

# Solutions

DATE : 20<sup>th</sup> Jan – 26<sup>th</sup> Jan

1) Correct Answer: b) 1, 3, and 4 only

Explanation:

- **Statement 1:** Correct. DOM supports India's obligations to the **International Seabed Authority (ISA)** by exploring **polymetallic nodules** and gaining deep-sea mining rights.
- **Statement 2:** Incorrect. While led by the **Ministry of Earth Sciences (MoES)**, funding includes **public and collaborative partnerships**, not solely MoES.
- **Statement 3:** Correct. Technologies like **Matsya6000** (a crewed submersible) and **Varaha** (an underwater mining system) are being developed in collaboration with **private industries**.
- **Statement 4:** Correct. DOM aligns with **India's Blue Economy policy**, focusing on **sustainable development of ocean resources**.

2) Correct Answer: d) It consists of a group of volcanic islands in the Atlantic Ocean.

Explanation:

- Cabo Verde is an **archipelago of 10 volcanic islands**, located **570 km off the coast of West Africa**.
- It is **not landlocked**, does not have **major mountain ranges**, and lacks **tropical rainforests**.
- **Climate:** Arid with stable temperatures.
- Divided into **Barlavento (windward)** and **Sotavento (leeward)** groups.

3) Correct Answer: c) It is an acute autoimmune disorder that targets the peripheral nervous system.

Explanation:

- **GBS** is a rare **acute autoimmune disorder** where the immune system attacks the **peripheral nervous system**.
- Symptoms include **muscle weakness, tingling sensations**, and **temporary paralysis** in severe cases.
- Causes often include **preceding infections** like **Campylobacter jejuni** or **Epstein-Barr virus**.
- Treatments: **Intravenous Immunoglobulin (IVIG)** and **plasmapheresis**.

4) Correct Answer: b) Only two

Explanation:

- **Statement 1:** Correct. The **Painted Grey Ware (PGW) culture** is linked to **early Iron Age settlements** in the **Ganga-Yamuna plains (1200–600 BCE)**.
- **Statement 2:** Incorrect. Iron tools were primarily used for **agriculture, hunting, and warfare**, not just for religious rituals.
- **Statement 3:** Correct. Evidence suggests the **Iron Age in South India** began earlier, as seen in sites like **Mayiladumparai (Tamil Nadu)**.

5) Correct Answer: a) Only one

Explanation:

- **Statement 1:** Correct. **Ad hoc judges** are appointed by the **President** based on the **recommendation of the High Court Chief Justice**.
- **Statement 2:** Incorrect. Their tenure is **not fixed** at three years; it depends on the specific need and may vary.
- **Statement 3:** Correct. They enjoy the **same powers and privileges** as sitting judges during their tenure.

6) Correct Answer: a) A splinter faction from the Congolese army due to disputes over a peace agreement.

Explanation:

- The **M23 Armed Group (March 23 Movement)** emerged in **2012** as a **splinter faction of the Congolese army (FARDC)** due to grievances over the **2009 peace agreement**.
- It operates in **North Kivu province** in the **eastern Democratic Republic of Congo**.

7) Correct Answer: b) Only two

Explanation:

- **Statement 1:** Incorrect. Rhodamine B is a **synthetic dye**, not derived from **natural plant-based sources**.
- **Statement 2:** Correct. Its use in **food products** is globally banned due to **carcinogenic properties**.
- **Statement 3:** Correct. Its **fluorescent properties** make it useful in **scientific research**.

8) Correct Answer: c) Statement-I is correct, but Statement-II is incorrect.

Explanation:

- **Statement-I:** Correct. **Differential pricing** helps businesses target different **consumer segments** and optimize **profits** (e.g., ride-hailing services like Ola/Uber).
- **Statement-II:** Incorrect. Differential pricing is **not prohibited** under the **Consumer Protection Act, 2019**, but it is **regulated** to ensure fairness.

9) Correct Answer: c) Statement-I is correct, but Statement-II is incorrect.

Explanation:

- **Statement-I:** Correct. Rhodamine B is used in **textiles and paints** for its **vivid coloring properties**.
- **Statement-II:** Incorrect. Rhodamine B is **toxic and unsafe** for use in **cosmetic products** due to its **carcinogenic properties**.

10) Correct Answer: d) Congo River

Explanation:

- The **Congo River**, Africa's second-longest river, provides the **main navigational and hydroelectric resources** for the Democratic Republic of Congo.

- Projects like the **Inga Dams** demonstrate its **hydropower potential**.

**11) Correct Answer: c) Whips operate as a part of internal parliamentary conventions with no direct constitutional mention.**

**Explanation:**

- What is a Whip?**
  - A whip is a **written directive** issued by a political party to its members, requiring them to vote as per the party line.
  - It ensures **party discipline** and strengthens decision-making during critical votes.
- Constitutional Status:**
  - Whips are not explicitly mentioned in the **Constitution of India**.
  - They are a part of **internal parliamentary conventions** borrowed from British parliamentary practices.
- Legal Backing:**
  - The enforceability of whips arises under the **anti-defection law in the Tenth Schedule**, which disqualifies members for defying the party directive.

**12) Correct Answer: d) 1 and 3 only**

**Explanation:**

- One-line Whip:**
  - Requires members to be **present during a vote** but allows them to abstain.
  - Used for non-critical issues like debates.
- Two-line Whip:**
  - Ensures members are **present during voting** but does not mandate voting in a specific way.
  - Typically issued for policy discussions.
- Three-line Whip:**
  - Mandates both **attendance and voting in alignment with the party's directive**.
  - Used for critical issues like no-confidence motions or constitutional amendments.
- Legal Enforceability:**
  - Whips are not legally enforceable in **all democracies**, though they are enforced under specific rules in countries like India (via anti-defection law).

**13) Correct Answer: b) 2 and 3 only**

**Explanation:**

- LiDAR Technology:**
  - Used for creating **high-resolution 3D maps** of a vehicle's surroundings, not for weather predictions.
- Radar:**
  - Detects objects, measures their **speed and distance**, helping in collision avoidance.
- ADAS Cameras:**
  - Use **machine learning algorithms** to identify **traffic signs** such as speed limits and warnings.
- Features of ADAS:**
  - Lane Departure Warning:** Alerts drivers when they deviate from their lane.
  - Collision Warning Systems:** Help avoid accidents by preemptively detecting obstacles.
  - Adaptive Cruise Control:** Maintains safe distances from other vehicles.

**14) Correct Answer: b) Promoting multilingual education at the primary level.**

**Explanation:**

- The NEP 2020 emphasizes **multilingual education**, promoting the use of regional languages at the primary school level.
- Key reforms:
  - Introduces **mother tongue or regional languages** as the medium of instruction till **Grade 5**.
  - Aims to improve **foundational literacy** and numeracy by 2025.
  - Encourages **flexibility** in the education system and **holistic development**.
- It does not centralize governance under UGC or mandate PhD qualifications for all academic roles.

**15) Correct Answer: a) Outer planets have longer orbital periods due to greater distances from the Sun.**

**Explanation:**

- Kepler's Third Law:**
  - The further a planet is from the Sun, the longer its **orbital period**, leading to slower apparent motion.
- Planet Parade:**
  - A celestial event where planets align in the same region of the sky.
  - Inner planets (Mercury, Venus) appear to move faster because of their **smaller orbital radii**.
- Retrograde motion affects apparent visibility but does not explain slower speeds.

**16) Correct Answer: d) None**

**Explanation:**

- Statement 1:** Incorrect.
  - Satguru Ram Singh, leader of the Kuka movement, was **exiled to Rangoon** by the British and not executed.
- Statement 2:** Incorrect.
  - The British used **cannons** for **public executions** of 66 Kukas in 1872 but did not deploy advanced artillery.
- Statement 3:** Incorrect.
  - The rebellion ended with **brutal suppression**, not a peace treaty.

**17) Correct Answer: c) 1, 2, and 3**

**Explanation:**

- Factors Affecting Efficacy:**
  - Venom Dose:** A higher dose of venom can overwhelm the body, making antivenom less effective.
  - Time Elapsed:** Delayed administration of antivenom reduces its ability to neutralize toxins.
  - Snake Species:** Antivenoms are often **species-specific**, targeting specific venom toxins.
- How Antivenoms Work:**
  - Neutralize toxins by binding to venom components.
  - Produced by immunizing animals (e.g., horses) with small doses of venom.

**18) Correct Answer: a) 1, 2, and 3 only**

**Explanation:**

- Objectives:**
  - Establishment of **Health and Wellness Centres (HWCs)** in both urban and rural areas.
  - Creation of **Integrated Public Health Labs (IPHLs)** in every district.
  - Development of **mobile hospitals** for disaster response.

- **Statement 4:** Incorrect.
  - The mission does not directly aim to **reduce healthcare costs** (addressed by PM-JAY).

19) **Correct Answer: c) Establishing a unified BRICS currency for trade settlements.**

**Explanation:**

- BRICS focuses on:
  - **Reforming global governance** institutions like the UN and IMF.
  - **South-South cooperation** to strengthen ties among developing nations.
  - Funding **sustainable development projects** via the **New Development Bank (NDB)**.
- **Unified currency** is not a primary goal, though **de-dollarization** discussions exist.

20) **Correct Answer: b) Strengthens India's position as a global hub for diamond processing and export.**

**Explanation:**

- The DIA Scheme allows **duty-free imports** of polished diamonds under  $\frac{1}{4}$  **carat size**, boosting competitiveness.
- **Key Features:**
  - Minimum export obligation: 10% value addition.
  - Beneficiaries: Two-Star Export Houses or higher with \$15M annual exports.
- **Significance:** Enhances India's role in the **global diamond processing industry**, especially for MSMEs.

21) **Correct Answer: c) 3 only**

- **Explanation:**
  - The Asan Wetland is an **artificial wetland** created due to the Asan Barrage and not a natural wetland.
  - It contributes to biodiversity but does not significantly affect the hydrological balance of the Yamuna basin.
  - It supports the endangered **Putitor mahseer**, a vital species in its ecosystem.

22) **Correct Answer: d) 2 and 3 only**

- **Explanation:**
  - The AWC is **not exclusive to Ramsar wetlands**; it includes other waterbodies as well.
  - It encourages participation from **local communities and citizen scientists** to enhance awareness.
  - It monitors the **impact of climate change on waterbird populations** by analyzing migration patterns and habitats.

23) **Correct Answer: a) Only one**

- **Explanation:**
  - Pay Commission recommendations primarily influence **central government employees**, not directly state employees.
  - Implementation is **not always retroactive**; it depends on the government's decision.
  - **Revising DA and pension structures** is a key part of the recommendations, making only **Statement 3 correct**.

24) **Correct Answer: a) Only one**

- **Explanation:**
  - **DDT contamination** is a global issue, not restricted to temperate climates.
  - **Biochar binds DDT** to reduce bioavailability, preventing uptake by plants and organisms.

- Biochar is an **organic material** and does not chemically react with DDT, making only **Statement 2 correct**.

25) **Correct Answer: d) Statement-I is incorrect, but Statement-II is correct**

- **Explanation:**
  - Bharat Ranbhoomi Darshan is **not exclusive to border areas**; it includes key historical and military sites across India.
  - The initiative uses **digital technology** to provide virtual tours of these sites, enhancing public engagement.

26) **Correct Answer: a) Only one**

- **Explanation:**
  - It is **not commonly referred to as the "River of Life"**.
  - The river is **non-perennial**, with flow dependent on monsoon rains, making this correct.
  - It does not support Kerala's **largest urban water supply network**, which is primarily served by the Periyar River.

27) **Correct Answer: b) To ensure universal health coverage and strengthen global health systems.**

- **Explanation:**
  - WHO's mission is to promote **universal health coverage, equity, and preparedness for health emergencies**.
  - It works beyond pandemics, focusing on **disease prevention** and global health standards.

28) **Correct Answer: b) Only two**

- **Explanation:**
  - The scheme includes **advocacy campaigns** to address gender bias and has been integrated into **Mission Shakti**.
  - It is not solely focused on financial incentives but emphasizes broader gender equality measures.

29) **Correct Answer: c) 3 and 4 only**

- **Explanation:**
  - The Vaigai River originates in the **Western Ghats**, not the Eastern Ghats, and empties into the **Palk Strait**(Bay of Bengal).
  - It is mentioned in **Sangam literature** and associated with the Pandya kingdom.
  - The **Vaigai Dam** is an important irrigation structure.

30) **Correct Answer: c) 3 only**

- **Explanation:**
  - The platform integrates **artificial intelligence** to streamline legislative functioning.

It is not **exclusive to Parliament's records** or all legislative bodies, as it primarily focuses on digitization and transparency

31) **Correct Answer: d) 1, 2, and 3**

- **Explanation:**
  - White goods are large home appliances like refrigerators, washing machines, and air conditioners used for household tasks.
  - The **PLI scheme** (Production Linked Incentive) for air conditioners focuses on critical components such as compressors and heat exchangers to boost domestic manufacturing.
  - LED lights are categorized as white goods because they are integral to household utility and are energy-efficient.



32) Correct Answer: c) All three

- **Explanation:**
  - **Entity Locker** is a secure, cloud-based platform enabling businesses to manage documents efficiently.
  - It integrates with government databases, ensuring real-time document access and verification.
  - The use of digital signatures ensures the legal authenticity of documents, making them valid for official purposes.

33) Correct Answer: c) 2, 3, and 4

- **Explanation:**
  - Coffee requires acidic soil with a pH range of 4.5–6.5, not 7–8, which makes Statement 1 incorrect.
  - **Robusta coffee** is grown at lower elevations, whereas **Arabica coffee** is grown at higher altitudes.
  - **Karnataka** is the largest coffee-producing state in India, followed by Kerala and Tamil Nadu.
  - Coffee thrives in regions with well-distributed rainfall (150–250 cm annually).

34) Correct Answer: a) Both Statement-I and Statement-II are correct, and Statement-II is the correct explanation for Statement-I.

- **Explanation:**
  - Ratnagiri, located in Odisha, was a prominent center for **Buddhist learning** during the medieval period.
  - Its **strategic location near ancient trade routes** facilitated the spread of Buddhism to Southeast Asia, which explains its significance.

35) Correct Answer: b) 2, 3, and 4

- **Explanation:**
  - The **WEF headquarters** is in **Cologny, Switzerland**, not Geneva, making Statement 1 incorrect.
  - The **Global Competitiveness Report, Energy Transition Index**, and various global initiatives (e.g., climate change dialogues) are WEF's major contributions.

36) Correct Answer: b) 2 and 3 only

- **Explanation:**
  - The **AERB** was **established in 1983**, not under the **Atomic Energy Act, 1962**. Instead, it was created through a notification by the Department of Atomic Energy (DAE). This makes **Statement 1 incorrect**.
  - **Statement 2** is correct as AERB functions as an **autonomous body under the Atomic Energy Commission (AEC)**.
  - **Statement 3** is correct because AERB oversees the safety of **nuclear installations and radiological facilities** in India. It ensures the safety of workers, the public, and the environment from potential hazards associated with nuclear activities.

37) Correct Answer: a) Unresolved riverine boundaries and conflicting claims over enclaves.

- **Explanation:**
  - **Unresolved riverine boundaries and conflicting enclave claims** have been the primary sources of disputes along the India-Bangladesh border.
  - Enclaves (territories of one country surrounded by another) added complexity to border demarcations. These issues were partially resolved by the **Land Boundary Agreement (LBA) of 2015**, but challenges remain in riverine areas where natural shifts in river courses create new ambiguities.
  - Issues like **illegal migration and smuggling** are secondary to the unresolved boundary concerns.

38) Correct Answer: b) Only two

- **Explanation:**
  - **Statement 1** is correct: The **US AI Export Rule** places a cap on the number of **advanced AI chips** India can import, to prevent misuse of sensitive technology.
  - **Statement 2** is correct: This restriction indirectly encourages **self-reliance in AI hardware manufacturing**, pushing India toward technological independence.
  - **Statement 3** is incorrect: India is categorized as a **Tier 2 nation**, not Tier 1, under this rule. Tier 2 nations face stricter controls compared to Tier 1 countries aligned more closely with US strategic interests.

39) Correct Answer: d) None

- **Explanation:**
  - **Statement 1** is incorrect: Nautor Land is **not exclusive to tribal regions** but applies broadly in hilly or forested areas for agricultural use.
  - **Statement 2** is incorrect: The policy does not cover land leasing for **non-agricultural purposes**, such as mining.
  - **Statement 3** is incorrect: Nautor Land policies originated in **Jammu and Kashmir**, not in the Northeast region of India.

40) Correct Answer: c) Removal improves bilateral trade opportunities but does not eliminate all restrictions.

- **Explanation:**
  - Removal from the **U.S. Entity List** eases trade and technology transfer restrictions but does not mean entities are free from all global restrictions.
  - Licensing requirements may still apply under international agreements or specific export controls.
  - This removal signals improved **bilateral trade opportunities** and relations but does not guarantee unrestricted access to U.S. technologies or signify military alliances.

41) Correct Answer: d) It is oriented to allow the first rays of the Sun to illuminate the sanctum.

- **Explanation:**
  - The **Konark Sun Temple**, built in the 13th century in Odisha, is aligned so that the **first rays of the Sun during sunrise** pass through the main entrance and illuminate the sanctum sanctorum. This architectural feature symbolizes the temple's dedication to the **Sun God (Surya)**.
  - The alignment demonstrates **advanced astronomical knowledge** of the time, integrating celestial events into architectural design.

42) Correct Answer: b) To route domestic internet traffic within India, reducing latency.

- **Explanation:**
  - **NIXI** manages **Internet Exchange Points (IXPs)**, ensuring that domestic internet traffic is routed within the country. This minimizes reliance on international routing, which can increase latency and pose security risks.
  - **Functions of NIXI:**
    - Enhances data exchange between Indian ISPs.
    - Promotes **IPv6 adoption** and manages the **.in domain**.
    - Reduces the cost and time of internet traffic by keeping it local.

43) **Correct Answer: a) To promote interoperability and maritime security among navies in the Indo-Pacific.**

• **Explanation:**

- **Exercise La Perouse** is a **multilateral naval exercise** led by France in the **Indo-Pacific** to strengthen maritime security, promote interoperability among navies, and maintain a **rules-based maritime order**.
- It includes nations like **India, France, the U.S., Australia, Japan**, and others, focusing on collaborative efforts in areas like **maritime surveillance, air operations**, and addressing threats such as **illegal trafficking** and environmental hazards.

44) **Correct Answer: c) It refers to the synchronized mass nesting of female turtles on specific beaches.**

• **Explanation:**

- **Arribada** is a Spanish term meaning "arrival," describing the phenomenon where **thousands of Olive Ridley turtles** simultaneously come ashore to nest on specific beaches.
- In India, this occurs at sites like **Gahirmatha** and **Rushikulya** beaches in Odisha.
- **Protection Status:**
  - Listed under **Schedule 1** of the **Wildlife Protection Act, 1972**.
  - Included in **Appendix I of CITES**, ensuring the species receives the highest level of protection.

45) **Correct Answer: d) It integrates physical combat with traditional medicine and healing practices.**

• **Explanation:**

- **Kalaripayattu**, one of the **oldest martial arts** globally, originated in **Kerala** and integrates physical combat with **traditional medicine** such as **marma therapy** (focused on vital points of the body).
- It involves training with:
  - **Wooden weapons (Kolthari)** and **metallic weapons (Angathari)**.
  - **Unarmed combat techniques (Verumkai)**.
- **Women's Participation:** Historically, women have trained and excelled in Kalaripayattu.
- It is recognized as part of **India's intangible cultural heritage**.

46) **Correct Answer: d) Planets are on the same side of the Sun and appear along the ecliptic plane.**

• **Explanation:**

- A **planet parade** occurs when multiple planets appear aligned in the night sky as they are on the **same side of the Sun**, along the **ecliptic plane**.
- This phenomenon is an **optical effect** from Earth's perspective and does not imply a straight-line alignment in space. Gravitational forces or Earth's axial tilt do not cause it.
- **Significance:**
  - Encourages public interest in astronomy.
  - Offers opportunities for scientific exploration and public outreach.

47) **Correct Answer: a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

• **Explanation:**

- **Statement I:** The **Satish Dhawan Space Center (SDSC)**, located in **Sriharikota**, supports **geostationary and polar satellite launches** due to its favorable position near the equator.

- **Statement II:** The **proximity to the equator** reduces energy and fuel requirements for satellite placement because rockets gain additional velocity from Earth's rotation.

○ **Key Features of SDSC:**

- Coastal location minimizes risks to settlements.
- Launches occur eastward, taking advantage of Earth's rotation.

48) **Correct Answer: d) Strengthening health systems and pandemic preparedness.**

• **Explanation:**

- **PM-ABHIM** aims to strengthen **public health infrastructure** and **pandemic preparedness**, addressing gaps in **primary, secondary, and tertiary healthcare systems**.
- **Key Features:**
  - Rural and urban **Health and Wellness Centres (HWCs)**.
  - Creation of **critical care blocks** and **disease surveillance systems**.
  - Establishment of **virology labs** and **mobile hospitals**.
- This scheme does not focus on **universal insurance** or **AYUSH practices**, which are addressed by other initiatives.

49) **Correct Answer: c) Exceptional international performance over a continuous four-year period.**

• **Explanation:**

- The **Major Dhyan Chand Khel Ratna Award** is India's highest sporting honor, recognizing **consistent international performance** over four years in global platforms like the **Olympics, World Championships**, etc.
- Renamed in **2021** to honor the legendary hockey player **Major Dhyan Chand**.
- **Eligibility Criteria:**
  - Outstanding international achievements.
  - Clean anti-doping record.
  - Evaluation through a **points-based system**.

50) **Correct Answer: b) Emphasis on religious reform alongside political resistance.**

• **Explanation:**

- The **Kuka Rebellion** (19th century) was unique as it combined **religious reforms** (e.g., vegetarianism, rejection of foreign goods) with **political resistance** against British rule and collaborators.
- **Key Events:**
  - Clashes at **Malerkotla** and **Malauhd Fort** (1872).
  - Execution of **49 Kukas** by cannon under British orders.
- **Leaders:** **Satguru Ram Singh** and prominent members of the **Namdhari sect**.
- **Legacy:** Inspired future resistance movements with its emphasis on **self-reliance and nationalism**.