

Solutions

DATE : 21st April – 27th April

1) Answer: c) Statement-I is correct but Statement-II is incorrect

Detailed Explanation:

◆ **Finance Commission and Fiscal Decentralization (Statement-I - Correct):**

- The **Finance Commission** is constituted under **Article 280** of the Constitution every **five years**.
- It recommends:
 - **Vertical Devolution:** Division of tax revenues between the Centre and States.
 - **Horizontal Devolution:** Distribution among States based on parameters like **population, income distance, forest cover**, etc.
- This ensures **fiscal decentralization**, empowering States to design policies based on local needs.
- **Scholar Perspective:** According to **K.C. Wheare**, federalism requires **financial autonomy** for sub-national units.

◆ **Borrowing Powers and Article 293 (Statement-II - Incorrect):**

- **Article 293** regulates State borrowing: States need **Central Government's consent** to borrow if they have outstanding loans from the Centre.
- The **Finance Commission** has **no authority** over regulating State borrowing.
- **Only the Union Executive** can impose conditions regarding State borrowings.

◆ **Contemporary Example:**

- **15th Finance Commission** recommended fiscal discipline norms but did **not modify borrowing limits**; it suggested grants for disaster management, health sector support, etc.

2) Answer: c) Statement-I is correct but Statement-II is incorrect

Detailed Explanation:

◆ **Purpose and Role of ESZs (Statement-I - Correct):**

- Defined under **Environment Protection Act, 1986**.
- Serve as **buffer zones** around **Protected Areas** like National Parks, Wildlife Sanctuaries.
- Aim to **minimize negative externalities** of human activities like construction, mining, tourism.
- **MoEFCC Guidelines (2011):** Promote regulated eco-development instead of banning all activities.

◆ **Not Eco-Industrial Corridors (Statement-II - Incorrect):**

- **Industrial activities like mining, thermal plants, stone quarrying** are **banned or heavily restricted** in ESZs.
- The idea is **environmental protection**, not **industrial promotion**.

◆ **Example:** Around the **Western Ghats**, ESZ notifications restrict development projects to protect biodiversity hotspots.

3) Answer: b) RFID-based signalling communication between train and trackside systems

Detailed Explanation:

◆ **About Kavach System:**

- **Indigenous Automatic Train Protection (ATP) system** developed by **Indian Railways**.
- Primary goal: **Prevent train collisions**, ensure **speed regulation**, and **adherence to signals**.

◆ **Working Principle:**

- Uses **Radio Frequency Identification (RFID)** tags installed along the railway tracks.
- Communication between:
 - **Locomotive-based equipment**
 - **Trackside equipment**
- **Ultra-High Frequency (UHF)** channels used for transmitting critical signals instantly.

◆ **Key Features:**

- **Automatic application of brakes** when a train passes a signal at danger.
- **Continuous updates** of track conditions to loco-pilots.

◆ **Contemporary Example:**

- Trial runs conducted successfully on the **South Central Railway Zone**.
- Vision: Deploy Kavach across **Delhi-Mumbai** and **Delhi-Howrah** corridors.

4) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements (2 and 3):**

- **Statement 2 (Correct):** X-band radar, due to its **short wavelength (2-4 cm)**, detects **rainfall intensity, cloud formation, and storm structures**.
- **Statement 3 (Correct):** Works on **Rayleigh scattering**, where particle size (like raindrops) is **much smaller** than radar wavelength.

◆ **Incorrect Statement (1):**

- **X-band radars have a limited range** due to **high attenuation** in the atmosphere.
- **S-band or L-band radars** are preferred for **long-distance maritime surveillance**.

◆ **Example:** Wayanad district, Kerala, installed X-band radars to monitor **landslides** and **intense rainfall** events.

5) Answer: a) Only one

Detailed Explanation:

◆ **Correct Statement:**

- **PLI Scheme Alignment:**

- Critical minerals like **lithium, cobalt, nickel** are essential for **EVs, batteries, semiconductors**.
- MSFN membership helps India **secure supply chains** to support domestic manufacturing under the **PLI schemes**.

◆ **Incorrect Statements:**

- **Statement 1:** India is a **net importer** of minerals like lithium and cobalt; major imports come from **Australia, Argentina**, etc.
- **Statement 2:** MSFN primarily **finances projects**; it does **not transfer rare earth processing technology**, which remains a sensitive strategic domain.

◆ **Current Affairs Context:** India signed critical mineral agreements with **Australia and Argentina** in 2024.

6) Answer: d) None

Detailed Explanation:

◆ **Establishment:**

- **Rome Statute** adopted in 1998; entered into force in 2002.
- ICC is **independent** of the United Nations system.

◆ **Jurisdiction Limits:**

- ICC can act if:
 - **Crime occurred** in a member country.
 - **Accused is a citizen** of a member country.
 - **UNSC referral** under Chapter VII powers.

◆ **Trial of Individuals:**

- ICC can **prosecute sitting Heads of State**.
- **Example:** Omar al-Bashir (Sudan), Uhuru Kenyatta (Kenya).

7) Answer: a) Regional stability amidst Cold War-era ideological tensions

Detailed Explanation:

◆ **Background:**

- Formed during the **Cold War** when Southeast Asia faced **communist insurgencies**.
- Founding members: **Indonesia, Malaysia, Philippines, Singapore, Thailand**.

◆ **Purpose:** Foster economic cooperation, political stability, peaceful co-existence.

◆ **Not about Military Alliances:** ASEAN Charter emphasizes **non-interference, peaceful settlement of disputes**.

◆ **Contemporary Importance:** Plays a crucial role in **Indo-Pacific geopolitics** today.

8) Answer: c) Strategic dialogue on regional security and diplomacy in West Asia

Detailed Explanation:

◆ **Organizers:** Conducted annually by **IISS** in **Bahrain**.

◆ **Focus Areas:**

- Regional security dynamics like:
 - **Iran-Saudi Arabia tensions**.
 - **Palestine-Israel conflict**.
 - **Energy security, maritime security**.

◆ **Nature of the Dialogue:** Informal diplomatic platform, no legally binding outcomes.

◆ **Example:** 2024 Dialogue emphasized **regional leadership and integration**.

9) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements (1 and 3):**

- **Largest Trade Bloc:** Covers 55 African Union members.
- **Tariff Elimination:** Aim to **eliminate tariffs on 90%** of intra-African goods.

◆ **Incorrect Statement (2):** AfCFTA does **not impose a single customs union** yet; customs authorities remain **national**, with efforts for harmonization ongoing.

◆ **Contemporary Development:** As of 2024, **Nigeria** ratified the AfCFTA after initial hesitation.

10) Answer: d) None

Detailed Explanation:

◆ **Geographical Location:** Located within the **Brahmaputra River** in Assam, not in Ganga-Brahmaputra Delta.

◆ **Formation Process:** Formed by **deposition and riverine erosion, not volcanic activity**.

◆ **UNESCO Status:** Proposed for **World Heritage Site**, but not yet inscribed officially.

◆ **Current Issue:** Facing **severe river erosion**, losing landmass every year.

11) Answer: c) Only three

Detailed Explanation:

◆ **Correctly Associated Sites:**

- **Ajanta Caves:**
 - Located in Maharashtra.
 - Famous for **Buddhist paintings, sculptures, and architecture**.
 - Reflects **Hinayana and Mahayana traditions**.
- **Mahabodhi Temple Complex:**
 - Located at Bodh Gaya, Bihar.
 - Site of **Buddha's enlightenment** under the Bodhi tree.
- **Nalanda Mahavihara:**
 - Ancient **Buddhist monastic university** in Bihar.
 - Important center of **Buddhist learning and scholasticism** (5th–12th century CE).

◆ **Incorrect Association:**

- **Pattadakal Group of Monuments:**
 - Located in Karnataka.
 - Dedicated to **Hindu deities**, mainly **Lord Shiva**.
 - Represents **early Chalukyan architecture** (blend of **Nagara and Dravida styles**).

- No direct Buddhist connection.

12) Answer: b) Only two

Detailed Explanation:

◆ Correct Statements:

- Statement 1 (Correct): Part of the **Central Asian Flyway**, crucial for migratory bird species.
- Statement 2 (Correct): **Flamingos** and other birds use it as a **feeding and resting site**.

◆ Incorrect Statement:

- Statement 3 (Incorrect): DPS Wetland is a **natural tidal wetland**, not an **artificial excavation**.

◆ Location and Importance:

- Situated at **Seawoods, Navi Mumbai**.
- Adjacent to **Thane Creek Ramsar site**.
- Plays a vital role in **biodiversity conservation** and **climate resilience**.

13) Answer: a) Only one

Detailed Explanation:

◆ Correct Statement:

- Statement 2 (Correct):
 - **Greater Flamingo (Phoenicopterus roseus)** is the **largest flamingo species**.
 - Native to **India's wetlands and saline lakes**.

◆ Incorrect Statements:

- Statement 1 (Incorrect): Flamingos are found in **coastal wetlands, mudflats, saline lakes** — not **evergreen forests** of the Western Ghats.
- Statement 3 (Incorrect): Build **mud mound nests**, not **floating nests**.

◆ Key Sites for Flamingos: **Sambhar Lake, Rann of Kutch, Thane Creek**.

14) Answer: c) All three

Detailed Explanation:

◆ Correct Statements:

- **PVTG Status**: Recognized as **Particularly Vulnerable Tribal Group (PVTG)** in Odisha.
- **Shifting Cultivation**: Practice **Podu cultivation** — clearing and rotating fields.
- **Mango Harvest Dance**: Performed as **thanksgiving to ancestral spirits** for nature's bounty.

◆ Cultural Significance:

- Reflects deep **eco-cultural ties**.
- Part of **India's indigenous knowledge systems**.

15) Answer: b) Only two

Detailed Explanation:

◆ Correct Statements:

- Statement 1 (Correct):

- Authored by **Bharat Muni**.
- Outlines **Rasa theory** and **principles of dramaturgy and stagecraft**.

- Statement 3 (Correct): Discusses **theatre architecture, dance (mudras), music scales, and performance arts**.

◆ Incorrect Statement:

- Statement 2 (Incorrect):

- It is **not a medieval codification of temple rituals**.
- Belongs to **ancient Sanskrit tradition** (estimated around 200 BCE–200 CE).

◆ UNESCO Recognition: **Natyashastra** and **Bhagavad Gita** added to **UNESCO Memory of the World Register (2024)**.

16) Answer: c) Statement-I is correct but Statement-II is incorrect

Detailed Explanation:

◆ Correct Statement:

- Statement 1 (Correct): Majuli's candidature under **mixed heritage** category highlights **India's cultural and ecological diplomacy**.

◆ Incorrect Statement:

- Statement 2 (Incorrect): Majuli is a **natural riverine island**, not a **post-industrial restoration site**.

◆ Additional Facts:

- Majuli was once the **largest river island** globally.
- Facing **erosion threats**, yet remains a **hub of Vaishnavite culture and biodiversity**.

17) Answer: a) 1 only

Detailed Explanation:

◆ Correct Statement:

- **Western Ghats**: Inscribed for their **exceptional biodiversity, endemism, and ecosystem diversity**.

◆ Incorrect Statement:

- **Rani-ki-Vav**:
 - Inscribed **only under cultural criteria**.
 - Renowned for **intricately carved stepwell architecture** in Gujarat.

◆ India's Current Heritage Sites Count: 43 World Heritage Sites as of 2024.

18) Answer: d) Detection of Dimethyl Sulfide and Dimethyl Disulfide in its atmosphere

Detailed Explanation:

◆ Key Observations:

- **James Webb Space Telescope (JWST)** detected **Dimethyl Sulfide (DMS)** and **Dimethyl Disulfide (DMDS)**.
- These gases on Earth are **biosignatures** produced mainly by **marine microorganisms**.

◆ Significance:

- Strongest evidence of **potential microbial life** outside Earth.

- Marks a major advancement in **astrobiology**.

◆ **Note:** Scientists stress that **further confirmations** are required before conclusively claiming extraterrestrial life.

19) Answer: d) It supports betel leaf cultivation in the districts it flows through

Detailed Explanation:

◆ **Location:** Flows through Azamgarh, Mau, Ghazipur districts of Eastern Uttar Pradesh.

◆ **Key Feature:** Region is famous for **betel (pan)** leaf cultivation, crucial for local economy.

◆ **Agricultural Importance:** Microclimate along the Magai River promotes **high-quality betel farming**.

20) Answer: a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 1 (Correct):** JWST's placement at L2 point helps detect faint infrared signals.
- **Statement 2 (Correct and Explanation for I):** L2 location ensures:
 - Constant cold and dark environment.
 - Reduced thermal noise and background light interference.

◆ **Technical Features of JWST:**

- **Infrared observation** allows peering through **cosmic dust clouds**.
- **Gold-coated mirrors** enhance **infrared reflectivity**.

◆ **Mission Purpose:** Study early universe formation, galaxy evolution, and **exoplanet atmospheres**.

21) Answer: a) Only one

Detailed Explanation:

◆ **Correct Statement:**

- **Statement 3 (Correct):** NCMM explicitly promotes mineral recycling to reduce **environmental degradation** and import dependence.

◆ **Incorrect Statements:**

- **Statement 1:** Nuclear fuel development is under the **Department of Atomic Energy**, not NCMM.
- **Statement 2:** NCMM was launched by the **Ministry of Mines** in the **Union Budget 2024-25**, not by NITI Aayog or under the **Integrated Energy Policy**.

◆ **Key Points about NCMM:**

- Aims at **critical mineral security** for **clean energy** and **defense sectors**.
- Focus on minerals like **lithium, cobalt, rare earths**.

22) Answer: c) It is the only sea connected directly to both the Mediterranean Sea and the Arabian Sea

Detailed Explanation:

◆ **Correct Features:**

- Connects to **Mediterranean Sea** via **Suez Canal**.
- Connects to **Arabian Sea** via **Gulf of Aden**.

◆ **Incorrect Options Explained:**

- **Not formed at a triple junction** — it is due to tectonic divergence.
- **Salinity is high**, not low (up to **41 PSU**).
- **Supports deep coral ecosystems** resilient to **bleaching**.

◆ **Strategic Importance:** Facilitates **12% of global trade**.

23) Answer: a) First exchange to launch a global depository receipt (GDR) in India

Detailed Explanation:

◆ **Correct Milestones of BSE:**

- **Sensex** (India's first index) launched in **1986**.
- **Electronic trading (BOLT)** started in **1995**.
- Joined **UN Sustainable Stock Exchanges Initiative** in **2012**.

◆ **Incorrect Milestone:** GDRs are issued **overseas** by companies; no Indian exchange **launches** GDRs.

◆ **Key Fact:** BSE is **Asia's oldest stock exchange** (established in **1875**).

24) Answer: a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

Detailed Explanation:

◆ **Habitat & Behavior:**

- Lives at **depths up to 2000 meters**.
- Rarely observed due to **logistical and technological challenges**.

◆ **Scientific Details:**

- **Mesonychoteuthis hamiltoni**.
- Possesses the **largest eyes** among known species.

◆ **Research Challenges:** Deep-sea conditions make **specimen retrieval difficult**.

25) Answer: c) Only three

Detailed Explanation:

◆ **Correct Statements:**

- **Celebrity advocacy:** Campaigns with stars like Joaquin Phoenix.
- **Global undercover investigations:** Exposing animal cruelty.
- **Ethical Motto:** Animals **should not be used** for any human purpose.

◆ **Incorrect Statement:** PETA rejects **cage-free meat**; advocates for **complete veganism**.

◆ **Organizational Fact:** Founded in **1980**, HQ in **Virginia, USA**, Indian office in **Mumbai**.

26) Answer: b) Only two

Detailed Explanation:

◆ **Incorrect Statements:**

- **Statement 1:** Red Sea named after red algal blooms (*Trichodesmium erythraeum*), not iron sediments.
- **Statement 2:** Red Sea has higher salinity than the Indian Ocean.

◆ **Correct Statement:** Statement 3: Red Sea's Bab el-Mandeb Strait is crucial for military surveillance and submarine operations.

27) Answer: d) None

Detailed Explanation:

◆ **Incorrect Statements:**

- PETA is an NGO, not a UN-affiliated body.
- Focuses on animal rights, not wildlife conservation.
- No Nobel Prize awarded to PETA.
- Campaigns go beyond vegetarianism, covering fashion, entertainment, cosmetics testing, etc.

28) Answer: c) Enhancing amphibious interoperability with a Quad member for Humanitarian Assistance and Disaster Relief (HADR) operations

Detailed Explanation:

◆ **Focus Areas:**

- Conducts amphibious landing operations.
- Enhances joint response capacity during natural disasters.

◆ **Strategic Angle:** Collaboration with the USA, a Quad partner, to strengthen maritime security in the Indo-Pacific.

29) Answer: d) None

Detailed Explanation:

◆ **Incorrect Statements:**

- **Salary of CAG:** Decided by Parliament separately, not by the Finance Commission.
- **Executive vs Constitutional Body:** Finance Commission is a constitutional body under Article 280.
- **Election Commission Funding:** Drawn directly from Consolidated Fund of India, independent of FC recommendations.

30) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements:**

- Focuses on counter-terrorism, urban warfare, and sub-conventional operations.
- Aims to enhance defense cooperation with Uzbekistan (a Central Asian Republic).

◆ **Incorrect Statement:** It is a bilateral exercise, not under SCO framework, even though both nations are SCO members.

◆ **Contextual Note:** Part of India's "Connect Central Asia" policy.

31) Answer: d) None

Detailed Explanation:

◆ **Incorrect Statements:**

- **Statement 1:** The Shyok River flows through India (Ladakh) and then enters Pakistan-administered Gilgit-Baltistan.

- **Statement 2:** It originates from the Rimo Glacier (Karakoram Range), not Pangong Tso.
- **Statement 3:** It joins the Indus River near Skardu (Pakistan), not the Ganga River.

◆ **Key Fact:** It forms an important part of the Indus River system.

32) Answer: a) Only one

Detailed Explanation:

◆ **Correct Statement:**

- **Statement 3:** FC recommends devolution of funds to Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs), especially after the 73rd and 74th Amendments.

◆ **Incorrect Statements:**

- **Statement 1:** Borrowing limits are regulated by Union Government under Article 293, not FC.
- **Statement 2:** FC has no mandate to evaluate the RBI's performance.

33) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 1:** IOM acts as technical secretariat for the Colombo Process.
- **Statement 3:** The process promotes bilateral labour agreements through thematic working groups.

◆ **Incorrect Statement:** Statement 2: Only labour-sending countries (not receiving countries) are members.

◆ **Key Members:** India, Bangladesh, Nepal, Pakistan, Sri Lanka, etc.

34) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 2:** ESZs serve as transition zones between protected areas and human-dominated landscapes.
- **Statement 3:** Environment (Protection) Act, 1986, empowers the central government to declare ESZs.

◆ **Incorrect Statement:**

- **Statement 1:** Forest (Conservation) Act, 1980 relates to forest diversion, not ESZ notification.

35) Answer: c) It emits its own energy and captures terrain data even through vegetation gaps

Detailed Explanation:

◆ **Key Concept:** LiDAR is an active remote sensing system that emits laser beams to measure distances.

◆ **Advantages Over Passive Systems:**

- Can penetrate dense vegetation.
- Effective in generating 3D digital elevation models (DEMs) even in forested regions.

◆ **Application:** Used in archaeological surveys, floodplain mapping, forest structure analysis.

36) Answer: c) They interact extremely weakly with matter due to being chargeless

Detailed Explanation:

◆ **Key Concept:** Neutrinos are neutral, low-mass particles interacting via the weak nuclear force only.

◆ **Reason for Difficulty:**

- They can pass through entire planets without interacting.
- Requires large, sensitive detectors like Super-Kamiokande (Japan), INO (India proposed).

37) Answer: a) Their neutral buoyancy allows prolonged interaction with contaminants

Detailed Explanation:

◆ **Key Concept:** Nanobubbles (size <200 nm) remain suspended in water for long periods.

◆ **Benefits:**

- High surface area for contaminant interaction.
- Effective in biofilm removal, wastewater treatment, and microbial control.

◆ **Application Areas:** Agriculture, aquaculture, industrial water treatment.

38) Answer: d) Ensuring critical mineral supply chains for green and digital transitions

Detailed Explanation:

◆ **Key Objective:** Secure access to lithium, cobalt, nickel, and rare earths.

◆ **Importance:**

- For EV manufacturing, semiconductors, solar energy, and battery storage technologies.
- Supports India's Net-Zero 2070 goals and Atmanirbhar Bharat vision.

39) Answer: b) Only two

Detailed Explanation:

◆ **Correct Statements:**

- Statement 1: ICC tries individuals for genocide, crimes against humanity, war crimes, and crime of aggression.
- Statement 3: ICC can prosecute crimes committed by nationals of member states even outside their own territory.

◆ **Incorrect Statement:**

- Statement 2: ICC prosecutes individuals, not states.

40) Answer: a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

Detailed Explanation:

◆ **Correct Explanation:**

- ASEAN's **non-interference principle** and **consensus-based decision-making** limit its action in Myanmar.
- **Five-Point Consensus (2021)** has seen limited implementation.

◆ **Consequences:** Myanmar crisis highlights ASEAN's **institutional limitations**.

◆ **Contemporary Example:** ASEAN has restricted Myanmar's military representatives from some summits but **avoided sanctions**.

41) Answer: c) Statement-I is correct but Statement-II is incorrect

Detailed Explanation:

◆ **Correct Statement:**

- **Statement I (Correct):**
 - Vietnam and the Philippines are among the world's **most typhoon-prone countries**.
 - Example: Typhoon Haiyan (2013) caused massive devastation in the Philippines.

◆ **Incorrect Statement:**

- **Statement II (Incorrect):**
 - Typhoons originate from the Western Pacific Ocean, not from the Atlantic Ocean.
 - Atlantic-origin storms impact Americas, not East/Southeast Asia.

◆ **Reason for High Typhoon Frequency:**

- Warm Pacific waters provide energy for cyclonic storms.
- Located in the **Pacific Typhoon Belt**.
- **June to November:** Peak season due to warm ocean currents and monsoon intensification.

42) Answer: a) A-2, B-3, C-1

Detailed Explanation:

◆ **Correct Matching:**

- A. Central Arctic Ice Loss — 2: Strengthens Rossby waves, causing increased rainfall in central and northern India.
- B. Barents-Kara Sea Melt — 3: Creates pressure anomalies, leading to decreased rainfall in central and northwest India.
- C. Greenland Ice Melt — 1: Has weak teleconnection with the Indian monsoon.

◆ **Mechanism:**

- Arctic ice melting **alters atmospheric circulation**.
- **Disruption of jet streams** affects **Southwest Monsoon** pattern in India.

43) Answer: c) Only three

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 1 (Correct):** Demand-driven scheme: Workers must be provided work when demanded.
- **Statement 3 (Correct):** Applicable across all rural districts.
- **Statement 4 (Correct):** Gram Panchayats are key in planning and implementation.

◆ **Incorrect Statement:**

- **Statement 2 (Incorrect):** Employment must be provided **within 15 days** of demand, **not 30 days**.

◆ **Importance of NREGA:**

- Acts as a **rural safety net**.
- Supports **natural resource management** and **wage growth**.

44) Answer: **d) 1, 2 and 3 only**

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 1:** Works under Ministry of Finance, exempted from CRR and SLR norms.
- **Statement 2:** Can issue both **tax-free** and **taxable bonds**.
- **Statement 3:** Plays a role in financing projects under the **National Infrastructure Pipeline (NIP)**.

◆ **Incorrect Statement:**

- **Statement 4:** NaBFID **does not construct** public infrastructure; it **finances** projects.

◆ **Key Role:**

- Bridge **long-term infrastructure financing gaps**.
- Promote **bond markets** and **project sustainability**.

45) Answer: **c) All three**

Detailed Explanation:

◆ **Correct Matchings:**

- **A. Har Khet Ko Pani** — Ministry of Jal Shakti — Expansion of irrigation coverage.
- **B. Per Drop More Crop** — Dept. of Agriculture & Farmers Welfare — Improved water productivity.
- **C. Watershed Component** — Ministry of Rural Development — Soil-moisture retention in drylands.

◆ **Integrated Strategy:**

- Enhances **water use efficiency**.
- Expands **irrigation coverage**.
- Promotes **sustainable agriculture** through **watershed management**.

◆ **Objective:** Ensure **water security** for every farm ("Har Khet Ko Pani").

46) Answer: **c) Only three**

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 1:** Aircrafts using **autopilot navigation** based on GPS can be **misguided to wrong coordinates** if spoofed.
- **Statement 2:** Banks rely on **GPS-based time synchronization**; spoofing can cause **time drift**, leading to **transaction failures**.
- **Statement 3:** Naval vessels can be **misled into wrong territorial waters**, raising **geopolitical tensions**.

◆ **Incorrect Statement:**

- **Statement 4:** GPS spoofing affects **receivers, not satellites**; no **root access** to satellites is possible through spoofing.

- ◆ **Key Insight:** GPS spoofing is a major threat to **aviation, maritime security, and financial sectors**.

47) Answer: **b) Only two**

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 2:** Mimics **Type 1 Diabetes symptoms** (e.g., polyuria, polydipsia), but has **atypical insulin responses**.
- **Statement 3:** Prevalent in **Africa and South Asia** where **chronic malnutrition** is widespread.

◆ **Incorrect Statement:**

- **Statement 1:** Not linked to **high BMI**; affects **lean, undernourished individuals**.

◆ **Contextual Note:** Global undernutrition hotspots show rising cases of **Type 5 Diabetes**, a largely **underdiagnosed** category.

48) Answer: **c) It serves as a global open-access database for water resources and agricultural water use**

Detailed Explanation:

◆ **Key Function:**

- **AQUASTAT** is an **open-access platform** developed by FAO.
- Provides **data on irrigation, water withdrawal, and efficiency indicators** for over **180 variables**.

◆ **Incorrect Options Explained:**

- **Not a regulatory agency** (Option a, d).
- **Not a funding body** like GEF (Option b).

◆ **Relevance:**

- Supports monitoring of **SDG 6.4 (water use efficiency)**.

49) Answer: **a) To build scalable quantum systems ranging from 50 to 1000 qubits**

Detailed Explanation:

◆ **Goal of NQM:**

- Develop **intermediate-scale quantum computers (50-1000 qubits)**.
- Propel **quantum research in computing, communication, sensing, and materials**.

◆ **Mission Timeline:** 2023–2031 with a budget of **₹6,003.65 crore**.

◆ **Key Components:**

- Establish **four thematic hubs (T-Hubs)** across quantum fields.
- Promote India's **global leadership in quantum technology**.

50) Answer: **b) Only two**

Detailed Explanation:

◆ **Correct Statements:**

- **Statement 2:** Supports **Google's AI workloads** like **Search and YouTube recommendations**.
- **Statement 3:** Offers **higher energy efficiency** than traditional **CPUs/GPUs** for **AI-specific tasks**.

◆ Incorrect Statement:

- **Statement 1:**
 - Not a general-purpose microprocessor; not used in Android phones.

- Designed for **Google Cloud AI Infrastructure**.

- ◆ **Key Feature:** Focused on **processing tensors** and **accelerating neural networks**.



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