

Solutions

DATE : (8th Sept – 14th Sept)

1. Answer: (a) Central Government approval is needed for Schedule I animals; State Governments for others.

Explanation:

1) Core Concept

- **Wildlife (Protection) Act, 1972** = principal law for protecting wild animals, birds, plants.
- **Section 12** → regulates **translocation**, requiring official permission.

2) Why Correct (a)

- **Schedule I species (tiger, elephant, rhino, etc.)** → Central Govt approval needed.
- **Other wild animals** → State Govt approval.

3) Why Others Wrong

- **(b):** Supreme Court = judicial body, not approving authority.
- **(c):** Reverses authority structure.
- **(d):** National Board for Wildlife = advisory, not sanctioning body.

4) Current Affairs Link

- **Tiger translocation to Sahyadri TR (2025)** underlines operational use of WPA.

5) Keywords

- **WPA 1972; Section 12; Schedule I; Translocation; Central approval**

6) Conclusion

➡ Translocation = legal conservation strategy under **Central/State approval framework**.

2. Answer: (a) Immediate ceasefire in Gaza and establishment of a sovereign Palestinian State.

Explanation:

1) Core Concept

- **New York Declaration** = UNGA initiative for **Middle East peace**.

2) Why Correct (a)

- Calls for **immediate ceasefire** in Gaza.
- Advocates for **two-state solution** (independent Palestine alongside Israel).

3) Why Others Wrong

- **(b):** Climate change/maritime = irrelevant.
- **(c):** Cyprus issue unrelated.
- **(d):** Korean nuclear disarmament not included.

4) Current Affairs Link

- UNGA debates (2024–25): India reaffirmed support for **two-state solution**.

5) Keywords

- **Ceasefire; Gaza; Two-state solution; UNGA; Palestine**

6) Conclusion

➡ Declaration = step toward **sustainable peace in West Asia**.

3. Answer: (c) United Nations Single Convention on Narcotic Drugs (1961).

Explanation:

1) Core Concept

- **Gum opium** = raw latex → source of medicinal alkaloids (morphine, codeine).
- Subject to **strict global regulation**.

2) Why Correct (c)

- **1961 UN Convention** gave **exclusive authorization to India** for gum opium.
- 11 other countries grow poppy but cannot extract gum.

3) Why Others Wrong

- **(a):** WHO = health, not production regulation.
- **(b):** ICJ = judiciary, no regulatory role.
- **(d):** ECOSOC oversees policy, but not exclusive rights.

4) Current Affairs Link

- India's **Central Bureau of Narcotics** regulates cultivation in **MP, Rajasthan, UP**.
- Global pharma relies on India for alkaloids.

5) Keywords

- **1961 UN Convention; Gum opium; CBN; NDPS Act; Alkaloids**

6) Conclusion ➡ India = **world's only legal gum opium producer**, ensuring **medical supply & control**.

4. Answer: (a) I only

Explanation:

1) Core Concept

- **SWAGAT-FI** = Single Window Access for **trusted foreign investors**.
- **Accredited investors** = wealthy individuals/institutions allowed higher-risk investments.

2) Why Correct (a)

- **Statement I:** Accredited investors allowed in **AI-only AIF schemes** (unregistered securities).
- **Statement II:** Wrong – SWAGAT-FI limited to FPIs/FVCIs in **listed securities**, not mutual funds/real estate.

3) Why Others Wrong

- (b), (c), (d): include false statement II.

4) Current Affairs Link

- Reforms (2024–25) = strengthen India's **capital markets** & attract global investors.

5) Keywords

- **SEBI; SWAGAT-FI; Accredited investors; AIF; FPIs**

6) Conclusion

➡ Reform = balance between **market openness** & **regulatory safeguards**.

5. Answer: (d) I and II only

Explanation:

1) Core Concept

- **Manuscripts** = handwritten works on palm leaf, birch bark, paper, etc.
- Vital for **cultural heritage & knowledge transfer**.

2) Why Correct (d)

- **Statement I:** ✓ Handwritten works, ≥75 years old.
- **Statement II:** ✓ ~75% in **Sanskrit**, rest in regional languages.
- **Statement III:** ✗ Printed/lithographs ≠ manuscripts.

3) Why Others Wrong

- (a), (b), (c) = partial/wrong inclusions.

4) Current Affairs Link

- **National Manuscripts Mission + digitization initiatives** under Digital India.

5) Keywords

- **Handwritten heritage; Sanskrit; Digitization; NMM; Preservation**

➡ Manuscripts = **handwritten cultural archives**, majority in **Sanskrit**, core to **heritage conservation**.

6. Answer: (a) III and IV only

Explanation:

1) Core Concept

- Russia = **largest country**, spanning Europe & Asia.
- Physiography → plains, Siberian plateau, Ural Mountains, Caucasus.

2) Correct Statements

- **(III):** ✓ Ural Mountains = major mountain range, dividing Europe & Asia.
- **(IV):** ✓ Gora El'brus (5,642 m) = highest peak in Europe, located in Russia's Caucasus.

3) Incorrect Statements

- **(I):** ✗ Kamchatka lies between Bering Sea, Pacific Ocean, Sea of Okhotsk.
- **(II):** ✗ Siberia = ~75% of Russia, not "less than half."

4) Keywords

- **Ural; El'brus; Siberia; Kamchatka; Eurasian geography**

➡ Russia's geography is marked by **strategic mountains & Siberian vastness**, shaping its **climate, economy & power projection**.

7. Answer: (a) I and II only

Explanation:

1) Core Concept

- India = **only country** legally producing **gum opium** under **UN Conventions**.
- Domestic regulation via **NDPS Act, 1985**.

2) Correct Statements

- **(I):** ✓ India uniquely authorized under **1961 UN Convention**.
- **(II):** ✓ Cultivation allowed only in **MP, Rajasthan, UP**.

3) Incorrect Statement

- **(III):** ✗ Farmers cannot sell in markets → entire produce must go to **Central Bureau of Narcotics (CBN)**.

4) Keywords

- **NDPS Act; UN 1961 Convention; Gum opium; CBN; MP-RJ-UP**

➡ India's unique **monopoly in gum opium** ensures global medical supply under strict state control.

8. Answer: (d) I, II and III

Explanation:

1) Core Concept

- **Cicadas (Cicadoidea)** = insects with unique life cycles & loud acoustic features.
- Recently reported in **Silent Valley National Park, Kerala**.

2) Correct Statements

- **(I):** ✓ 3-stage life cycle → egg → nymph → adult.
- **(II):** ✓ Only **males produce sound** via tymbals.
- **(III):** ✓ Found mainly in **warm & temperate regions** globally.

3) Ecological Role

- Part of **food chains**, serve as **ecological indicators** of environmental changes.

4) Keywords

- **Cicadas; Tymbals; 3-stage cycle; Silent Valley NP; biodiversity indicators**

➡ Cicadas = **bio-indicators of ecosystem health**, linking entomology to **climate and biodiversity studies**.

9. Answer: (a) I, II and III

Explanation:

1) Core Concept

- **Gold nanoparticles (AuNPs)** = 1–100 nm particles with **unique optical, chemical & biomedical uses**.

2) Correct Statements

- **(I):** Used in **biosensors, imaging, diagnostics, drug delivery**.
- **(II):** Size = **1–100 nm**.
- **(III):** Aggregation reduces **reliability & stability**.

3) Current Significance

- Used in **cancer therapy, biosensors, nanomedicine**.
- Key to **future nanotechnology applications**.

4) Keywords

- **AuNPs; Nanomedicine; Biosensors; Photothermal; Aggregation**

5) Conclusion AuNPs = **frontier nanotechnology material** with medical and scientific breakthroughs, but **aggregation control is critical**.

10. Answer: (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I.

Explanation:

1) Core Concept

- **Tiger translocation** = moving tigers between reserves to balance **ecology & human safety**.
- Legal backing under **WPA 1972**; oversight by **NTCA & MoEFCC**.

2) Correct Statements

- **(I):** Restores **predator-prey balance** in underpopulated reserves.
- **(II):** Reduces **human-tiger conflict** in overpopulated reserves.

3) Why (b) is Correct

- Both statements correct, but II is **not an explanation** of I → independent justification.

4) Current Relevance

- **2025:** Tigers moved from **Tadoba & Pench** → **Sahyadri TR** to revive local extinction.

5) Keywords

- **NTCA; Sahyadri TR; Predator-prey; Human-tiger conflict; WPA 1972**

6) Conclusion Translocation = **practical conservation tool** for long-term tiger survival, though dependent on **habitat suitability & community support**.

11. Answer: (c) UMANG

Explanation:

1) Core Concept

- AI in governance = improves **public service delivery, accessibility, multilingual inclusivity, and grievance redressal**.

2) Why Correct (c)

- **UMANG (Unified Mobile Application for New-age Governance):**

- Provides access to **multiple govt. services** on one platform.
- AI-enabled features: **chatbots, grievance handling, citizen queries**.
- Scales up for **large-scale citizen interactions**.

3) Why Others Wrong

- **(a) Bhashini:** Multilingual access, not grievance platform.
- **(b) Diella:** Linked to tenders, not citizen service delivery.
- **(d) RAHAT:** AI in **disaster relief**, not routine governance services.

4) Current Relevance

- UMANG integrates with **Digital India & AI-powered governance push (2023–25)**.

5) Keywords

- **UMANG; AI-governance; Grievance redressal; Digital India**

6) Conclusion UMANG = **flagship AI platform** for citizen-centric governance in India.

12. Answer: (a) A recombinant chimeric malaria vaccine targeting multiple stages of *Plasmodium falciparum*

Explanation:

1) Core Concept

- **AdFalcivax** = India's first **indigenous multi-stage malaria vaccine**.
- Targets **Plasmodium falciparum** – deadliest malaria parasite.

2) Why Correct (a)

- Combines **multiple antigens** across parasite stages → broader protection.
- Recombinant DNA technology = stronger, longer-lasting immunity.

3) Why Others Wrong

- **(b):** Dengue = wrong.
- **(c):** Polio = wrong.
- **(d):** Tuberculosis = wrong.

4) Current Relevance

- Licensed in India (2024–25).
- Supports **domestic vaccine R&D** & India's role in **global malaria control**.

5) Keywords

- **AdFalcivax; Plasmodium falciparum; Multi-stage vaccine; DNA technology**

6) Conclusion AdFalcivax = India's **game-changer in malaria control** with dual-stage protection.

13. Answer: (b) A small herb with deep reddish leaves and white flowers

Explanation:

1) Core Concept

- **Murikooti Pacha (Red Ivy):** Indigenous herb of tropical India & SE Asia.
- Known for **wound-healing** properties.

2) Why Correct (b)

- **Morphology:** Small herb, **reddish leaves, white flowers.**
- Contains **Acteoside** → proven wound-healing compound.

3) Why Others Wrong

- **(a):** Not a sub-Himalayan shrub.
- **(c):** Not a tree.
- **(d):** Not marine algae.

4) Current Relevance

- Studies bridge **Ayurveda & pharmacology.**
- Shows potential for **affordable wound care solutions.**

5) Keywords

- **Murikooti Pacha; Red Ivy; Acteoside; Ethnobotany; Ayurveda**

6) Conclusion → Murikooti Pacha = example of **traditional knowledge validated by science.**

14. Answer: (c) I, II, III and IV

Explanation:

1) Core Concept

- **Critical minerals:** essential for clean energy & tech (lithium, cobalt, graphite).
- **Strategic minerals:** linked to national security (uranium, thorium).

2) Why All Four Correct

- **Lithium (I):** ✓ Critical for EV batteries.
- **Thorium (II):** ✓ Strategic → nuclear energy.
- **Uranium (III):** ✓ Strategic → nuclear fuel.
- **Cobalt (IV):** ✓ Critical → battery technologies.

3) Policy Link

- Mining reforms (2023–25) under **MMDR Act** → boost exploration, reduce imports.

4) Current Relevance

- India imports **90% of lithium & cobalt** → push for **self-reliance.**

5) Keywords

- **Critical minerals; Strategic minerals; MMDR Act; Lithium; Uranium**

6) Conclusion → Securing these minerals = vital for **energy transition + strategic security.**

15. Answer: (b) I and II only

Explanation:

1) Core Concept

- **Green finance** = capital flows directed to projects with **economic + environmental benefits.**
- Includes **green bonds, climate funds, GSSS bonds.**

2) Why Correct (I & II)

- **(I):** ✓ Green finance restructures investments for sustainability.
- **(II):** ✓ Green Climate Fund → \$100 billion annual mobilization goal.

3) Why Incorrect

- **(III):** ✗ Wrong – GSSS bonds include **green, blue, AND yellow (solar) bonds.**

4) Current Relevance

- India needs **\$170 billion annually till 2030** for climate goals.
- GSSS bonds issued in India (2023–24) to fund renewable projects.

5) Keywords

- **Green finance; GCF; GSSS bonds; Climate targets; Sustainable investments**

6) Conclusion → Green finance = backbone of India's **climate strategy & sustainable growth model.**

16. Answer: (b) II, III and IV only

Explanation:

1) Core Concept

- **Vinoba Bhave** = Gandhian leader, social reformer, and freedom fighter.
- Known as the **“spiritual heir of Gandhi”** and father of the **Bhoodan Movement (1951).**

2) Correct Statements

- **(II):** ✓ Bhoodan = voluntary, non-violent land redistribution to the landless.
- **(III):** ✓ First individual satyagrahi (1940) during Individual Civil Disobedience.
- **(IV):** ✓ Founded **Gram-seva Mandal (1934)** for rural upliftment.

3) Incorrect Statement

- **(I):** ✗ *Nai Talim* (basic education) is linked to **Mahatma Gandhi**, not Vinoba.

4) Keywords

- **Bhoodan; Gram-seva Mandal; First satyagrahi; Gandhian ideals**

5) Conclusion → Vinoba Bhave = symbol of **non-violence, rural justice, and Gandhian constructive work.**

17. Answer: (d) II, III and IV only

Explanation:

1) Core Concept

- **CPA (1911):** Oldest Commonwealth body, fosters **parliamentary cooperation & democracy.**
- Links **180+ legislatures** worldwide.

2) Correct Statements

- **(II):** ✓ Established in 1911.
- **(III):** ✓ Membership = over 180 legislatures/branches.

- (IV): Aims = inter-parliamentary collaboration & best practices.

3) Incorrect Statement

- (I): HQ Secretariat is in **London**, not New Delhi.

4) Keywords

- CPA 1911; 180 legislatures; London HQ; Parliamentary democracy

5) Conclusion CPA = global platform for **dialogue, governance, and democratic strengthening**.

18. Answer: (b) I, III and IV only

Explanation:

1) Core Concept

- FTI-TTP (2024): Indian govt's **trusted traveller programme** for quick immigration.
- Promotes **ease of travel** for citizens & OCI cardholders.

2) Correct Statements

- (I): Ensures ~30-second clearance for registered travellers.
- (III): Launched at **Delhi Airport (2024)**.
- (IV): Extended to 13 other airports.

3) Incorrect Statement

- (II): OCI cardholders also eligible, not just Indians.

4) Keywords

- FTI-TTP; 30-second clearance; Delhi launch; OCI eligibility

5) Conclusion FTI-TTP = tech-driven reform for **efficient travel, tourism, and global mobility**.

19. Answer: (d) I only

Explanation:

1) Core Concept

- DRI = tool created by the **15th Finance Commission** to assess disaster risk across states.
- Links **fund allocation** with hazard/vulnerability exposure.

2) Correct Statement

- (I): Exposure parameters = **Population & GDP**.

3) Incorrect Statements

- (II): Developed by **15th**, not 16th, Finance Commission.
- (III): Includes **hazards, vulnerabilities, and exposures**, not hazards alone.

4) Current Relevance

- Guides **disaster fund allocations**, ensures **scientific, equitable planning**.

5) Keywords

- 15th FC; Hazards; Vulnerabilities; Population & GDP; DRI

6) Conclusion DRI = **scientific basis** for **disaster resilience funding** in India.

20. Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation:

1) Core Concept

- EIA 2006 (under EPA 1986): mandates **public consultation** for projects.
- Exemption now extended to **defence-linked & strategic mineral mining projects**.

2) Why Both Statements Correct

- (I): Strategic mining projects (atomic/critical minerals) = exempted from **public hearings**.
- (II): Justification = secure **supply chains**, reduce imports, & fast-track approvals.
- (II explains I): Exemption exists *because of security & supply needs*.

3) Current Relevance

- India imports >90% of lithium, cobalt → exemption ensures **domestic resource security**.
- Debate continues over **environment vs strategic needs**.

4) Keywords

- EIA 2006; Critical minerals; Defence projects; National security; Exemption

5) Conclusion Exemption = balance between **national security priorities** and **environmental democracy**.

21. Answer: (c) Rock or sediment formations containing freshwater located beneath the sea floor

Explanation:

1) Core Concept

- **Offshore aquifers** = underground freshwater reservoirs beneath the seabed.
- Potential source for **water-scarce regions**, especially with **climate-induced droughts**.

2) Why Correct (c)

- Freshwater trapped in **rock/sediment formations** under the ocean.
- **Cap rock** prevents seawater mixing.
- May hold **up to 10% of global fresh groundwater**.

3) Why Others Wrong

- (a): Not saline bodies.
- (b): Not oil/gas reservoirs.
- (d): Not volcanic/mineral deposits.

4) Current Relevance

- Viewed as **strategic reserves** for future freshwater security.

5) Keywords

- Offshore aquifers; Freshwater reserves; Cap rock; Water security

6) **Conclusion** → Offshore aquifers = **hidden freshwater frontier** with high potential but technical/ecological challenges.

22. Answer: (b) II only

Explanation:

1) Core Concept

- REMs = strongest permanent magnets, used in **EVs, renewable energy, defense tech**.
- Made from alloys of **rare earth elements** like **neodymium, praseodymium, dysprosium**.

2) Correct Statement

- (II): ✓ REMs are made from rare earth alloys (Nd, Pr, Dy).

3) Incorrect Statement

- (I): ✗ India not self-sufficient → imports almost all REMs despite 5th largest reserves.

4) Current Relevance

- Supply chain risks (China dominates global REM processing).
- India pushing for **domestic REM production & processing**.

5) Keywords

- REMs; Neodymium; EVs; Supply chain; Import dependence

6) **Conclusion** → REMs = **strategic technology enablers**, India still **import-dependent**.

23. Answer: (c) Both I and II

Explanation:

1) Correct Statements

- (I): ✓ Located beneath the sea, extending up to **90 km offshore**.
- (II): ✓ **Cap rock of clay-rich sediments** prevents seawater mixing.

2) Significance

- Could act as **buffer reserves** against water scarcity.
- Challenges = **high cost, ecological risks, governance issues**.

3) Keywords

- Offshore aquifers; 90 km extension; Cap rock; Climate resilience**

4) **Conclusion** → Offshore aquifers = **critical but underexplored freshwater reserves**.

24. Answer: (b) I and IV only

Explanation:

1) Core Concept

- Qatar** = small Gulf state, **major LNG exporter**, influential in West Asia.

2) Correct Statements

- (I): ✓ Shares **land border with Saudi Arabia**.
- (IV): ✓ Capital = **Doha**.

3) Incorrect Statements

- (II): ✗ Has 3rd largest **natural gas reserves**, not oil.
- (III): ✗ Borders Persian Gulf/Gulf of Bahrain, but not included in answer key.

4) Current Relevance

- Major **natural gas supplier**, hosts **2022 FIFA World Cup**, important for **India's energy ties**.

5) Keywords

- Qatar; Doha; Saudi border; Natural gas hub; Gulf geopolitics**

6) **Conclusion** → Qatar = **energy-rich Gulf power**, key to India's **energy security**.

25. Answer: (a) I, III and IV only

Explanation:

1) Core Concept

- Adi Sanskriti** = digital platform to **preserve, promote & market tribal artforms**.
- First global initiative dedicated to **tribal knowledge systems**.

2) Correct Statements

- (I): ✓ **Adi Haat** = online tribal artisan marketplace (linked with **TRIFED**).
- (III): ✓ World's first **digital tribal art learning platform**.
- (IV): ✓ **Adi Sampada** = repository covering 5 themes (artefacts, livelihood, traditions).

3) Incorrect Statement

- (II): ✗ **Adi Vishwavidyalaya** offers **45+ courses**, not limited to dance & music.

4) Current Relevance

- Launched by **Ministry of Tribal Affairs** to **empower tribal communities digitally**.

5) Keywords

- Adi Sanskriti; TRIFED; Digital tribal heritage; Adi Haat; Adi Sampada**

6) **Conclusion** → **Adi Sanskriti** = **digital empowerment of tribal communities through heritage + livelihoods**.

26. Answer: (d) I, II and III

Explanation:

1) Core Concept

- Mauritius** = India's closest partner in the **Indian Ocean Region (IOR)**.
- Ties built on **diaspora, security, and economic partnerships**.

2) Correct Statements

- (I): ✓ Mauritius is central to India's **MAHASAGAR Vision** and *Neighbourhood First Policy*.
- (II): ✓ First **Girmitiyas** (indentured labourers) taken from **Puducherry in 1729**.
- (III): ✓ ~70% of Mauritian population is of **Indian origin**.

3) Current Relevance

- India provides **defence cooperation, Line of Credit, infrastructure aid.**
- Mauritius supports India in **IOR security & regional diplomacy.**

4) Keywords

- **MAHASAGAR Vision; Neighbourhood First; Girmitiya; Diaspora diplomacy**

5) Conclusion

➔ Mauritius = **strategic, cultural, and economic bridge** for India in the IOR.

27. Answer: (c) II and III only

Explanation:

1) Core Concept

- **SSLV** = new generation ISRO launcher for **small satellites (≤500 kg).**

2) Correct Statements

- **(II):** Designed for **rapid, on-demand launches.**
- **(III):** Launches satellites up to **500 kg into LEO.**

3) Incorrect Statement

- **(I):** **SSLV = 3 solid propulsion stages + 1 liquid-based terminal stage** (not all solid).

4) Current Relevance

- Competes in **global small-satellite market.**
- Supports **India's space commercialization & Gaganyaan ecosystem.**

5) Keywords

- **SSLV; ISRO; 500 kg LEO; On-demand launch**

6) Conclusion

➔ SSLV = India's tool for **affordable, quick space access.**

28. Answer: (d) I and II only

Explanation:

1) Core Concept

- **Black Aspergilli** = group of filamentous fungi with dual roles in **industry & health.**

2) Correct Statements

- **(I):** Some species = **pathogenic & carcinogenic.**
- **(II):** Widely used in **citric acid production & fermentation.**

3) Incorrect Statement

- **(III):** Not restricted to agriculture → major role in **industrial biotech.**

4) Current Relevance

- New species found in **Western Ghats** (India).
- Opportunities in **food processing + risks in biosafety.**

5) Keywords

- **Black Aspergillus; Citric acid; Fermentation; Pathogenic fungi**

6) Conclusion

➔ Black Aspergilli = **industrial assets + biosafety concerns.**

29. Answer: (a) I, II and III

Explanation:

1) Core Concept

- **NIC** = classification system for **economic activities**, vital for policy & statistics.

2) Correct Statements

- **(I):** First introduced in **1962** as Standard Industrial Classification.
- **(II):** Codes classify activities into **sectors, subsectors, detailed activities.**
- **(III):** Used in **policy-making & surveys** at central/state levels.

3) Current Relevance

- Draft **NIC 2025** (revision of NIC 2008) → aligns with **global standards.**

4) Keywords

- **NIC 1962; NIC 2008/2025; Economic classification; Policy planning**

5) Conclusion

➔ NIC = backbone of **economic governance & statistical analysis** in India.

30. Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation:

1) Core Concept

- **Rare Earth Magnets (REMs):** made from **Nd-Pr-Dy alloys**, strongest permanent magnets.
- Critical for **EVs, wind turbines, defence tech.**

2) Correct Statements

- **(I):** REMs are vital for functioning of **advanced technology supply chains.**
- **(II):** Their strength comes from **unique alloy composition.**
- **Explanation Link:** II explains I → composition → technological indispensability.

3) Current Relevance

- India has reserves but lacks **processing & manufacturing.**
- China dominates **global REM supply chains** → vulnerability.

4) Keywords

- **REMs; Nd-Pr-Dy alloys; EVs; Supply chain risk**

5) Conclusion

➔ REMs = **strategic backbone of modern industries**, supply chain security is vital.

31. Answer: (b) CLAMP reconstructs past climate conditions

Explanation:

1) Core Concept

- **CLAMP** = method of analyzing **fossil leaf morphology** to infer **paleoclimate**.
- Fossil leaves = “**climate fingerprints**.”

2) Mechanism

- Examines **leaf size, margin, and shape** → indicators of **rainfall, humidity, and temperature**.

3) Significance

- Nagaland study: showed how **Antarctica’s shifts influenced Indian monsoon**.
- Useful where other records (ice cores, sediments) are absent.

4) Keywords

- **CLAMP; Fossil leaves; Monsoon history; Paleoclimate reconstruction**

5) Conclusion

➡ CLAMP = vital tool for **reconstructing Earth’s past climates**, improving predictions of **future warming effects**.

32. Answer: (c) Leatherback Turtles and Nicobar Megapode

Explanation:

1) Core Concept

- **Galathea Bay** = globally recognized **primary nesting site** for **endangered species**.

2) Correct Species

- **Leatherback Turtle** (Schedule I, WPA 1972).
- **Nicobar Megapode** (Schedule I, WPA 1972).

3) Incorrect Species

- (a): Olive Ridley & Indian Skimmer ❌
- (b): Green Turtle & Siberian Crane ❌
- (d): Hawksbill Turtle & Gangetic Dolphin ❌

4) Relevance

- Development projects in Nicobar = concerns of **habitat loss + indigenous rights**.

5) Keywords

- **Galathea Bay; Leatherback Turtle; Nicobar Megapode; Biodiversity hotspot**

6) Conclusion

➡ Galathea Bay = **critical conservation zone**, balancing **development vs biodiversity**.

33. Answer: (c) Advocated for Linguistic Reorganization of States as Home Minister

Explanation:

1) Core Concept

- GB Pant: **freedom fighter, first CM of Uttar Pradesh, later Union Home Minister (1955–1961)**.

2) Major Contributions

- Key role in **States Reorganisation Act (1956)** → linguistic basis of states.
- Promoted **administrative efficiency + federal balance**.

3) Incorrect Options

- (a): Not Chief Justice ❌
- (b): Constitution drafting led by **B.R. Ambedkar** ❌
- (d): INA founded by **Subhas Chandra Bose** ❌

4) Keywords

- **GB Pant; States Reorganisation Act; Federalism; Home Minister**

5) Conclusion

➡ GB Pant = architect of **linguistic reorganization**, strengthening **national unity & federalism**.

34. Answer: (a) I and II only

Explanation:

1) Core Concept

- UKIIFB = joint initiative for **mobilizing global capital** into **India’s infrastructure sector**.

2) Correct Statements

- (I): Joint project between **NITI Aayog & City of London**.
- (II): Aims to align **India’s procurement standards** with international norms.

3) Incorrect Statement

- (III): ❌ Not launched at COP26 → mislink.

4) Current Relevance

- Strengthens **India-UK economic cooperation**.
- Helps address **risk management & transparency** in infrastructure financing.

5) Keywords

- **UKIIFB; NITI Aayog; City of London; Infrastructure finance**

6) Conclusion

➡ UKIIFB = bridge for **global investment flows into India’s infrastructure**.

35. Answer: (b) II only

Explanation:

1) Core Concept

- VP election = conducted differently from President’s election.

2) Correct Statement

- (II): Uses **Proportional Representation by Single Transferable Vote (STV) + Secret Ballot**.

3) Incorrect Statement

- (I): ❌ Electoral College includes **all MPs of Lok Sabha & Rajya Sabha (elected + nominated)**, not just elected.

4) Significance

- Ensures **broad consensus**, avoids **partisan domination**.
- VP = ex-officio **Chairperson of Rajya Sabha**.

5) Keywords

- **VP election; STV; Proportional representation; Electoral college**

6) Conclusion

➡ VP election = designed for **independence, inclusivity, and legitimacy**.

36. Answer: (c) II, III and IV only

Explanation:

1) Core Concept

- **NCAP** = India's flagship mission to fight **urban air pollution**.
- Launched to achieve measurable reductions in **particulate matter (PM10, PM2.5)**.

2) Correct Statements

- **(II):** ✓ Target = up to **40% reduction in PM10** by 2025–26 (baseline 2019–20).
- **(III):** ✓ Launched in **2019** by MoEFCC.
- **(IV):** ✓ Covers **131 cities in 24 States/UTs**.

3) Incorrect Statement

- **(I):** ✗ Implementing agency = **CPCB**, not Ministry of Urban Development.

4) Current Relevance

- Cities monitored via **PRANA portal**.
- Critical for **public health, SDGs, climate co-benefits**.

5) Keywords

- **NCAP; CPCB; PRANA portal; PM10 reduction target**

6) Conclusion

➡ NCAP = cornerstone of India's **urban environmental governance**.

37. Answer: (d) I, II and III only

Explanation:

1) Core Concept

- FRA = legislation to **correct historical injustices** to forest-dwelling communities.

2) Correct Statements

- **(I):** ✓ Recognizes **individual & community rights**.
- **(II):** ✓ Claims verified by **District Level Committees**.
- **(III):** ✓ Officially called *Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act*.

3) Incorrect Statement

- **(IV):** ✗ FRA recognizes both **individual & community rights** for PVTGs, not just individual.

4) Broader Impact

- Balances **tribal welfare + biodiversity conservation**.

- Strengthens **participatory forest governance**.

5) Keywords

- **FRA 2006; PVTGs; Individual & community rights; DLC verification**

6) Conclusion

➡ FRA = tool for **social justice + sustainable conservation**.

38. Answer: (c) Statement I is true, Statement II is false

Explanation:

1) Core Concept

- **IES** = Digital Public Infrastructure for India's **power sector**.
- Designed as an **open, interoperable ecosystem**.

2) Correct Statement

- **(I):** ✓ Conceptualized by **Ministry of Power** as a DPI.

3) Incorrect Statement

- **(II):** ✗ Not meant to centralize/restrict access → aims at **collaboration & innovation**.

4) Current Relevance

- **Utility Intelligence Platform** under development.
- Stakeholder survey launched for adoption.

5) Keywords

- **IES; DPI; Ministry of Power; Interoperability**

6) Conclusion

➡ IES = future of **digital governance in energy sector**, enabling **efficiency & innovation**.

39. Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation:

1) Core Concept

- **Childhood obesity crisis** linked to **aggressive expansion of UPFs**.

2) Correct Statements

- **(I):** ✓ Global rise in childhood obesity strongly tied to **availability & affordability of UPFs**.
- **(II):** ✓ Subsidies for raw ingredients + long shelf life make UPFs **cheap & accessible**, especially for poor families.

3) Global Significance

- Childhood obesity **doubled since 2000**.
- Particularly alarming in **South Asia**.

4) Keywords

- **UPFs; Childhood obesity; Agricultural subsidies; Food affordability**

5) Conclusion

➡ UPFs = structural driver of **childhood obesity**, requiring **stronger food policies & regulation**.

40. Answer: (d) None

Explanation:

1) Core Concept

- VP = **second-highest constitutional office**; ex-officio **Chairman of Rajya Sabha**; successor to President (if vacancy).

2) Article-wise Breakdown

- Article 63:** India shall have a Vice-President.
- Article 64:** VP shall be **Chairman of Rajya Sabha**.
- Article 65:** VP acts as **President in case of vacancy**.

3) Given Pairs

- Pair 1:** ✗ Mismatched (Article 64 wrongly described).
- Pair 2:** ✗ Mismatched (Article 65 wrongly described).
- Pair 3:** ✗ Mismatched (Article 63 wrongly described).

4) Keywords

- Articles 63–65; Vice-President; Succession; Rajya Sabha Chairperson**

5) Conclusion

None of the pairs are correct → Answer = (d) None.

41. Answer: (c) They can be developed rapidly once a virus's genetic sequence is known

Explanation:

- Core Concept:** mRNA vaccines deliver genetic instructions → host cells produce **antigen protein** → immune response without live virus.
- Advantages:** Speed, adaptability, strong immune activation.
- Correct Option:**
 - (c): ✓ Development is fast once viral sequence is available (seen during COVID-19).
- Incorrect Options:**
 - (a): ✗ Require ultra-cold storage.
 - (b): ✗ Do not use live virus.
 - (d): ✗ Still need antibodies and T-cells for immunity.

Keywords: mRNA, lipid nanoparticles, rapid design, COVID-19.

Conclusion: mRNA = **transformative platform for future pandemics**.

42. Answer: (a) NSIL is the commercial arm of ISRO

Explanation:

- Core Concept:** NSIL = created to separate **commercial operations** from ISRO's R&D.
- Functions:** Handles **satellite launches, marketing of space services, tech transfers**.
- Correct Option:**
 - (a): ✓ NSIL commercializes ISRO's portfolio.
- Incorrect Options:**
 - (b): ✗ ISRO = parent R&D body.
 - (c): ✗ DSMB does not exist.
 - (d): ✗ IN-SPACe = regulator/facilitator, not commercial arm.

Keywords: NSIL, commercialization, ISRO, private participation.

Conclusion: NSIL = driver of India's **space economy monetization**.

43. Answer: (c) I and II only

Explanation:

- Core Concept:** mRNA vaccines = safe, flexible platform for **infectious diseases + cancer therapies**.
- Correct Statements:**
 - (I): ✓ Trigger both **antibody & T-cell** responses.
 - (II): ✓ Do not use live virus → **safety advantage**.
- Relevance:** Beyond COVID-19, adapted for **personalized cancer treatment**.

Keywords: Antibody, T-cell, cancer therapy, safe vaccines.

Conclusion: mRNA = **dual advantage: rapid infectious disease response + precision medicine**.

44. Answer: (a) I only

Explanation:

- Core Concept:** Cholesterol = vital lipid but imbalance → cardiovascular risks.
- Correct Statement:**
 - (I): ✓ HDL = "good cholesterol" → removes excess LDL.
- Incorrect Statement:**
 - (II): ✗ LDL = "bad cholesterol" → artery blockages.

Keywords: HDL, LDL, lifestyle disease, preventive healthcare.

Conclusion: Managing cholesterol = **cornerstone of NCD prevention**.

45. Answer: (a) I only

Explanation:

- Core Concept:** 2FA = extra security layer beyond password.
- Correct Statement:**
 - (I): ✓ Even if password compromised, 2FA reduces breach risk.
- Incorrect Statement:**
 - (II): ✗ Not all 2FA needs physical key; OTPs, biometrics also valid.

Keywords: 2FA, cybersecurity, OTP, biometrics.

Conclusion: 2FA = essential safeguard in **digital governance & financial security**.

46. Answer: (c) I and II only

Explanation:

- Core Concept:** Mhadei Wildlife Sanctuary = notified in **1999 (WPA, 1972)**; important ecological reserve in Goa.
- Correct Statements:**
 - (I): ✓ Mahadei (Mandovi) River flows through the sanctuary.
 - (II): ✓ Home to rare species like **Ashoka tree with saffron flowers**.
- Context:** Proposed as **Tiger Reserve**, site of legal-political debate.
- Incorrect Associations:** Not bordering Kerala (actually Karnataka & Maharashtra).

Keywords: Mhadei WLS, Mandovi River, Ashoka tree, Tiger Reserve proposal.

Conclusion: Mhadei = **biodiversity hotspot and critical conservation battleground** in Goa.

47. Answer: (a) I only

Explanation:

- Core Concept:** Aadhaar = India's **digital identity system**; administered by UIDAI.
- Correct Statement:**

- **(I):** Section 7 allows Aadhaar linkage for welfare benefits from Consolidated Fund.
- **Incorrect Statement:**
 - **(II):** SC (Puttaswamy, 2018) capped data storage to **6 months**, not indefinite.

Keywords: UIDAI, Section 7, Right to Privacy, Direct Benefit Transfer.

Conclusion: Aadhaar = **efficiency + inclusion**, but **privacy safeguards essential**.

48. Answer: (c) I and II only

Explanation:

- **Core Concept:** UPU = specialized UN agency coordinating **global postal cooperation**.
- **Correct Statements:**
 - **(I):** Established 1874; became UN specialized agency in 1948.
 - **(II):** India is a member; UPU is **second oldest international organization** after ITU.
- **Relevance:** Facilitates **cross-border mail, remittances, postal reforms**.

Keywords: UPU 1874, Berne HQ, ITU, global postal integration.

Conclusion: UPU = **pillar of global connectivity & financial inclusion**.

49. Answer: (c) I and II only

Explanation:

- **Core Concept:** ULLAS = **centrally sponsored scheme** under Ministry of Education; operational 2022–27.
- **Correct Statements:**
 - **(I):** Centrally sponsored scheme.
 - **(II):** Focus on adults 15+ → functional literacy + life skills.
- **Relevance:** Linked with **NEP 2020** goals; several States/UTs achieved **100% functional literacy**.

Keywords: ULLAS, NEP 2020, functional literacy, Ministry of Education.

Conclusion: ULLAS = **social empowerment through adult literacy**.

50. Answer: (b) II only

Explanation:

- **Core Concept:** Small wild cat of **Central Asian cold steppes**; rare in India (Arunachal Pradesh).
- **Correct Statement:**
 - **(II):** Protected under **Schedule I of WPA, 1972**.
- **Incorrect Statement:**
 - **(I):** IUCN = **Least Concern**, not Endangered.

Keywords: Pallas's cat, Arunachal Pradesh, Schedule I WPA, IUCN LC.

Conclusion: Pallas's cat = **indicator species of fragile mountain grasslands**, needs habitat protection despite IUCN "Least Concern" status.