

# Solutions

DATE : 4<sup>th</sup> – 10<sup>th</sup> Aug

1) Correct Option: (c) Increasing productivity in perpetuity without ecological harm

## Expanded Explanation

- **Core Concept:** The **Evergreen Revolution** — term coined by **Dr. M.S. Swaminathan** — is an evolution of the **Green Revolution**.
- **Green Revolution Context:**
  - 1960s → India faced severe food shortages.
  - High-Yielding Varieties (HYVs), irrigation, fertilizers, pesticides boosted yields.
  - **Issue:** Long-term environmental degradation (soil depletion, groundwater decline, pesticide pollution).
- **Evergreen Revolution Principles:**
  1. **Sustainability:** Productivity gains **without harming the environment**.
  2. **Equity:** Inclusive growth — benefits must reach **small & marginal farmers**.
  3. **Ecological Balance:** Biodiversity conservation, organic farming, integrated pest management.
  4. **Innovation:** Use of **biotechnology, ICT, precision farming** in eco-friendly ways.
  5. **Climate Resilience:** Crops adapted to changing rainfall, temperature, pests.
- **Current Relevance:**
  - **SDG 2 (Zero Hunger) + SDG 13 (Climate Action)**.
  - Needed for **doubling farmers' income** while preventing resource collapse.
  - Example: **Sikkim's 100% organic farming model**.
- **Elimination:**
  - (a) Over-mechanization harms soil & biodiversity.
  - (b) Farmland expansion increases deforestation & carbon footprint.
  - (d) Monoculture weakens resilience to pests/climate change.

2) Correct Option: (c) They are important marine predators capable of regenerating lost arms

## Expanded Explanation

- **Taxonomy:**
  - Phylum: **Echinodermata**
  - Class: **Asteroidea**
- **Unique Biological Features:**
  1. **Water Vascular System:** Uses seawater for circulation & movement.
  2. **No Blood:** Nutrients & oxygen moved via seawater & coelomic fluid.
  3. **Regeneration:** Can regrow arms, some species regenerate whole bodies.
- **Ecological Role:**
  - **Keystone predator** — controls population of bivalves like mussels.
  - Their decline → **Trophic cascades** harming marine biodiversity.
- **Contemporary Issue:**
  - **Sea Star Wasting Syndrome** in Pacific coasts — mass die-offs linked to warming oceans & pathogens.
  - Impacts shellfish industry, fisheries & coastal ecosystems.
- **Elimination:**
  - (a) Wrong — not freshwater.
  - (b) Wrong — not herbivores.
  - (d) Wrong — no closed circulatory system.

3) Correct Option: (b) A duty levied as a percentage of the value of goods or services imported

## Expanded Explanation

- **Definition:**
  - *Ad valorem* = “according to value” (Latin origin).
  - $\text{Tariff} = \% \times \text{customs-assessed value of goods}$ .
- **Importance in Trade Policy:**
  1. **Price-sensitive:** Revenue rises with higher-value imports.
  2. **Fairness:** Higher value = higher tax, proportional approach.
  3. **Flexibility:** Adjusts automatically with inflation/market prices.
- **Comparison with Other Duties:**
  - **Specific Duty:** Fixed per unit/weight (not value-sensitive).
  - **Compound Duty:** Combination of ad valorem + specific.
- **Current Affairs Link:**
  - India's recent **retaliatory tariffs** on certain U.S. imports used ad valorem rates.
  - WTO disputes often involve disagreements over valuation methods.
- **Elimination:**

- (a) Weight-based = Specific duty.
- (c) "Irrespective of value" = contradicts definition.
- (d) Flat fee = not ad valorem.

#### 4) Correct Option: (a) I only

##### Expanded Explanation

- **Background:** Ni-Cu-PGE sulphide deposits = Nickel, Copper, Platinum Group Elements found in Chhattisgarh (Bhalukona-Jamnidihi block).
- **Platinum Group Elements (PGEs):** Platinum, Palladium, Rhodium, etc.
- **Uses:**
  1. **Hydrogen Economy:** Catalysts in hydrogen fuel cells.
  2. **Automotive Industry:** Catalytic converters reduce emissions.
  3. **Electronics:** Microchips, sensors.
  4. **Jewellery:** Secondary use compared to industrial applications.
- **Strategic Importance:**
  - India's **import dependence** → discovery boosts self-reliance.
  - Critical mineral for **EV push & Net Zero targets**.
- **Global Context:** PGEs heavily mined in South Africa, Russia — geopolitical supply risks.
- **Elimination:** Statement II wrong — PGEs far more than jewellery metal; essential for clean energy tech.

#### 5) Correct Option: (b) I and III only

##### Expanded Explanation

- **Background:**
  - **Small Finance Banks (SFBs)** → serve unbanked/underbanked segments.
  - **Universal Bank** → full-scale commercial banking services.
- **RBI Norms for Transition:**
  1. **Net Worth:** ₹1,000 crore minimum.
  2. **Scheduled Bank Status:** Must be held for **at least 5 years**.
  3. **Listing:** Shares must be listed on recognized stock exchanges.
  4. **Other Criteria:** Sound governance, profitability track record, low NPAs.
- **Significance:** Allows SFBs to access **wider customer base**, offer diversified financial products, and compete with large banks.
- **Current Example:** AU Small Finance Bank → successfully converted to Universal Bank.
- **Elimination:** Statement II wrong — requires 5 years, not 7.

#### 6) Correct Option: (d) II and III only

##### Detailed Explanation

- **What Are Lichens?**
  - **Symbiotic association** between **fungus** (*mycobiont*) and **photosynthetic partner** (*photobiont* — algae or cyanobacteria).
  - Fungus provides **structure, water retention**; algae/cyanobacteria provide **food via photosynthesis**.
- **Ecological Significance:**
  1. **Pioneer species** → first colonizers on bare rock, aiding **soil formation** through mechanical & chemical weathering.
  2. **Nutrient cycling** → fix nitrogen if cyanobacteria are present.
  3. **Air quality bioindicators** → sensitive to SO<sub>2</sub> and heavy metals.
  4. **Role in Succession:** Prepare ground for grasses and shrubs.
- **Economic & Cultural Uses:**
  - **Medicines:** Usnic acid (antibacterial), antifungal agents.
  - **Perfumes:** Oakmoss & tree moss in high-end fragrances.
  - **Food:** In Arctic, *Cladonia rangiferina* is reindeer food.
  - **Dyes:** Litmus from *Roccella tinctoria*.
- **Why Statement I is Wrong:** It limits lichens to soil enrichment only — ignores medicinal, perfumery, biomonitoring roles.
- **Current Relevance:**
  - **Climate studies:** Track environmental changes in polar & alpine regions.
  - **India:** Lichens in Western Ghats and Eastern Himalayas being monitored for forest health.

#### 7) Correct Option: (c) II and III only

##### Detailed Explanation

- **Formation:**
  - Established **July 2010** by UN General Assembly.
  - Consolidated 4 bodies: DAW, INSTRAW, OSAGI, UNIFEM.
- **Mandate:**
  - Achieve **gender equality** and **empowerment of women**.
  - Not focused on children (UNICEF) or elderly (UNDESA).
- **Focus Areas:**
  1. **Political participation** & leadership.
  2. **Economic empowerment** — skills, market access.
  3. **Ending violence** against women & girls.

4. **Peace & security** — women in peacekeeping.
  5. **Humanitarian response** with gender sensitivity.
- **Global Role:**
    - Monitors **CEDAW implementation**.
    - Supports **SDG 5** globally.
  - **India-Specific Initiatives:**
    - Gender budgeting workshops with Ministry of Women & Child Development.
    - **SheLeads** and rural women entrepreneurship projects.
  - **Why Statement I is Wrong:** Mandate is **gender equality**, not rights of all vulnerable groups.

### 8) Correct Option: (c) II and III only

#### Detailed Explanation

- **What is Jointness?**
  - Integration of **Army, Navy, Air Force** resources for coordinated operations.
  - Avoids duplication, improves **combat synergy**, and optimizes logistics.
- **Why Important:**
  - Modern warfare = multi-domain (land, sea, air, cyber, space).
  - India's **two-front threat perception** (China + Pakistan) needs unified commands.
- **Reforms Introduced:**
  1. **Department of Military Affairs (DMA)** (2020) under CDS — ensures integration in procurement, training, and operations.
  2. **Integrated Theatre Commands (ITCs)** — combine assets for a geographic theatre (e.g., maritime, northern).
  3. **Integrated Battle Groups (IBGs)** — agile, self-contained combat units for rapid deployment.
  4. **Joint Logistics Nodes** — common inventory and maintenance hubs.
- **Why Statement I is Wrong:** Jointness is about avoiding duplication, not encouraging it.
- **Current Status:**
  - ITCs under planning — resistance from some service branches.
  - Successful IBG trials on Western and Northern borders.

### 9) Correct Option: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

#### Detailed Explanation

- **Sector Importance:**
  - Supports **circular economy** by recycling steel, reducing dependence on mining iron ore.
  - Lowers carbon emissions compared to primary steel production.
  - Employment generator in collection, processing, manufacturing.
- **Challenges:**
  1. **No national database** on scrap generation, collection, imports, and recycling → poor policy targeting.
  2. **No nodal ministry** for coordination — data scattered across ministries.
- **Policy Response:**
  - **Steel Scrap Recycling Policy (SSRP) 2019** — formalization of sector, scientific dismantling, skill training, modern shredding plants.
  - Recommended **Ministry of Steel** as nodal agency for data management.
- **Why Both Statements Are Correct:**
  - Statement I (data deficit) and Statement II (no nodal agency) are both factual.
  - Statement II explains Statement I — lack of agency → no data collection.
- **Current Relevance:**
  - India's target to become **scrap-neutral by 2030** under National Steel Policy.

### 10) Correct Option: (c) Statement-I is correct, but Statement-II is incorrect

#### Detailed Explanation

- **Definition:**
  - Polymers produced **directly from petrochemical feedstocks** (crude oil/natural gas).
  - **No prior use** — unlike recycled polymers.
- **Advantages:**
  - Uniform molecular structure → consistent mechanical strength.
  - Used where **purity is critical** (medical, food packaging).
- **Environmental Issues:**
  - Higher **carbon footprint** due to extraction & processing.
  - Dependence on **non-renewable** fossil fuels.
- **Policy Context:**
  - India's Plastic Waste Management Rules (2016, amended 2022) push for higher recycled plastic content in packaging.
  - EPR (Extended Producer Responsibility) norms to shift industry from virgin to recycled plastics.
- **Statement Analysis:**
  - **I:** Correct — Fossil fuel origin + greater environmental impact than recycled polymers.
  - **II:** Incorrect — Virgin polymers are *not* made from recycled plastics. That defines **recycled polymers**.
- **Global Trend:** EU, Japan, and India now encouraging **bio-based and recycled alternatives**.

### 11) Correct Option: (d) The RBI Governor acts as the ex officio Chairperson of the Committee

### Detailed Explanation

- **Constitution:** Formed under **Section 45ZB** of the RBI Act, 1934, amended in 2016.
- **Composition:**
  - **3 RBI members:** Governor (Chairperson), Deputy Governor (Monetary Policy), 1 RBI nominee.
  - **3 Government nominees:** Appointed by the Centre, eminent in economics, banking, finance.
- **Voting:**
  - Each member has **one vote**.
  - RBI Governor has **casting vote** in case of tie.
- **Function:** Sets the **repo rate** to meet the inflation target ( $4\% \pm 2\%$ ).
- **Significance:**
  - Improves **transparency** (decisions published with minutes).
  - Aligns with **flexible inflation targeting** framework.
- **Elimination of Options:**
  - (a) Wrong — meets at least 4 times/year, not monthly.
  - (b) Wrong — Finance Minister not involved in voting.
  - (c) Wrong — Has 6 members, not all appointed by RBI.

### 12) Correct Option: (d) A rating tool to assess building performance against national benchmarks

#### Detailed Explanation

- **Developed by:** TERI; adopted as **India's national green building rating system** in 2007.
- **Purpose:** Assess buildings' environmental performance across their lifecycle.
- **Key Parameters:**
  - Energy efficiency
  - Water conservation
  - Waste management
  - Site planning & biodiversity
  - Indoor environmental quality
- **National Importance:**
  - Supports India's **National Action Plan on Climate Change** (Energy Efficiency Mission).
  - Aligned with **SDG 11** (Sustainable Cities).
- **Applications:** Used in **government projects** (e.g., Central Vista), corporate campuses, housing.
- **Elimination:**
  - (a) Wrong — not agricultural.
  - (b) Wrong — not an emission standard.
  - (c) Wrong — not a litigation authority.

### 13) Correct Option: (c) SEBI (Share Based Employee Benefits and Sweat Equity) Regulations, 2021

#### Detailed Explanation

- **Definition:** Right (not obligation) for employees to buy shares at a **predetermined price** after a **vesting period**.
- **Purpose:**
  - Attract and retain talent.
  - Align employee interest with company growth.
- **Regulation:**
  - Listed companies → **SEBI (SBEB & Sweat Equity) Regulations, 2021**.
  - Unlisted companies → Companies Act, 2013.
- **Provisions:**
  - Disclosure norms, shareholder approval.
  - Vesting & exercise rules.
- **Elimination:**
  - (a) Buyback Rules — unrelated.
  - (b) SAST — takeover norms, not ESOPs.
  - (d) Industrial Disputes Act — labor disputes, not share incentives.

### 14) Correct Option: (d) ASEAN serving as the main driver of the evolving regional architecture

#### Detailed Explanation

- **Meaning:** ASEAN's **agenda-setting role** in the Indo-Pacific's multilateral forums.
- **Origin:** Post-Cold War, to keep SE Asia neutral & cohesive amid great power rivalry.
- **Key Mechanisms:**
  - East Asia Summit (EAS)
  - ASEAN Regional Forum (ARF)
  - ASEAN Defence Ministers' Meeting Plus (ADMM-Plus)
- **India's View:** Supports "**ASEAN Centrality**" in its **Act East Policy & Indo-Pacific Vision**.
- **Contemporary Importance:**
  - Prevents dominance by US-China rivalry.
  - Encourages inclusive, rules-based order.
- **Elimination:**

- (a) Wrong — not bilateral focus.
- (b) Wrong — EU not in leadership role.
- (c) Wrong — maritime security not India-exclusive.

### 15) Correct Option: (c) Ministry of Electronics and Information Technology

#### Detailed Explanation

- **Established:** 1991; autonomous society under **MeitY**.
- **Objective:** Promote software exports, tech innovation, and IT entrepreneurship.
- **Key Functions:**
  - Infrastructure for IT/ITES companies.
  - Incubation for startups.
  - Fiscal incentives (till 2011 under STP scheme).
- **Geographical Impact:** 85% centres in Tier 2 & Tier 3 cities → balanced regional growth.
- **Strategic Role:** Supports India's digital economy goals, export competitiveness.
- **Elimination:**
  - (a) Wrong — Communications Ministry not in charge.
  - (b) Wrong — S&T Ministry unrelated.
  - (d) Wrong — Skill Development Ministry unrelated.

### 16) Correct Option: (b) II only

#### Deep Explanation

- **Definition:**
  - Co-lending is a framework allowing **banks and NBFCs/HFCs** to jointly lend to borrowers, particularly in **priority sector segments**.
  - Introduced by RBI to increase credit outreach and risk-sharing.
- **Regulatory Background:**
  - Governed by RBI's *Co-Lending Model (CLM)* guidelines (2020 revision), under the **Banking Regulation Act, RBI Act, and National Housing Bank Act**.
- **Key Features:**
  1. **Minimum Loan Share:** Each regulated entity must retain **at least 10%** of each loan.
  2. **Blended Rate:** Calculated as a **weighted average** of the rates of both lenders — not just NBFC's rate.
  3. **Risk Sharing:** Ensures both entities bear proportional risk.
  4. **Customer Interface:** NBFC often handles origination & servicing; banks provide funding.
- **Benefits:**
  - Banks meet **priority sector lending** targets.
  - NBFCs get access to lower-cost capital.
  - End-customers get better rates.
- **Option Analysis:**
  - **I:** Incorrect — Misstates how blended rate is calculated.
  - **II:** Correct — RBI mandates minimum 10% retention.
- **Current Affairs Link:** Major banks (SBI, HDFC Bank) using co-lending for MSME & agri-loans.

### 17) Correct Option: (a) I only

#### Deep Explanation

- **Definition:** **BharatGen AI** is an indigenously developed **Large Language Model (LLM)** for **Indian languages** with multimodal capabilities (text, speech, vision).
- **Implementation:**
  - Under **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)** of **Department of Science & Technology (DST)**.
  - Led by **Technology Innovation Hub (TIH) for IoT and IoE** at **IIT Bombay**.
- **Current Status:**
  - Supports **9 Indian languages** now.
  - Goal → all **22 Scheduled Languages** by **2026**.
- **Significance:**
  - Boosts **linguistic inclusivity** in AI tools.
  - Supports **Digital India, AI for All, and public digital infrastructure**.
- **Option Analysis:**
  - **I:** Correct — Implemented under NM-ICPS.
  - **II:** Incorrect — Current coverage is 9 languages, not all 22.
- **Current Affairs Link:** Launched alongside other IndiaAI initiatives for AI governance & ethics.

### 18) Correct Option: (c) II only

#### Deep Explanation

- **Definition:**
  - STPI is an **autonomous society under MeitY** set up in 1991 to promote IT & software exports, provide incubation, and extend benefits to Tier 2/3 cities.
- **Core Functions:**

- Infrastructure for IT/ITES companies.
- Regulatory facilitation for exports.
- R&D and innovation support.
- **Policy Linkage:**
  - Aligns with **National Policy on Software Products (2019)** — focus on creating a \$70–80 billion product industry, promoting startups, and boosting exports.
- **Option Analysis:**
  - **I:** Incorrect — MeitY is the parent ministry, not MoS&T.
  - **II:** Correct — Vision matches NPSP 2019.
  - **III:** Incorrect — Focus on software & services, not just hardware manufacturing.
- **Current Affairs Link:** STPI Next initiatives to promote AI, IoT, and AR/VR-based startups.

### 19) Correct Option: (c) II only

#### Deep Explanation

- **Definition:** DNA that organisms shed into their surroundings via skin cells, mucous, hair, gametes, excrement, etc.
- **Collection Sources:** **Water, soil, air, snow** — not just water.
- **Advantages:**
  - **Non-invasive**, highly sensitive.
  - Detects rare/endangered species without direct sighting.
- **Applications:**
  - Monitoring amphibians in Western Ghats.
  - Detecting invasive fish in the Great Lakes (US).
  - Early detection of diseases in wildlife.
- **Option Analysis:**
  - **I:** Incorrect — eDNA includes multiple biological sources, not limited forms.
  - **II:** Correct — It is indeed non-invasive & sensitive.
  - **III:** Incorrect — Not water-only collection.
- **Current Affairs Link:** India exploring eDNA for tiger habitat biodiversity mapping.

### 20) Correct Option: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

#### Deep Explanation

- **Rule:** RBI mandates **minimum 10% loan share retention** for each lender.
- **Purpose:**
  - To **align lender incentives**.
  - Ensure both parties face consequences of loan quality.
- **Why This Is Important:**
  - Without retention, one party might offload risk entirely to the other.
  - Promotes prudent credit assessment & monitoring.
- **Option Analysis:**
  - **I:** Correct — This is the factual RBI requirement.
  - **II:** Correct — Explains the reason (risk-sharing).
- **Current Affairs Link:** RBI revisiting co-lending norms for microfinance and housing loans to prevent bad loan concentration.

### 21) Correct Option: (d) It requires the presence of Hepatitis B virus for replication

#### Expanded Explanation

- **Nature of Virus:**
  - HDV is an **incomplete RNA virus** (deltavirus) — cannot make its own envelope protein.
  - Relies entirely on **HBV's surface antigen (HBsAg)** for assembly and infection.
- **Types of Infection:**
  1. **Co-infection:** HBV + HDV at the same time → more severe acute hepatitis.
  2. **Superinfection:** HDV infects someone already with chronic HBV → rapid progression to **cirrhosis** & **HCC**(hepatocellular carcinoma).
- **Transmission:** Same as HBV — blood transfusion (unsafe), sexual contact, mother-to-child, sharing needles.
- **Prevention:** No direct HDV vaccine; **HBV vaccination** indirectly prevents HDV infection.
- **Global/National Relevance:**
  - WHO aims to **eliminate viral hepatitis by 2030**.
  - India's National Viral Hepatitis Control Programme (2018) covers HBV vaccination, indirectly tackling HDV.
- **Option Elimination:**
  - (a) **✗** Wrong — Cannot infect without HBV.
  - (b) **✗** Wrong — Not waterborne like HAV/HEV.
  - (c) **✗** Wrong — No HDV-specific vaccine exists.
  - (d) **✓** Correct — Needs HBV to replicate.

### 22) Correct Option: (a) 3 years

#### Expanded Explanation

- **Constitutional Provision:**
  - Article 356: Invoked if “**Government of the State cannot be carried on in accordance with the provisions of the Constitution.**”
  - Imposed by President on **Governor’s report** or other credible information.
- **Duration Rules:**
  - Initial period: 6 months.
  - Can extend every 6 months with **Parliament’s approval**.
  - **Maximum: 3 years** → only if:
    1. National Emergency in force; or
    2. EC certifies elections cannot be held.
- **Historical Context:** Misused during Indira Gandhi’s era; 44th Amendment (1978) added safeguards.
- **Option Elimination:**
  - (b)  Wrong — Max is not 2 years.
  - (c)  Wrong — Can go beyond 1 year in special cases.
  - (d)  Wrong — No 4-year provision.
  - (a)  Correct — 3 years with conditions.

**23) Correct Option: (b) All large construction projects above 20,000 sq.m must follow the environmental clearance process**

### Expanded Explanation

- **Legal Background:**
  - **EIA Notification, 2006** under Environment (Protection) Act, 1986 → mandatory prior Environmental Clearance (EC) for projects meeting size/type thresholds.
  - Large building/construction projects  $\geq 20,000$  sq.m fall under **Category 8(a)**.
- **SC Ruling:**
  - Govt. notifications exempting certain projects (industrial sheds, educational buildings) from EC were struck down.
  - **Reason:** Blanket exemptions violate **precautionary principle** & sustainable development.
- **Significance:**
  - Reinforces uniform application of EC norms → no arbitrary exemptions.
- **Option Elimination:**
  - (a)  Wrong — No exemption for educational projects.
  - (c)  Wrong — States can’t override central EIA norms.
  - (d)  Wrong — Industrial shed exemption quashed.
  - (b)  Correct — All  $\geq 20,000$  sq.m must undergo EC.

**24) Correct Option: (b) BrahMos Missile**

### Expanded Explanation

- **About BrahMos:**
  - Joint venture between DRDO (India) and NPO Mashinostroyeniya (Russia).
  - Supersonic cruise missile (Mach 2.8–3), ~290 km export range.
  - Can be launched from **land, ship, submarine, or aircraft**.
- **Deal with Philippines:**
  - Signed 2022; worth ~\$375 million.
  - First foreign buyer → boosts India’s defense export credibility.
  - Strengthens **Philippines’ maritime security** in South China Sea disputes.
- **Strategic Context:**
  - Supports India’s **Act East Policy**.
  - Counters Chinese assertiveness in Indo-Pacific.
- **Option Elimination:**
  - (a)  Nag ATGM not exported to Philippines.
  - (c)  Akash SAM not part of this deal.
  - (d)  Pinaka MBRL not exported to Philippines.
  - (b)  Correct — BrahMos is the export item.

**25) Correct Option: (b) I and II only**

### Expanded Explanation

- **Provision:**
  - Seats reserved in proportion to SC/ST population in the state.
  - Special provisions for **Autonomous Districts of Assam** → separate representation.
- **Constitutional Purpose:**
  - Ensure political representation for historically marginalized communities.
- **Recent Developments:**
  - Reservation extensions for SC/STs in legislatures have been periodically renewed by constitutional amendments.
- **Option Analysis:**
  - **I:**  Correct — STs in Assam’s autonomous districts excluded from general ST quota.
  - **II:**  Correct — Reservation is proportional to SC/ST population.
  - **III:**  Incorrect — Assam does have reserved seats for autonomous districts; statement suggests otherwise.

**26) Correct Option: (d) I, II and IV only**

### Detailed Explanation

- **Species Profile:**
  - Only mountain ungulate (hoofed mammal) in southern India.
  - **Endemic** to the **Western Ghats** — found in Tamil Nadu & Kerala.
  - Largest population: **Eravikulam National Park** (Kerala).
  - Legal Protection: **Schedule I**, Wildlife (Protection) Act, 1972; IUCN: Endangered.
  - State animal of Tamil Nadu.
- **Threats:** Habitat loss, land-use change, tourism pressure, climate change.
- **Conservation Initiatives:**
  - Project Nilgiri Tahr (Tamil Nadu Govt., 2022) to restore habitat, survey populations, and raise awareness.
- **Option Elimination:**
  - **I:**  Correct — Schedule I protection confirmed.
  - **II:**  Correct — Largest population in Eravikulam NP.
  - **III:**  Incorrect — Not found in Himalayas; endemic to Western Ghats.
  - **IV:**  Correct — Only mountain ungulate in southern India among 12 nationally.

**27) Correct Option: (b) II only**

### Detailed Explanation

- **Establishment:** 1961, by UN General Assembly & FAO.
- **Headquarters:** Rome, Italy (not Geneva).
- **Funding:** 100% voluntary contributions (governments, private donors, NGOs).
- **Functions:**
  - Emergency food relief.
  - Nutrition programs for children and mothers.
  - Supply chain/logistics for food aid.
- **Awards:** Nobel Peace Prize (2020) for combating hunger and promoting peace.
- **Option Elimination:**
  - **I:**  Wrong — HQ in Rome.
  - **II:**  Correct — Nobel Peace Prize 2020 awarded.
  - **III:**  Wrong — Funding is voluntary, not solely UNGA allocations.

**28) Correct Option: (b) I and III only**

### Detailed Explanation

- **Mandate:**
  - Regulates mineral exploration and exploitation in “the Area” — seabed beyond national jurisdiction (~54% of oceans).
  - Created under UNCLOS (1982) + 1994 Implementing Agreement.
- **Functions:**
  - Environmental guidelines for deep-sea mining.
  - Benefit-sharing & capacity-building for developing states.
  - Initiatives like **Deep-Sea Biobank**.
- **Headquarters:** Kingston, Jamaica.
- **Option Elimination:**
  - **I:**  Correct — Deep-Sea Biobank covers areas beyond national jurisdiction.
  - **II:**  Wrong — Manages beyond, not within, national jurisdiction.
  - **III:**  Correct — HQ in Kingston.

**29) Correct Option: (a) Both Statement-I and Statement-II are correct, and Statement-II explains Statement-I**

### Detailed Explanation

- **Definition:** Rainfall >10 cm/hour in a localized area.
- **Mechanism:** Common in hilly terrain — **orographic uplift** + sudden cooling → intense downpour.
- **Why frequent in Himalayas:**
  - Moist air from monsoon winds forced up steep slopes.
  - Rapid condensation causes torrential rain in short bursts.
- **Disaster Link:** Causes flash floods, landslides (e.g., Kedarnath 2013).
- **Option Elimination:**
  - **I:**  Correct — Frequent in hilly areas.
  - **II:**  Correct — Steep slopes cause rapid uplift.
  - Explains I → hence “Both + II explains I.”

**30) Correct Option: (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I**

### Detailed Explanation

- **Species Profile:**
  - Keystone species in Antarctic ecosystem.
  - Prey for whales, seals, penguins, fish.
- **Ecological Role:**
  - Transfer energy from phytoplankton to higher trophic levels.
  - Major player in **biological carbon pump** — fecal pellets transport carbon to deep ocean.
- **Option Elimination:**
  - **I:**  Correct — Foundational food source.
  - **II:**  Correct — Significant carbon sequestration role.
  - But II does not explain I — these are independent roles.

### 31) Correct Option: (b) 80% petrol and 20% ethanol

#### Full Explanation

- **Definition:**
  - “E20” → Petrol blend with **80% petrol + 20% ethanol**.
  - Ethanol sourced from **sugarcane, maize, damaged food grains**.
- **Policy Framework:**
  - **National Policy on Biofuels, 2018** (amended 2022) → target for 20% ethanol blending **advanced from 2030 to 2025–26**.
  - Implemented by **Ministry of Petroleum & Natural Gas**.
- **Benefits:**
  1. **Energy security:** Cuts crude oil import bill.
  2. **Environment:** Lower carbon monoxide & hydrocarbon emissions.
  3. **Rural economy:** Stable market for farmers’ produce.
- **Challenges:**
  - Vehicle compatibility.
  - Ethanol production capacity.
  - Food security concerns if excess grains diverted.
- **Elimination Logic:**
  - (a)  E25, not E20.
  - (b)  Correct ratio.
  - (c)  E30.
  - (d)  E40.
- **Current Affairs:** E20 fuel launched in 2023 in select cities; gradual nationwide rollout planned.

### 32) Correct Option: (a) Rhinos

#### Full Explanation

- **Concept:** Inject **radioactive isotopes** into rhino horns to make them detectable in scanners and unattractive for poachers.
- **Origin:** University of Witwatersrand, South Africa, in collaboration with wildlife reserves.
- **How It Works:**
  - Safe, low-dose radioisotopes → harmless to the rhino but easily picked up by radiation detectors at airports and borders.
- **Objective:**
  - Increase risk for traffickers.
  - Enable law enforcement to trace horn movement.
- **Conservation Context:**
  - South Africa has ~80% of world’s rhino population.
  - Poaching driven by demand in East Asia for traditional medicine and status symbols.
- **Elimination Logic:**
  - (a)  Rhinos targeted.
  - (b)  Tigers not involved.
  - (c)  Pangolins not targeted.
  - (d)  Elephants not involved (ivory issue, but not this project).
- **Current Affairs:** Pilot phase results expected to be a model for other species in future.

### 33) Correct Option: (a) It is the world’s highest saltwater lake with a portion in China

#### Full Explanation

- **Geography:**
  - Altitude: **4,350 m** — one of the highest saltwater lakes in the world.
  - 134 km long → ~1/3 in India (Ladakh), ~2/3 in China (Tibet Autonomous Region).
- **Ecology:**
  - Despite salinity, freezes in winter (Nov–Mar).
  - Breeding ground for migratory birds (bar-headed geese, Brahminy ducks).
- **Strategic Importance:**
  - Near LAC — site of India–China border standoffs (2020).
  - Important for defence logistics in eastern Ladakh.
- **Tourism:**
  - Eco-tourism regulated to avoid ecological damage.

- **Elimination Logic:**
  - (a)  True facts.
  - (b)  Freezes fully despite being saline.
  - (c)  No tigers here.
  - (d)  Not freshwater, and India doesn't have majority portion.

**34) Correct Option: (a) II and III only**

### Full Explanation

- **Establishment:** 2000, under **Ministry of AYUSH**.
- **Mandate:** Promote conservation, cultivation, and sustainable management of medicinal plants.
- **Functions:**
  1. **In-situ & ex-situ conservation** (e.g., Medicinal Plant Conservation Areas).
  2. **Quality assurance & certification** to standardize herbal products.
  3. **Support R&D** in cultivation techniques, processing.
- **Not a Function:** Price regulation (market prices determined by industry & trade).
- **Significance:**
  - Supports Ayurveda, Siddha, Unani systems.
  - Boosts India's herbal exports.
- **Elimination Logic:**
  - (I)  Wrong — no pricing powers.
  - (II)  Correct — Established in 2000 under AYUSH.
  - (III)  Correct — Certification role.
- **Current Affairs:** Focus on medicinal plant clusters under Atmanirbhar Bharat.

**35) Correct Option: (d) I, III and IV only**

### Full Explanation

- **Profile:**
  - Largest tortoise in mainland Asia.
  - IUCN: **Critically Endangered**.
  - Protected under **Schedule I, Wildlife (Protection) Act, 1972**.
  - Keystone species — influences forest floor ecology.
- **Special Trait:** Nests **above ground** (unlike most tortoises which dig nests).
- **Distribution:** Northeast India, Bangladesh, Myanmar, Thailand, Malaysia — not limited to Indian subcontinent.
- **Threats:** Habitat loss, hunting for meat, pet trade.
- **Conservation Measures:** Captive breeding & reintroduction in Arunachal Pradesh.
- **Elimination Logic:**
  - (I)  True (above-ground nesting).
  - (II)  Wrong — wider Asian range.
  - (III)  Largest in mainland Asia.
  - (IV)  Critically Endangered + Schedule I listed.

**36) Correct Answer: (d) II and III only**

### Detailed Explanation

#### Concept

- **ESG (Environmental, Social, Governance):** A framework for evaluating corporate performance beyond profit—covering sustainability, ethics, and transparency.
- Increasingly adopted by **investors, regulators, and global markets** as a non-financial performance metric.

#### Policy Context in India

- **No explicit ESG mandate in Companies Act, 2013** — but related provisions exist (energy conservation, CSR, workplace safety, disclosures).
- **Business Responsibility and Sustainability Reporting (BRSR):**
  - Mandatory for **top 1000 listed companies** (by market capitalization) since FY 2022–23.
  - Overseen by **SEBI** to improve transparency.

#### Risks & Challenges

- **Greenwashing:** Misrepresentation of ESG credentials.
- **Inconsistent Implementation:** Especially among mid- and small-cap companies.
- **Lack of uniform global standards:** Difficult comparability.

#### Elimination Logic

- Statement I  - No explicit ESG mandate for *all* listed companies in the Companies Act.

- Statement II  – Greenwashing & inconsistent compliance are documented risks.
- Statement III  – BRSR mandatory for top 1000 listed entities.

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

### Detailed Explanation

#### Concept

- A debt management tool where the government **replaces short-term bonds with longer-term ones**.
- Purpose: **Smooth repayment obligations**, manage interest rate risks, and improve debt sustainability.

#### Mechanism in India

- Can be done:
  1. **With RBI** (for internal debt restructuring).
  2. **With market participants** via auctions.
- Does **not** increase total debt—only changes maturity profile.

#### Benefits

- Reduces near-term repayment pressure.
- Improves fiscal space.
- Supports sovereign bond market depth.

#### Elimination Logic

- Statement I  – Both RBI and market participants can be involved.
- Statement II  – Extends duration to reduce immediate repayment burdens.
- Statement III  – Not aimed at increasing total debt.

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

### Detailed Explanation

#### Scheme Overview

- **Centrally Sponsored Scheme** under **Mission Shakti** → sub-scheme **Samarthya**.
- Objective: Improve **maternal health** and **child nutrition**, partially compensate wage loss.

#### Features

- ₹5,000 for **first child** (two installments).
- ₹6,000 for **second girl child** (one installment).
- Direct Benefit Transfer (DBT) mode.
- Linked to **National Food Security Act, 2013** (Section 4).

#### Significance

- Encourages **institutional delivery**.
- Promotes **girl child welfare**.
- Strengthens **nutrition security**.

**Elimination Logic:** All three statements  correct, hence answer is I + II + III.

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

### Detailed Explanation

#### Regulatory Pillars

1. **CSR (Section 135, Companies Act, 2013)** – 2% of average net profit over last 3 years for eligible companies.
2. **National Guidelines on Responsible Business Conduct (NGRBCs)** – Issued by MCA for ESG principles.
3. **BRSR Core** – SEBI mechanism to monitor ESG disclosures & prevent greenwashing.

#### Purpose

- Build **corporate accountability**.
- Align Indian businesses with **SDGs** and **Paris Agreement** commitments.

#### Elimination Logic

## An Institute for Civil Services

- Statement I  – BRSR Core targets greenwashing.
- Statement II  – CSR mandate correct.
- Statement III  – NGRBCs issued by MCA.

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

### Detailed Explanation

#### Policy Change

- **Original target:** 20% ethanol blending by 2030.
- **Revised (2022):** Advanced to 2025–26.
- E20 → 80% petrol + 20% ethanol.

#### Benefits

- **Energy security:** Cuts crude oil import bills.
- **Environmental:** Lowers emissions.
- **Rural economy:** Boosts demand for biofuel crops.

#### Link between Statements

- Statement I: Policy advancement.
- Statement II: Reason — better fuel quality, rural income boost.
- Statement II directly explains Statement I.

**41) Correct Answer: (b) Comprehensive welfare of transgender persons**

### Detailed Explanation

#### Background

- **Social Challenge:** Transgender persons in India face **systemic discrimination** in access to education, healthcare, housing, jobs, and legal rights.
- **Legal Mandate:** Based on:
  - **NALSA v. Union of India (2014)** – Recognized transgender persons as the “third gender” with right to self-identification.
  - **Transgender Persons (Protection of Rights) Act, 2019** – Prohibits discrimination, mandates welfare measures.

#### About SMILE

- **Full Form:** Support for Marginalized Individuals for Livelihood and Enterprise.
- **Ministry:** Social Justice & Empowerment.
- **Key Components:**
  - **Garima Greh** – Shelter homes for transgender persons.
  - **Skill Development** – Integration with PM-DAKSH.
  - **Health & Education** – Gender Inclusion Fund support.
  - **Legal Aid & Identity** – Online Transgender ID certification portal.

#### Why Significant Now

- Census 2011: 4.8 lakh transgender persons (likely underreported).
- Aligns with **SDG 10 (Reduced Inequalities)** and **constitutional principles of equality (Art. 14, 15, 21)**.

**Elimination Logic:** Option (b) matches exactly; others target different beneficiary groups (rural women, senior citizens, maternal health).

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

### Detailed Explanation

#### Background

- **Nature of Dispute:** Odisha (downstream) alleges Chhattisgarh's barrages reduce non-monsoon flows; Chhattisgarh cites irrigation needs.
- **Legal Basis:**
  - **Article 262:** Parliament may adjudicate inter-state river disputes.
  - **Inter-State River Water Disputes Act, 1956:** Empowers **Central Government** to form tribunals.

#### Key Facts

- MWDT constituted in **2018** by the Central Government.
- Tribunal verdicts are binding but implementation often delayed.

#### Elimination Logic

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- Statement I  – Correct under ISRWD Act, 1956.
- Statement II  – The President has no role; power lies with Parliament via Central Govt.

**43) Correct Answer: (c) II and IV only**

### Detailed Explanation

#### Background

- **Regulation:** Transplantation of Human Organs and Tissues Act, 1994 (amended 2011).
- **Objective:** Ensure ethical organ donation, prevent commercial trading.

#### Key Points

- **National Organ Transplant Program** – Works via:
  - **NOTTO** (National)
  - **ROTO** (Regional)
  - **SOTTO** (State)
- India ranks **3rd globally** in total organ transplants.

#### Recent Reforms

- Removed **domicile, age, registration fee** for deceased donor recipients.
- Promoting “One Nation One Policy” approach.

#### Elimination Logic

- Statement I  – India’s rank is 3rd globally.
- Statement II  – Reform removing barriers is correct.
- Statement III  – Program is multi-tier, not just NOTTO.
- Statement IV  – Act bans commercial dealing.

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

### Detailed Explanation

#### Background

- Origin: Developed in Kashmir between 8th–9th century CE.
- Family: Part of **Brahmic scripts**.
- Usage: Primarily for **Sanskrit**, later for Kashmiri.

#### Spread & Evidence

- Geographical: Kashmir, Himachal Pradesh, Punjab.
- Archaeological finds:
  - Ganesh statue (Gardez, Afghanistan).
  - Uma Maheshwara sculpture (near Kabul).

#### Elimination Logic

- All three statements are correct; evidence supports wide spread and Brahmic lineage.

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

### Detailed Explanation

**Purpose:** ISRO’s **analog mission facility** for simulating extraterrestrial environments (like Mars) on Earth.

**Location Rationale: Tso Kar Valley, Ladakh:** High UV radiation, low pressure, extreme cold, saline permafrost — similar to Martian surface.

#### Activities

- Studies in human health, genomics, psychology.
- Testing equipment and mission protocols.

#### Comparison with Gaganyaan

- HOPE: Research/training for planetary exploration.
- Gaganyaan: Crewed orbital mission around Earth.

#### Elimination Logic

- Statement I  – True.
- Statement II  – Describes Gaganyaan, not HOPE.

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

### Detailed Explanation

#### Background

- India = **world's largest vegetable oil importer**.
- Palm oil = ~59% of imports; rest from soybean and sunflower.

**Trends:** Import dependence reduced from **63.2% (2015-16)** → **54.9% (2021-22)** due to domestic initiatives.

#### Government Initiatives

- **NMEO-OP** – Boost domestic oil palm.
- **NFSM-OS&OP** – Increase productivity in oilseeds.

#### Elimination Logic

- Statement I  – True; India leads globally in imports.
- Statement II  – Palm oil is largest import but dependence has decreased, not increased.

**47) Correct Answer: (b) Ministry of Petroleum and Natural Gas**

### Detailed Explanation

#### Background

- Launched **2016** to provide **clean cooking fuel** (LPG) to deprived households, especially rural women, to:
  - Reduce **indoor air pollution**.
  - Improve **public health**.
  - Reduce **drudgery** from firewood collection.
  - Empower women socially & economically.

#### Key Features

- Target group: Adult women from **poor households** (including SC/ST, Most Backward Classes, PMAY beneficiaries, AAY, forest dwellers).
- **Financial Support:** Deposit-free LPG connection + first refill subsidy.
- **Implementing Ministry:** Ministry of Petroleum and Natural Gas through Oil Marketing Companies.

#### Current Relevance

- Over **10 crore connections** provided.
- Linked to **SDG 3 (Good Health) & SDG 7 (Clean Energy)**.

#### Elimination Logic

- (a), (c), (d) → Ministries unrelated to LPG supply implementation.
- (b) → Correct nodal ministry.

**48) Correct Answer: (b) Neutralizes  $\beta$ -lactamase enzymes**

### Detailed Explanation

#### Background

- **Antimicrobial Resistance (AMR):** When pathogens evolve resistance to drugs, leading to ineffective treatments.
- **$\beta$ -lactam antibiotics:** Commonly used (e.g., penicillins, carbapenems) but targeted by  $\beta$ -lactamase enzymes in resistant bacteria.

#### About Compound 3b

- Developed to **inhibit  $\beta$ -lactamase** — particularly **KPC-2** enzymes in *Klebsiella pneumoniae*.
- Restores potency of existing  $\beta$ -lactam antibiotics (e.g., meropenem).

#### Policy Context

- Supports **WHO Global Action Plan on AMR (2015)**.
- Addresses WHO's "critical priority pathogens" list.

#### Elimination Logic

## An Institute for Civil Services

- (a) → Not a vaccine.
- (c) → Does not directly inhibit cell wall synthesis.
- (d) → Not an immune booster.

**49) Correct Answer: (b) Promote EV adoption and manufacturing**

### Detailed Explanation

#### Background

- Central Sector Scheme by **Ministry of Heavy Industries**.
- Objective: Support EV ecosystem through **subsidies, charging infra, and R&D**.

#### Key Components

- Incentives for **e-2W, e-3W, e-buses**.
- Grants for **charging infrastructure**.
- Modernization of vehicle testing facilities.

#### Current Significance

- Linked to **Net Zero targets by 2070**.
- Supports **energy security** by reducing oil imports.

#### Elimination Logic

- (a) → Solar power unrelated.
- (c) → Biofuels unrelated.
- (d) → LPG subsidies unrelated.

**50) Correct Answer: (a) Gujarat**

### Detailed Explanation

#### Background

- Located in **Porbandar & Devbhumi Dwarka districts**, Gujarat.
- Declared sanctuary in **1979**.
- Identified as **potential second home** for Asiatic lions to reduce risk of single-population dependency.

#### Current Significance

- Habitat diversification for endangered species.
- Supports **biodiversity and ecological resilience**.

**Elimination Logic:** Options b, c, d = wrong states.

