

Solutions

DATE : 21st July- 27th July

1) ♦ **Correct Answer: (a)** – *They assist plants in nutrient absorption and play a major role in soil carbon sequestration.*

🔍 **Explanation in Detail:**

♦ **What are Mycorrhizal Fungi?**

- Mycorrhizal fungi are **mutualistic organisms** that form **symbiotic associations** with the roots of over **80% of terrestrial plant species**.
- They **extend the root surface area** through their hyphae, improving the plant's access to **phosphorus, nitrogen, and water**.

♦ **Key Ecological Functions:**

1. **Nutrient Absorption:**
 - These fungi enhance **phosphorus uptake**, crucial for plant growth.
 - They also aid in the absorption of **micronutrients** like zinc and copper.
2. **Carbon Sequestration:**
 - Use **plant-derived carbon (CO₂)** and convert it into stable soil organic matter.
 - Contribute to long-term **soil carbon storage**, playing a role in **climate regulation**.
3. **Soil Health & Biodiversity:**
 - Improve **soil structure** and support a diverse soil microbiome.
 - Play a critical role in **forest regeneration** and **ecosystem resilience**.

♦ **Policy and Conservation Significance:**

- Highlighted in **IPBES** and **UN biodiversity strategies**.
- A recent **scientific study (2023)** shows most **mycorrhizal hotspots lie outside protected areas**, indicating gaps in conservation planning.

♦ **Option Analysis:**

- **(a) Correct** – Clearly states the dual role in **nutrient uptake** and **carbon storage**.
- **(b)** – Decomposition of lignin is a function of **saprophytic fungi**.
- **(c)** – These fungi are **not pathogenic**; they **benefit crops**.
- **(d)** – **Nitrogen fixation** is done by **Rhizobium and cyanobacteria**, not mycorrhizal fungi.

2) ♦ **Correct Answer: (c)** – *A mobile app to capture geotagged crop images for analysis under PMFBY.*

🔍 **Explanation in Detail:**

♦ **What is CROPIC?**

- Stands for **Collection of Real-time Observations & Photo of Crops**.
- Launched under **Pradhan Mantri Fasal Bima Yojana (PMFBY)** to ensure **accurate crop monitoring**.

♦ **Key Features:**

1. **Real-time Data Collection:**
 - Field functionaries capture **geotagged images** of crop plots through the app.
 - Ensures **transparency and accountability** in crop damage assessment.
2. **AI-Based Analysis:**
 - Images are analyzed using **artificial intelligence** and **cloud computing** for damage prediction and yield estimation.
3. **Dashboard Access:**
 - Centralized **dashboard** enables policymakers to monitor crop health dynamically.

♦ **Implementation Context:**

- Managed by **Ministry of Agriculture** in partnership with **insurance companies** and **state governments**.
- Addresses previous challenges of **manual verification delays** and **subjective assessment**.

♦ **Significance:**

- Promotes **financial resilience** among farmers.
- Reduces delay in **claim settlements** under PMFBY.
- Encourages **digital governance** in agriculture.

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◆ Option Analysis:

- **(c) Correct** – Directly aligned with the purpose of **digital monitoring for PMFBY**.
- Others (a, b, d) misrepresent the function and domain of the app.

3) ◆ **Correct Answer: (a)** – *A precision guided missile launched from UAVs, developed by DRDO.*

🔍 Explanation in Detail:

◆ What is ULPGM-V3?

- Stands for **Unmanned Launched Precision Guided Missile - Version 3**.
- Developed by the **Defence Research and Development Organisation (DRDO)** as part of India's drive towards **strategic autonomy**.

◆ Key Features:

1. **Precision Targeting:**
 - Equipped with **dual-mode seeker (EO/IR)**, offering day & night capability.
 - Can be guided mid-flight via a **two-way data link**.
2. **High Operational Flexibility:**
 - Can be launched from **UAVs like Rustom-II**, enhancing surveillance-strike integration.
 - Effective in **mountain warfare, anti-armour operations, and surgical strikes**.
3. **Strategic Impact:**
 - Improves **India's rapid response capabilities**.
 - Reduces dependency on foreign missile systems.

◆ Implementation & Policy Context:

- Part of **Atmanirbhar Bharat** and **Make in India in Defense** initiatives.
- Enhances India's **warfighting capabilities in high-altitude and border regions**.

◆ Option Analysis:

- **(a) Correct** – Matches technical description and operational intent.
- **(b)** – Not an **anti-submarine missile**.
- **(c)** – Not developed **jointly with Israel**.
- **(d)** – It is **not air-to-air**, but **UAV-to-ground**.

4) ◆ **Correct Answer: (a) I only**

🔍 Explanation in Detail:

◆ What is "Hydrogen for Heritage"?

- A government initiative to introduce **hydrogen-powered trains on heritage/hilly routes**.
- Supports **National Green Hydrogen Mission** and aligns with **India's energy transition goals**.

◆ Key Features of Hydrogen Trains:

1. **Green Hydrogen Fuel:**
 - Produced using **electrolysis powered by renewable energy**.
 - Fuel cells emit **only water vapor**, making it a **zero-emission** solution.
2. **Higher Energy Efficiency:**
 - **Higher energy density than batteries**, suitable for **long-distance & heavy-duty** transport.
3. **Use of Existing Infrastructure:**
 - Trains can run on **existing tracks**, eliminating the need for expensive electrification in remote regions.

◆ Strategic Significance:

- Boosts India's **green mobility mission**.
- Showcases innovation and heritage conservation.
- Supports India's **Net Zero 2070** goal.

◆ Statement Analysis:

- **Statement I: Correct** – Green hydrogen's energy density advantage is a key factor.
- **Statement II: Incorrect** – Can be run on **existing rail tracks**.

5) ◆ **Correct Answer: (a) I only**

🔍 Explanation in Detail:

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◆ What is APY?

- Launched in **2015** for providing **pension security** to the **unorganized sector**.
- Administered by **PFRDA (Pension Fund Regulatory and Development Authority)**.

◆ Key Features:

1. **Target Group:**
 - Indian citizens aged **18–40 years**.
 - Excludes **income tax payers** (from October 2022 onwards).
2. **Pension Guarantee:**
 - Subscribers get **₹1000 to ₹5000** monthly pension after **age 60** based on their contribution.
3. **Voluntary, Auto-Debit Scheme:**
 - Monthly contribution from **bank-linked accounts**.
 - Government co-contribution available for early subscribers.

◆ Social Significance:

- Reduces old-age vulnerability.
- Promotes **financial inclusion** and **retirement planning** among low-income citizens.

◆ Achievements:

- Over **8 crore subscribers** as of 2025.
- Major success in states like **UP, Bihar, Maharashtra**.

◆ Statement Analysis:

- **Statement I: Correct** – PFRDA is the correct implementing agency.
- **Statement II: Incorrect** – Only for **18–40 years**, not beyond.

6) Correct Answer: (a) I only

🔍 Explanation in Detail:

◆ Topic in Focus:

- **President's Rule** (Article 356) allows the Union Government to assume control over state administration if the constitutional machinery fails.
- It is a vital tool for maintaining **constitutional governance** in states.

◆ Legal & Constitutional Framework:

- **Article 356:** Allows proclamation if **President is satisfied** that the governance in a state cannot be carried on as per the Constitution.
- **Article 365:** A state's failure to comply with Union directions can trigger President's Rule.

◆ Key Features:

- Can be imposed **with or without Governor's recommendation**.
- Initially valid for **6 months**, extendable up to **3 years** with **Parliamentary approval every 6 months**.

◆ Current Relevance:

- Invoked in **Manipur (2023)** following political violence and breakdown of public order.
- Its repeated use has often raised concerns regarding **federal autonomy**.

◆ Broader Impact:

- While it ensures **constitutional integrity**, excessive use may **undermine cooperative federalism**.
- **S.R. Bommai Case (1994)** laid strict guidelines against arbitrary imposition.

◆ Statement Analysis:

- **Statement I: Correct** – Rule can be extended **up to 3 years**, in **6-month phases**.
- **Statement II: Incorrect** – **Governor's recommendation** is not **mandatory**.

7) Correct Answer: (d) I and III only

🔍 Explanation in Detail:

◆ Topic in Focus:

- **ULPGM-V3** is an **advanced, indigenously developed missile** launched from **Unmanned Aerial Vehicles (UAVs)**.

- Developed by **DRDO**, it enhances India's **precision strike** capabilities.

◆ Technological Features:

1. **Dual-Channel Seeker (Statement I: Correct)**
 - High-definition optical/infrared system for **all-weather precision targeting**.
2. **Day-Night Capability & Two-Way Data Link (Statement III: Correct)**
 - Can operate at night.
 - **Data link** enables **mid-flight corrections** after launch.
3. **Deployment Scope (Statement II: Incorrect)**
 - Designed to work in **both plains and high-altitude areas**, including difficult terrains like Ladakh.

◆ Strategic Significance:

- Strengthens **India's ISR (Intelligence, Surveillance, Reconnaissance)** and strike integration.
- Supports **Atmanirbhar Bharat** in defense.

8) Correct Answer: (c) II and IV only

🔍 Explanation in Detail:

◆ **Topic in Focus:** E3: Informal grouping of **Germany, France, and the UK** formed post-Iraq War (2003) to coordinate **security and foreign policy** responses.

◆ Relation with Iran & JCPOA:

- E3 has played a key role in the **Iran nuclear deal (JCPOA)**.
- **Snapback sanctions:** Mechanism to **reimpose UN sanctions** if Iran breaches the deal.

◆ Clarification of Statements:

- **Statement I: Incorrect** – USA is **not a member** of E3; it was part of **P5+1**, a separate grouping.
- **Statement II: Correct** – E3 emerged **after 2003 Iraq War**, focused on diplomacy with Iran.
- **Statement III: Incorrect** – E3 is **not a formal alliance**, but a **flexible diplomatic coalition**.
- **Statement IV: Correct** – Snapback sanctions are indeed a part of **JCPOA enforcement**.

◆ **Current Relevance:** In light of Iran's nuclear escalation, E3 remains a vital **European voice** in **non-proliferation diplomacy**.

9) Correct Answer: (b) I, II, III and IV

🔍 Explanation in Detail:

◆ **Topic in Focus:** RRTS is India's **semi-high-speed rail** system, designed to improve **intercity connectivity** across **urban-regional corridors**.

◆ Key Objectives:

1. **Statement I: Correct** – Connects **peri-urban** areas with cities to ensure **equitable regional development**.
2. **Statement II: Correct** – Reduces **travel time**, improves **worker productivity**.
3. **Statement III: Correct** – Aligned with **Smart Cities Mission** and **Make in India**.
4. **Statement IV: Correct** – With **40% of India's population** expected to be urban by 2030, RRTS is critical.

◆ Policy and Implementation Context:

- Managed by **NCRTC (National Capital Region Transport Corporation)**.
- First corridor: **Delhi–Meerut RRTS**, operational trials ongoing.

◆ **Significance:** Reduces **vehicular congestion**, lowers **carbon footprint**, improves **urban efficiency**.

10) Correct Answer: (b) I, II and III

🔍 Explanation in Detail:

◆ **Topic in Focus:** Indian legal system regulates **online obscenity** under IT laws and constitutional constraints.

◆ Legal Provisions:

1. **Section 67 of IT Act** – Prohibits **publishing or transmitting obscene material** electronically.
2. **Section 67A** – Targets **sexually explicit content** and **pornographic material**.

◆ Constitutional Framework:

- **Article 19(1)(a)** grants **freedom of speech**.
- **Article 19(2)** allows **reasonable restrictions** in the interests of **decency, morality, public order**.

◆ Judicial Interpretations:

- **Aveek Sarkar v. State of West Bengal (2014)** – Obscenity judged by **contemporary standards**.
- Courts balance **artistic freedom** with **public morality**.

◆ Statement Clarification:

- **Statement I: Correct** – Obscene content is **not protected** under freedom of speech.
- **Statement II: Correct** – Article 19(2) allows restrictions on such speech.
- **Statement III: Correct** – IT Act provides **clear penal provisions**.

◆ Current Relevance:

- **OTT platforms, social media, and AI-generated content** raise regulatory concerns.
- **2023 Guidelines for Online Platforms** emphasize accountability and grievance redressal.

11) Correct Answer: (b) Both Statement I and II are correct, but Statement II does not explain Statement I

🔍 Explanation in Detail:

◆ **Topic in Focus:** Coral reefs are **biodiversity hotspots**, supporting nearly **25% of marine life** despite occupying **only ~1% of the ocean floor**.

◆ Key Ecological Facts:

- Require **clear, warm, shallow waters** with **stable salinity** (typically 23–29°C).
- Thrive in depths **less than 60 meters** for optimal sunlight access.

◆ Indian Distribution:

- Major coral reef regions:
 - **Andaman & Nicobar Islands** (largest area)
 - **Lakshadweep** (atolls)
 - **Gulf of Mannar**, Tamil Nadu
 - **Gulf of Kutch**, Gujarat

◆ Conservation Context:

- Protected under initiatives like:
 - **Coastal Regulation Zone (CRZ) notifications**
 - **UN SDG 14 – Life Below Water**
 - **Marine Protected Areas (MPAs)**

◆ Statement Analysis:

- **Statement I: Correct** – Coral reefs are ecologically productive ecosystems.
- **Statement II: Correct** – They need stable, clear, shallow marine environments, but this is a **condition of survival**, not a reason for productivity.
- Hence, **Statement II does not explain Statement I**.

12) Correct Answer: (a) Only one

🔍 Explanation in Detail:

◆ **Topic in Focus:** Traditional art forms reflect **regional identity, tribal spirituality, and community-based narratives**.

◆ Art Forms and Their Regions:

- **Sohrai** – *Jharkhand*: Tribal wall paintings during the harvest season.
- **Pattachitra** – *Odisha*: Cloth scroll paintings with themes from Jagannath and epics.
- **Patua** – *West Bengal*: Narrative scroll art sung by **patuas**.

◆ Significance:

- Promoted through **Kala Utsav, GI tagging, and cultural tourism**.
- Symbolize **intangible cultural heritage** under **UNESCO 2003 Convention**.

◆ Pair Analysis:

- Pair 1: Incorrect (Pattachitra ≠ Jharkhand)
- Pair 2: Incorrect (Sohrai ≠ Odisha)

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- Pair 3: Correct (Patua = West Bengal)

13) Correct Answer: (b) A folk painting stitched onto cloth scrolls, originating from West Bengal

🔍 Explanation in Detail:

◆ **Topic in Focus:** Patua Art is a narrative scroll painting tradition, often accompanied by storytelling songs called “Pater Gaan.”

◆ **Key Features:**

- Made on **cloth scrolls**, using natural colors.
- Often **stitched or rolled**, telling **religious, social, or political stories**.
- Practiced by **Muslim and Hindu artisans**.

◆ **Current Relevance:**

- Supported through programs like:
 - **Artists in Residence Programme** at Rashtrapati Bhavan
 - **Cultural mapping** under Ministry of Culture

◆ **Option Analysis:**

- (a) – Incorrect: Not a metal craft.
- (b) – **Correct**.
- (c) – Incorrect: Not wood-based.
- (d) – Kerala mural art is distinct in style and region.

14) Correct Answer: (d) It is India’s independent regional navigation satellite system providing precise position data in India and up to 1500 km beyond its borders

🔍 Explanation in Detail:

◆ **Topic in Focus:** NavIC (Navigation with Indian Constellation) is India’s **indigenous GPS alternative**, managed by ISRO.

◆ **Key Features:**

- **7 satellites:** 3 in geostationary, 4 in geosynchronous orbits.
- **Coverage:** India + **1500 km beyond borders**.
- Provides:
 - **SPS (Standard Positioning Service)** for civilian use.
 - **RS (Restricted Service)** for authorized users like military.

◆ **Strategic Importance:**

- Reduces **dependence on GPS/GLONASS**.
- Used in **transport navigation, disaster management, military targeting, and smartphones**.

◆ **Current Status:**

- **ISRO & Qualcomm** integrating NavIC into mobile chipsets.
- Mandatory for certain navigation-enabled consumer devices post-2025.

15) Correct Answer: (b) Ministry of Minority Affairs

🔍 Explanation in Detail:

◆ **Topic in Focus:** Pradhan Mantri Virasat Ka Samvardhan (PM VIKAS) is a **Central Sector Scheme** for the **holistic development** of six notified minorities.

◆ **Merged Schemes Under PM VIKAS:**

1. **USTTAD** – Artisans’ skill development
2. **Nai Roshni** – Women leadership
3. **Seekho aur Kamao** – Skill training
4. **Nai Manzil** – Education + skill integration
5. **Hamari Dharohar** – Cultural preservation

◆ **Implementation Context:**

- Launched in **FY 2022–23**.
- Targets **Muslims, Christians, Sikhs, Buddhists, Jains, and Parsis**.
- Administered by the **Ministry of Minority Affairs**.

◆ Current Relevance:

- Empowers minority communities with **market-relevant skills**.
- Aligns with **Skill India Mission** and **Atmanirbhar Bharat**.

◆ Option Analysis:

- **(a)** – Incorrect: Ministry of Labour not involved here.
- **(b)** – **Correct**.
- **(c) & (d)** – Incorrect: No administrative role in PM VIKAS.

16) **Correct Answer: (c) Depth less than 50 meters for sufficient sunlight penetration**

🔍 Explanation in Detail:

◆ **Topic in Focus:** Coral reefs are sensitive ecosystems that require **specific environmental conditions** to grow, such as:

- **Stable temperature (23–29°C)**
- **Clear, unpolluted water**
- **Depths less than 50 meters**
- **Stable salinity**
- **Hard substrate for attachment**

◆ Why Depth Matters:

- Corals rely on **zooxanthellae algae** for photosynthesis, which requires **sunlight**.
- **Shallow depths (<50 m)** ensure sufficient **light penetration**.

◆ Indian Context:

- Found in **Andaman & Nicobar Islands, Gulf of Mannar, Gulf of Kachchh, Lakshadweep**.
- Threatened by **marine heatwaves, coral bleaching, and coastal pollution**.

◆ Option Analysis:

- **(a)** – Incorrect: Temperature should be warm (not <18°C).
- **(b)** – Incorrect: High sedimentation **blocks sunlight** and **chokes coral polyps**.
- **(c)** – **✓ Correct**.
- **(d)** – Incorrect: Corals require **stable salinity**, not fluctuating.

17) **Correct Answer: (d) I only**

🔍 Explanation in Detail:

◆ **Topic in Focus:** The **Comprehensive Economic and Trade Agreement (CETA)** is a **bilateral trade pact** between **India and the UK** (often confused with Canada-EU CETA).

◆ Key Provisions:

- **Eliminates tariffs on:**
 - 99% of **Indian tariff lines**
 - 90% of **UK tariff lines**
- **Professional mobility, services access, and public procurement**.
- Covers sectors: **Textiles, Pharma, IT, MSMEs**

◆ Statement Analysis:

- **Statement I: Correct** – Accurately reflects tariff elimination commitment.
- **Statement II: Incorrect** – Contrary to fact; **Indian MSMEs are allowed** to participate in UK's public procurement.

18) **Correct Answer: (b) II only**

🔍 Explanation in Detail:

◆ **Topic in Focus:** PM VIKAS is a **Central Sector Scheme** launched by the **Ministry of Minority Affairs** to empower **six notified minority communities** through:

- **Skill development**
- **Leadership training**
- **Preservation of traditional arts**
- **Educational empowerment**

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◆ Minorities Covered:

1. Muslims
2. Christians
3. Sikhs
4. Buddhists
5. Jains
6. Parsis (Zoroastrians) ✓

◆ Statement Analysis:

- **Statement I: Incorrect** – Parsis are among the notified minorities.
- **Statement II: Correct** – Scheme merges five earlier schemes to streamline delivery.

19) Correct Answer: (d) I and II only

🔍 Explanation in Detail:

◆ **Topic in Focus:** The **Maritime Development Fund (MDF)** is a proposed financial mechanism to **boost India's shipping and maritime infrastructure**.

◆ Key Features:

- A **blended finance instrument**.
- Supports **shipyards, coastal infrastructure, inland waterways**.
- Complements **100% FDI in shipping** to attract global capital.

◆ Benefits:

- Reduces **logistics cost**
- Attracts **private investment**
- Enhances **Blue Economy** targets

◆ Statement Analysis:

- **Statement I: Correct** – 100% FDI policy aligns with sectoral reforms.
- **Statement II: Correct** – MDF's intent is to drive **long-term investments** in the sector.

20) Correct Answer: (c) I and II only

🔍 Explanation in Detail:

◆ **Topic in Focus:** **DTAA** are **bilateral treaties** signed by India with other countries to **avoid taxing the same income twice**.

◆ Key Components:

- **Defines Tax Residency**.
- Identifies **Permanent Establishment**.
- Provides **relief via tax credit or exemption methods**.

◆ Significance:

- Reduces tax burden for:
 - **NRIs, PIOs, OCIs**
 - **Foreign investors & companies**
- Encourages **cross-border trade** and **FDI inflows**

◆ Statement Analysis:

- **Statement I: Correct** – Provides relief to the diaspora.
- **Statement II: Correct** – Main objective is to **prevent double taxation**.

21) Correct Answer: (a) Both Statement I and II are correct and Statement II explains Statement I

🔍 Explanation in Detail:

◆ **Topic in Focus:** The **National Policy on Biofuels (2018)**, amended in **2022**, is a landmark policy for advancing **ethanol blending in petrol**, promoting energy diversification, climate resilience, and **farm income support**.

◆ Key Features:

1. **Advancement of Targets:**
 - **20% ethanol blending** goal was preponed from **2030 to 2025-26** via the 2022 amendment.
2. **Expanded Feedstock Base:**
 - Ethanol can now be produced from:
 - **Surplus food grains**
 - **Sugarcane juice**
 - **Damaged grains**
 - **Non-edible feedstocks**

◆ Significance:

- Reduces **crude oil imports**
- Enhances **forex savings** (₹1.36 lakh crore till 2025)
- Boosts **farm income** (~₹1.2 lakh crore to farmers)
- Promotes a **circular bioeconomy**

◆ Statement Analysis:

- **Statement I: Correct** – Target was revised to 2025–26.
- **Statement II: Correct & explains I** – Expanded feedstocks are essential to meet the accelerated target.

22) **Correct Answer: (c) Statement I is correct, but Statement II is incorrect**

🔍 Explanation in Detail:

◆ **Topic in Focus:** This question assesses **progressivity in taxation** under **GST**, which replaced multiple indirect taxes with a unified structure.

◆ Key Features:

1. **Multiple Slabs & Exemptions:** Essentials like **food, healthcare, education** either **exempted** or taxed at **5% or lower**.
2. **Tax Burden Distribution:** Studies show **rich households** contribute **more** to GST collections, making it **progressive**.

◆ Policy Significance:

- Promotes **fiscal equity**
- Supports **poor households** via **lower indirect tax exposure**

◆ Statement Analysis:

- **Statement I: Correct** – GST is found to reduce post-tax inequality.
- **Statement II: Incorrect** – **Increasing** lower slab rates would **increase** burden on the poor, not reduce it.

23) **Correct Answer: (b) Naval expeditions against the Srivijaya Empire**

🔍 Explanation in Detail:

◆ **Topic in Focus: Rajendra Chola I (1014–1044 CE)** was one of India's greatest **naval emperors**, son of Rajaraja I.

◆ Key Achievements:

1. **Naval Campaigns:**
 - Notably invaded the **Srivijaya Empire** (modern-day Indonesia and Malaysia).
 - Asserted Indian dominance over **Southeast Asian maritime trade routes**.
2. **Cultural & Political Legacy:**
 - Founded **Gangaikonda Cholapuram**
 - Spread **Shaivism**, Indian culture & architecture

◆ Statement Analysis:

- **(a)** – Incorrect: Pallavas declined before Cholas rose.
- **(b)** – **Correct.**
- **(c)** – Incorrect: Thanjavur was capitalized by **Vijayalaya Chola**.
- **(d)** – Incorrect: Sun Temple was built by the **Eastern Ganga dynasty**.

24) **Correct Answer: (b) II only**

🔍 Explanation in Detail:

◆ **Topic in Focus: Chikungunya** is a **mosquito-borne viral disease** transmitted by **Aedes aegypti** and **Aedes albopictus**.

◆ Key Aspects:

1. **Symptoms:** Sudden **fever, joint pain**, rashes.
2. **No Specific Cure:** **No antiviral drug**; treatment is **supportive** (hydration, pain relief).
3. **Policy Response:** Managed under **National Vector Borne Disease Control Programme (NVBDCP)**.

◆ **Statement Analysis:**

- **Statement I: Incorrect** – No specific antiviral treatment exists.
- **Statement II: Correct** – Transmitted by mosquitoes, caused by **chikungunya virus**.

25) **Correct Answer: (a) I only**

🔍 **Explanation in Detail:**

◆ **Topic in Focus:** The **Henley Passport Index** ranks global passports based on **visa-free or visa-on-arrival access**.

◆ **Key Features:**

1. **Source of Data:** Compiled using **IATA (International Air Transport Association)** data.
2. **Ranking Basis:** **Number of countries** passport holders can visit **without prior visa**.

◆ **Current Status:** As of 2025, **Singapore** holds the **top position**, offering visa-free access to over **190 destinations**.

◆ **Statement Analysis:**

- **Statement I: Correct** – Singapore is ranked **#1**.
- **Statement II: Incorrect** – GDP is **not a criterion** for passport ranking.

26) **Correct Answer: (c) I, II and III**

Explanation in Detail:

Topic in Focus: The **National Crisis Management Committee (NCMC)** is the apex body for disaster response in India, responsible for **strategic planning, inter-ministerial coordination, and quick decision-making during national emergencies**.

Key Aspects:

- **Policy Framework:** NCMC gained **statutory status** under the **Disaster Management (Amendment) Act, 2025**, strengthening its authority.
- **Composition:** Headed by the **Cabinet Secretary**, with members including Secretaries of Home Affairs, Defence, and key ministries.
- **Functions:** Ensures **centralized command**, resource allocation, and real-time monitoring of **national disaster response**.

Current Relevance:

- India faces recurring **cyclones, floods, earthquakes, and man-made crises** (e.g., industrial accidents), making NCMC vital for **preparedness and response**.
- **Recent Example:** NCMC's role during Cyclone Michaung and the 2023 Manipur conflict response.

Statement Analysis:

- **I:** Correct – NCMC is now a **statutory body**.
- **II:** Correct – It is **headed by the Cabinet Secretary**.
- **III:** Correct – NCMC **coordinates disaster response efforts nationally**.

27) **Correct Answer: (a) II and III only**

Explanation in Detail:

Topic in Focus: The **International Court of Justice (ICJ)**, the judicial organ of the UN, addresses **disputes between states** and provides **advisory opinions on international law**.

Key Aspects:

- **Establishment:** Created in **1945** under the UN Charter; **headquartered in The Hague, Netherlands**.
- **Role in Climate Action:** ICJ recently clarified that **states have legal obligations to curb greenhouse gas emissions**, referencing the **Paris Agreement's 1.5°C limit**.
- **Advisory Opinions:** Can only be sought by **UN organs (e.g., General Assembly, Security Council)**.

Statement Analysis:

- **I:** Incorrect – It is **based in The Hague**, not elsewhere.
- **II:** Correct – ICJ acknowledges **state obligations to limit emissions**.
- **III:** Correct – Established in **1945 as the UN's judicial body**.
- **IV:** Incorrect – **States cannot directly request advisory opinions**.

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28) Correct Answer: (c) I, II and III

Explanation in Detail:

Topic in Focus: A public-private partnership between the World Economic Forum (WEF) and Ministry of Skill Development and Entrepreneurship (MSDE) to bridge India's future skill gaps.

Key Aspects:

- **Sectors Focused:** AI, robotics, clean energy, advanced manufacturing.
- **Mechanism:** Provides reskilling platforms, cross-industry training, and career transition support.
- **Global Context:** Part of WEF's Reskilling Revolution for workforce adaptability.

Statement Analysis:

- **I:** Correct – It is a public-private innovation platform.
- **II:** Correct – Facilitates agile career transitions.
- **III:** Correct – Aligns education with industry needs.

29) Correct Answer: (c) II and III only

Explanation in Detail:

Topic in Focus: Power Market Coupling is a regulatory mechanism under the Central Electricity Regulatory Commission (CERC) to integrate power exchanges for efficient price discovery.

Key Aspects:

- **Day-Ahead Market (DAM):** The first segment for market coupling.
- **Benefits:** Eliminates price divergence, increases transparency, and improves grid efficiency.
- **Example:** Similar mechanisms are used in European electricity markets.

Statement Analysis:

- **I:** Incorrect – DAM is next-day trading, but that does not define coupling.
- **II:** Correct – Aggregates orders to find uniform price.
- **III:** Correct – Ensures price convergence across markets.

30) Correct Answer: (d) I and III only

Explanation in Detail:

Topic in Focus: A flagship programme by MSDE to democratize tech and AI skills with focus on vernacular languages and rural outreach.

Key Aspects:

- **Languages:** Covers nine Indian vernacular languages.
- **Inclusion:** Targets rural, non-English, and underprivileged youth.
- **Objective:** Bridge the digital divide and make AI/ML skills accessible.

Statement Analysis:

- **I:** Correct – Aims for inclusive tech skill access.
- **II:** Incorrect – Not limited to urban or English-proficient youth.
- **III:** Correct – Focuses on vernacular training modules.

31) Correct Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation in Detail:

◆ **Topic in Focus:** Arctic Amplification refers to the phenomenon where the Arctic warms more than twice as fast as the global average due to several climate feedback mechanisms.

◆ Key Aspects:

- **Reduced Albedo:** Melting ice exposes dark ocean water or land, absorbing more solar radiation and accelerating warming.
- **Lapse Rate Feedback:** Arctic atmosphere loses heat less effectively due to a smaller difference between surface and upper air temperatures.
- **Water Vapour Feedback:** Warmer air holds more water vapor—a greenhouse gas that traps heat.

◆ Current Relevance:

- Impacts global weather patterns, including monsoons.
- Contributes to sea-level rise and permafrost thawing, releasing methane.

- Affects **India's climate resilience and coastal vulnerability**.

◆ Statement Analysis:

- **Statement I:** Correct – Arctic is warming faster than global average due to feedback loops.
- **Statement II:** Correct – Reduced albedo is a major reason; directly explains Statement I.

32) **Correct Answer: (a) An international agreement under the World Intellectual Property Organization for classification of industrial designs**

🔍 Explanation in Detail:

◆ **Topic in Focus:** The **Locarno Agreement (1968)** provides an **international classification system** for **industrial designs**, adopted by the **World Intellectual Property Organization (WIPO)**.

◆ Key Features:

- Establishes a **common classification code** for registering industrial designs globally.
- **India uses Locarno Classification** in its design registration under the **Designs Act, 2000**.
- Enhances **global harmonization** and **ease of doing business**.

◆ Importance for India:

- Aligns India with **global IP standards**.
- Supports innovation, design protection, and **"Make in India"** initiatives.

◆ Option Analysis:

- **(a):** Correct.
- **(b):** Incorrect – Not a bilateral patent treaty with Switzerland.
- **(c):** Incorrect – Not related to trademarks or EU digitalization.
- **(d):** Incorrect – Not a regional copyright agreement.

33) **Correct Answer: (c) Building barrages across Kalasa and Banduri tributaries of the Mhadei to divert water to the Malaprabha River**

🔍 Explanation in Detail:

◆ **Topic in Focus:** The **Kalasa-Banduri Project** is Karnataka's initiative to **divert water** from the Mhadei River's tributaries to the **Malaprabha basin** to address **drinking water shortages**.

◆ Background:

- Rivers involved: **Kalasa and Banduri**, both tributaries of the **Mhadei (Mandovi) River**.
- Opposed by **Goa**, which fears ecological damage and reduced river flow.
- Issue is under **judicial review** and part of **interstate water disputes** in India.

◆ Key Dimensions:

- Federal relations
- Ecological sensitivity
- Water governance and **tribunal adjudication**

◆ Option Analysis:

- **(a):** Not in Maharashtra.
- **(b):** Unrelated to Narmada or Saurashtra.
- **(c):** Correct.
- **(d):** Not an interlinking project of Godavari-Krishna.

34) **Correct Answer: (a) Its headquarters is located in Geneva (Incorrect)**

🔍 Explanation in Detail:

◆ **Topic in Focus:** **UNESCO (United Nations Educational, Scientific and Cultural Organization)** is a **specialized UN agency** focused on **global cooperation in education, science, culture, and communication**.

◆ Key Facts:

- **Founded:** 1945, post-WWII
- **Headquarters:** Paris, France

- **Flagship Programs:**
 - **World Heritage Sites**
 - **Man and Biosphere Programme**
 - **Global Education Monitoring Report**

◆ **Statement Analysis:**

- **(a):** ✗ Incorrect – HQ is **Paris**, not Geneva.
- **(b), (c), (d):** ✓ All correctly describe UNESCO's role and functions.

35) **Correct Answer: (d) Rajendra Chola I**

🔍 **Explanation in Detail:**

◆ **Topic in Focus:** **Chola Gangam Lake**, also known as **Ponneri Lake**, was constructed by **Rajendra Chola I** as a **symbol of his northern conquests**, especially of the **Ganga region**.

◆ **Key Features:**

- Located in **Gangaikonda Cholapuram**, the Chola capital.
- Called the “**liquid pillar of victory**” in inscriptions.
- Served purposes of **urban planning, irrigation, and commemorative architecture**.

◆ **Cultural & Political Significance:**

- Reflects the **Chola emphasis on water management and public works**.
- Symbolizes **imperial legitimacy and expansion**.

◆ **Option Analysis:**

- **(a, b, c):** ✗ Incorrect – Not related to this lake's construction.
- **(d):** ✓ Correct – Built by **Rajendra Chola I**.

36) **Correct Answer: (a) I only**

🔍 **Explanation:**

◆ **Topic in Focus:** The **Financial Inclusion Index (FI-Index)** is a composite index developed by the **Reserve Bank of India (RBI)** to assess the **extent of financial inclusion** across India.

◆ **Key Features:**

- **Launched:** 2021
- **Parameters:**
 - **Access** – 35%
 - **Usage** – 45%
 - **Quality** – 20%
- Covers banking, insurance, investments, postal, and pension services.
- **No base year** is assigned to the index; it is **built on a scoring methodology (0–100)**.

◆ **Statement Analysis:**

- **Statement I:** ✓ Correct – These three parameters form the core structure.
- **Statement II:** ✗ Incorrect – It is **deliberately designed without a base year**.

37) **Correct Answer: (c) Both I and II**

🔍 **Explanation:**

◆ **Topic in Focus:** **WiFEX** is a **scientific field project** to study **winter fog formation**, especially in **northern India**.

◆ **Implementing Agency:** Conducted by **Indian Institute of Tropical Meteorology (IITM)** under the **Ministry of Earth Sciences (MoES)**.

◆ **Objectives:**

- Improve **fog forecasting** models for public safety.
- Enhance **now-casting** and disaster preparedness.
- Used in civil aviation, road transportation, and agriculture.

◆ **Statement Analysis:**

- **Statement I:** Correct – Improving forecasting is the key aim.
- **Statement II:** Correct – It is led by **IITM under MoES**.

38) Correct Answer: (b) II only

 Explanation:

◆ **Topic in Focus:** Article 143(1) of the **Indian Constitution** allows the **President to seek advisory opinion** of the **Supreme Court** on **questions of law or fact**.

◆ **Key Features:**

- **Non-binding** in nature – the SC's opinion is not mandatory to follow.
- Referred **based on Cabinet advice**.
- Played a role in issues like **Ayodhya (1994)**, **Ram Janmabhoomi site**, and **9th Schedule**.

◆ **Statement Analysis:**

- **Statement I:** Incorrect – The SC's opinion is **advisory**, not binding.
- **Statement II:** Correct – Article 143(1) enables such references.

39) Correct Answer: (a) I and II only

 Explanation: ◆ **Topic in Focus:**

India's IP reforms aim to **simplify procedures, reduce fees**, and **digitize the system** to support innovation, especially among **startups and MSMEs**.

◆ **Key Reforms:**

- Adoption of **Locarno Classification** for industrial designs (under **WIPO**).
- **80% fee reduction** for **startups, MSMEs**, educational institutions.
- Reduced **trademark forms** from 74 to just **8**.

◆ **Statement Analysis:**

- **Statement I:** Correct – Locarno Agreement is under **WIPO**.
- **Statement II:** Correct – Fee reduction is in place.
- **Statement III:** Incorrect – The number of forms has been **reduced**, not increased.

40) Correct Answer: (c) II and III only

 Explanation:

◆ **Topic in Focus:** **Biostimulants** are **non-nutrient inputs** that **enhance plant health, nutrient uptake, and stress tolerance**. They do **not act like fertilizers or pesticides**.

◆ **Regulatory Framework:**

- Regulated under the **Fertiliser Control Order (FCO), 1985**.
- Requires **labelling, efficacy tests, and approval**.

◆ **Current Role:**

- Promote **sustainable agriculture**.
- Reduce dependency on chemical fertilizers.

◆ **Statement Analysis:**

- **Statement I:** Incorrect – They **act on plants**, not animals.
- **Statement II:** Correct – They improve **nutrient uptake, stress tolerance, and yield quality**.
- **Statement III:** Correct – Governed under the **FCO 1985**.

41) Correct Answer: (a) I only

 Explanation in Detail:

◆ **Topic in Focus:** India's coal sector, though essential for **energy security**, faces scrutiny due to its **environmental impact**. Hence, **sustainability reforms** are crucial.

◆ **Key Sustainability Measures:**

- **Afforestation** of mined-out areas
- **Mine water reuse** for irrigation & drinking
- **Sand extraction** from overburden for construction
- **Blast-free mining** using **Surface Miners, Rippers, and Continuous Miners**

◆ Statement Analysis:

- **Statement I:** Correct – Reflects true initiatives like water reuse and ecological restoration.
- **Statement II:** Incorrect – **Blast-free mining uses Surface and Continuous Miners**; it doesn't eliminate them.

42) Correct Answer: (a) Both I and II are correct, and II explains I

🔍 Explanation in Detail:

◆ **Topic in Focus:** UPI is a real-time, interoperable digital payments platform launched by NPCI, and a key part of India's Digital Public Infrastructure (DPI).

◆ Key Highlights:

- Based on **IMPS infrastructure**
- Integrated with **Aadhaar, Jan Dhan, and mobile**
- Globally operational in **Singapore, France, UAE, Bhutan, Sri Lanka**, and more
- Recognized for **interoperability, scalability, and open API framework**

◆ Statement Analysis:

- **Statement I:** Correct – UPI is expanding internationally.
- **Statement II:** Correct – The expansion is due to its **tech-driven, interoperable, scalable nature**, not just language support.
- Statement II logically **explains I**.

43) Correct Answer: (a) I only

🔍 Explanation in Detail:

◆ **Topic in Focus:** Removal of judges ensures **accountability without eroding independence**, as per **Articles 124(4) & 124(5)** of the Constitution.

◆ Removal Process:

- Initiated by **100 Lok Sabha or 50 Rajya Sabha MPs**
- **Judges Enquiry Act, 1968** governs inquiry
- Requires **special majority** in both Houses
- **No usage of the word "impeachment"** in context of judges (unlike for the President)

◆ Statement Analysis:

- **Statement I:** Correct – Special majority is required in both Houses.
- **Statement II:** Incorrect – The Constitution avoids using **"impeachment"** for judges.

44) Correct Answer: (b) Article 324

🔍 Explanation in Detail:

◆ **Topic in Focus:** **Article 324** empowers the **Election Commission of India (ECI)** to conduct free, fair, and credible elections.

◆ Key Functions under Article 324:

- **Superintendence, direction, and control** of elections
- Covers **Lok Sabha, State Assemblies, President, and Vice President elections**
- Includes **electoral roll preparation and monitoring of poll conduct**

◆ Article Analysis:

- **Article 80:** Composition of Rajya Sabha
- **Article 324:** Correct – Powers of ECI
- **Article 326:** Universal adult suffrage
- **Article 338:** National Commission for SCs

45) Correct Answer: (c) Statement-I is correct, but Statement-II is incorrect

🔍 Explanation in Detail:

◆ **Topic in Focus:** **Biotransformation** involves altering chemical compounds using biological agents. **In vitro biotransformation (ivBT)** uses **isolated enzymes or cells outside** living organisms in a controlled lab environment.

◆ **Key Aspects:**

- **Framework:** Enabled by developments in **biotechnology** and **synthetic biology**.
- **Implementation:** Conducted using isolated biological components (e.g., enzymes or cell organelles).
- **Applications:** Production of artificial food (e.g., synthetic sucrose), pharmaceuticals, and waste-to-resource innovations.
- **Relevance:** Supports **sustainability** and reduces dependence on natural agriculture.

◆ **Statement Analysis:**

- **Statement-I:**  Correct – ivBT is performed using **isolated biological agents** outside living organisms.
- **Statement-II:**  Incorrect – Biotransformation **does not require whole organisms; isolated enzymes or cells** suffice.

46) **Correct Answer: (c) Statement-I is correct, but Statement-II is incorrect**

 **Explanation in Detail:**

◆ **Topic in Focus:** **Kamchatka Peninsula** and **Kuril Archipelago** are part of the **Pacific Ring of Fire**, prone to **earthquakes and volcanic activity**.

◆ **Key Aspects:**

- **Kamchatka:** Known as the “**land of fire and ice**” due to **volcanoes and glaciers**.
- **Kuril Archipelago:** Stretches from Kamchatka to **Japan**, not China.
- **Strategic Importance:** Involves **geopolitical disputes** (e.g., Russia-Japan over Kurils).

◆ **Statement Analysis:**

- **Statement-I:**  Correct – Reflects the unique **volcanic-glacial landscape** of Kamchatka.
- **Statement-II:**  Incorrect – Kurils extend towards **Japan**, not eastern China.

47) **Correct Answer: (c) I only**

 **Explanation in Detail:**

◆ **Topic in Focus:** The **China-constructed dam** on the **Yarlung Tsangpo/Brahmaputra** is situated near the river’s **U-turn** in Tibet before entering Arunachal Pradesh.

◆ **Key Aspects:**

- **Origin:** Brahmaputra originates from **Chemayungdung Glacier** on the Tibetan Plateau.
- **International Law:** Neither India nor China is a **signatory to the 1997 UN Watercourses Convention**.
- **Implications:** Risks of **water diversion, disaster vulnerability, and transboundary tensions**.

◆ **Statement Analysis:**

- **Statement-I:**  Correct – Accurate details of Brahmaputra’s path and geographical context.
- **Statement-II:**  Incorrect – Both countries have **not signed** the UN 1997 Convention.

48) **Correct Answer: (c) Both I and II**

 **Explanation in Detail:**

◆ **Topic in Focus:** **Bitra Island** is the **smallest inhabited** island in **Lakshadweep**, located in the **Arabian Sea**, near **Agatti Island**.

◆ **Key Aspects:**

- **Geography:** Total area of only **0.105 sq km** with **minimal population**.
- **Proximity:** Located near **Agatti**, a key island with an airport and administrative significance.
- **Importance:** Relevant for **ecological, developmental, and security concerns**.

◆ **Statement Analysis:**

- **Statement-I:**  Correct – It **is** the smallest inhabited island.
- **Statement-II:**  Correct – Correct geographic proximity to Agatti.

49) **Correct Answer: (b) Ministry of Statistics and Programme Implementation**

 **Explanation in Detail:**

An Institute for Civil Services

◆ **Topic in Focus:** The **NSS** is India's primary **socio-economic data collection** mechanism, essential for **policy formulation and national planning**.

◆ **Key Aspects:**

- **Origin:** Initiated in **1950** by **P.C. Mahalanobis**.
- **Administered by:** **MoSPI (Ministry of Statistics and Programme Implementation)**.
- **Scope:** Surveys cover **consumption, employment, education, health**, and more.
- **Importance:** Provides base data for **NITI Aayog, Planning Commission**, and **Budget allocations**.

◆ **Option Analysis:**

- (a): ❌ Ministry of Home Affairs – Incorrect
- (b): ✅ **Correct** – MoSPI is the correct administrative ministry.
- (c): ❌ Ministry of Science and Technology – Incorrect
- (d): ❌ Ministry of Rural Development – Incorrect

50) ✅ **Correct Answer:** (c) It offers **dual-stage protection** against *Plasmodium falciparum*

◆ **Topic in Focus:** AdFalciVax is an **indigenous malaria vaccine** developed in India targeting *Plasmodium falciparum* with **dual-stage protection**—a unique feature over current vaccines.

◆ **Key Points:**

- **Dual-stage protection:** Acts on both **pre-erythrocytic (liver)** and **transmission (sexual)** stages of the parasite.
- Developed by Indian research bodies under the **Department of Biotechnology**.
- **Not based** on synthetic nanoparticles or oral delivery.
- Offers **broader, longer immunity** with **greater efficacy** than existing vaccines like RTS,S.

❌ **Eliminating Other Options:**

- (a): Targets *only* P. falciparum, not all species.
- (b): Not based on synthetic nanoparticles.
- (d): Not administered orally.

✅ **Conclusion:** AdFalciVax is a major step in **India's public health innovation**, offering **dual-stage, cost-effective** malaria protection.