 14°N during the summer months.

These are also responsible for Tropical cyclones that occur during the monsoon period and October – November period

Thus, option (c) is the correct answer.

75. (b)

Pair 1 is not correctly matched: Marapi is one of the most active volcanoes on Sumatra island in Indonesia.

Pair 2 is correctly matched: Mount Ulawun is a basaltic and andesitic stratovolcano. It is one of Papua New Guinea's most active volcanoes.

Pair 3 is correctly matched: On Sicily's eastern coast, Mount Etna is an active stratovolcano in Italy. It is situated above the African Plate and Eurasian Plate's convergence plate border. It is among the tallest active volcanoes in Europe.

Thus, option (b) is the correct answer.

76. (c)

Statement 1 and 2 are correct: Critical minerals are those minerals that are essential for economic development and national security. The lack of availability of these minerals or concentration of extraction or processing in a few geographical locations may lead to supply chain vulnerabilities and even disruption of supplies.

These are essential for the advancement of many sectors, including hightech electronics, telecommunications, transport, and defence. They are also vital to power the global transition to a low carbon emissions economy, and the renewable energy technologies that will be required to meet the 'Net Zero' commitments of an increasing number of countries around the world. Hence, it has become imperative to identify and develop value chains for the minerals which are critical to our country.

Statement 3 is correct: Ministry of Mines has released a list of 30 critical minerals for India.

These minerals are Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, **Graphite**, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

Thus, option (c) is the correct answer.

77. (b)

Statement 1 is not correct: Bomdi-La: It connects Arunachal Pradesh with Lhasa.

Statement 2 is correct: Diphu Pass: Diphu Pass is a mountain pass around the area of the disputed tripoint borders of India, China, and Myanmar. Eastern Arunachal Pradesh in India can also be strategically approached via Diphu Pass. It lies on the McMahon Line.

Statement 3 is correct: Khardung La: Nestled in the Ladakh Range, to the north of Leh, this pass links the Indus and Shyok river valleys. It also serves as the entrance to the Nubra Valley, which is where the Siachen Glacier is located.

Thus, option (b) is the correct answer.

78. (c)

Only option 4 is not correct:

Gravity: The water is drawn downward by gravity, which modifies the gradient.

Heating by solar energy: The water expands when heated by solar radiation. This explains why the ocean's level is around 8 cm higher at the equator than it is in the middle latitudes. As a result, there is relatively little gradient, and water tends to run off the hill.

Wind flow: Water moves when wind blows across the ocean's surface. The flow of the water body is influenced by friction between the wind and the water's surface.

Revolution of the Earth: The Earth's revolution does not directly affect the currents in the oceans.

Coriolis force: In the northern and southern hemispheres, the Coriolis force intervenes and forces the water to travel to the right and left respectively.

Thus, option (c) is the correct answer.

79. (b)

Pair 1 is correctly matched: The Apatani people are an ethnic group who live in the Ziro valley of Arunachal Pradesh.

Pair 2 is correctly matched: Santhal is the third largest scheduled tribe community in the country after Gond and Bhil. They mostly belong to Jharkhand, Odisha and West Bengal.

Pair 3 is not correctly matched: Irula are a Dravidian ethnic group inhabiting the Indian states of Tamil Nadu, Kerala and Karnataka. People of Irula ethnicity are called Irular, and speak Irula, which belongs to the Dravidian languages family.

Thus, option (b) is the correct answer.

80. (b)

Statement 1 is correct. The Northern Plain is broadly divided into three sections. The Western part of the Northern Plain is referred to as the Punjab Plains. Formed by the Indus and its tributaries, the larger part of this plain lies in Pakistan. The Indus and its tributaries — the Jhelum, the Chenab, the Ravi, the Beas and the Satluj originate in the Himalaya. This section of the plain is dominated by the doabs.

Statement 2 is correct. The Ganga plain extends between Ghaggar and Teesta rivers. It is spread over North India in Haryana, Delhi, U.P., Bihar, partly Jharkhand and West Bengal. In the East, particularly in Assam lies the Brahmaputra plain.

Statement 3 is not correct. The northern plains are generally described as flat land with no variations in its relief. It is not true. These vast plains also have diverse relief features. According to the variations in relief features, the Northern plains can be divided into four

regions – Bhabar, Bhangar, Kankar and Khadar.

Thus, option (b) is the correct answer.

81. (c)

All the pairs are correctly matched:

1. Congo - Atlantic Sea: The Congo River formerly also known as the Zaire River, is the second-longest river in Africa, shorter only than the Nile. It is the only major river to cross the Equator twice.
2. Niger-Gulf of Guinea: It runs in a crescent shape through Mali, Niger, on the border with Benin and then through Nigeria, discharging into the Gulf of Guinea in the Atlantic Ocean.
3. Mekong-South China Sea: Rising in southeastern Qinghai province, China, it forms part of the international border between Myanmar and Laos, as well as between Laos and Thailand. The river then flows through Laos, Cambodia, and Vietnam before draining into the South China Sea.

Thus, option (c) is the correct answer.

82. (b)

There were three major reasons behind the lack of snowfall — and consequently — intensifying cold waves over north India. These were — a drastic fall in Western Disturbances (WDs) over northwest India; prevailing El Nino conditions; and the **absence of a strong jet stream**.

Thus, option (b) is the correct answer.

83. (b)

Statement I is correct: A marine heat wave is an extreme weather event. It occurs when the surface temperature of a particular region of the sea rises to 3 or 4 degree Celsius above the average temperature for at least five days. MHWs can last for weeks, months or even years, according to the US government's agency National Oceanic and Atmospheric Administration (NOAA).

Statement II is also correct: As global warming and increased greenhouse gas emissions is an important factor for the increase in the frequency, intensity, and duration of marine heatwaves (MHW) in the past decades.

Statement II is not the correct explanation of the statement I: As marine heatwaves (MHW) can also be influenced by other factors, such as natural variability, ocean currents, atmospheric circulation, and local weather patterns. Therefore, not every marine heatwave (MHW) is directly caused by global warming and increased greenhouse gas emissions, but they are more likely to occur and persist under these conditions.

Thus, option (b) is the correct answer.

84. (d)

The ecology of rivers is irreversibly damaged through riverfront projects in India. Following rivers feature riverfronts which are becoming cause of concerns.

Statement 1 is correct. The Gomti River is unique in that it is both rain and groundwater-fed; the other major tributaries of the Ganga in this region are snow-fed rivers originating in the Himalayas. The Gomti River joins the river Ganga at Kaithi Ghat near Varanasi

Statement 2 is correct. The Sabarmati River with its origin in Rajasthan flows generally in South – West direction. It enters the Gujarat State and passes through the plains and continues to flow in the same direction and joins the Gulf of Khambhat in the Arabian Sea. It receives the Sei on the right bank near Mhauri and then the Harnav on the left bank at about 103 km. From respective sources beyond this confluence, Sabarmati flows through the Dharoi gorge. Emerging from the gorge it passes through the plains and is joined on its left bank at about 170 km from its source by the Hathmati, which is its major tributary.

Statement 3 is correct. The Godavari basin extends over states of Maharashtra, Andhra Pradesh, Chhattisgarh and Odisha in addition

to smaller parts in Madhya Pradesh, Karnataka and Union territory of Puducherry. The largest tributary of the Godavari is the Pranhita with about 34.87% coverage of drainage area.

Thus, option (d) is the correct answer.

85. (c)

Millet is a common term to categorize small-seeded grasses that are often termed Nutri-cereals or Dryland-cereals and includes Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi), Little Millet (Kutki), Foxtail Millet (Kakun), Proso Millet (Cheena), Barnyard Millet (Sawa), Kodo Millet (Kodon) and other millets.

Millets are the stapled crops adapted to dry land agro-ecologies of the arid and semi-

arid tropics. In India, millets are produced in most of the states characterized by low to moderate precipitation (200–800 mm rainfall).

Statement 1 is correct: Millets are the backbone for dry land agriculture. They are hardy, resilient crops that have a low carbon and water footprint, **can withstand high temperatures, grow on poor soils with little** or no external inputs and are thus termed as the ‘miracle grains’ or ‘crops of the future’. In times of climate change, they are the most secure crops to small farmers as they are the hardest, most resilient and climate adaptable crops in harsh, hot (up to 50 degrees Celsius) and drought environments.

Statement 2 is correct:

Crop	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Jowar	59.8	52.8	55.4	54.5	42.4	45.7	48.0	34.8	47.7	47.8
Bajra	102.8	87.4	92.5	91.8	80.7	97.3	92.1	86.6	103.6	108.6
Ragi	19.3	15.7	19.8	20.6	18.2	13.9	19.9	12.4	17.6	19.6
Small Millers	4.5	4.4	4.3	3.9	3.9	4.4	4.4	3.3	3.7	3.5
Total Nutri Cereals	186.4	160.3	172.0	170.8	145.2	161.2	164.4	137.1	172.6	179.6

Statement 3:

Millets are classified into Major Millets and Minor Millets based on their grain size.

Pseudo millets are so called because they are not part of the Poaceae botanical family, to which ‘true’ grains belong, however they are nutritionally similar and used in similar ways to ‘true’ grains.

Pseudo Millets:

- Amaranth (Ramdana/ Rajgira)
- Buckwheat (Kuttu)
- Major Millets
- Sorghum (Jowar)
- Pearl Millet (Bajra)
- Finger Millet (Ragi)
- Minor Millets
- Foxtail millet (Kakum)

- Kodo millets (Kodon)
- Barnyard millet (Sanwa)
- Little millet (Kutki/Shavan)
- Proso millet (Chenna/Barri)

Thus, option (c) is the correct answer.

86. (b)

Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation.

Cyclones are classified as:

Extra tropical cyclones (also called temperate and mid-latitude cyclones); and, Tropical cyclones

Extra tropical cyclones occur in temperate zones and high latitude regions, though they are known to originate in the Polar Regions,

and affect a much larger area as compared to the tropical cyclone.

Statement 1 is correct: The mid-latitude cyclones have clear frontal systems like cold and warm fronts and form along the polar front which is not present in the tropical cyclones. The passage of the front causes abrupt changes in the weather conditions over the area in the middle and high latitudes.

Statement 2 is correct: The extra tropical or mid-latitude cyclones move from west to east but tropical cyclones move from east to west.

Statement 3 is not correct: The western disturbance has its origin in the Mediterranean Sea as an extra-tropical cyclone and gradually travels across the middle-east from Iran, Afghanistan and Pakistan to finally enter the Indian sub-continent and brings rainfall and snowfall in the northern part of India.

Thus, option (b) is the correct answer.

87. (c)

Statement 1 is not correct: Biogas is produced through the process of Biological decomposition of organic materials like cow dung, poultry droppings etc. in the absence of oxygen. It is also called anaerobic digestion.

Statement 2 is correct: It burns without smoke, leaves no residue like ash in wood, charcoal and coal burning.

Statement 3 is correct: Biogas consists of Methane (CH₄) 55-60%, Carbon dioxide (CO₂) 35-40%, Trace elements of Ammonia Hydrogen Sulphide (H₂S) and moisture.

Statement 4 is correct: Biogas is a renewable source of energy, whereas natural gas is a fossil fuel and hence non-renewable.

Thus, option (c) is the correct answer.

88. (a)

Amaterasu' is an ultra-high-energy cosmic ray detected in 2021 and later identified in 2023. It was named after the sun goddess in Japanese mythology and is one of the highest-energy cosmic rays ever detected.

Cosmic rays are energetic charged particles originating from galactic and extragalactic sources. Cosmic rays with extremely high energy are exceptionally rare; they can reach greater than 10¹⁸ electron volts or one exa-electron volt (EeV), which is roughly a million times higher than achieved by the most powerful accelerators ever made by humans.

Thus, option (a) is the correct answer.

89. (a)

Statement 1 is not correct. Near Field Communication (NFC) is indeed a contactless communication technology that uses electromagnetic radio fields for short-range communication.

Statement 2 is correct. Both devices must contain NFC chips, as transactions take place within a very short distance. NFC-enabled devices must be either physically touching or within a few centimetres from each other for data transfer to occur.

Statement 3 is not correct: NFC technology is designed for an operation between devices within a few centimetres from each other. This makes it difficult for attackers to record the communication between the devices compared to other wireless technologies which have a working distance of several metres. The security level of the NFC communication is by default higher compared to other wireless communication protocols. NFC transactions also incorporate security features, including encryption and authentication, to ensure secure communication between devices.

Thus, option (a) is the correct answer.

90. (c)

HDPE, Polyvinyl Chloride, and Polystyrene are types of commonly used plastics.

Thus, option (c) is the correct answer.

91. (c)

2023 - Nobel Prize for physics was awarded to **Anne L'Huillier, Pierre Agostini, and**

Ferenc Krausz “for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter”.

An attosecond is one quintillionth of a second, or 10⁻¹⁸ seconds.

This is the timescale at which the properties of an electron change.

Attosecond science, including attosecond physics, or attophysics, deals with the production of extremely short light pulses and using them to study superfast processes.

Thus, option (c) is the correct answer.

92. (c)

Statement 1 and 3 are correct:

In nuclear reactions, the nuclei, not electrons, of the reactants interact with each other. They result in the formation of new elements. This process is also called transmutation of nuclei. It is an exothermic reaction.

Fission Reaction

The nucleus of an atom breaks up into two lighter nuclei. In the fission process, a large quantity of energy is released, radioactive products are formed, and several neutrons are emitted. When Uranium-235 atom is bombarded with a neutron, it splits into two lighter nuclei Barium and Krypton.

Fusion Reaction

When light nuclei fuse into a heavier nucleus. The reaction that happens in the sun fuses two Hydrogen atoms together to produce Helium.

Example of fission is when a uranium isotope ²³⁵92U bombarded with a neutron breaks into two intermediate mass nuclear fragments

When two light nuclei fuse to form a larger nucleus, energy is released

Statement 2 is not correct:

Nuclear Fission reaction is widely used, however utilizing Nuclear Fusion reaction is under experimental study.

The main reason we aren't using nuclear fusion to generate power yet is because it is

incredibly difficult to sustain a fusion reaction. The energy requirements are very high, and it is hard to find materials that can withstand such high temperatures. Additionally, we need a lot of excess energy to keep the fusion reaction going, and we have yet to figure out a way to self-contain the plasma so that it is stable and safe.

Thus, option (c) is the correct answer.

93. (a)

Synthetic embryos have been created from stem cells grown in the lab. Known as stem cell-based embryo-like structures, or SEMs, they were developed without using sperm, eggs or a womb.

Thus, option (a) is the correct answer.

94. (c)

Missile defense is a system, weapon, or technology involved in the detection, tracking, interception, and also the destruction of attacking missiles.

Statement 1 is correct:

Iron Dome is an Israeli mobile all-weather air defense system developed by Rafael Advanced Defense Systems and Israel Aerospace Industries. The system is designed to intercept and destroy short-range rockets and artillery shells fired from distances of 4 to 70 kilometres (2–43 mi) away.

Statement 2 is correct:

The Patriot system is a surface-to-air missile (SAM) system that is used by the US Army. It is developed by Raytheon company. In 1984, the Patriot system began to replace the Nike Hercules system as the U.S. Army's primary high to medium air defense (HIMAD) system and the MIM-23 Hawk system as the U.S. Army's medium tactical air defense system.

In addition to these roles, Patriot has been given a function in the U.S. Army's anti-ballistic missile (ABM) system. The system is expected to stay fielded until at least 2040.

Statement 3 is correct:

Very Short Range Air Defence System (VSHORADS). VSHORADS is a Man Portable Air Defence System (MANPAD) designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad

Adani Defence and Aerospace is the Development-cum-Production Partner (DcPP) for manufacturing of VSHORAD system.

Thus, option (c) is the correct answer.

95. (a)

Statement 1 is correct: Satellites in geostationary orbit rotate with the Earth directly above the equator, continuously staying above the same spot.

Statement 2 is correct and it is the correct explanation of Statement 1: Satellites in geostationary orbit (GEO) circle Earth above the equator from west to east following Earth's rotation – taking 23 hours 56 minutes and 4 seconds – by travelling at earth's speed of rotation. This makes them appear to be stationary with respect to earth's surface.

Thus, option (a) is the correct answer.

96. (a)

Cooking generally involves raising the temperature of food until chemical reactions take place, like those that break down the tough tissue in meat or soften the starch in vegetables. Those reactions usually happen faster at higher temperatures.

Imagine a conventional pot full of vegetables and water. As the pot is heated, the temperature inside increases until the water starts to boil. At that point, all the heat energy goes into boiling the water, and the temperature doesn't increase unless all the water boils away—water in liquid form cannot be a higher temperature than its boiling point.

The same thing happens in a pressure cooker, but the temperature inside is much higher. The temperature at which a liquid boils is dependent on the surrounding pressure. When you cook

in a regular pot at atmospheric pressure (14.7 pounds per square inch [psi]), water boils at 100°C (212°F). Inside a pressure cooker, the pressure can increase by an additional 15 psi, to almost 30 psi. At that pressure, water boils at 121°C (250°F). That means food can cook at a much higher temperature than it ever could at atmospheric pressure—and since cooking reactions speed up at higher temperatures, your food cooks faster. It also doesn't dry out, since the water stays in liquid form.

Thus, option (a) is the correct answer.

97. (c)

Human papillomavirus (HPV) is one of the most common sexually transmitted infection (STI). It is a small, non-enveloped deoxyribonucleic acid (DNA) virus that infects skin or mucosal cells. The two most common "high-risk" genotypes (HPV 16 and 18) cause approximately 70% of all cervical cancers. HPV was estimated to cause almost half a million cases and 250,000 deaths from cervical cancer in 2002, of which about 80% occurred in developing countries. Cervavac is India's first quadrivalent Human Papillomavirus Vaccine (qHPV) to fight cervical cancer, which has been developed and manufactured by the Pune-based Serum Institute of India

Thus, option (c) is the correct answer.

98. (c)

Generative artificial intelligence (AI) describes algorithms (such as ChatGPT) that can be used to create new content, including audio, code, images, text, simulations, and videos. Among the given options, Large language models, Artificial Neural networks, and Natural Language Processing are the technologies involved in Generative AI. But Generative AI is not based Blockchain.

Large Language models: A large language model (LLM) is a type of artificial intelligence (AI) algorithm that uses deep learning techniques and massively large data sets to

understand, summarize, generate and predict new content. The term generative AI also is closely connected with LLMs, which are, in fact, a type of generative AI that has been specifically architected to help generate text-based content.

Artificial neural networks: Neural networks, also known as artificial neural networks (ANNs) or simulated neural networks (SNNs), are a subset of machine learning and are at the heart of deep learning algorithms. Their name and structure are inspired by the human brain, mimicking the way that biological neurons signal to one another. They form the foundation of generative AI, mimicking the structure and function of the human brain to learn and process information.

Blockchain: A blockchain is a digitally distributed, decentralized, public ledger that exists across a network. It focuses on secure data storage and distributed ledger systems, not content generation.

Natural Language Processing: Natural language processing enables machines to understand and respond to text or voice data

Thus, option (c) is the correct answer.

99. (b)

Statement 1 is correct: Lithium-ion (li-ion) batteries use liquid electrolytes and have separators that keep the positive electrode from coming in contact with the negative electrode. Whereas, Solid-state batteries use thin layers

of solid electrolytes, which carry lithium ions between electrodes.

Statement 2 is correct: A solid-state battery has higher energy density than a Li-ion battery that uses liquid electrolyte solution. It doesn't have a risk of explosion or fire, so there is no need to have components for safety, thus saving more space.

Statement 3 is not correct: Currently, a solid-state cell costs about eight times more to make than a liquid li-ion battery, and are used in devices such as pacemakers and smart watches.

Thus, option (b) is the correct answer.

100.(b)

Statement 1 is correct: A key scenario for 5G technology is to support massive machine to machine communication (MMTC), or communication between appliances, devices or machines without intervention of human beings. While the earlier generations of telecom technology enabled human to human or human to machine communications, 5G would unleash massive machine to machine communication by connecting a large number of devices.

Statement 2 is correct: The ultra-low latency and reliable communication (URLLC) is another capability offered by 5G. In computer networking, latency is an expression of how much time it takes for a data packet to travel from onedesignated point to another.

Thus, option (b) is the correct answer.

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