

# Solutions

DATE : 10<sup>th</sup> Feb- 16<sup>th</sup> Feb

1) Answer: (a) Only one

Explanation:

- **Statement 1 is incorrect:** The CRI assesses vulnerability based only on **extreme weather events** (such as cyclones, floods, and heatwaves). It does not include **anthropogenic disasters** like pollution-related deaths or industrial accidents.
- **Statement 2 is incorrect:** The CRI is published by **Germanwatch**, a German environmental think tank, not the **World Meteorological Organization (WMO)**.
- **Statement 3 is correct:** The CRI methodology considers **absolute economic losses** and **relative economic losses** (as a percentage of GDP) to **account for disparities** between developed and developing nations.

About Climate Risk Index (CRI):

- **Purpose:** Ranks countries based on **vulnerability to extreme weather events**.
- **Published by:** **Germanwatch** (Annual Report since 2006).
- **Methodology Includes:**
  - **Fatalities** (direct and indirect deaths from extreme weather).
  - **Affected population** (displaced persons, injuries, and livelihood impact).
  - **Economic losses** (damage to infrastructure and GDP losses).
  - **Number of extreme weather events** (floods, storms, heatwaves, etc.).
  - **Long-term (1993-2022) & Short-term (2022) impact assessment.**

2) Answer: (d) HPAI strains cause severe disease in birds and have a higher mortality rate than LPAI strains.

Explanation:

- **HPAI strains (e.g., H5N1, H7N9):**
  - Cause **severe disease** and **high mortality** in poultry.
  - Can spread to humans but does **not easily transmit** between people.
  - When it infects humans, **mortality is high**.
- **LPAI strains (e.g., H9N2):**
  - Cause **mild disease** in birds but can **mutate into HPAI**.
  - Have **lower mortality** in poultry.
  - Some LPAI strains **can infect humans**, but with **low severity**.

3) Answer: (b) Establishment of a U.S.-India Space Cooperation Council

Explanation:

- **Option (b) is incorrect:** The U.S.-India COMPACT Initiative does **not include a Space Cooperation Council**.
- **Key Features of COMPACT Initiative:**
  - **Defense & Security Cooperation** – 10-year U.S.-India Defense Partnership Framework (2025-2035).
  - **Economic & Trade Expansion** – Mission-500 aims to **double bilateral trade to \$500 billion** by 2030.
  - **Technology & Innovation** – AI, semiconductors, quantum computing, and cybersecurity cooperation.
  - **Energy & Climate Action** – Collaboration in **nuclear energy, LNG trade, and clean hydrogen**.

- **Strategic Geopolitical Engagement** – Indo-Pacific security, counterterrorism, and economic corridors like IMEEC.

4) Answer: (d) To create a free trade zone between India and Europe

Explanation:

- **Option (d) is incorrect:** IMEEC does **not establish a free trade zone** between India and Europe.
- **Key Objectives of IMEEC:**
  - **Alternative trade route** to China's BRI, bypassing the Suez Canal.
  - **Enhancing green energy trade** (hydrogen & renewables).
  - **Strengthening digital connectivity** with high-speed data links.
  - **Improving logistics integration** for efficient customs processing.

5) Answer: (a) Only one

Explanation:

- **Statement 1 is incorrect:** The PAC was established in **1921**, after the **Montagu-Chelmsford Reforms (Government of India Act, 1919)**, not under the **Government of India Act, 1935**.
- **Statement 2 is incorrect:** The **Chairman of the PAC is from the Opposition**, not the ruling party (parliamentary convention since 1967).
- **Statement 3 is correct:** PAC examines **Appropriation Accounts, Finance Accounts, and CAG Reports**.

About PAC:

- **Established:** 1921, under the **Montford Reforms**.
- **Composition:** **22 members** (15 from Lok Sabha, 7 from Rajya Sabha).
- **Chairmanship:** Always from the **Opposition Party**.
- **Functions:** Examines government spending, CAG Reports, and financial accountability.

6) Answer: (c) Launching underwater satellites for oceanic research

Explanation:

- **Option (c) is incorrect:** Matsya 6000 is **not an underwater satellite**; it is a **manned submersible** for deep-sea exploration.
- **Objectives of Matsya 6000:**
  - **Deep-sea mineral exploration** (cobalt, manganese, rare earth metals).
  - **Surveying hydrothermal vents** and methane seeps.
  - **Studying deep-sea biodiversity** and climate impact.

7) Answer: (c) Heatwaves

Explanation:

- **Heatwaves caused the highest fatalities worldwide.**
- **India & Pakistan** recorded **thousands of deaths** due to prolonged extreme temperatures.
- **Floods affected the most people** but had **lower fatalities** compared to heatwaves.

8) Answer: (b) 1, 3, and 4 only

Explanation:

- **Statement 1 is correct:** Used for **underwater archaeology** and marine heritage exploration.
- **Statement 2 is incorrect:** Matsya 6000 is **not nuclear-powered**; it runs on **battery-operated systems**.
- **Statement 3 is correct:** It will **study carbon sequestration** in deep-sea environments to **analyze climate change impact**.
- **Statement 4 is correct:** India will **join an elite group of nations** (US, China, France, Russia, Japan) with **manned deep-sea submersible technology**.

9) Answer: (b) It has the longest recorded history of eruptions in Hawaii

Explanation:

- **Kilauea has the longest recorded eruption history in Hawaii (1983-2018).**
- **Mauna Loa is the tallest volcano in Hawaii**, making option (c) incorrect.
- **Lo'ihl Seamount is the only submarine volcano in Hawaii**, making option (d) incorrect.

10) Answer: (c) Only three

Explanation:

- **Statement 1 is correct:** IMEEC **facilitates secure high-speed data connectivity** between Asia, the Middle East, and Europe.
- **Statement 2 is correct:** Uses a **blockchain-based digital trade system** to streamline supply chains.
- **Statement 3 is correct:** **Integrates logistics management** for customs efficiency and seamless trade.
- **Statement 4 is incorrect:** IMEEC does **not** include a **hyperloop project**; it focuses on **rail and sea connectivity**.

11) Answer: (a) 1 and 2 only

Explanation:

- **Statement 1 is correct:** The 'Tax Year' concept **replaces the assessment year system**, ensuring that income is assessed and taxed **within the same financial year**.
- **Statement 2 is correct:** The **new system aligns income taxation** within the same year, unlike the previous model where taxation occurred the following year.
- **Statement 3 is incorrect:** The Tax Year **reduces** compliance burden instead of increasing it by eliminating confusion between the **financial year and assessment year**.

**Key Features of the 'Tax Year' Concept:**

- **Replaces Assessment Year:** Taxes are **filed in the same year** the income is earned.
- **Enhances Clarity:** Tax deductions, rates, and exemptions are streamlined.
- **Improves Compliance:** Reduces confusion and simplifies reporting.
- **Strengthens Revenue Collection:** Enables **real-time tax assessment** and reduces tax evasion.

12) Answer: (d) Each piece is unique as the mold is destroyed after use

Explanation:

- **Option (d) is correct:** Dokra uses the **lost-wax casting method**, where the mold is **destroyed** after a single use, making each piece unique.
- **Option (a) is incorrect:** Dokra is made of **brass and copper**, not iron or aluminum.
- **Option (b) is incorrect:** Dokra is **handcrafted, not mass-produced**.
- **Option (c) is incorrect:** It originated in **India**, dating back to the **Indus Valley Civilization**.

**About Dokra Metal Craft:**

- **Found in:** Jharkhand, Chhattisgarh, Odisha, West Bengal, Telangana, Madhya Pradesh, Rajasthan, Tamil Nadu.
- **Casting Methods:**
  - **Solid casting** (South India).
  - **Hollow casting** (Central and Eastern India).
- **Recognized with a GI tag** (Adilabad Dokra - 2018).

13) Answer: (d) None

Explanation:

- **Statement 1 is incorrect:** **Section 67 of the IT Act prohibits** publishing/transmitting obscene material online, even for educational use.
- **Statement 2 is incorrect:** The **Hicklin Test has been replaced** by the **Community Standards Test** (Aveek Sarkar case, 2014).
- **Statement 3 is incorrect:** **Obscenity laws apply to online content** under the IT Act and the **Bharatiya Nyaya Sanhita (BNS), 2023**.

**Key Legal Provisions:**

- **BNS, 2023 (Section 294):** Punishes sale, display, or distribution of obscene content.
- **IT Act, 2000 (Section 67):** Prohibits obscene digital content; penalties include **up to 3 years imprisonment and ₹5 lakh fine**.
- **Supreme Court Cases:**
  - **Ranjit Udeshi (1964):** Applied Hicklin Test.
  - **Aveek Sarkar (2014):** Replaced Hicklin Test with Community Standards Test.

14) Answer: (a) 1 and 2 only

Explanation:

- **Statement 1 is correct:** **Einstein Rings form due to gravitational lensing**, where light from a background galaxy bends around a massive foreground object.
- **Statement 2 is correct:** The phenomenon requires **precise alignment** of the observer, lensing mass, and light source.
- **Statement 3 is incorrect:** **Dark matter influences** gravitational lensing, impacting Einstein Ring formation.

**Significance of Einstein Rings:**

- **Confirms General Relativity.**
- **Helps study dark matter distribution.**
- **Enables analysis of distant galaxies and cosmic expansion.**

15) Answer: (b) 2 only

Explanation:

- **Statement 1 is incorrect:** **Tobin Tax applies to foreign exchange transactions**, not stock trading.
- **Statement 2 is correct:** Proposed by **James Tobin in 1972** to stabilize exchange rates after the **Bretton Woods collapse**.
- **Statement 3 is incorrect:** **India does not impose a Tobin Tax** but has a **Securities Transaction Tax (STT)** on stock market transactions.



### Features of Tobin Tax:

- **Low tax rate (0.1%–0.5%) on currency conversions.**
- **Aims to deter short-term speculation** and stabilize financial markets.
- **Adopted by some EU nations for financial transactions.**

16) Answer: (c) All three

### Explanation:

- **Statement 1 is incorrect: Ongole cattle are native to Andhra Pradesh, not Tamil Nadu.**
- **Statement 2 is incorrect: They have high heat and disease resistance, making them suitable for tropical climates.**
- **Statement 3 is incorrect: Ongole cattle are recognized internationally, especially in Brazil and the USA.**

### Key Features of Ongole Cattle:

- **Strong, disease-resistant, heat-tolerant.**
- **Widely used for breeding in Brazil and Australia.**
- **Famous for their endurance and strength.**

17) Answer: (a) Only one

### Explanation:

- **Statement 1 is incorrect: Dokra uses brass and copper, not iron.**
- **Statement 2 is incorrect: Lost-wax technique is ancient, not a modern innovation.**
- **Statement 3 is correct: Dokra is practiced in West Bengal, Odisha, and Chhattisgarh.**

### Historical Significance:

- **Dates back to the Indus Valley Civilization.**
- **Dhokra Damar tribes are traditional practitioners.**

18) Answer: (c) Only three

### Explanation:

- **Statement 1 is correct: Listed under Schedule I of the Wildlife Protection Act, 1972.**
- **Statement 2 is correct: Protected under Appendix I of CITES, banning international trade.**
- **Statement 3 is correct: UNCLOS supports marine conservation, indirectly aiding sea turtles.**
- **Statement 4 is incorrect: The Ramsar Convention focuses on wetlands, not marine species.**

19) Answer: (b) Only two

### Explanation:

- **Statement 1 is correct: Quantum teleportation enables ultra-secure communication via quantum entanglement.**
- **Statement 2 is incorrect: It does not violate relativity since classical communication is needed to complete teleportation.**
- **Statement 3 is correct: Used for transmitting quantum information between quantum computers.**

### Applications:

- **Quantum internet & cryptography.**
- **Secure satellite communications.**
- **Distributed quantum computing.**

20) Answer: (b) India's repo rate applies to short-term loans from the RBI to banks, whereas the Fed Funds Rate applies to overnight interbank lending in the U.S.

### Explanation:

- **Option (b) is correct:**
  - **Repo rate:** The RBI lends to commercial banks, secured by government securities.
  - **Fed Funds Rate:** Governs overnight interbank lending in the U.S., not borrowing from the Fed directly.
- **Option (a) is incorrect:** The RBI and Federal Reserve control their respective rates, not commercial banks.
- **Option (c) is incorrect:** The mechanics of implementation differ.
- **Option (d) is incorrect:** The repo rate applies to all scheduled banks in India.

### Key Differences:

Feature	Repo Rate (India)	Fed Funds Rate (USA)
Controlled by	RBI	Federal Reserve
Applies to	Loans from RBI to banks	Interbank lending
Collateral Required?	Yes (Govt. securities)	No
Used for	Liquidity control	Monetary policy

21) Answer: (b) Only two

### Explanation:

- **Statement 1 is correct: President's Rule is imposed under Article 356** when the President is satisfied that a state government cannot function according to constitutional provisions.
- **Statement 2 is incorrect: President's Rule cannot be extended indefinitely.** Beyond one year, it can only continue if:
  - A **National Emergency** is in force, or
  - The **Election Commission certifies** that elections cannot be conducted.
- **Statement 3 is correct: When President's Rule is imposed:**
  - **The Governor assumes executive powers.**
  - **The State Legislative Assembly is either dissolved or suspended.**
- **Statement 4 is incorrect: The Supreme Court can review President's Rule under S.R. Bommai vs. Union of India (1994),** ruling that misuse of Article 356 is subject to judicial scrutiny.

### Key Features of President's Rule:

- **Duration: Initially 6 months,** extendable up to 3 years with parliamentary approval every 6 months.
- **Impact:**
  - **State Executive:** The Governor acts on behalf of the President.
  - **State Legislature:** Assembly suspended/dissolved; Parliament assumes legislative powers.
  - **Judiciary remains independent.**

22) Answer: (b) Only two

### Explanation:

- **Statement 1 is correct: The Baltic Sea is a semi-enclosed marginal sea of the North Atlantic Ocean, surrounded by Northern and Central European countries.**
- **Statement 2 is correct: The Baltic Sea connects to the North Sea via:**
  - **Kiel Canal (Germany).**
  - **Danish Straits (Öresund, Great Belt, and Little Belt).**

- **Statement 3 is incorrect:** The Baltic Sea is one of the least salty seas due to extensive freshwater inflow from rivers like Neva, Vistula, and Oder.

### Key Features of the Baltic Sea:

- **Connected to:**
  - North Sea via Kiel Canal.
  - White Sea via White Sea Canal (Russia).
- **Environmental Concern:** Low salinity and high pollution due to industrial waste.

23) Answer: (a) Only one

### Explanation:

- **Statement 1 is incorrect:** Trumpeting is not produced by the vocal cords; it occurs when elephants force air through their trunks in sudden bursts.
- **Statement 2 is correct:** Elephants use trumpeting for:
  - Alarm signals.
  - Social bonding and excitement.
  - Territorial defense.
- **Statement 3 is incorrect:** Different species of elephants have varying trumpeting frequencies and durations.

### Key Features of Elephant Trumpeting:

- High-frequency sound, audible over long distances.
- Used in social interactions, play, and distress signals.

24) Answer: (d) To disinfect and neutralize biomedical waste in an eco-friendly manner without incineration.

### Explanation:

- **Option (a) is incorrect:** Srjanam does not convert biomedical waste into biofuel; its primary function is disinfection and eco-friendly disposal.
- **Option (b) is incorrect:** The focus is not on recycling all waste but on safe biomedical waste treatment.
- **Option (c) is incorrect:** Srjanam is designed for treatment, not transportation.
- **Option (d) is correct:** Srjanam neutralizes biomedical waste without incineration, eliminating harmful pathogens.

### Key Features:

- **Developed by:** CSIR-NIIST and implemented at AIIMS, New Delhi.
- **Non-incineration technology:** Reduces emissions of dioxins and furans.
- **Capacity:** Treats 400 kg of waste per day.
- **Eco-friendly:** Produces non-toxic, fragrance-infused treated waste.

25) Answer: (b) Only two

### Explanation:

- **Statement 1 is correct:** NCSK functions under the Ministry of Social Justice & Empowerment.
- **Statement 2 is incorrect:** NCSK does not have legal authority to impose fines or sanctions on local governments.
- **Statement 3 is incorrect:** Members are appointed by the Union Government, not the President of India.
- **Statement 4 is correct:** NCSK monitors compliance with Supreme Court directives on the welfare of sanitation workers.

26) Answer: (c) 1 and 3 only

### Explanation:

- **Statement 1 is correct:** Shakti is open-source, allowing customization for various applications.
- **Statement 2 is incorrect:** Not designed for gaming; it is meant for AI, IoT, and defense applications.
- **Statement 3 is correct:** Used in AI, IoT, and aerospace applications.

### Key Features:

- Developed by: IIT Madras.
- Based on: RISC-V open-source architecture.
- Applications: Aerospace, defense, secure computing.

27) Answer: (a) Only one

### Explanation:

- **Statement 1 is incorrect:** Zamindari system reduced agricultural productivity due to high rents and tenant exploitation.
- **Statement 2 is correct:** Peasants faced debt, land alienation, and bonded labor.
- **Statement 3 is incorrect:** Zamindari was abolished gradually with legal challenges.

### Key Features of Zamindari System:

- **Introduced by:** Lord Cornwallis (1793) under the Permanent Settlement Act.
- **Prevalent in:** Bengal, Bihar, UP, MP, Odisha.
- **Abolished through:** Land reform acts post-independence.

28) Answer: (d) A-1, B-2, C-3, D-4

### Explanation:

- **A-1:** Gulf of Bothnia – Between Sweden & Finland.
- **B-2:** Gulf of Finland – Estonia, Russia, Finland.
- **C-3:** Gulf of Riga – Latvia, Estonia.
- **D-4:** Bay of Gdańsk – Poland, Kaliningrad (Russia).

29) Answer: (a) A-1, B-2, C-3, D-4

### Explanation:

- **A-1:** Gahirmatha Beach – Odisha (Largest Olive Ridley nesting site).
- **B-2:** Rushikulya Rookery – Odisha.
- **C-3:** Velas Beach – Maharashtra.
- **D-4:** Chandipur Beach – West Bengal.

30) Answer: (c) Statement-I is correct, but Statement-II is incorrect.

### Explanation:

- **Statement 1 is correct:** The repo rate influences home loans, vehicle loans, and commercial lending rates as banks adjust interest rates based on RBI policy.
- **Statement 2 is incorrect:** Banks do not always pass on repo rate changes immediately due to:
  - Liquidity conditions.
  - Deposit rates.
  - Risk factors.



### Key Differences:

Feature	Repo Rate (India)	Fed Funds Rate (USA)
Controlled by	RBI	Federal Reserve
Applies to	Loans from RBI to banks	Interbank lending
Collateral Required?	Yes (Govt. securities)	No
Used for	Liquidity control	Monetary policy

31) **Answer:** (b) LF is transmitted through multiple mosquito species, complicating vector control strategies.

### Explanation:

- **Option (b) is correct:** LF is transmitted by **multiple mosquito species (Culex, Anopheles, and Aedes)**, making vector control **challenging**.
- **Option (a) is incorrect:** The filarial parasites **can survive for years**, but treatment with **Diethylcarbamazine (DEC), Albendazole, and Ivermectin** is effective.
- **Option (c) is incorrect:** LF is **not spread directly from human to human**; it requires a **mosquito vector**.
- **Option (d) is incorrect:** **Mass Drug Administration (MDA) drugs have manageable side effects** and are safe for public use.

### Key Features of LF:

- **Caused by:** *Wuchereria bancrofti*, *Brugia malayi*, *Brugia timori*.
- **India's LF elimination target: 2027.**
- **Control Measures:**
  - **Mass Drug Administration (MDA).**
  - **Triple Drug Therapy (DEC + Albendazole + Ivermectin).**
  - **Vector control (mosquito nets, insecticides).**

32) **Answer:** (d) To collaborate on the development of next-generation weapons and military technologies.

### Explanation:

- **Option (d) is correct:** DP-I focuses on **joint development of advanced defence technologies**, including **high-velocity missiles, laser-guided weapons, and multirole missiles**.
- **Option (a) is incorrect:** AI-based cyber defence is **not the primary focus**.
- **Option (b) is incorrect:** There is no **exclusive UK-India defence supply chain**.
- **Option (c) is incorrect:** The **Royal Air Force and Indian Air Force will not merge**.

### Key Features of DP-I:

- **Laser Beam Riding MANPADS (LBRM).**
- **Lightweight Multirole Missiles (LMM).**
- **ASRAAM Missile Facility in Hyderabad.**

33) **Answer:** (b) Only two

### Explanation:

- **Statement 1 is correct:** MIS applies to **perishable crops** not covered under **Minimum Support Price (MSP)**.
- **Statement 2 is correct:** The 2025 revision allows procurement by **Farmer Producer Organizations (FPOs) and Farmer Producer Companies (FPCs)**.
- **Statement 3 is incorrect:** States **still require approval** from the central government to implement MIS.

### Key Features of MIS:

- **Covers perishable crops (fruits, vegetables, and spices).**
- **Cost-sharing: 50:50 (Central-State), 75:25 (Northeast States).**
- **Procurement by NAFED, NCCF, and FPOs.**

34) **Answer:** (c) Individuals with this blood type cannot receive blood from any ABO or O-negative donors.

### Explanation:

- **Option (c) is correct:** The **Bombay Blood Group lacks the H antigen**, making transfusion difficult since **ABO and O-negative blood types contain the H antigen**.
- **Option (a) is incorrect:** It is **not a universal donor**; it can only donate to **another Bombay Blood Group individual**.
- **Option (b) is incorrect:** Discovered in **India (1952)**, not South Africa.
- **Option (d) is incorrect:** The **global prevalence is 1 in a million** (not more than 5%).

35) **Answer:** (c) 3 only

### Explanation:

- **Statement 1 is incorrect:** The project is **entirely within Madhya Pradesh**; there is no **inter-state water-sharing** with Maharashtra.
- **Statement 2 is incorrect:** The **Morand River originates in Madhya Pradesh, not Chhattisgarh**.
- **Statement 3 is correct:** The project will **impact wildlife corridors**, particularly **Satpura and Melghat Tiger Reserves**.

### Key Features of the Project:

- **Location:** Hoshangabad, Betul, Harda, and Khandwa districts (Madhya Pradesh).
- **Rivers involved: Morand and Ganjal** (tributaries of Narmada).

36) **Answer:** (d) None

### Explanation:

- **Statement 1 is incorrect:** The **Paris AI Summit was not initiated by the UN**; it is led by **France**.
- **Statement 2 is incorrect:** The summit **does not mandate a single AI regulatory framework**.
- **Statement 3 is incorrect:** Private AI firms (**Google, OpenAI, Microsoft**) actively participate.

### Key Focus Areas:

- **AI safety, governance, and ethics.**
- **Preventing AI-driven misinformation.**
- **International collaboration on AI research.**

37) **Answer:** (b) Only two

### Explanation:

- **Statement 1 is correct:** Bacteria degrade plastics via **oxidation and hydrolysis**, breaking down polymer chains.
- **Statement 2 is incorrect:** Plastic degradation **does not always result in complete mineralization**; it often produces **microplastics**.
- **Statement 3 is correct:** The degradation rate **depends on environmental factors (UV exposure, temperature, and microbial activity)**.

### Key Microorganisms Involved:

- **Ideonella sakaiensis** (breaks down PET plastics).
- **Bacillus subtilis** (used in biodegradable plastics).

38) Answer: (a) 1-b, 2-c, 3-a, 4-d

### Explanation:

#### Article Provision

Article 324 Superintendence of elections by ECI.

Article 326 Voting rights based on **adult suffrage**.

Article 330 **Reservation of seats** for SC/ST in Lok Sabha.

Article 356 **President's Rule** in case of state constitutional breakdown.

39) Answer: (a) 1 and 2

### Explanation:

- **Statement 1 is correct:** LF is a **WHO-listed Neglected Tropical Disease (NTD)**.
- **Statement 2 is correct:** India uses **Triple Drug Therapy (DEC + Albendazole + Ivermectin)** for faster elimination.
- **Statement 3 is incorrect:** LF is **caused by filarial nematodes**, not protozoa.

### India's Target: Eliminate LF by 2027.

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

### Explanation:

- **Statement 1 is correct:** The Bombay Blood Group is **extremely rare (1 in a million globally, 1 in 10,000 in India)**.
- **Statement 2 is correct:** The **hh (recessive) inheritance pattern** is responsible for the rarity.
- **Statement 2 explains Statement 1** because **both parents must carry the recessive hh gene** for an individual to have the Bombay Blood Group.

### Key Challenges in Blood Transfusion:

- **Can only receive blood from another Bombay Blood Group donor.**
- **Routine tests misidentify it as O-type blood.**

41) Answer: (b) Only two

### Explanation:

- **Statement 1 is incorrect:** The **first BIMSTEC Youth Summit is being hosted in Gandhinagar, Gujarat, not Kathmandu**.
- **Statement 2 is correct:** The summit aims to **foster intra-BIMSTEC exchanges among young leaders**, enhancing regional cooperation.
- **Statement 3 is correct:** The **Ministry of Youth Affairs & Sports and the Ministry of External Affairs** are jointly organizing the event.

### Key Features of BIMSTEC Youth Summit 2025:

- **Host:** Gandhinagar, Gujarat.
- **Theme:** "Youth as a bridge for intra-BIMSTEC exchange."
- **Organizers:** Ministry of Youth Affairs & Sports + MEA (in partnership with CII Young Indians).
- **Focus Areas:**
  - **Leadership training in AI, cybersecurity, digital technology.**

- **Startup ecosystem development.**
- **Youth policy discussions & cultural exchanges.**

42) Answer: (c) It is a self-governing territory in free association with New Zealand.

### Explanation:

- **Option (c) is correct:** The Cook Islands **governs itself but relies on New Zealand for defense and foreign affairs**.
- **Option (a) is incorrect:** It is **not an independent UN member state**.
- **Option (b) is incorrect:** It **has full self-governance**.
- **Option (d) is incorrect:** It is **not part of Australia**.

### Key Features of the Cook Islands:

- **Location:** Polynesia, **South Pacific Ocean**.
- **Capital:** Avarua (**on Rarotonga Island**).
- **Citizenship:** Cook Islanders hold **New Zealand citizenship**.
- **New Zealand's Role:** Provides **defense, financial aid, and manages foreign affairs**.

43) Answer: (d) All of the above.

### Explanation:

- **Option (a) is correct:** The sanctuary has an **open savanna-like ecosystem**, ideal for cheetahs.
- **Option (b) is correct:** **Cheetahs once roamed the region before their extinction in India (1952)**.
- **Option (c) is correct:** The area has a **low density of competing predators (leopards, hyenas)**, reducing survival challenges for cheetahs.

### Key Features of Gandhi Sagar Wildlife Sanctuary:

- **Location:** **Northwestern Madhya Pradesh**, near the MP-Rajasthan border.
- **Habitat:** **Dry deciduous forests + open scrublands**.
- **Prey Base:** **Chinkara, Nilgai, Spotted Deer**.
- **Cheetah Reintroduction:**
  - **Second habitat for cheetahs after Kuno National Park.**
  - **Management plan includes prey augmentation and predator control.**

44) Answer: (b) Only two

### Explanation:

- **Statement 1 is correct:** The **Shiv Shakti Point region** formed due to **volcanic activity and impact processes**.
- **Statement 2 is correct:** The site is **surrounded by three major craters (Manzinus, Boguslawsky, and Schomberger)**.
- **Statement 3 is incorrect:** No direct evidence of **liquid water** has been found; hydrated minerals indicate **interactions with solar wind** rather than past water presence.

### Key Features of the Chandrayaan-3 Landing Site:

- **Location:** **Shiv Shakti Point (near the Moon's South Pole)**.
- **Geological Importance:** **Volcanic formations + impact craters**.
- **Scientific Discoveries:** **Detection of sulfur, oxygen, and possible hydroxyl (OH) molecules**.

45) Answer: (d) None

### Explanation:

- **Statement 1 is incorrect:** **SRY is not essential for sperm production in adults**; sperm formation depends on **FSH and LH hormones**.



- **Statement 2 is incorrect:** External male genitalia develop due to testosterone and DHT, not directly by SRY.
- **Statement 3 is incorrect:** Turner Syndrome (45, X) is not caused by SRY gene loss but by absence of a second sex chromosome.

### Key Features of the SRY Gene:

- Found on the Y chromosome.
- Triggers male gonadal differentiation (testis formation).
- SRY mutations can result in individuals with male genes but female characteristics.

46) **Answer:** (c) Delhi's administration is governed by a special provision inserted through the 69th Constitutional Amendment.

### Explanation:

- **Statement 1 is incorrect:** Delhi's Legislative Assembly does not have exclusive power over all State List subjects; police, land, and public order remain with the Centre.
- **Statement 2 is incorrect:** The LG is not bound by the Council of Ministers' advice in all matters; he can refer matters to the President.
- **Statement 3 is incorrect:** The Supreme Court has ruled that Delhi is not a full-fledged state.

### KeyPoints:

- Article 239AA, inserted by the 69th Amendment, grants Delhi special administrative status with a Legislative Assembly.

47) **Answer:** (a) It involves the transfer of quantum states between particles using quantum entanglement.

### Explanation:

- **Statement 1 is correct:** Quantum teleportation allows the transfer of quantum states between entangled particles, preserving the original state without moving physical matter.
- **Statement 2 is incorrect:** Physical matter is not transported; only quantum information is transferred.
- **Statement 3 is incorrect:** No classical-to-quantum data conversion is needed for teleportation.
- **Statement 4 is incorrect:** Quantum teleportation is possible at non-zero temperatures.

### KeyPoints:

- Quantum teleportation relies on quantum entanglement to transfer information without moving physical matter.

48) **Answer:** (b) To integrate all three branches of the Indian military in a real-time conflict simulation.

### Explanation:

- **Statement 1 is correct:** TROPEX (Theatre Level Operational Readiness Exercise) is the Indian Navy's largest war game, integrating the Navy, Army, and Air Force in joint operations.
- **Statement 2 is incorrect:** Submarine warfare is a component but not the primary focus.
- **Statement 3 is incorrect:** TROPEX does not focus on nuclear deterrence alone.
- **Statement 4 is incorrect:** Anti-piracy operations are not the main objective.

### KeyPoints:

- TROPEX is designed to test operational readiness and integrate all three branches of the Indian military in simulated conflict scenarios

49) **Answer:** (c) The same female turtles return to the same beach where they hatched for nesting.

### Explanation:

- **Statement 1 is correct:** Olive Ridley turtles exhibit natal homing, meaning they return to their birthplace for nesting.
- **Statement 2 is incorrect:** They display mass nesting (Arribada), where thousands nest simultaneously.
- **Statement 3 is incorrect:** Arribada occurs in multiple locations, not just the Indian Ocean.
- **Statement 4 is incorrect:** They may skip a year based on environmental conditions.

### KeyPoints:

- Olive Ridley turtles are known for their natal homing behavior, returning to their birthplace to nest.

50) **Answer:** (b) It ensures that all registered banks in India operate under a secure and verified domain to prevent phishing and fraud.

### Explanation:

- **Statement 1 is correct:** The '.bank.in' domain ensures that only RBI-registered banks can use it, reducing online fraud risks.
- **Statement 2 is incorrect:** It does not centralize digital banking but provides security.
- **Statement 3 is incorrect:** Blockchain security is not mandated under this initiative.
- **Statement 4 is incorrect:** NBFCs and fintech firms cannot register under '.bank.in'; it is restricted to regulated banks.

### KeyPoints:

- The '.bank.in' domain helps in verifying and securing the digital presence of RBI-registered banks, reducing the risks of phishing and online fraud.