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Institute for IAS Examination

UPSC CSE Prelims 2023

Paper I – General Studies (G.S)

for Prelims 2023

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CSE Prelims 2023 - GS Paper - 1 (Set B)

UPDATED

Answer Key
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UPSC Prelims 2023 – Answer Key									
SET - B									
1. (a)	11. (c)	21. (c)	31. (b)	41. (d)	51. (b)	61. (a)	71. (a)	81. (b)	91. (d)
2. (c)	12. (a)	22. (c)	32. (b)	42. (a)	52. (b)	62. (c)	72. (c)	82. (c)	92. (c)
3. (b)	13. (c)	23. (a)	33. (b)	43. (b)	53. (d)	63. (a)	73. (d)	83. (a)	93. (d)
4. (d)	14. (a)	24. (b)	34. (b)	44. (a)	54. (c)	64. (d)	74. (b)	84. (c)	94. (b)
5. (d)	15. (a)	25. (c)	35. (d)	45. (b)	55. (b)	65. (c)	75. (c)	85. (b)	95. (d)
6. (b)	16. (d)	26. (d)	36. (d)	46. (b)	56. (b)	66. (c)	76. (d)	86. (a)	96. (c)
7. (b)	17. (a)	27. (c)	37. (c)	47. (c)	57. (d)	67. (c)	77. (a)	87. (d)	97. (a)
8. (a)	18. (c)	28. (c)	38. (a)	48. (c)	58. (d)	68. (d)	78. (c)	88. (d)	98. (d)
9. (c)	19. (b)	29. (b)	39. (d)	49. (b)	59. (c)	69. (a)	79. (a)	89. (c)	99. (c)
10. (d)	20. (c)	30. (c)	40. (d)	50. (c)	60. (c)	70. (d)	80. (a)	90. (c)	100. (a)

Q1.

Answer: a

Explanation:

- **Amaravati (Andhra) is the site of ancient Dhanyakataka**, an important town in the Deccan and the capital of the later Satavahanas, mentioned in many inscriptions. A large Buddhist establishment was located here. The six occupational periods ranged from the 2nd century BCE to the 2nd/3rd century CE.

Therefore, option (a) is the correct answer.

Q2.

Answer: c

Explanation:

- The practice of preserving the remains of an important personality below accumulated earth was long in existence. But, stupa as a concept as we know today originated with Buddhism only. According to Buddhist sources, the remains of the Buddha's body were divided into eight parts and placed under the Stupas. **So, statement 1 is correct.**
- According to Buddhist sources, the remains of the Buddha's body (relics) were divided into eight parts and placed under the stupas. **So, statement 2 is correct.**
- According to **A. Cunningham**, Maisey and Foucher the Stupas can be classified into five categories
 - » Relic stupas
 - Relic stupas are those in which the relics of Buddha and other religious persons are buried. - SANCHI.
 - » Object stupas
 - Object stupas are those in which the objects belonging to the Buddha or his disciples are buried. - VAISHALI .
 - » **Commemorative stupas**
 - Commemorative stupas are those which are built to commemorate events in the life of Buddha and his disciples. - ANURADHAPURA
 - » Symbolic stupas
 - Symbolic stupas are those which are built to symbolise various aspects of Buddhist theology. - LEH
 - » **Votive stupas**
 - Votive stupas are constructed to commemorate visits or gain spiritual benefits. can be made from metal, stone, glass, etc
 - » **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q3.

Answer: b

Explanation:

- The premier Chola port was Puhar (also known as Kaveripumpattinam and Poompuhar), the major Pandya port was Korkai, while Tondi and Muchiri were the important ports in the Chera kingdom.

Therefore, option (b) is the correct answer.

Q4.

Answer: d

Explanation:

- Sangam poems are pervaded with a warrior ethic. The goal of the hero of the puram poems was puka (glory, fame) and a heroic death was greatly valued.
- It was believed that the spirit of a warrior who died in battle dwelt in paradise. A poem in the **Purananuru** suggests that the bodies of warriors who did not die in battle were cut with swords before the funerary rites, to simulate death in battle.
- The practice of **vattakirutal** was one in which a defeated king committed ritual suicide by starving himself to death, accompanied by those who had been close to him during his lifetime.

Therefore, option (d) is the correct answer.

Q5.

Answer: d

Explanation:

- **Hoysala**
 - » The Hoysalas came into the limelight from the beginning of the **11th century**. In the Kaliyur (near Talakad) inscription of about **990 A.D.**, a Hoysala chief is mentioned in the Ganga confederacy fighting against Aprameya, a Chola general, and this chief is identified as Nripakama, the earliest known member of the Hoysala dynasty. His son and successor Vinayaditya is first referred to in a record of **1047 A.D.** So, option 1 is not correct.
- **Gahadwala**
 - » With the break-up of the Pratihara empire, a number of Rajput states came into existence in north India.
 - » The most important of **these were the Gahadavalas of Kanauj**, the Paramaras of Malwa, and the Chauhans of Ajmer. There were other smaller dynasties in different parts of the country, such as the Kalachuris in the area around modern Jabalpur, the Chandellas in Bundelkhand, the Chalukyas of Gujarat, the Tomars of Delhi, etc Bengal remained under the control of the Palas and, later, under the Senas. The Gahadavalas of Kanauj gradually squeezed the Palas out of Bihar.
 - » **Chandradeva (1089-1103 CE), also known as Chandraditya**, was an Indian king from the Gahadavala dynasty. He ruled the Antarvedi country in present-day Uttar Pradesh, including **Kanyakubja and Varanasi**.
 - » At its height, the Gahadval kingdom extended from Mongyr in Bihar to Delhi. The greatest ruler in the dynasty was **Govind Chandra** who ruled in the first half of the twelfth century. He made **Kanauj** his capital, with Banaras remaining a second capital. Persian sources of the time call Govind Chandra the greatest ruler of Hindustan.
 - » The Gahadvars are reputed to be the biggest defenders against the continued Ghaznavid raids into the doab. Govind Chandra was succeeded by Jai Chandra who had to contend with the rising power of the Chauhans. So, option 2 is not correct.
- **Kakatiya**
 - » The sub-feudatories of the Rashtrakutas emerged themselves as independent kings and founded the **Kakatiya dynasty around 950 AD** and this kingdom became a strong and united whole of Telugu-speaking lands and lasted for more than three centuries and a half. The kingdom saw powerful kings like Ganapatideva, Rudradeva and Prataparudra as well as the first ever woman ruler in the subcontinent Rudramadevi. The Kakatiyas ruled from Hanumakonda in the beginning and

shifted their capital to Warangal later. **So, option 3 is not correct.**

- **Yadava**

- » In the last quarter of the **12th century AD** the Yadavas of Devagiri came into prominence. They had previously been ruling over Seunadesha (Khandesh) as feudatories of the Chalukyas of Kalyani. The founder of the family was Dridhaprahara, the son of Subahu. **So, option 4 is not correct.**

Therefore, option (d) is the correct answer.

Q6.

Answer: b

Explanation:

- **Vishakhadatta's** Mudrarakshasa (7th/8th century) revolves around the manoeuvres of Chanakya to win over Rakshasa, a minister of the Nandas, to Chandragupta's side. His **Devichandragupta** centres on an incident set in the reign of the Gupta king Ramagupta. Narrative literature such as the Panchatantra (5th–6th centuries) and the Kathasaritsagara (Ocean of Streams of Stories, 11th century) are collections of popular folk tales that ordinary people may have known, listened to, and enjoyed. **So, pair 1 is not correctly matched.**
- Nayacandra Suri wrote the Hammira-mahakavya, which is among the latest important works of Sanskrit literature. **So, pair 2 is correctly matched.**
- **Milindapanha** (1st century BCE–1st century CE), which consists of a dialogue on various philosophical issues between king Milinda—no doubt the Indo-Greek Menander—and the monk **Nagasena**. **So, pair 3 is not correctly matched.**
- **Somadeva** followed up the concepts of the Arthashastra tradition comprising mandala, sadgunyam, and four upayas in his **Nitivakyamrita** (the nectar of the Niti—lessons). The author has also attached importance to the acquisition of land, which, according to him, is better than that of money, which is better than acquiring the land. He has also referred to the importance of the king's three powers (shaktis) after Kautilya, such as the intellectual, the material, and the volitional. **So, pair 4 is correctly matched.**

Therefore, option (b) is the correct answer.

Q7.

Answer: b

Explanation:

- The central tenet of Jainism is **non-violence**. No other religion lays as much emphasis on non-violence as Jainism. As Jainism placed **great emphasis on non-violence**, strict observers of the faith wear a muslin cloth around their mouth and nose so that they would not inhale small insects even by mistake. To avoid trampling on ants and other insects, Jain monks used feathers to sweep the path before walking. Jains could not practise agriculture or other crafts that involve killing or injury to living organisms. Hence, they took to trading and money-lending and excelled in it. As a result, they were closely associated with urbanisation.

Therefore, option (b) is the correct answer.

Q8.

Answer: a

Explanation:

- **Deva Raya I** constructed a dam across the **Tungabhadra** so that he could bring the canals into the city to relieve the shortage of water. It irrigated the neighbouring fields also, for we are told that the canals increased his revenues by 350,000 pardaos. He also built a dam on the river Haridra for irrigation purposes.

Therefore, option (a) is the correct answer.

Q9.

Answer: c

Explanation:

- In view of the growing Portuguese threat to the Gujarat trade and coastal areas, the sultan of Gujarat sent an embassy to the Ottoman ruler, congratulating him on his victories, and seeking his support. In return, the Ottoman ruler expressed a desire to combat the infidels, that is, the Portuguese, who had disturbed the shores of Arabia. From this time on, there was a continuous exchange of embassies and letters between the two countries.
- The Turks ousted the Portuguese from the Red Sea, and in 1529, a strong fleet under Sulaiman Rais was dispatched to aid Bahadur Shah, the ruler of Gujarat. Bahadur Shah received it well, and two of the Turkish officials, who were given Indian names, were appointed governors of Surat and Diu, respectively. Of these two, Rumi Khan was later to earn a great name for himself as a master-gunner.
- **In 1531**, after intriguing with local officials, the Portuguese attacked Daman and Diu but the Ottoman commander, Rumi Khan, repulsed the attack. However, the Portuguese built a fort at Chaul lower down the coast.
- Before the Gujarat-Turkish alliance could be consolidated, a bigger threat to Gujarat appeared from the side of the Mughals. Humayun attacked Gujarat. In order to meet this threat, **Bahadur Shah** granted the **island of Bassein to the Portuguese**. A defensive-offensive alliance against the Mughals was also concluded, and the Portuguese were allowed to **build a fort at Diu. Thus were the Portuguese able to establish their foothold in Gujarat.**
- **Bahadur Shah soon repented his concessions** to the Portuguese. Following the expulsion of the Mughals from Gujarat, he once again appealed to the Ottoman sultan for help, and tried to limit the Portuguese encroachments at Diu. During the negotiations, Bahadur Shah who was aboard one of the ships the governor of the fort suspected treachery. In the scuffle which ensued, the Portuguese governor was killed and **Bahadur Shah drowned** while swimming ashore. This was in 1536.

Therefore, option (c) is the correct answer.

Q10.

Answer: d

Explanation:

Charter Act of 1833

- The Charter Act of 1833 was a significant constitutional instrument defining the scope and authority of the East India Company. The liberal and utilitarian philosophy of Bentham was made popular by the provisions of this Act. Following were the important provisions:
 - » The English East India Company ceased to be a commercial agency in India. In other words, it would function hereafter as the political agent for the Crown.
 - » The **Governor-General of Fort William was hereafter called 'the Governor - General of India'**. Thus, **Bentinck was the first Governor-General of India'**.
 - » A Law Member was appointed to the Governor-General's Council. T. B. Macaulay was the first Law Member of the Governor- General-in-Council.
 - » The Act categorically stated "that no native of India, nor any natural born subject of His Majesty, should be disabled from holding any place, office, or employment, by reason of his religion, place of birth, descent or colour". It was this enactment which laid the foundation for the Indianisation of public services.

Therefore, option (d) is the correct answer.

Q11.

Answer: c

Explanation:

- The difference between "**procedure established by law**" and "**due process of law**" is that under the former only the decisions of the executive will be tested by the courts with the touchstone of fairness but under the latter, the courts will examine the fairness of not only the decisions of the executive but also that of a law passed by the legislature.

Therefore, option (c) is the correct answer.

Q12.

Answer: a

Explanation:

- **Prison is a State subject** under List-II of the Seventh Schedule in the Constitution. The management and administration of Prisons falls exclusively in the domain of the State Governments, and is governed by the Prisons Act, 1894 and the Prison Manuals of the respective State Governments. Thus, **States have the primary role, responsibility and power to change the current prison laws, rules and regulations. So, statement I is correct.**
- In India, prisons are governed by the Prisons Act, 1894 and **Section 59 of this Act** which deals with the **Power to make rules** states that **the State Government may make rules consistent with this Act** with regards to these aspects-
 - » (1) defining the act which shall constitute prison-offences;
 - » (2) determining the classification of prison-offences into serious and minor offences;
 - » (3) fixing the punishments admissible under this Act which shall be awardable for commission of prison-offences or classes thereof;
 - » (4) declaring the circumstances in which acts constituting both a prison offence and an offence under the Indian Penal Code (Act 45 of 1860) may or may not be dealt with as a prison offence;
 - » (5) for the award of marks and the shortening of sentences;
 - » (6) regulating the use of arms against any prisoner or body of prisoners in the case of an outbreak or attempt to escape; **etc. So, statement II is correct.**

Therefore, option (a) is the correct answer.

Q13.

Answer: c

Explanation:

WHY DO WE NEED A CONSTITUTION?

- The first function of a constitution is to provide a set of basic rules that allow for minimal coordination amongst members of a society.
- The second function of a constitution is to specify who has the power to make decisions in a society. It decides how the government will be constituted.
- But this is clearly not enough. Suppose you decided who had the authority to make decisions. But then this authority passed laws that you thought were patently unfair. So the third function, which is also the **chief function of a constitution, is to set some limits on what a government** can impose on its citizens. These limits are fundamental in the sense that the government may never trespass them. The **most common way of limiting the power of government is to specify certain fundamental rights** that all of us possess as citizens and which no government can ever be allowed to violate.
- The fourth function of a constitution is to enable the government to fulfill the aspirations of a society and create conditions for a just society.
- Finally, a constitution expresses the fundamental identity of a people. This means the people as a collective entity are agreeing to a basic set of norms about how one should be governed, and who should be governed etc.

Therefore, option (c) is the correct answer.

Q14.

Answer: a

Explanation:

- During the initial months of the working of the Constitution, **certain difficulties were brought to light by judicial decisions and pronouncements** especially in regard to the chapter on fundamental rights. The citizen's right to freedom of speech and expression guaranteed by article 19(1)(a) had been held by some courts to be so comprehensive as not to render a person culpable even if he advocates murder and other crimes of violence.
- As a result of this, the **Constitution (First Amendment) Act, 1951** was passed. Its object was to amend Article 19 for the purposes indicated above and to insert provisions fully securing the constitutional

validity of zamindari abolition laws in general and certain specified State Acts in particular.
Therefore, option (a) is the correct answer.

Q15.

Answer: a

Explanation:

- National Commission for Backward Classes (NCBC) -
 - » Was initially constituted by the Central Govt by the National Commission for Backward Classes Act, 1993
 - » The **present Commission (8th) has been accorded Constitutional Status and constituted through “The Constitution (One Hundred and Second Amendment) Act, 2018” Act**, whereby **Article 338B has been inserted**, forming a Commission for the socially and educationally backward classes to be known as National Commission for Backward Classes. **So, point 1 is correct.**
- National Human Rights Commission -
 - » The National Human Rights Commission (NHRC) of India was established on 12 October, 1993. The statute under which it is established is the **Protection of Human Rights Act (PHRA), 1993** as amended by the Protection of Human Rights (Amendment) Act, 2006. **So, point 2 is not correct.**
- National Law Commission -
 - » Law Commission of India is a non-statutory body and is constituted by a notification of the Government of India, Ministry of Law & Justice, Department of Legal Affairs with a definite terms of reference to carry out research in the field of law and the Commission makes recommendations to the Government (in the form of Reports) as per its terms of reference. **So, point 3 is not correct.**
- National Consumer Disputes Redressal Commission (NCDRC)
 - » The National Consumer Disputes Redressal Commission (NCDRC), India is a quasi-judicial commission in India which was set up in 1988 under the **Consumer Protection Act of 1986**. Its head

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office is in New Delhi. So, point 4 is not correct.

Therefore, option (a) is the correct answer.

Q16.

Answer: d

Explanation:

- If the election of the President of India is declared void by the Supreme Court of India, all acts done by him/her in the performance of duties of his/her office of President before the date of **decision remain valid**. So, **statement 1 is not correct**.
- Election for the post of the President of India is **not postponed** on the ground that some Legislative Assemblies have been dissolved and elections are yet to take place. As when an assembly is dissolved, the members cease to be qualified to vote in the presidential election, even if fresh elections to the dissolved assembly are not held before the Presidential election. So, **statement 2 is not correct**.
- According to **Article 111**, when a Bill has been passed by the Houses of Parliament, it shall be presented to the President, and the President shall declare either that he assents to the Bill, or that he withholds assent therefrom Provided that the President may, **as soon as possible after the presentation to him of a Bill for assent**, return the Bill if it is not a Money Bill to the Houses with a message requesting that they will reconsider the Bill or any specified provisions thereof and, in particular, will consider the desirability of introducing any such amendments as he may recommend in his message, and when a Bill is so returned, the Houses shall reconsider the Bill accordingly, and if the Bill is passed again by the Houses with or without amendment and presented to the President for assent, the President shall not withhold assent therefrom Procedures in Financial Matters. So, the **Constitution does not prescribe any time limit** within which he/she has to declare his/ her assent. So, **statement 3 is not correct**.

Therefore, option (d) is the correct answer.

Q17.

Answer: a

Explanation:

- A **Finance Bill is a Money Bill** as defined in Article 110 of the Constitution. Whereas a Financial Bill is an ordinary bill as it apart from dealing with money matters also deals with non-money matters.
- It deals with the proposals of the government for levy of new taxes, modification of the existing tax structure or continuance of the existing tax structure beyond the period approved by Parliament are submitted to Parliament through this bill. So, **it is introduced as a part of the Annual Financial Statement (i.e. Budget) under Article 112**.
- The Finance Bill is accompanied by a Memorandum containing explanations of the provisions included in it. The Finance Bill can be introduced only in Lok Sabha.
- However, the **Rajya Sabha can only recommend amendments in the Bill**. The bill has to be passed by the Parliament within 75 days of its introduction. So, **statement 1 is not correct and statement 2 is correct**.
- As a finance bill is a money bill so **no joint sitting** of the two houses is allowed with regard to a finance bill under Article 108. So, **statement 3 is not correct**.

Therefore, option (a) is the correct answer.

Q18.

Answer: c

Explanation:

- Conservation reserves and community reserves in India are terms denoting protected areas of India which typically act as buffer zones to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India.
- **These protected area categories were first introduced in the Wildlife (Protection) Amendment Act of 2002 – the amendment to the Wildlife Protection Act of 1972**. These categories were added because of reduced protection in and around existing or proposed protected areas due to private ownership of land, and land use.

- **Section 33 of the WLPA passes the authority of the sanctuary to the chief wildlife warden. So, statement 1 is correct.**
- Such areas are designated as conservation areas if they are uninhabited and completely owned by the Government of India but **used for subsistence by communities** and community areas if part of the lands are privately owned. Thus, **people of such areas are allowed to collect non-timber forest produce. So, statement 3 is correct.**
- After a forest has been made into a community reserve, **people cannot hunt there, nor can they use it for agricultural practices, leave alone jhum cultivation. So, statement 2 is correct and statement 4 is incorrect.**

Therefore, option (c) is the correct answer.

Q19.

Answer: b

Explanation:

- In the **Article 244(1)** of the Constitution, expression Scheduled Areas means such areas as the **President may by order declare to be Scheduled Areas. So, statement 1 is correct.**
- **Criteria for declaring any area as a “Scheduled Area under the Fifth Schedule are:**
 - » Preponderance of tribal population
 - » Compactness and reasonable size of the area
 - » **A viable administrative entity such as a district, block or taluk. So, statement 2 is correct.**
 - » Economic backwardness of the area as compared to the neighboring areas.
- **The Governor of each State having Scheduled Areas therein shall annually, or whenever so required by the President, make a report to the President regarding the administration of the Scheduled Areas in that State and the executive power of the Union shall extend to the giving of directions to the State as to the administration of the said areas. So, statement 3 is not correct.**

Therefore, option (b) is the correct answer.

Q20.

Answer: c

Explanation:

- The Court has held in **several judgments (Indra Sawhney and Others v Union of India and Others 1993; M Nagaraj and Others v Union of India and Others 2006)** that the **reservation policies made under Article 16(4) of the Constitution would be limited by Article 335**, which provides for “maintenance of efficiency of administration,” while considering the claims of the Scheduled Castes (SCs) and the Scheduled Tribes (STs) in the making of appointments to public services and posts. **So, statement I is correct.**
- **Article 335 - Claims of Scheduled Castes and Scheduled Tribes to services and posts states that the claims of the members of the Scheduled Castes and the Scheduled Tribes shall be taken into consideration, consistently with the maintenance of efficiency of administration, in the making of appointments to services and posts in connection with the affairs of the Union or of a State.**
- Thus, the **Constitution does not define the term “efficiency of administration” under Article 335.** However, the judiciary has filled this gap in interpretation through **B K Pavitra (II) v Union of India case, 2019** wherein the judiciary held that **“efficiency of administration in the affairs of the union or of a state must be defined in an inclusive sense, where diverse segments of society find representation as a true aspiration of governance by and for the people.”** So, statement II is not correct.

Therefore, option (c) is the correct answer.

Q21.

Answer: c

Explanation:

- India is the world’s ninth-largest producer of uranium, with an output of 617 Tonnes in 2022, up by 0.26% in 2021. However, **Coal** is still the most important and abundant fossil fuel in India. **It accounts for 55% of the country’s energy needs. So, statement 1 is correct.**
- Uranium is an element which occurs naturally. It can have nuclear-related uses once it has been refined,

or enriched. This is achieved by increasing the content of its most fissile isotopes, U-235, through the use of centrifuges - machines which spin at supersonic speeds.

- **Low-enriched uranium, which typically has a 3-5% concentration of U-235, can be used to produce fuel for commercial nuclear power plants. So, statement 2 is not correct.**
- Highly enriched uranium has a purity of 20% or more and is used in research reactors. Weapons-grade uranium is 90% enriched or more.

So, Statement-I is correct but Statement-II is incorrect.

Therefore, option (c) is the correct answer.

Q22.

Answer: c

Explanation:

- Marsupials (Metatheria) are pouched mammals, that is mammals in which the females bear their young alive but in an almost foetal state and, in most species, carry them within an external pocket or pouch formed by a flap of dermal tissue on the abdomen. The most familiar marsupials are the kangaroos. The Marsupials are **native to Australia**. They are **not naturally found in India**. **So, statement 1 is correct.**
- Marsupials are **mostly found in arid and semi-arid** regions and not only in montane grasslands with no predators. **So, statement 2 is not correct.**

So, Statement-I is correct but Statement-II is incorrect.

Therefore, option (c) is the correct answer.

Q23.

Answer: a

Explanation:

- The Global Invasive Species Database was developed and is managed by the Invasive Species Specialist Group' of the Species Survival Commission of the **International Union for Conservation of Nature**. It was developed as part of the global initiative on invasive species led by the erstwhile Global Invasive Species Programme (GISP) in 2000. The GISD over the past two years and has been redesigned with support from the Abu Dhabi Environment Agency, the Italian Ministry of Environment and ISPRA - the Institute for Environmental Protection and Research, Italy.

Therefore, option (a) is the correct answer.

Q24.

Answer: b

Explanation:

- Lion-tailed macaque, also known as the wanderoo, thrives in the upper canopy of tropical evergreen rainforests and monsoon forests, at a wide range of elevations, from 330 to 6,000 ft (100-1,850 m). They are endemic to the Western Ghats. Lion-tailed macaques are diurnal and live in groups of 10 to 20 individuals. **So, point 1 is not correct.**
- Malabar Civet is a nocturnal and elusive animal. It is endemic to Western Ghats of India. They are mainly found in Wooded plains and hill slopes of evergreen rainforests. **So, point 2 is correct.**
- Sambar deer is native to the Indian subcontinent and Southeast Asia that is listed as a vulnerable species on the IUCN Red List since 2008. Sambar are nocturnal or crepuscular animals and rest during the day under the cover of heavy forest. **So, point 3 is correct.**

Therefore, option (b) is the correct answer.

Q25.

Answer: c

Explanation:

- **Honeybees** live in colonies with one queen running the whole hive. Worker honeybees are all females and are the only bees most people ever see flying around outside of the hive. They forage for food, build the honeycombs, and protect the hive.

- Honey bees use “waggle dance” to communicate the direction, distance, and quality of a resource to nestmates by encoding celestial cues, retinal optic flow, and relative food value into motion and sound within the nest.

Therefore, option (c) is the correct answer.

Q26.

Answer: d

Explanation:

- Mushrooms act as antibacterial, immune system enhancer and cholesterol lowering agents; additionally, they are important sources of bioactive compounds. As a result of these properties, some mushroom extracts are used to promote human health and are found as dietary supplements. **So, statement 1 is correct.**
- Psychedelic mushrooms are wild or cultivated mushrooms that contain psilocybin, a naturally occurring psychoactive and hallucinogenic compound. **So, statement 2 is correct.**
- Recently, an increasing number of mushrooms have been found to contain insecticidal compounds. Among these are species of *Lactarius* (Russulaceae), which react to wounding by exuding a milky fluid and/or color change reactions, which could be a warning reaction. **So, statement 3 is correct.**
- A mushroom documentation project in the forests of Northeast India has revealed a bioluminescent — or light emitting — variety of mushroom. The new species — named *Roridomyces phyllostachydis* — was first sighted on a wet August night near a stream in Meghalaya’s Mawlynnong in East Khasi Hills district and later at Krang Shuri in West Jaintia Hills district. It is now one among the 97 known species of bioluminescent fungi in the world. **So, statement 4 is correct.**

Therefore, option (d) is the correct answer.

Q27.

Answer: c

Explanation:

- Indian squirrels are found in India (south of the Vindhyas) and Sri Lanka. They live in tropical dry forests, rainforests, mangrove forests, grasslands, scrub, parks, gardens, and urban areas. They are solitary and only come together during the breeding season. They are active during the day spending their time both in trees and on the ground. Sometimes they live in a system of burrows that they use for shelter and storage. **So, statement 1 is correct.**
- They store their food materials like **nuts and seeds in the ground**. Squirrels hide nuts this way as preparation for cold weather when otherwise food will be scarce. **So, statement 2 is correct.**
- Indian squirrels are **omnivores**. They feed mainly on nuts and fruits but will also eat seeds, insects, small mammals and reptiles, eggs, and even sometimes chicks of bird. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q28.

Answer: c

Explanation:

- “Thermophiles” are microorganisms with optimal growth temperatures between 60 and 108 degrees Celsius. They are isolated from a number of marine and terrestrial geothermally-heated habitats including shallow terrestrial hot springs, hydrothermal vent systems, sediment from volcanic islands, and deep-sea hydrothermal vents. The boiling point of water is 100 degrees Celsius. **So, statement 1 is correct.**
- The microorganisms live in every part of the biosphere, and some of them are even capable of growing at low temperatures, including those below the freezing point. These microorganisms live in the sea or in high mountains, but unfortunately also in refrigerators, where they may spoil or, as pathogens contaminate foods. **So, statement 2 is correct.**
- Microorganisms that grow optimally at pH less than 5.55 are called acidophiles. For example, the sulfur-oxidizing *Sulfolobus* spp. isolated from sulfur mud fields and hot springs in Yellowstone National Park are extreme acidophiles. These archaea survive at pH values of 2.5–3.5. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q29.

Answer: b

Explanation:

- **Orangutans** are the largest arboreal mammal, spending most of their time in trees. Long, powerful arms and grasping hands and feet allow them to move through the branches. These great apes share 96.4% of our genes and are highly intelligent creatures.
- They have been observed as using sticks **for fishing out bugs from bark**. Researchers have also spotted orangutans **using sticks to extract seeds from fruit and scrape** insects from a hole in a tree in the wild.
- The name orangutan means “man of the forest” in the Malay language. In the lowland forests in which they reside, orangutans live solitary existences. They feast on wild fruits like lychees, mangosteens, and figs, and slurp water from holes in trees. They make nests in trees of vegetation to sleep at night and rest during the day.

Therefore, option (b) is the correct answer.

Q30.

Answer: c

Explanation:

- **Hydrofluorocarbons (HFCs)** are a group of industrial chemicals primarily used for cooling and refrigeration. HFCs were developed to replace stratospheric ozone-depleting substances that are currently being phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer.
- HFCs are entirely man-made. They are primarily produced for use in refrigeration, air-conditioning, insulating foams and aerosol propellants, with minor uses as solvents and for fire protection. HFCs are not used for making lubricants. **So, points 1, 2 and 3 are correct and point 4 is not correct.**

Therefore, option (c) is the correct answer.

Q31.

Answer: b

Explanation:

- **Wular Lake** is the largest freshwater lake in India and is located in Jammu and Kashmir. It lies at the north end of the Vale of Kashmir, 20 miles (32 km) north-northwest of Srinagar. The lake controls the flow of the **Jhelum River**, which traverses it. **So, statement 1 is correct.**
- **Kolleru Lake** is fed directly by water from the seasonal **Budameru and Tammileru streams** and is connected to the Krishna and Godavari systems by over 68 inflowing drains and channels. It serves as a habitat for migratory birds. Thus, the Krishna River does not directly feed Kolleru Lake. **So, statement 2 is not correct.**
- **Kanwar Lake**, also known as Kabar Taal, is the largest freshwater lake in Bihar. Kanwar jheel, as it is locally called, is located 22 km north-west of Begusarai town. It is a residual oxbow lake, formed due to meandering of Gandak river, a tributary of Ganga, in the geological past. **So, statement 3 is correct..**

Therefore, option (b) is the correct answer.

Q32.

Answer: b

Explanation:

- **Kamarajar Port**, located on the Coromandel Coast north of Chennai Port, Chennai, is the 12th major port of India, and the **first port** in India which is a **public company**. The port was declared as a major port under the Indian Ports Act, 1908 in March 1999 and incorporated as Ennore Port Limited under the Companies Act, 1956 in October 1999. **So, Statement 1 is correct.**
- **Mundra Port** is India's first private port and largest **privately owned** port, located on the northern shores of the Gulf of Kutch near Mundra, Kutch district, Gujarat. **So, Statement 2 is correct.**
- **Visakhapatnam Port** is India's third largest state-owned port by volume of cargo handled and the largest on the Eastern Coast. It is located midway between the Chennai and Kolkata Ports on the Bay of Bengal. **Jawaharlal Nehru Port** (Nhava Seva), Maharashtra, is the largest container port in India. **So, Statement 3 is not correct.**

Therefore, option (b) is the correct answer.

Q33.

Answer: b

Explanation:

- **Jackfruit** (*Artocarpus heterophyllus*) is an evergreen tree, which means they retain their leaves throughout the year and do not shed them seasonally. **So, point 1 is not correct.**
- **Mahua** (*Madhuca indica*) is found in the dry deciduous type of forests like the Forests of Chhattisgarh and Jharkhand. **So, point 2 is correct.**
- **Teak** (*Tectona grandis*) is a moist deciduous tree. Teak wood forests are mainly found in North East India. **So, point 3 is correct.**

Therefore, option (b) is the correct answer.

Q34.

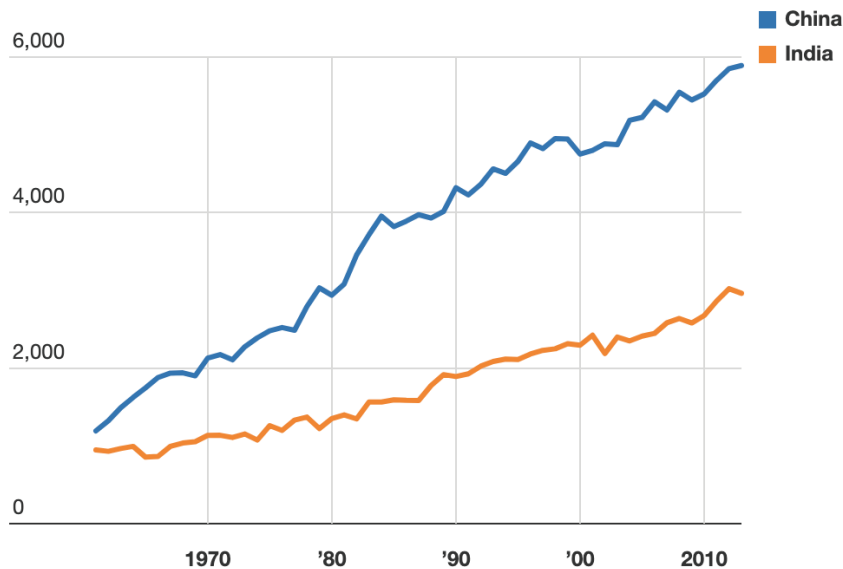
Answer: b

Explanation:

- Arable land is land ploughed or tilled regularly. India has the most arable land in the world followed by the United States, Russia, China and Brazil.
- India and the United States account for roughly 22% of the world's arable land.
- India has the largest arable land of any country at 1,656,780 km square (50.4% of total land) compared with 1,084,461 km square (11.3% of total land) of China. **So, statement 1 is correct.**
- India has more proportion of irrigated land than China. China's irrigation cover is 41% of the cultivated area, and India's is 48%. **So, statement 2 is correct.**
- However, the average productivity per hectare is higher in China i.e., 4.7 tonnes per hectare compared to India's 2.7. **So, statement 3 is not correct.**

Therefore, option (b) is the correct answer.

Cereal Yield



Yield is in kg/hectare

Source: World Development Indicators [Get the data](#)

Q35.

Answer: d

Explanation:

- The **Rann of Kutch** is a vast salt marsh located in the Thar Desert of Gujarat, India. It is known for its unique ecosystem and is characterized by extensive marshy areas.
- The region has **experienced multiple cycles of sea level fluctuations** over time, leading to the **formation of the marshland** in the present day.

- The Rann was once a shallow part of the Arabian Sea until a geological shift closed off the connection with the sea. The region became a seasonal marshy salt desert over the years. During monsoons, the region fills up with water and forms a wetland. In the summer the water dries to create a bed of white salty land.

Therefore, option (d) is the correct answer.

Q36.

Answer: d

Explanation:

- **Ilmenite and rutile**, which are abundantly available in certain coastal tracts of India, are rich **sources of titanium**. Titanium is a strong and lightweight metal widely used in various industries, including aerospace, automotive, and medical.
- India is endowed with large resources of heavy minerals which occur mainly along coastal stretches of the country and also in inland placers. Heavy mineral sands comprise a group of seven minerals, viz, ilmenite, leucoxene (brown ilmenite), rutile, zircon, sillimanite, garnet and monazite. Ilmenite (FeO. TiO₂) and rutile (TiO₂) are the two chief minerals of titanium

Therefore, option (d) is the correct answer.

Q37.

Answer: c

Explanation:

- About three-fourths of the world's cobalt, a metal required for the manufacture of batteries for electric motor vehicles, is produced by the **Democratic Republic of the Congo**.
- The Democratic Republic of the Congo (DRC) is a major global producer of cobalt and has significant cobalt reserves, making it a critical player in the supply chain for electric vehicle batteries.

Therefore, option (c) is the correct answer.

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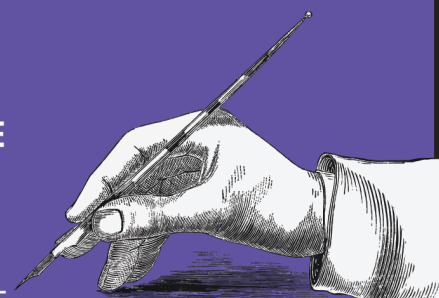


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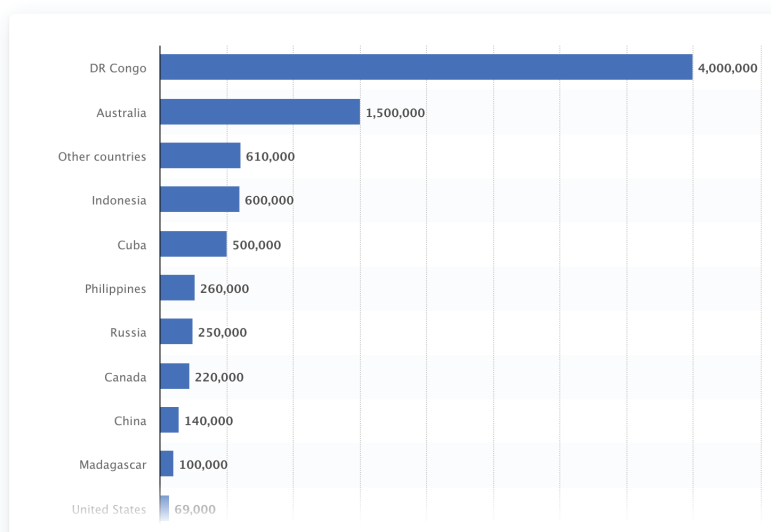
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AVAILABLE IN CLASSROOM & LIVE-ONLINE MODE



Reserves of cobalt worldwide in 2022, by country

(in metric tons)



Q38.

Answer: a

Explanation:

- **Cameroon is a part of the Congo Basin.** The Congo Basin is a vast region in Central Africa that encompasses several countries, including Cameroon.
- Congo basin, basin of the Congo River, lying astride the Equator in west-central Africa. It is the world's second-largest river basin (next to that of the Amazon), comprising an area of more than 1.3 million square miles (3.4 million square km). The vast drainage area of the Congo River includes almost the whole of the Republic of the Congo, the Democratic Republic of the Congo, the Central African Republic, western Zambia, northern Angola, and parts of Cameroon and Tanzania.
- Countries wholly or partially in the Congo region:
 - » Angola
 - » Gabon
 - » Burundi
 - » Cameroon
 - » Central African Republic
 - » Democratic Republic of the Congo
 - » Republic of the Congo
 - » Rwanda
 - » Tanzania
 - » Zambia

Therefore, option (a) is the correct answer.



Q39.

Answer: d

Explanation:

- **Amarkantak** is a pilgrimage town located in the Anuppur District of Madhya Pradesh, India. It is known for being the source of the Narmada River, Mahanadi and Son Rivers. It is located in South Eastern Madhya Pradesh. **So, statement 1 is not correct.**
- The **Biligirirangan Hills**, do not constitute the easternmost part of the Satpura Range and are located in the Chamarajanagar district of Karnataka, India. They are part of the Eastern Ghats mountain range, not the Satpura Range. **So, statement 2 is not correct.**
- The **Seshachalam Hills**, also known as the Tirumala Range are hill ranges of the Eastern Ghats, located in southern Andhra Pradesh. They are bounded by the Rayalaseema uplands in the west and northwest and the Nandyal Valley in the northeast. **So, statement 3 is not correct.**

Therefore, option (d) is the correct answer.

Q40.

Answer: d

Explanation:

- The Golden Quadrilateral Project is a major highway development project in India that aims to connect the four major metropolitan cities: Delhi, Mumbai, Chennai, and Kolkata. The East-West Corridor is a part of this project and connects Silchar in Assam to Porbandar in Gujarat. **So, Statement 1 is not correct.**
- The IMT Trilateral Highway connects Moreh in the Indian state of Manipur with Mae Sot in Thailand, passing through Myanmar. It is an ambitious infrastructure project aimed at enhancing connectivity and trade between India, Myanmar, and Thailand. **So, Statement 2 is not correct.**
- The Bangladesh-China-India-Myanmar Economic Corridor (BCIM) Corridor is a proposed connectivity project that aims to enhance economic cooperation and trade between Bangladesh, China, India, and Myanmar. The corridor is expected to run from Kunming in China, through Myanmar, and Bangladesh, and eventually reach Kolkata in India. **So, Statement 3 is not correct.**

Therefore, option (d) is the correct answer.



Q41.

Answer: d

Explanation:

- **Infrastructure investment trusts (InvITs)** are a type of investment vehicle that is similar to a mutual fund. The Securities and Exchange Board of India is in charge of this type of investment. The units of these trusts, which are also called "InvITs," are listed on different places to trade, such as stock exchanges. InvITs are a mix of equity instruments and debt instruments.
- InvITs are set up to get investors to put their money into the infrastructure sector. These types of investments take money from several investors and put it into things that make money. The cash flow is then given back to investors as dividend income. When compared to Real Estate Investment Trusts, or REITs, InvITs are similar in how they are set up and how they work.

- InvITs have two types of returns for investors – **Dividend Income and Capital Gains**. Here is the tax treatment of each of these incomes:
 - » **Tax on Dividend and Interest Income:** Any dividend or interest income from an InvIT investment is taxed **at the individual Income Tax Slab rate**. Every year, investors must report this income on their Income Tax Return.
 - » **Capital Gains Tax:** An investor only has to pay capital gains tax if they sell their InvITs units. Short-Term Capital Gains (STCG) tax is 15% on income from the sale of InvITs units held for up to 3 years. Long-term capital gains (LTCG) tax of 10% is charged on the sale of InvITs units held for more than 3 years if the income is more than Rs. 1 lakh. **So, statement 1 is not correct.**
- On February 11, 2021, the Finance Ministry said that the Government of India would be making changes to:
 - » the Securities Contracts (Regulation) Act (SCRA) 1956;
 - » **the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act 2002;** and
 - » the Recovery of Debts Due to Banks and Financial Institutions Act ('Recovery of Debts Act') 1993.
 - » The SARFAESI Act and the Recovery of Debts Act have also been changed to give domestic lenders more ways to get their money back. **With these changes, the definition of "borrower" in the acts is expanded to include a pooled investment vehicle.** When combined with the definition of "secured creditor" in the SARFAESI Act, this means that a debenture trustee for listed secured debt securities issued by an InvIT or REIT will be able to use the protections and enforcement mechanisms in the acts. In the same way, eligible lenders can now take advantage of the Recovery of Debts Act when it comes to debt securities issued by an InvIT or REIT. **So, statement 2 is correct.**

Therefore, option (d) is the correct answer.

Q42.

Answer: a

Explanation:

- Many Central banks worldwide have carried out interest rate hikes in the post-pandemic recent past to try and tackle rising inflation. For example, the Reserve Bank of India raised the repo rate by 40 basis points to 4.4% in May 2022, the US Federal Reserve raised interest rates by 0.25 percentage points in February 2023, and the UK raised rates for the 10th month in a row in February 2023. **So, statement 1 is correct.**
- Central Banks assume that they have the ability to counteract the rising consumer prices via monetary policy means because they have the power to control the money supply in the economy through various tools. For example, they can adjust interest rates, which can influence borrowing and spending decisions by consumers and businesses and, by extension, affect the supply of money in circulation.
 - » When the Central Bank raises interest rates, it becomes more expensive for consumers and businesses to borrow money, which in turn reduces their spending and slows down the economy. The **monetary policy transmission mechanism** can help reduce inflation. This can cause inflation to decrease, as less money is chasing the same amount of goods and services. On the other hand, if the Central Bank lowers interest rates, it becomes cheaper for consumers and businesses to borrow money, which can stimulate spending and economic growth but may also lead to higher inflation if the supply of money increases faster than the supply of goods and services.
 - » Monetary policy measures are often used by Central Banks as a tool to maintain price stability and promote economic growth. This is known as **inflation targeting** by the Central Banks. This is because high and volatile inflation can adversely affect the economy by reducing the purchasing power of consumers and making it harder for businesses to plan and invest for the long term. By maintaining price stability, the Central Bank can create a conducive environment for businesses to thrive and support the overall health of the economy.
 - » So, Central Banks assume that they have the ability to counteract the rising consumer prices via monetary policy means because they have the power to control the money supply and influence

the borrowing and spending decisions of consumers and businesses. By using monetary policy tools such as interest rates, they can maintain price stability, promote economic growth, and support the overall health of the economy.

- » **So, statement II is correct and it provides a reason for the interest rate hikes mentioned in Statement-I.**

Therefore, option (a) is the correct answer.

Q43.

Answer: b

Explanation:

- Statement I suggest that carbon markets have the potential to become widely used tools in the effort to combat climate change. Carbon markets, also known as emissions trading systems or cap-and-trade programs, aim to reduce greenhouse gas emissions by creating a market for buying and selling carbon allowances or credits. By putting a price on carbon emissions, carbon markets provide economic incentives for industries to reduce their emissions and invest in cleaner technologies. This statement is generally correct as carbon markets have gained prominence globally as a policy instrument for addressing climate change. **So, statement 1 is correct.**
- Statement II states that carbon markets transfer resources **to the state**. Carbon markets involve transactions between the private sector and the State. For example, carbon markets can enable trade between developed and developing countries, between different sectors or industries, or between companies and the State Environmental Authorities. Carbon markets can also create opportunities for the private sector to invest in low-carbon projects and benefit from carbon credits.
 - » **Compliance markets and voluntary markets** are the two main types of carbon markets.
 - » **Compliance markets are made when a policy or regulation by the State is made at the national, regional, or international level.**
 - » National and international voluntary carbon markets are places where people can buy and sell carbon credits on their own time.
 - » Most of the **voluntary carbon credits that are available now come from private companies** that create carbon projects or from government programmes that are certified by carbon standards and reduce or remove emissions.
 - » Demand comes from people who want to make up for their carbon footprints, companies with sustainability goals, and others who want to trade credits at a higher price to make money. **So, statement 2 is correct.**

So, both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.

Therefore, option (b) is the correct answer.

Q44.

Answer: a

Explanation:

- **Sterilization** is an action taken by the Central Bank (such as RBI in India) to counterbalance the effects of foreign exchange interventions on domestic money supply and inflation. It is done to neutralize the impact of inflows or outflows of foreign exchange reserves on the domestic monetary system.
- **Open Market Operations (OMOs)** are one of the tools used by the RBI for sterilization. OMOs are the purchase or sale of government securities by the Central Bank in the open market in order to regulate the money supply in the economy. When the RBI buys government securities, it injects liquidity into the economy, while when it sells these securities, it absorbs liquidity from the economy.
- Through OMOs, the RBI can either inject or drain liquidity from the banking system in order to maintain price stability and promote economic growth. This is done to neutralize the inflationary or deflationary impact of foreign exchange interventions on the domestic economy.

Therefore, option (a) is the correct answer.

Q45.

Answer: b

Explanation:

- The **money market** is where short-term debt and lending takes place, usually for one year or less. The **capital market** is where long-term assets, such as stocks and bonds, are traded. The money market is less risky but also less rewarding than the capital market, which is more volatile but potentially more profitable.
- Based on this definition, we can see that only two of the above markets are included in the capital market, that is Government Bond Market and the stock market. The other two, Call Money Market and Treasury Bill Market are part of the money market, as they deal with short-term financial instruments.

Therefore, option (b) is the correct answer.

Q46.

Answer: b

Explanation:

- The concept of '**Small Farmer Large Field**' is a participatory collective action model that aims **to improve the livelihood of small and marginal farmers** in India by achieving economies of scale and bargaining power in the supply chain.
- The Small Farmer Large Field (SFLF) model was piloted in two villages of Odisha, an eastern Indian state, with 112 farmers who organized themselves into groups and synchronized their operations such as nursery bed management, transplanting, and harvesting collectively to achieve economies of scale. The SFLF farmers also purchased inputs (seed and fertilizer) and sold paddy as a group to increase their bargaining power in price negotiations. The results from this pilot study showed that the participating farmers almost doubled their profits.
- The SFLF concept was adapted from the Large Field Model (LFM) of Vietnam, which was also based on the principles of aggregation and achieving economies of scale, through strengthening backward and forward integration along the supply chain and lowering costs by synchronising key agricultural operations from field preparation to harvest.

Therefore, option (b) is the correct answer.

Q47.

Answer: c

Explanation:

- Niger (*Guizotia abyssinica*) is a minor oilseed crop that is grown in India mainly during **kharif** season. It is also known as ramtil or karala. Niger seeds have high oil content (37-47%) and protein content (18-24%). The oil is used for cooking, lighting, lubrication and perfume making. The seed cake is used as animal feed and manure. **Niger seed oil are also consumed as a condiment by some tribal people. The Government of India provides Minimum Support Price for niger. So, statements 1, 2 and 3 are correct.**
- Niger can grow on various types of soils, from clay loam to sandy loam, as long as they are well drained. It can tolerate slight alkalinity and salinity. It requires moist soil and moderate rainfall (1000-1300 mm). Niger is cultivated as a sole crop or mixed crop with millets, groundnut or pulses. The seed rate varies from 5 to 15 kg/ha depending on the method of sowing. Niger is cross-pollinated by bees and other insects.
- The major niger producing states in India are Madhya Pradesh, Orissa, Maharashtra, Karnataka, Gujarat and Jharkhand. The average yield of niger in India is around 266 kg/ha. However, the area under niger cultivation has been declining over the years due to various factors such as low productivity, lack of government support, amarbel infestation and increasing preference for paddy.

Therefore, option (c) is the correct answer.

Q48.

Answer: c

Explanation:

- Intangible investments are assets that are not physical in nature, such as **patents, trademarks, copyrights, and human capital**. They are often associated with higher productivity and growth in companies, sectors,

and economies. Intangible investments can be created or acquired by businesses, but they do not appear on the balance sheet unless they have been purchased.

- Among the four assets listed above, three are considered intangible investments: **brand recognition, intellectual property, and mailing list of clients**. These assets have **no physical form**, but they can generate value for the business by enhancing its reputation, innovation, and customer loyalty. Inventory, on the other hand, is a tangible asset that consists of physical goods that are ready to be sold or used in production. **So, points 1, 3 and 4 are correct.**
- Intangible assets exist in opposition to **tangible assets, which include land, vehicles, equipment, and inventory**. **So, point 2 is not correct.**

Therefore, option (c) is the correct answer.

Q49.

Answer: b

Explanation:

- The Finance Commission (FC) is a constitutional body that recommends how the central government should share its tax revenues with the states and local bodies.
- Horizontal devolution refers to the distribution of funds among the states based on certain criteria such as population, income, area, forest cover, etc.
 - » The 15th FC has made some changes in the horizontal devolution formula compared to the previous FCs. For example, it has reduced the weightage of population based on 1971 census from 17.5% to 15%, and increased the weightage of population based on 2011 census from 10% to 12.5%. It has also introduced a new criterion of demographic performance, which rewards the states that have controlled their population growth. The 15th FC has also increased the share of grants-in-aid for local bodies from 2.5% to 4% of the divisible pool of taxes. These changes have implications for the fiscal autonomy and equity of the states and local bodies in India.
 - » Based on principles of need, equity and performance, overall devolution formula is as follows:

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Forest & ecology	10.0
Income distance	45.0
Tax & fiscal efforts	2.5
Demographic performance	12.5
Total	100

Therefore, option (b) is the correct answer.

Q50.

Answer: c

Explanation:

- The UNOPS Sustainable Investments in Infrastructure and Innovation (S3i) initiative was launched in 2015 as a proof of concept to explore innovative ways of financing sustainable infrastructure projects in developing countries. The initiative aimed to leverage UNOPS expertise and experience in delivering infrastructure solutions that meet the needs and aspirations of people and communities.
- S3i seed-funds **large-scale affordable housing, renewable energy, and health infrastructure projects**. It does not focus on mass rapid transport infrastructure.

Therefore, option (c) is the correct answer.

Q51.

Answer: b

Explanation:

- Home Guards are raised under the Home Guards Act and Rules of the **States/Union Territories**. They are recruited from amongst all classes of people and walks of life, who give their spare time to the organisation for betterment of the community. **So, statement 1 is not correct.**
- The role of Home Guards is to serve as an **auxiliary Force to the Police in maintenance of internal security situations**, help the community in any kind of emergency such as an air-raid, fire, cyclone, earthquake, epidemic etc. help in maintenance of essential services, promote communal harmony and assist the administration in protecting weaker sections, participate in socio-economic and welfare activities and perform Civil Defence duties. **So, statement 2 is correct.**
- Fifteen Border Wing Home Guards (BWHG) Battalions have been raised in the border States viz. Punjab (6 Bns.), Rajasthan (4 Bns.), Gujarat (2 Bns.) and one each Battalion for Meghalaya, Tripura and West Bengal to serve as an auxiliary to Border Security Force for **preventing infiltration on the international border/coastal areas**. **So, statement 3 is correct.**

Therefore, option (b) is the correct answer.

Q52.

Answer: b

Explanation:

- **Official Secrets act** stated that **Unauthorised use of uniforms, falsification of reports, forgery, personation, and false documents**.—(1) If any person for the purpose of gaining admission or of assisting any other person to gain admission to a prohibited place or for any other purpose prejudicial to the safety of the State wears police or military uniform shall be guilty. **So, pair 1 is correctly matched.**
- **Official secrets act** stated that No person in the vicinity of any prohibited place shall obstruct, **knowingly mislead or otherwise interfere with or impede, any police officer, or any member of engaged on**

guard, Sentry, patrol, or other similar duty in relation to the prohibited place. **So, pair 2 is not correctly matched.**

- The **Arms (Amendment) Act, 2019** ensures that those using firearms in a rash or negligent manner in celebratory gunfire, endangering human life or personal safety of others, shall be punishable with an imprisonment to two years or with fine which may extend to Rs one lakh or with both. **So, pair 3 correctly matched.**

Therefore, option (b) is the correct answer.

Q53.

Answer: d

Explanation:

- **North Kivu and Ituri** are the Provinces of the **Democratic Republic of the Congo**. Humanitarian Emergency in North Kivu, Ituri and South Kivu in 2023. **So, pair 1 is not correctly matched.**
- The landlocked mountainous region of **Nagorno-Karabakh** is the subject of an unresolved dispute between **Azerbaijan**, in which it lies, and its ethnic Armenian majority, backed by neighbouring Armenia. **So, pair 2 is not correctly matched.**
- Russia carried out so-called referendums on joining Russia in the Ukrainian regions of **Luhansk, Donetsk, Zaporizhzhia and Kherson** – which represent 15 percent of **Ukraine's** territory and are controlled by Russia. **So, pair 3 is not correctly matched.**

Therefore, option (d) is the correct answer.

Q54.

Answer: c

Explanation:

- The development of open, friendly relations between Israel and some Gulf Arab states has emerged as a significant new dynamic of the 21st century Middle East.
- Although the diplomatic accords signed by the **United Arab Emirates (UAE) and Bahrain with Israel in 2020** constituted a breakthrough in relations, the lines of communication and cooperation between the Gulf states and Israel are not new. Multiple countries in the region, including Qatar, Bahrain, and Oman, established connections with Israel in the 1990s after the Palestine Liberation Organization (PLO) and Israel signed the **Oslo Accords**. **So, statement 1 is correct.**
- The Arab Peace Initiative is a comprehensive peace plan which was proposed in 2002 by then-Crown Prince Abdullah of Saudi Arabia. The Initiative calls for an end to the conflict between Israel and the Palestinians and the **normalization of relations between Israel and the entire Arab world**, in exchange for an Israeli withdrawal from the areas gained by Israel during the 1967 Six Day War and a “just settlement” to the issue of Palestinian refugees. The Arab League endorsed the plan in March 2002, and readopted it in March 2007.
- However, **The Israeli government rejected the initiative immediately**, calling it a “non-starter,” though the Quartet on the Middle East endorsed the Initiative in 2003. **So, statement 2 is not correct.**

Therefore, option (c) is the correct answer.

Q55.

Answer: b

Explanation:

- **Major Dhyan Chand Khel Ratna Award:** The recipient(s) is/are selected by a committee constituted by the Ministry and is honoured for their “spectacular and **most outstanding performance in the field of sports over a period of four years**” at international level. **So, pair 1 is correctly matched.**
- **Arjun Awad:** The Arjuna Award, officially known as Arjuna Awards for Outstanding Performance in Sports and Games, is the second-highest sporting honour of India. **Dhyan Chand award is the lifetime achievement sporting honour of India.** **So, pair 2 is not correctly matched.**
- **Dronacharya Award** is given to **coaches for doing outstanding and meritorious work** on a consistent basis and enabling sportspersons to excel in International events. **So, pair 3 is correctly matched.**
- **‘Rashtriya Khel Protsahan Puruskar’** is given to corporate entities (both in private and public sector), Sports Control Boards, NGOs, including sports bodies at the State and National level, who have played a

visible role in the area of sports promotion and development. So, pair 4 is not correctly matched. Therefore, option (b) is the correct answer.

Q56.

Answer: b

Explanation:

- For the 1st time ever, the world's biggest chess event is happening in India. Chennai is hosting the 44th Chess Olympiad. **So, statement 1 is correct.**
- The Official Mascot of 44th Chess Olympiad is 'Thambi'. The word 'Thambi' in Tamil language means - little or younger brother. **So, statement 2 is correct.**
- **1st place in the Open section: Hamilton-Russel Cup.** So, statement 3 is not correct.
- **1st place in the Women's section: Vera Menchik Cup.** So, statement 4 is not correct.

Therefore, option (b) is the correct answer.

Q57.

Answer: d

Explanation:

- **The Donbas or Donbass** is a historical, cultural, and economic region in eastern **Ukraine**. **So, pair 1 is not correctly matched.**
- Kachin State also known by the endonym Kachinland, is the northernmost state of Myanmar. **So, pair 2 is not correctly matched.**
- **Tigray is Ethiopia's northernmost region.** Bordering Eritrea, it is home to most of the country's estimated 7 million ethnic Tigrayans. **So, pair 3 is not correctly matched.**

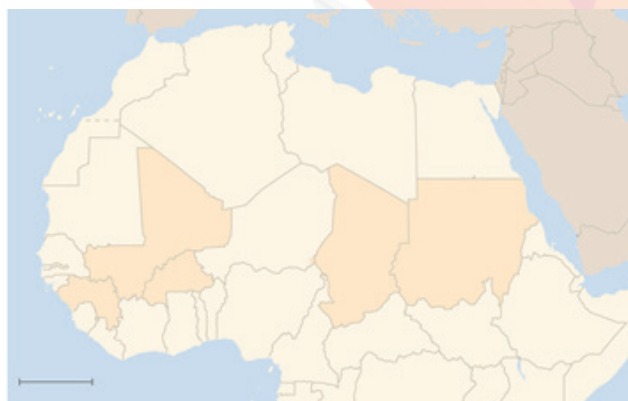
Therefore, option (d) is the correct answer.

Q58.

Answer: d

Explanation:

- In past few years, military leaders have toppled the governments of Mali, Chad, Guinea, Sudan and Burkina Faso. These five nations that have recently experienced military coups form a broken line that stretches across the wide bulge of Africa, from Guinea on the west coast to Sudan in the east. The resurgence of coups has alarmed the region's remaining civilian leaders.



Therefore, option (d) is the correct answer.

Q59.

Answer: c

Explanation:

- The primary focus for adoption of green hydrogen is likely to be **oil refineries, fertilisers and chemical industry**. oil refineries using grey hydrogen for desulphurisation, ammonia production for fertilisers and chemicals industry, and treatment of basic metals are the leading market opportunities for green hydrogen in the short-medium term. **Oil refineries, fertiliser companies and steel producers** are likely

to be asked to meet a compulsory green hydrogen purchase obligation (GHPO) in a planned national move to green energy.

Therefore, option (c) is the correct answer.

Q60.

Answer: c

Explanation:

- The G20 group of 19 countries and the EU was established in 1999 as a platform for **Finance Ministers and Central Bank Governors** to discuss **international economic and financial issues**. Together, the G20 countries account for almost two-thirds of the global population, 75% of global trade, and 85% of the world's GDP. So, **statement 1 is correct**.
- India is pitching its **digital infrastructure at G20** as an open-access platform that can aid in improving development outcomes. So, **statement 2 is correct**.

Therefore, option (c) is the correct answer.

Q61.

Answer: a

Explanation:

- The Buddhist architecture in Andhra Pradesh is represented by the rock-cut caves and brick and stone built stupas, chaityas, viharas and silamandpas. The rock-cut caves are seen at Guntupalli, Kapavaram, Erravaram, Gopalpatnam etc.
- A.H. Longhurst, Walter Elliot, Alexander Rea, James. Burgess, Robert Sewell and many others conducted **systematic and careful excavations** at Bhattiprolu, Ghantasala, Amaravati etc. and exposed relic caskets which created much curiosity among Indian scholars about various aspects of these valuable reliquaries.

Therefore, option (a) is the correct answer.

Q62.

Answer: c

Explanation:

- **Udayagiri Caves (in Besnagar Modern day Vidisha)** are a group of rock - cut cave sanctuaries, carved into a sandstone hill that stand, sentinel like, on the horizon. Situated in Sonpura and Udaygiri villages of Vidisha district of Madhya Pradesh, these are the finest examples of classical gupta arts.
 - » **Cave 4**, also known as Bina Cave, is a significant stage in the process of cave development. It features an impressive Shiva Lingam, a symbolic representation of Lord Shiva, placed on a rock-cut platform within the cave. So, **pair 1 is correctly matched**.
- **Bhaja Caves** is a group of 22 rock cut caves built during the 2nd century BC. This cave is also known as Bhaje caves and is located in Pune district, near Lonavala, Maharashtra. **The Caves belong to the Hinayana Buddhism sect in Maharashtra. So, pair 2 is correctly matched.**
- Sittanavasal is a small village in Pudukottai district of Tamil Nadu. **It was a major centre of Jain influence for 1,000 years** just before the Christian era. Sittanavasal is the name used synonymously for the hamlet and the hillock that houses the Arivar Kovil (temple of Arihats - Jains who conquered their senses), 'Ezhadipattam' (a cavern with 17 polished rock beds), megalithic burial sites and the Navachunai tarn (small mountain lake) with a submerged shrine. So, **pair 3 is correctly matched**.

Therefore, option (c) is the correct answer.

Q63.

Answer: a

Explanation:

- In 2015, the **Government of India decided to designate the 7th August every year, as the National Handloom Day**. The first National Handloom Day was inaugurated on 7 August 2015 by Prime Minister Narendra Modi in Chennai. On this day, we honour our handloom-weaving community and highlight the contribution of this sector in the socio-economic development of our country. So, **Statement 1 is correct**.

- The **Swadeshi Movement** which was launched on **7th August, 1905** had encouraged indigenous industries and in particular handloom weavers. In 2015, the Government of India decided to designate the 7th August every year, as the National Handloom Day. **So, Statement 2 is correct.**

Therefore, option (a) is the correct answer.

Q64.

Answer: d

Explanation:

The Flag Code of India took effect on January 26, 2002. As per Clause 2.1 of the Flag Code of India, there shall be no restriction on the display of the National Flag by members of the general public, private organizations, educational institutions etc. consistent with the dignity and honour of the National Flag.

- The Flag Code of India, 2002 was amended recently, and National Flag made of polyester or machine made flag have also been allowed.
- Now, the National Flag shall be made of hand-spun, hand-woven or machine-made cotton/polyester/wool/silk/khadi bunting, as per the amended flag code.
- The standard sizes of the National Flag shall be as follows: -

The standard sizes of the National Flag shall be as follows:-

Flag Size No.	Dimensions in mm
1	6300 X 4200
2	3600 X 2400
3	2700 X 1800
4	1800 X 1200
5	1350 X 900
6	900 X 600
7	450 X 300
8	225 X 150
9	150 X 100

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So, Statement 1 is not correct.

- The National Flag shall be rectangular in shape. **The ratio of the length to the height (width) of the Flag shall be 3:2. So, Statement 2 is correct.**

Therefore, option (d) is the correct answer.

Q65.

Answer: c

Explanation:

- Constitution Day, also known as 'Samvidhan Divas', is celebrated in our country on 26th November every year to commemorate the adoption of the Constitution of India.
- The **Ministry of Social Justice and Empowerment** on 19th November 2015 notified the decision of Government of India to celebrate the 26th day of November every year as 'Constitution Day' to **promote Constitution values among citizens. So, Statement-I is correct.**
- Among all the committees of the **Constituent Assembly**, the most important committee **was the Drafting Committee, set up on August 29, 1947.** It was this committee that was entrusted with the task of preparing a draft of the new Constitution. It consisted of seven members. They were:
 - » **Dr. B.R. Ambedkar (Chairman)**
 - » N. Gopalaswamy Ayyangar
 - » Alladi Krishnaswamy Ayyar
 - » Dr. K.M. Munshi
 - » Syed Mohammad Saadullah
 - » N. Madhava Rau (He replaced B.L. Mitter who resigned due to ill-health)
 - » T.T. Krishnamachari (He replaced D.P. Khaitan who died in 1948)
- The Drafting Committee, after taking into consideration the proposals of the various committees, prepared the first draft of the Constitution of India, which was published in February 1948.
- On 26th November 1949, the Constituent Assembly of India adopted the Constitution of India, which came into effect from 26th January 1950. **So, Statement 2 is not correct.**

Therefore, option (c) is the correct answer.

Q66.

Answer: c

Explanation:

- **In 2021, Switzerland exported \$86.7B in Gold**, making it the **1st largest exporter of Gold in the world.** In the same year, Gold was the 1st most exported product in Switzerland. The main destination of Gold exports from Switzerland are India (\$29.3B), China (\$16B), the United States (\$8.13B), Germany (\$5.8B), and Hong Kong (\$4.67B). **So, statement 1 is correct.**
- Switzerland has the **seventh-largest reserves of gold in the world.** Its reserves of 1,040.0 tons account for 6.3% of its foreign reserves. **So, statement 2 is not correct.**

Therefore, option (c) is the correct answer.

Q67.

Answer: c

Explanation:

- Recently the **United States of America and the European Union** have launched the **Trade and Technology Council**, a strategic coordination mechanism to tackle challenges at the nexus of trade, trusted technology and security. **So, statement 1 is correct.**
- The EU-US Trade and Technology Council serves as a forum for the United States and European Union to coordinate approaches to key **global trade, economic, and technology issues and to deepen transatlantic trade and economic relations based on these shared values. So, statement 2 is not correct.**

Therefore, option (c) is the correct answer.

Q68.

Answer: d

Explanation:

- As per the WTO data released in April 2019, for the year 2018, India's share in global exports for merchandise was 1.7 % and in global imports was 2.6 %. For the year 2018, for the service sector, India's share in global exports was 3.5 % and imports was 3.2 %. So, statement 1 is not correct.
- Production-linked Incentive schemes are a cornerstone of the Government's push for achieving an Atmanirbhar Bharat. The objective is to make domestic manufacturing globally competitive and to create global Champions in manufacturing. The strategy behind the scheme is to offer companies incentives for incremental sales from products manufactured in India over the base year. So, statement 2 is correct.

Therefore, option (d) is the correct answer.

Q69.

Answer: a

Explanation:

- The Stability and Growth Pact (SGP) is a binding diplomatic agreement among European Union (EU) member states. Economic policies and activities are coordinated cohesively to safeguard the stability of the economic and monetary union. The Stability and Growth Pact (SGP) is a set of fiscal rules designed to prevent countries in the EU from spending beyond their means and pursuing sound financial policies. So, statement 1 is correct and statements 2 and 3 are not correct.

Therefore, option (a) is the correct answer.

Q70.

Answer: d

Explanation:

- The Global Compact for Safe, Orderly and Regular Migration is the first intergovernmental agreement, adopted under the auspices of the United Nations, to cover all dimensions of international migration in a holistic and comprehensive manner. It was adopted at an intergovernmental conference on migration in Marrakesh, Morocco, on 10 December 2018. The pact was agreed by all 193 members, except the United States. But at the ceremony to adopt the text on 10 December, only 164 countries formally adopted it. So, statement 1 is not correct.
- The Global Compact for Migration is the first-ever UN global agreement on a common approach to international migration in all its dimensions. The global compact is non-legally binding. So, statement 2 is not correct.
- Key commitments of the Global Compact for Safe, Orderly and Regular Migration (GCM) include:
 - » Strengthening evidence-based and human rights-based policy-making and public discourse on migration;
 - » Minimising the adverse drivers of migration, including combatting poverty and discrimination and addressing climate and disaster-related displacement;
 - » Ensuring migrants' rights to information and to a legal identity;
 - » Expanding and diversifying the availability of pathways for safe, orderly and regular migration, taking into account the particular needs of migrants in situations of vulnerability;
 - » Protecting the right to decent work and other labour rights for migrants;
 - » Addressing and reducing vulnerabilities and human rights violations in the context of migration;
 - » Protecting the right to life in the context of migration;
 - » Combatting smuggling and trafficking while protecting the human rights of those who have been smuggled or trafficked;
 - » Respecting human rights at borders and conducting human rights-based and individualised screening, assessment and referral of migrants;
 - » Protecting the right to liberty and freedom from arbitrary detention, including by prioritising alternatives to immigration detention;
 - » Ensuring migrants' rights to access basic services, including health, education, and social sup-

- port, without discrimination;
- » Eliminating discrimination and combatting hate speech and xenophobia;
- » Upholding the prohibitions of collective expulsion and refoulement for all migrants, ensuring that returns are safe and dignified and reintegration is sustainable. **So, statement 3 is not correct.**

Therefore, option (d) is the correct answer.

Q71.

Answer: a

Explanation:

Ukraine is the largest country in Europe. The country sits on the southwestern part of the Russian Plain. It is bordered by the Black Sea and the Sea of Azov to the south, Russia to the east and north, **Belarus to the north, Poland, Slovakia, and Hungary to the west, and Romania and Moldova to the south.**

Therefore, option (a) is the correct answer.



Q72.

Answer: c

Explanation:

- The Earth's surface receives most of its energy in short wavelengths. The energy received by the earth is known as incoming solar radiation, which in short, is termed insolation.
- The atmosphere is largely transparent to short wave solar radiation. The incoming solar radiation passes through the atmosphere before striking the earth's surface. Within the troposphere **water vapour, ozone and other gases absorb much of the near infrared radiation.**

Therefore, option (c) is the correct answer.

Q73.

Answer: d

Explanation:

- **The soils of the tropical rainforest are typically nutrient-poor.** The high temperature and moisture of tropical rainforests cause dead organic matter in the soil to **decompose quickly**. In tropical rainforests, the plants grow so fast that they quickly consume the nutrients from the soil, and the leftover nutrients are then leached away by abundant rainfall, which leaves the soil infertile. **So, statement 1 is not correct and statement 2 is correct.**

Therefore, option (d) is the correct answer.

Q74.

Answer: b

Explanation:

- The temperature contrast between continents and oceans is greater during summer than in winter. This is

the result of more heat and stronger sea breeze in the summer than in winter. **So, statement 1 is correct.**

- The specific heat capacity of water is much greater than the land because the relative density of water is much lower than that of the land surface. However, this is true throughout the year and not related to any particular season. **So, statement 2 is correct but it is not the correct explanation for Statement-I.**

Therefore, option (b) is the correct answer.

Q75.

Answer: c

Explanation:

Earthquake waves are basically of two types — body waves and surface waves. Body waves are generated due to the release of energy at the focus and move in all directions travelling through the body of the earth. Hence, the name body waves. The body waves interact with the surface rocks and generate new set of waves called surface waves. These waves move along the surface. The velocity of waves changes as they travel through materials with different densities. The denser the material, the higher is the velocity. Their direction also changes as they reflect or refract when coming across materials with different densities.

- **P-waves move faster and are the first to arrive at the surface.** These are also called 'primary waves'. The P-waves are similar to sound waves. They travel through gaseous, liquid and solid materials. **S-waves arrive at the surface with some time lag.** These are called secondary waves. **So, statement 1 is correct.**
- **P-waves vibrate parallel to the direction of the wave.** This exerts pressure on the material in the direction of the propagation. As a result, it creates density differences in the material leading to stretching and squeezing of the material. The direction of vibrations of **S-waves is perpendicular to the wave direction** in the vertical plane. Hence, they create troughs and crests in the material through which they pass. Surface waves are considered to be the most damaging waves. **So, statement 2 is correct.**

Therefore, option (c) is the correct answer.

Q76.

Answer: d

Explanation:

- In India, several coal-fired thermal power plants **employ seawater** for a variety of functions, including **cooling the condenser system.** Seawater is a frequent supply of cooling water for power plants near the coast. It should be noted, however, that not all power plants use seawater; others may rely on freshwater sources. **So, statement 1 is not correct.**
- According to a report, **40 per cent of the country's thermal power plants are located in areas facing high water stress,** a problem since these plants use water for cooling. Scarce water is already hampering electricity generation in this region. **So, statement 2 is not correct.**
- There are both **privately and publicly owned coal-fired thermal power stations in India.** The country's power generating is a collaboration of corporate and public companies. Many private corporations have invested in the power industry and run coal-fired thermal power facilities. **So, statement 3 is not correct.**

Therefore, option (d) is the correct answer.

Q77.

Answer: a

Explanation:

- The Wolbachia method is simple. when Aedes aegypti mosquitoes carry Wolbachia, the bacteria compete with viruses like dengue, Zika, chikungunya and yellow fever. This makes it harder for viruses to reproduce inside the mosquitoes. And the mosquitoes are much less likely to spread viruses from person to person. This means that when Aedes aegypti mosquitoes carry natural Wolbachia bacteria, the transmission of viruses like dengue, Zika, chikungunya and yellow fever is reduced.

Therefore, option (a) is the correct answer.

Q78.

Answer: c

Explanation:

Carbon sequestration is described as the technologies designed to tackle global warming by capturing CO₂ at power stations, industrial sites or even directly from the air and permanently storing it underground. It describes the long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming.

- **Spreading finely ground basalt rock on farmlands extensively:** This method aims to enhance the natural weathering of minerals that can react with CO₂ and form stable carbonates. This can increase the carbon storage capacity of soils and also improve soil fertility and crop yields. **So, point 1 is correct.**
- **Increasing the alkalinity of oceans by adding lime:** This method involves dissolving limestone or other alkaline minerals in seawater, which can increase the ocean's capacity to absorb CO₂ from the atmosphere and reduce ocean acidification. **So, point 2 is correct.**
- **Capturing carbon dioxide** involves capturing carbon dioxide (CO₂) at emission sources, transporting and then storing or burying it in a **suitable deep, underground location**. CCS can also mean the removal of CO₂ **directly or indirectly from the atmosphere**. **So, point 3 is correct.**

Therefore, option (c) is the correct answer.

Q79.

Answer: a

Explanation:

- **Aerial metagenomics** typically refers to the study of genetic material (such as DNA or RNA) collected from the air, usually in the form of airborne particles or aerosols. It involves analysing the microbial communities present in the air and characterising their genetic diversity.
- Ecologists have thought of this, and it certainly works for things like animal droppings. But these, too, must first be detected and collected—and they will identify only the animal that dropped them.

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Therefore, option (a) is the correct answer.

Q80.

Answer: a

Explanation:

- Microsatellite DNA is utilised in genetic analysis, more specifically in molecular genetics and genomics. Microsatellites are small DNA sequences made up of repeating units. They are also known as short tandem repeats (STRs) or simple sequence repeats (SSRs). These repeating units, which are typically 1-6 base pairs in length, are repeated in tandem, and the amount of repetitions varies between individuals. The number of repeats at a certain microsatellite locus might vary greatly between people in a population because microsatellite DNA is highly variable.
- **Researchers can analyse the genetic structure, population dynamics, and evolutionary relationships among various species of animals by analysing microsatellite DNA.** Microsatellite markers are very valuable in population genetics, conservation genetics, and phylogenetic research.

Therefore, option (a) is the correct answer.

Q81.

Answer: b

Explanation:

- Janani Suraksha Yojana (JSY) is a safe motherhood intervention **under the National Rural Health Mission (NRHM)**. JSY is a 100 % centrally sponsored scheme. **So, statement 1 is not correct.**
- It is being implemented with the objective of reducing maternal and neo-natal mortality by promoting institutional delivery among poor pregnant women. **So, statements 2 and 3 are correct.**
- Under the **Janani Shishu Suraksha Karyakaram** scheme (and not under JSY), all pregnant women and infants will get free treatment benefits at public health institutions including zero expenses delivery. **So, statement 4 is not correct.**

Therefore, option (b) is the correct answer.

Q82.

Answer: c

Explanation:

- The Anaemia Mukh Bharat- intensified Iron-plus Initiative aims to strengthen the existing mechanisms and foster newer strategies for tackling anemia. It focuses on six target beneficiary groups, through six interventions and six institutional mechanisms to achieve the envisaged target under the POSHAN Abhiyan.
- A key intervention is to give **Prophylactic Iron and Folic Acid** supplementation to children, adolescents and women of reproductive age and pregnant women irrespective of anemia, under Anaemia Mukh Bharat. **So, statement 1 is not correct.**
- The various behaviour change communication activities of the strategy will address four key behaviours, one of which is promoting practice of **delayed cord clamping** (by atleast 3 minutes or until cord pulsations cease) in all health facility deliveries followed by early initiation of breastfeeding within 1 hour of birth. **So, statement 2 is correct.**
- Bi-annual mass deworming for children in the age groups between 1-19 years is carried out on designated dates – 10th February and 10th August every year under National Deworming Day (NDD) programme. The Anaemia Mukh Bharat, also **integrates deworming** of women of reproductive age and for pregnant women as part of the NDD strategy. **So, statement 3 is correct.**
- The strategy attempts to intensify awareness and integrate screening and treatment for following **non-nutritional causes of anaemia** with special focus on malaria, haemoglobinopathies and fluorosis. **So, statement 4 is correct.**

Therefore, option (c) is the correct answer.

Q83.

Answer: a

Explanation:

- **Carbon fibres** can be defined as fibres with a carbon content of 90% or above. They are produced by the thermal conversion of organic fibres with a lower carbon content such as polyacrylonitrile (PAN) containing several thousand filaments with diameters between 5 and 10 μm .
- **Aerospace and automobiles** were some of the first industries to adopt carbon fibre. The high modulus of carbon fibre makes it suitable structurally to replace alloys such as aluminium and titanium. The weight savings carbon fibre provides is the primary reason carbon fibre has been adopted by the aerospace industry. **So, statement 1 is correct.**
- Currently, the most common **recycling process** used to recover carbon fibre from composite waste is pyrolysis, where high heat basically burns off the resin. Solvolysis, which uses a solvent to dissolve the resin, has long been claimed to offer superior properties. However, one of the main challenges to date has been obtaining recycled carbon fibre keeping the same mechanical properties as virgin carbon fibre. **So, statement 2 is not correct.**

Therefore, option (a) is the correct answer.

Q84.

Answer: c

Explanation:

- An **accelerometer** is an electronic sensor that measures the acceleration forces acting on an object, in order to determine the object's position in space and monitor the object's movement.
- In the case of a **car crash/collision**, the accelerometer is used to detect the sudden deceleration of the vehicle and trigger the deployment of the airbags. **So, point 1 is correct.**
- In the case of a **laptop falling**, the accelerometer is used to detect the sudden change in motion and trigger the immediate turning off of the hard drive to prevent damage to the data. **So, point 2 is correct.**
- An accelerometer is also required for the detection of the tilt of the smartphone which results in the rotation of the display between portrait and landscape mode. **So, point 3 is correct.**

Therefore, option (c) is the correct answer.

Q85.

Answer: b

Explanation:

- In recent decades, the use of biofilters to remove of contaminants from wastewater and waste gases is being developed. **Biofilters use microorganisms**, which are capable of degrading many compounds, fixed to an inorganic/organic medium (carrier) to break down pollutants present in a fluid stream. They also provide waste treatment by removing uneaten fish feed. **So, statement 1 is correct.**
- A properly designed biofilter will keep ammonia and nitrite concentrations at levels that are not harmful to the fish. Biofilters convert ammonia nitrogen to nitrite nitrogen and then to the **less toxic nitrate** nitrogen for the fish. **So, statement 2 is correct.**
- **Biofilters do not increase phosphorus** as nutrient for fish in water. Phosphorus (P) is in fact removed to reduce the potential for eutrophication in waters. **So, statement 3 is not correct.**

Therefore, option (b) is the correct answer.

Q86.

Answer: a

Explanation:

- **Cepheids**, also called Cepheid Variables, are stars which brighten and dim periodically. **So, pair 1 is not correctly matched.**
- A **nebula** is a giant cloud of dust and gas in space. Some nebulae (more than one nebula) come from the gas and dust thrown out by the explosion of a dying star, such as a supernova. Other nebulae are regions

where new stars are beginning to form. So, pair 2 is not correctly matched.

- **Neutron** stars are formed when a massive star runs out of fuel and collapses. The very central region of the star – the core – collapses, crushing together every proton and electron into a neutron. Pulsars are rotating neutron stars observed to have pulses of radiation at very regular intervals that typically range from milliseconds to seconds. Pulsars have very strong magnetic fields which funnel jets of particles out along the two magnetic poles. These accelerated particles produce very powerful beams of light. **So, pair 3 is correctly matched.**

Therefore, option (a) is the correct answer.

Q87.

Answer: d

Explanation:

- **Japan** is the country that has its own satellite navigation system. The system is called the **Quasi-Zenith Satellite System** (QZSS) and it is designed to augment the existing GPS system, providing more accurate and reliable positioning and timing information within Japan and surrounding regions.

Therefore, option (d) is the correct answer.

Q88.

Answer: d

Explanation:

- **Cruise missiles** are jet-propelled at subsonic speeds throughout their flights, while **ballistic missiles** are rocket-powered only in the initial (boost) phase of flight, after which they follow an arcing trajectory to the target. **So, statement 1 is not correct.**
- **The Agni-V** is an Indian **intercontinental ballistic missile** (ICBM) with a range of over 5,000 km. **BrahMos** is a universal long-range **supersonic cruise missile** system that can be launched from land, sea and air. BRAHMOS has been jointly developed by DRDO, India, and NPOM, Russia. **So, statement 2 is not correct.**

Therefore, option (d) is the correct answer.

Q89.

Answer: c

Explanation:

- **Mercury (Hg)** is a global pollutant that affects human and ecosystem health. We synthesize understanding of sources, atmosphere-land-ocean Hg dynamics and health effects, and consider the implications of Hg-control policies. Primary anthropogenic Hg emissions greatly exceed natural geogenic sources, resulting in increases in Hg reservoirs and subsequent secondary Hg emissions that facilitate its global distribution. The ultimate fate of emitted Hg is primarily recalcitrant soil pools and deep ocean waters and sediments.
- One major source of mercury emissions is small-scale **gold mining** that occurs in many countries. Artisanal gold mining currently contributes more than 35 per cent of all global mercury emissions created by people. **So, statement 1 is correct.**
- **Coal-based thermal power plants** are a known source of mercury pollution. When coal is burned to generate electricity, trace amounts of mercury present in coal can be released into the atmosphere as emissions. These emissions contribute to mercury pollution. **So, statement 2 is correct.**
- Acute or chronic mercury exposure can cause adverse effects during any period of development. Mercury is a highly toxic element; **there is no known safe level of exposure**. Ideally, neither children nor adults should have any mercury in their bodies because it provides no physiological benefit. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q90.

Answer: c

Explanation:

- **Green hydrogen can be used directly** as a fuel for internal combustion by a **hydrogen engine (HCE)**. HCE is an engine that uses hydrogen (H₂) as fuel. It is a modified gasoline-powered engine but doesn't

emit any carbon-based pollution, which is a big benefit towards carbon neutrality. HCEs operate similarly to 4-stroke gasoline engines (ICEs). But compared to gasoline, which has an octane rating of 90 (for premium gasoline), hydrogen has a higher-octane number of 130. **So, statement 1 is correct.**

- Hydrogen produced through clean pathways can be injected into natural gas pipelines, and the resulting blends can be used to generate heat and power with lower emissions than using natural gas alone. **So, statement 2 is correct.**
- A fuel cell uses the chemical energy of green hydrogen or other fuels to cleanly and efficiently produce electricity. If hydrogen is the fuel, the only products are electricity, water, and heat. **So, statement 3 is correct.**

Therefore, option (c) is the correct answer.

Q91.

Answer: d

Explanation:

- After 14 years since the MSME Development Act came into existence in 2006, a revision in MSME definition was announced in the Atmanirbhar Bharat package on 13th May, 2020. As per this announcement, the definition of Micro manufacturing and services units was increased to Rs. 1 Crore of investment and Rs. 5 Crore of turnover. The limit of small unit was increased to Rs. 10 Crore of investment and Rs. 50 Crore of turnover. Similarly, the limit of medium unit was increased to Rs. 20 Crore of investment and Rs. 100 Crore of turnover. The Government of India on 01.06.2020 decided for further upward revision of the MSME Definition. For medium Enterprises, now it will be **Rs. 50 Crore of investment and Rs. 250 Crore of turnover. So, statement 1 is not correct.**
- All bank loans to Micro, Small and Medium Enterprises do not qualify under the priority sector. Bank loans to Micro, Small and Medium Enterprises, for both manufacturing and service sectors are eligible to be classified under the priority sector as per the following norms:
 - » **Manufacturing Enterprises** - The Micro, Small and Medium Enterprises engaged in the manufacture or production of goods to any industry specified in the first schedule to the Industries (Development and Regulation) Act, 1951 and as notified by the Government from time to time. The Manufacturing Enterprises are defined in terms of investment in plant and machinery.
 - » **Service Enterprises** - Bank loans up to Rs 5 crore per unit to Micro and Small Enterprises and Rs 10 crore to Medium Enterprises engaged in providing or rendering of services and defined in terms of investment in equipment under MSMED Act, 2006. **So, statement 2 is not correct.**

Therefore, option (d) is the correct answer.

Q92.

Answer: c

Explanation:

- Central bank digital currencies (CBDCs) are a form of digital currency issued by a country's central bank. They are similar to cryptocurrencies, except that their value is fixed by the central bank and equivalent to the country's fiat currency.
- Countries will be able to directly exchange digital currencies in a bilateral way and without going through SWIFT or similar settlement systems. **So, statement 1 is correct.**
- A CBDC is programmable to the point that the currency can be made to expire, thus forcing consumers to use it upto a certain date. **So, statement 2 is correct.**

Therefore, option (c) is the correct answer.

Q93.

Answer: d

Explanation:

- Beta is a **measure of a stock's historical volatility in comparison with that of a market index** such as the S&P 500. Stocks with a beta above 1 tend to be more volatile than their index, while stocks with lower betas tend to be less volatile.

Therefore, option (d) is the correct answer.

Q94.

Answer: b

Explanation:

- In India, banks are the predominant agency for delivery of micro-credit. In 1970, Ilaben Bhat, founder member of 'SEWA' (Self Employed Women's Association) in Ahmadabad, had developed a concept of 'women and micro-finance'. The Annapurna Mahila Mandal in Maharashtra and 'Working Women's Forum' in Tamilnadu and many National Bank for Agriculture and Rural Development (NABARD)-sponsored groups have followed the path laid down by 'SEWA'. 'SEWA' is a trade union of poor, self-employed women workers. **So, statement 1 is not correct.**
 - In an SHG, all members are jointly responsible for the loans taken by individual members. **So, statement 2 is correct.**
 - Both the Regional Rural Banks and Scheduled Commercial Banks support SHGs. **So, statement 3 is correct.**
- So, only 2 statements are correct.**

Therefore, option (b) is the correct answer.

Q95.

Answer: d

Explanation:

- Health care covers not merely medical care; all aspects like preventive and curative and rehabilitative care are given due importance. **So, statement-I is not correct.**
- Under India's decentralized approach to health care delivery, the states are primarily responsible for organizing health services, since public health is a subject under State list of 7th Schedule. **So, statement-II is correct.**

Therefore, option (d) is the correct answer.

Q96.

Answer: (c)

Explanation:

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Mentorship



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Guidance



Mains-focused
Guidance



Value Addition
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- According to the United Nations' 'World Water Development Report, 2022,' India extracts more than a quarter of the world's groundwater withdrawal every year. **So, statement-I is correct.**
- About 89% of this groundwater is used in India for irrigation. **So, statement-II is not correct.**

Therefore, option (c) is the correct answer.

Q97.

Answer: a

Explanation:

- **Article 355** states, "It shall be the duty of the Union to protect every State against external aggression and internal disturbance and to ensure that the Government of every State is carried on in accordance with the provisions of this Constitution." **So, statement 1 is correct.**
- **Article 22 (1)** states that "No person who is arrested shall be detained in custody without being informed, as soon as may be, of the grounds for such arrest nor shall he be denied the right to consult, and to be defended by, a legal practitioner of his choice." **Article 22 (5)** states that, when any person is detained in pursuance of an order made under any law providing for preventive detention, the authority making the order shall, as soon as may be, communicate to such person the grounds on which the order has been made and shall afford him the earliest opportunity of making a representation against the order. **So, statement 2 is not correct.**
- According to the Prevention of Terrorism Act, 2002, confession of the accused before the police can be used as evidence. **So, statement 3 is not correct.**

So, only one statement is correct.

Therefore, option (a) is the correct answer.

Q98.

Answer: d

Explanation:

- **A total of 6.5 million people in Somalia face acute food insecurity amid the driest conditions in 40 years, following five consecutive failed rainy seasons.** Drought is compounding the impacts of other recurrent climate shocks, persistent insecurity and instability. A total of 1.84 million children under 5 face acute malnutrition

Therefore, option (d) is the correct answer.

Q99.

Answer: c

Explanation:

- The biodiversity management committees (BMCs) have been constituted in local bodies across the length and breadth of the country under the provisions of the national Biological Diversity Act, 2002 and relevant state rules enacted under it. The act gives effect to India's commitments under the Convention on Biological Diversity (CBD) of 1992 to which it is a party, and the act's objectives mirror the three goals of the CBD, namely the conservation of biological diversity, sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the use of biological resources and associated knowledge.
- While primarily responsible for the preparation of peoples' biodiversity registers (PBRs) containing comprehensive knowledge on the availability and knowledge of local biological resources, their medicinal, or any other use or associated traditional knowledge, the BMCs also have important functions in determining access and benefit-sharing (ABS), including the power to levy collection fees on the access of biological resources within its jurisdiction. BMCs are, thus, key to the realisation of the objectives of the Nagoya Protocol (2010), negotiated within the CBD, enjoining parties to take measures to ensure that benefits from the utilisation of genetic resources and associated traditional knowledge accrue to indigenous and local communities on mutually agreed terms. **So, statement 1 is correct.**
- The BMC may levy charges by way of collection fees from any person for accessing or collecting any biological resource for commercial purposes from areas falling within its territorial jurisdiction. The

Board shall provide guidance to the BMCs for the said purpose. **So, statement 2 is correct.**
Therefore, option (c) is the correct answer.

Q100.

Answer: a

Explanation:

- As per Article 54 of the Constitution, the President of India is elected by the Members of an Electoral College consisting of (a) the elected members of both Houses of Parliament, and (b) the elected members of the Legislative Assemblies of all States [including National Capital Territory of Delhi and the Union Territory of Puducherry]. The Members nominated to either House of Parliament or the Legislative Assemblies of States, including NCT of Delhi and Union Territory of Puducherry, are not eligible to be included in the Electoral College. **So, statement 1 is not correct.**
- The value of the vote of an MP in a presidential election is based on the number of elected members in legislative assemblies of states and union territories, including Delhi, Puducherry and Jammu and Kashmir.** If the number of elected Assembly seats increased, the value of vote of each MLA of that state will decrease. **So, statement 2 is not correct.**

<p>Value of the vote of an MLA</p> $= \frac{\text{Total population of state}}{\text{Total number of elected members in the state legislative assembly}} \times \frac{1}{1000}$	<p>Value of the vote of an MP =</p> $\frac{\text{Total value of votes of all MLAs of all states}}{\text{Total number of elected members of Parliament}}$
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- The value of vote of each MLA of Madhya Pradesh is 131 which is less than that of Kerala where it is 152. **So, statement 3 is not correct.**
- The value of vote of each MLA of Puducherry (16) is higher than that of Arunachal Pradesh (8) because the ratio of total population to total number of elective seats in Puducherry is greater as compared to Arunachal Pradesh. **So, statement 4 is correct.**

So, only two statements are correct.

Therefore, option (a) is the correct answer.

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