

1. Consider the following statements:

1 Statement-I: The monumental Prambanan temple complex was constructed in Java under the patronage of the Sanjaya Dynasty as a political assertion of its authority.

2 Statement-II: The Sanjaya rulers commissioned Prambanan partly to counter the cultural and religious influence of the nearby Buddhist Borobudur monument built by the Sailendra Dynasty.

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

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.

(b) Both Statement-I and Statement-II are correct but Statement-II is not the correct explanation for Statement-I.

(c) Statement-I is correct but Statement-II is incorrect.

(d) Statement-I is incorrect but Statement-II is correct.

Answer: (a)

Explanation

During the 8th–9th centuries CE, Central Java witnessed intense political and religious rivalry between the Shaivite **Sanjaya Dynasty** and the Buddhist **Sailendra Dynasty**. Around 850 CE, the Sanjaya rulers constructed the magnificent **Prambanan Temple Complex** as both a religious and political statement.

The monument served as a symbolic response to the nearby **Borobudur**, reflecting the revival of Shaivite Hinduism and reinforcing Sanjaya political legitimacy. Therefore, Statement-II correctly explains Statement-I.

2. Consider the following statements regarding satellite imagery capabilities:

1 Optical imaging sensors provide uninterrupted all-weather observations irrespective of cloud cover.

2 Synthetic Aperture Radar (SAR) payloads actively emit microwave signals, enabling data collection during both day and night.

3 Integrating optical and radar sensors on a single satellite platform minimizes temporal mismatches during data fusion.

Which one of the following conclusions based on the above statements is correct?

(a) All three statements are correct.

(b) There is no correct statement.

(c) There are two correct statements, including Statement 3.

(d) There is only one correct statement.

Answer: (c)

Explanation

Statement 1 is incorrect because optical sensors depend on sunlight and clear atmospheric conditions. They cannot effectively image through dense clouds, fog, or during nighttime.

Statement 2 is correct because SAR is an active remote sensing system that transmits its own microwave signals, allowing imaging irrespective of daylight or cloud cover.

Statement 3 is also correct because simultaneous acquisition from co-located optical and radar sensors eliminates timing differences that arise when data are collected from separate satellites.

Hence, Statements 2 and 3 are correct.

3. The operational philosophy of the BrahMos missile enables it to independently navigate towards its designated target after launch without requiring continuous guidance from the launching platform. This capability is known as:

- (a) Track-via-Missile
- (b) Command Line-of-Sight
- (c) Fire and Forget
- (d) Semi-Active Radar Homing

Answer: (c)

Explanation

The **BrahMos** is designed on the **Fire and Forget** principle. Once launched, its onboard navigation system and terminal seeker autonomously guide the missile to its target.

As a result, the launching platform can immediately disengage or engage another target without maintaining continuous communication or guidance with the missile.

4. Consider the following statements regarding tactical defence platforms:

1 Statement-I: Universal cross-platform capability allows a single weapon system to be deployed from land launchers, naval vessels, submarines, and aircraft.

2 Statement-II: Standardizing a weapon system across multiple platforms simplifies logistics, maintenance, and personnel training.

3 Statement-III: Designing separate weapon systems for each military service enhances interoperability and component commonality.

Which of the following relationships among the above statements is/are correct?

1 Statement-II explains a key operational advantage of Statement-I.

2 Statement-III contradicts the approach reflected in Statement-I.

3 Statements-I and III together promote interoperability across the armed forces.

Select the correct answer using the code given below.

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

Answer: (c)

Explanation

Statement-I correctly describes cross-platform deployment, enabling the same weapon system to operate from multiple military platforms.

Statement-II correctly explains one of its major advantages by reducing logistical complexity, simplifying maintenance, and lowering training requirements.

Statement-III is incorrect because developing separate weapon systems increases complexity and reduces interoperability.

Therefore, only relationships 1 and 2 are correct.

5. From the perspective of behavioural ecology, how do matriarchal herd organization and protective behaviour contribute to the survival of Himalayan yak populations?

- (a) They enable older bulls to lead seasonal migration routes across lower-altitude valleys.
- (b) They facilitate coordinated defensive formations that protect calves from apex predators.
- (c) They reduce competition for food by dispersing adult females into isolated grazing areas.
- (d) They prevent contact with other domesticated high-altitude ruminants.

Answer: (b)

Explanation

Himalayan yak herds are typically led by experienced females, while adult bulls remain largely solitary outside the breeding season.

When threatened by predators such as snow leopards, adults form a defensive circle around calves, thereby reducing juvenile mortality. This cooperative behaviour enhances survival under harsh alpine conditions.

6. Consider the following statements regarding the Himalayan Yak:

- 1 The Himalayan Yak is currently classified as Endangered on the IUCN Red List.
- 2 More than half of India's domestic yak population is found in Arunachal Pradesh.
- 3 Smart IoT-based collars are increasingly being used to monitor the health and movement of yaks in remote mountainous regions.

Which one of the following conclusions based on the above statements is correct?

- (a) There are two correct statements, including Statement 2.
- (b) There are two correct statements, namely Statements 1 and 3.
- (c) All three statements are correct.
- (d) There is only one correct statement, namely Statement 3.

Answer: (d)

Explanation

Statement 1 is incorrect because the Himalayan Yak is categorized as **Vulnerable (VU)** on the IUCN Red List.

Statement 2 is incorrect because nearly half of India's domestic yak population is concentrated in **Ladakh**, rather than Arunachal Pradesh.

Statement 3 is correct. IoT-enabled smart collars are being deployed to monitor movement, grazing patterns, and health parameters of yaks, improving livestock management in remote Himalayan landscapes.

7. Consider the following statements regarding the Narmada River:

1 Statement-I: The Narmada empties into the Arabian Sea through a well-developed estuary rather than forming a delta.

2 Statement-II: The river flows through a tectonic rift valley, limiting sediment deposition and preventing delta formation.

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

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

Answer: (a)

Explanation

The Narmada is one of India's few west-flowing rivers and enters the Arabian Sea through a pronounced estuary.

Its course follows an ancient **rift valley (graben)** between the Vindhya and Satpura ranges. The confined rocky channel restricts sediment accumulation, preventing the formation of a delta. Hence, Statement-II correctly explains Statement-I.

8. In remote sensing technology, what is the principal advantage of acquiring co-registered optical and radar data from a unified payload such as OptoSAR?

- (a) It shifts the satellite from low Earth orbit to geosynchronous orbit.
- (b) It removes spatial and temporal inconsistencies during multi-sensor data integration.
- (c) It eliminates the requirement for ground-based receiving stations.
- (d) It removes the need for onboard data storage systems.

Answer: (b)

Explanation

When optical and radar sensors operate from different satellites, differences in observation time and viewing geometry create alignment errors.

A unified payload captures both datasets simultaneously from the same orbital position, eliminating spatial and temporal mismatches and greatly improving the accuracy of integrated analysis.

9. Consider the following statements regarding the Narmada River:

- 1 The Narmada originates from Narmada Kund located in the Maikal Hills.
- 2 The Tawa River is the largest right-bank tributary of the Narmada.
- 3 The Narmada basin extends across Madhya Pradesh, Maharashtra, and Gujarat.

Which one of the following conclusions based on the above statements is correct?

- (a) There are two correct statements, including Statement 2.
- (b) There are two correct statements, namely Statements 1 and 3.
- (c) All three statements are correct.
- (d) There is only one correct statement, namely Statement 2.

Answer: (b)

Explanation

Statement 1 is correct because the Narmada originates from **Narmada Kund** at **Amarkantak** in the Maikal Hills.

Statement 2 is incorrect because the **Tawa River** is the largest **left-bank** tributary of the Narmada.

Statement 3 is correct because the basin extends across **Madhya Pradesh, Maharashtra, and Gujarat**, with a small catchment also lying in Rajasthan.

10. With reference to military exercises in the Indian Ocean Region, consider the following statements regarding Exercise PRAGATI 2026:

- 1 It is a bilateral military exercise conducted between India and Malaysia.
- 2 The exercise emphasizes counter-terrorism and counter-insurgency operations in semi-mountainous and jungle terrain.
- 3 The exercise includes an exhibition showcasing indigenous Indian defence technologies and equipment.

Which of the statements given above are correct?

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

Answer: (d)

Explanation

Statement 1 is incorrect because **Exercise PRAGATI 2026** is a **multinational** military exercise involving India and several partner countries rather than a bilateral exercise.

Statement 2 is correct as the exercise focuses on joint planning and counter-terrorism and counter-insurgency operations in semi-mountainous and jungle environments.

Statement 3 is also correct because the exercise features an **Atmanirbhar Bharat** defence exhibition showcasing India's indigenous defence technologies, equipment, and weapon systems.

11. The fundamental principle that prevents **Low-Enriched Uranium (LEU)** obtained through downblending from being directly used in a nuclear weapon is:

- (a) The complete conversion of uranium-235 into stable, non-fissile lead isotopes.
- (b) The reduction of uranium-235 concentration to below 5%, making it incapable of sustaining the rapid, uncontrolled chain reaction required for a nuclear explosion.
- (c) The permanent chemical bonding of uranium with specialized biopolymers that suppress nuclear fission.
- (d) The placement of radioactive safeguard seals by the International Atomic Energy Agency (IAEA), which neutralize the fissile nature of uranium.

Answer: (b)

Explanation

Downblending is the process of converting **Highly Enriched Uranium (HEU)** into **Low-Enriched Uranium (LEU)** by mixing it with natural uranium, depleted uranium, or another uranium stream containing a lower proportion of uranium-235 (U-235).

Nuclear weapons generally require **weapons-grade uranium**, containing about **90% or more U-235**. By contrast, LEU usually contains **less than 20% U-235**, while commercial nuclear reactors typically use fuel enriched to **3–5% U-235**. At these enrichment levels, uranium cannot sustain the extremely rapid and uncontrolled chain reaction necessary for a nuclear explosion. Although LEU remains suitable as reactor fuel, it cannot be directly used in nuclear weapons without undergoing substantial further enrichment.

- Option (a) is incorrect because downblending does not convert U-235 into lead or any other element; it simply reduces its concentration.
- Option (c) is incorrect because no biopolymer-based chemical process is used to inhibit nuclear fission.
- Option (d) is incorrect because IAEA safeguards only monitor and verify nuclear material; they do not alter its physical or nuclear properties.

12. Consider the following statements regarding the Smart Seed Coating Technology developed by ICAR–Indian Institute of Oilseeds Research (ICAR-IIOR):

- 1 It functions as a multifunctional coating that combines plant protection agents, essential nutrients, and beneficial bio-inoculants within a single biodegradable biopolymer layer.
- 2 The biodegradable biopolymer matrix naturally decomposes in the soil, thereby preventing microplastic pollution and long-term environmental contamination.
- 3 The technology employs a fixed and uniform formulation for all crop categories to ensure standardized delivery of agricultural inputs.

Which of the above statements are correct?

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

Answer: (a)

Explanation

Statement 1 is correct because the technology integrates multiple agricultural inputs—including crop protection chemicals, macro- and micronutrients, and beneficial microorganisms—into a single protective coating applied to seeds.

Statement 2 is also correct because the carrier material is based on an **Indian-patented biodegradable biopolymer**, which naturally decomposes through microbial activity in the soil, eliminating concerns related to synthetic microplastic residues.

Statement 3 is incorrect because the technology is **customizable**. The composition of the coating, including its thickness, nutrient content, and biological additives, is tailored to meet the specific

requirements of different crop groups such as cereals, pulses, oilseeds, fibre crops, and horticultural crops.

13. Consider the following statements regarding the institutional framework of VivaTech 2026:

- 1 India became the permanent co-owner of VivaTech, resulting in the relocation of the event headquarters from Paris to New Delhi.
- 2 VivaTech serves as an open-innovation platform that connects startups, investors, large corporations, and technology innovators from across the world.
- 3 The 2026 edition of the event was exclusively dedicated to software startups working in digital payment technologies.

Which one of the following conclusions based on the above statements is correct?

- (a) All three statements are correct.
- (b) There is no correct statement.
- (c) There is only one correct statement, namely Statement 2.
- (d) There are two correct statements.

Answer: (c)

Explanation

Statement 1 is incorrect because **VivaTech** continues to be hosted in **Paris, France**, at the Paris Expo Porte de Versailles. It is organized by **Publicis Groupe** and **Les Echos–Le Parisien**. India participates as an important international partner but is neither a permanent co-owner nor the host country.

Statement 2 is correct because VivaTech is designed as a global **open-innovation ecosystem**, bringing together startups, venture capitalists, industry leaders, researchers, and multinational corporations to promote technological innovation and collaboration.

Statement 3 is incorrect because the event covers a wide range of sectors, including artificial intelligence, health technology, climate technology, mobility, agriculture, advanced computing, and clean energy, rather than focusing exclusively on digital payment startups.

14. Consider the following statements regarding the historical application of the Doctrine of Lapse to Jhansi:

- 1 The Doctrine of Lapse was a statutory law enacted by the British Parliament specifically to annex the princely states of southern India.
- 2 Under this policy, the East India Company refused to recognize the political right of an adopted heir to succeed a childless ruler, despite the prevailing Hindu custom of adoption.
- 3 Rani Lakshmibai accepted the British pension, voluntarily surrendered Jhansi Fort, and participated in the Revolt of 1857 only after relocating to Gwalior.

4 The annexation of states such as Jhansi under the Doctrine of Lapse generated widespread resentment among Indian rulers and became one of the important political causes of the Revolt of 1857.

Which one of the following conclusions based on the above statements is correct?

- (a) There are four correct statements.
- (b) There are two correct statements, including Statement 4.
- (c) There is no correct statement.
- (d) There is only one correct statement.

Answer: (b)

Explanation

Statement 1 is incorrect because the **Doctrine of Lapse** was an expansionist administrative policy implemented by **Lord Dalhousie** on behalf of the **East India Company**, rather than a law enacted by the British Parliament. It was applied to princely states lacking a natural male heir.

Statement 2 is correct because the British refused to recognize the political succession rights of adopted heirs, even though Hindu law accepted adoption for inheritance purposes.

Statement 3 is incorrect because **Rani Lakshmibai** rejected British annexation, defended Jhansi militarily, and became one of the foremost leaders of the Revolt of 1857. She retreated to Gwalior only after the fall of Jhansi.

Statement 4 is correct because the annexation of princely states such as **Jhansi**, **Satara**, and **Nagpur** created deep political resentment among Indian rulers and contributed significantly to the outbreak of the Revolt of 1857.
