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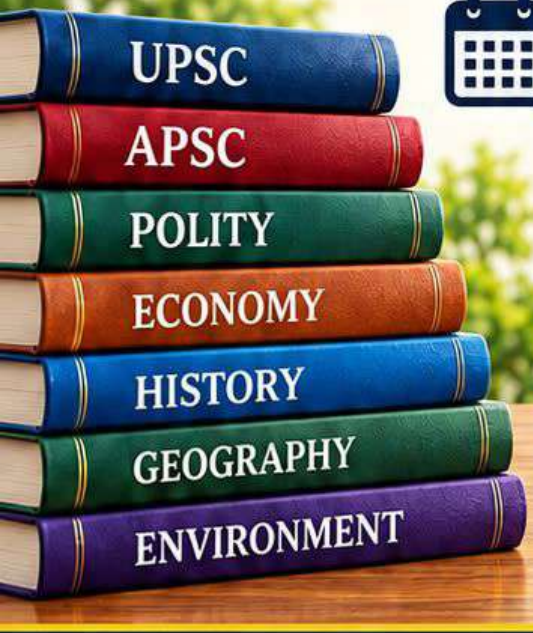
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INTERNATIONAL RELATIONS (GS Paper 3)

India–Iran: Freedom of Navigation & West Asia Crisis

Why in News?
PM Narendra Modi met Iranian President **Masoud Pezeshkian** on the sidelines of **the 2026 SCO Summit in Bishkek**. India called for **dialogue, regional stability and freedom of navigation**, particularly amid tensions around the Strait of Hormuz.

Key Points

- **India's stand:** West Asian disputes should be resolved through **dialogue and diplomacy**.
- **Strait of Hormuz:** India stressed protection of **freedom of navigation and commerce**.
- **Civilian protection:** Commercial ships, seafarers, civilians and civilian infrastructure should not be harmed.
- **Iran's request:** Pezeshkian sought India's diplomatic support and use of its contacts to facilitate dialogue.
- **Bilateral relations:** Both sides discussed expanding trade and cooperation, including **Chabahar Port** and maritime affairs.
- **Multilateral platforms:** India and Iran cooperate through **SCO and BRICS**.

Prelims Facts

Strait of Hormuz

- Connects the **Persian Gulf** with the **Gulf of Oman**.
- Important chokepoint for global energy and maritime trade.
- Any disruption can affect **oil prices, shipping costs and India's energy security**.

Chabahar Port

- Located in **Iran**.
- Important for India's connectivity with **Afghanistan and Central Asia**.
- Provides **an alternative connectivity route that reduces India's dependence on routes through Pakistan.**

India–Iran: Importance for India

Strategic: Access to Central Asia and Afghanistan
Economic: Energy and trade interests
Connectivity: Chabahar Port
Maritime: Protection of Indian shipping and seafarers
Diplomatic: Maintaining engagement with different regional actors

Challenges

- Balancing relations with **Iran, Israel, Gulf countries and the US**
- Sanctions affecting India-Iran economic cooperation
- Threats to shipping through the Strait of Hormuz
- Energy-price volatility
- Regional escalation affecting India's diaspora and maritime interests

Prelims Question

Q. Consider the following statements:

1. The Strait of Hormuz connects the Persian Gulf with the Gulf of Oman.
2. Chabahar Port is located in Iran.
3. India and Iran are both members of the Shanghai Cooperation Organisation.
4. The Strait of Hormuz is important for global energy transportation.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 4 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Mains Question

Q. *"India's engagement with Iran reflects the importance of strategic autonomy, energy security and freedom of navigation." Discuss. (150 words)*

Indian Polity & Governance (GS Paper 2)

Special Intensive Revision (SIR) of Electoral Rolls



What is SIR?

Special Intensive Revision (SIR) is a detailed revision of electoral rolls undertaken by the **Election Commission of India (ECI)** to ensure that **eligible citizens are included and ineligible/dead/duplicate/migrated entries are removed**. The ECI derives its authority for SIR from **Article 324 of the Constitution**, Section 21 of the **Representation of the People Act, 1950**, and the Registration of Electors Rules, 1960.

Why is it important?

SIR → Verification → Draft Electoral Roll → Claims & Objections → Final Electoral Roll

Importance

1. Prevents **duplicate and ineligible entries**.
2. Helps maintain **accurate electoral rolls**.
3. Protects the principle of **"one person, one vote."**
4. Strengthens the credibility of elections.

5. Provides an opportunity for citizens to **challenge wrongful deletion**.

Constitutional & Legal Angle:

Provision	Relevance
Article 324	ECI's constitutional power over elections and electoral rolls
Article 326	Elections to Lok Sabha & State Assemblies based on adult suffrage
Representation of the People Act, 1950	Legal framework for electoral rolls
Registration of Electors Rules, 1960	Procedures relating to electoral-roll revision
ECI	Constitutional authority responsible for electoral-roll administration

The Supreme Court upheld the ECI's Bihar SIR exercise in May 2026, while litigation and judicial scrutiny have continued regarding implementation and safeguards for voters.

Potential benefits

- Cleaner and more accurate electoral rolls
- Removal of duplicate/dead/migrated entries
- Better election management

Concerns requiring safeguards

- Possible wrongful exclusion of genuine voters
- Documentation difficulties
- Need for transparent verification
- Accessibility for poor, elderly and marginalised citizens
- Effective **claims, objections and appeal mechanisms**

The Supreme Court has also been involved in ensuring mechanisms for people to challenge adverse decisions during SIR-related exercises.

Prelims Question

Q1. Consider the following statements regarding Special Intensive Revision (SIR):

1. SIR is conducted by the Election Commission of India.
2. Article 324 provides constitutional authority to the ECI over elections.
3. The final electoral roll cannot be changed after publication of the draft roll.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Explanation: Draft rolls are followed by a period for **claims and objections**, after which the final roll is prepared.

Answer: B — Adult suffrage

Mains Question

Q. "Accurate electoral rolls are essential for ensuring the integrity of democratic elections." Discuss the significance of Special Intensive Revision (SIR) of electoral rolls and examine the challenges associated with large-scale deletion of names.(10 marks / 150 words)

Polity, Governance & Inter-State Relations

Cauvery Water Dispute

What happened?

- The **Cauvery Water Management Authority (CWMA)** directed Karnataka to ensure a flow of **9,000 cusecs of Cauvery water to Tamil Nadu for 15 days**.
- Karnataka told the **Supreme Court** that it was complying with the order.
- Karnataka stated that it released **9,888 cusecs on August 30**, with the flow later crossing **11,000 cusecs**.
- Tamil Nadu argued that merely maintaining 9,000 cusecs does **not compensate for the accumulated shortfall** in earlier releases.
- Tamil Nadu sought release of an additional **17.604 TMC ft** of water, claiming it was the balance due as of August 27.
- The Supreme Court observed that any demand beyond the CWMA's direction would have to be challenged before the **appropriate forum**.
- The matter was listed for further hearing on **September 15**.

Key Institutions

Cauvery Water Disputes Tribunal (CWDT)
⬇️
Cauvery Water Management Authority (CWMA)
⬇️
Cauvery Water Regulation Committee (CWRC)
⬇️
Implementation/monitoring of water releases

Constitutional & Legal Angle

- **Article 262:** Parliament can provide for adjudication of disputes relating to inter-State rivers.
- **Inter-State River Water Disputes Act, 1956:** Provides the statutory mechanism for adjudicating such disputes.
- **Entry 17, State List:** Water, subject to Entry 56 of Union List.
- **Entry 56, Union List:** Regulation and development of inter-State rivers and river valleys when declared by Parliament to be in the public interest.
- **Cauvery Water Management Authority:** Created following the Supreme Court's 2018 Cauvery judgment to implement the water-sharing framework.

Important for UPSC/APSC

This issue highlights:

- **Cooperative federalism**
- **Inter-State water conflicts**
- Role of the **Supreme Court and statutory authorities**
- Water scarcity and competing agricultural demands
- Need for **basin-level water management**
- Centre–State and State–State coordination

Prelims Questions

Q1. With reference to inter-State river water disputes in India, consider the following statements:

1. Article 262 deals with adjudication of disputes relating to waters of inter-State rivers.
2. Parliament can provide by law for adjudication of such disputes.
3. The Supreme Court can never have any role in matters concerning inter-State river disputes.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B

Mains Question

Q. "Inter-State river water disputes pose a challenge to cooperative federalism in India." Discuss with reference to the Cauvery water dispute.
(10 marks, 150 words)

Economy, Energy & Environment (GS Paper 3)

Samudra Manthan Scheme (Hydrocarbon Exploration / Energy Security)



In News

The Union Cabinet approved **Samudra Manthan – National Offshore Exploration Scheme** on **31 July 2026**, with an outlay of **₹84,084 crore**, to be implemented up to **FY 2030–31**.

Key Facts

- **Ministry:** Ministry of Petroleum & Natural Gas
- **Type:** Central Sector Scheme
- **Outlay:** ₹84,084 crore
- **Target:** Drilling of **60 deepwater and ultra-deepwater exploratory wells**

- Government support can cover **up to 50% of eligible drilling cost or ₹675 crore per well, whichever is lower**.
- Expected reserve accretion: **600+ MMTOE**.
- Focus areas:
    - 2D/3D seismic surveys
    - Deepwater exploration
    - Scientific drilling
    - Common offshore infrastructure
    - Oil & Gas Manufacturing and Services Zones
    - Advanced technology and digital management

Why Important?

India has substantial offshore hydrocarbon potential, but deepwater exploration requires **high technology, large capital investment and specialised infrastructure**. The scheme aims to:

- strengthen **energy security**
- increase domestic oil & gas production
- reduce import dependence
- promote **Make in India/Atmanirbhar Bharat**
- develop domestic offshore technology and manufacturing.

Current Controversy

The Congress has **alleged** that the scheme could disproportionately benefit private companies, including an Adani-linked exploration company, and has questioned why **ONGC**, with long experience in hydrocarbon exploration, was not given a primary role. These are **political allegations, not established findings**; the government and Adani Group had not responded to the allegations in the report provided by you.

Prelims Question

Q. With reference to the Samudra Manthan Scheme, consider the following statements:

1. It is a Central Sector Scheme of the Ministry of Petroleum & Natural Gas.
2. It focuses exclusively on onshore hydrocarbon exploration.
3. It includes support for deepwater and ultra-deepwater exploratory drilling.
4. It aims to increase India's domestic hydrocarbon reserves.

Which of the statements given above is/are correct?

A. 1, 2 and 3 only
B. 1, 3 and 4 only
C. 2 and 4 only
D. 1, 2, 3 and 4

Answer: B. 1, 3 and 4 only

Mains Question

Q. “India's offshore hydrocarbon potential can play an important role in strengthening energy security, but exploration must balance economic objectives with technological, environmental and governance challenges.” Discuss.
(150 words | 10 marks)

Environment, Waste Management (GS Paper 3)

E-Waste & Urban Mining



Current News

- Rapid **digitalisation and technology replacement** are generating large quantities of **e-waste**.
- Discarded computers, servers, batteries and electronic devices contain valuable materials such as **copper, aluminium, gold, silver, palladium and critical minerals**.
- **Urban mining** means **recovering valuable materials** from discarded products rather than extracting them through conventional mining.
- Advanced e-waste recycling requires **collection, segregation, data destruction, refurbishment, safe processing and traceable supply chains**, making it more expensive than simple disposal/resale.
- The article highlights the idea of **"two balance sheets"**:
    - **Financial balance sheet: immediate purchase, resale and disposal costs.**
    - **Strategic balance sheet: resource security, environmental protection, cybersecurity, import dependence, industrial capability and supply-chain resilience.**
- **Lowest-price procurement** may not always represent the **lowest life-cycle cost**.
- **Life-cycle costing/value-based procurement** considers the long-term economic, environmental and strategic consequences of a decision.
- **Extended Producer Responsibility (EPR)** can encourage producers to ensure collection and responsible recycling of e-waste.

- Better e-waste management can contribute to **circular economy, critical-mineral security and reduced dependence on virgin mining/imports**.

Key Concept: Urban Mining

E-waste → Collection → Segregation → Refurbishment → Recycling → Recovery of metals/critical minerals → Reuse in manufacturing

Why Important for India?

E-waste management → Critical mineral recovery → Less import dependence → Circular economy → Green jobs → Environmental protection → Strategic resilience

Prelims Questions

Q1. Consider the following statements regarding "urban mining":

1. It involves recovering valuable materials from discarded products and waste.
2. It can reduce dependence on extraction of virgin mineral resources.
3. It refers exclusively to mining activities conducted within cities.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Questions

Q1. *"E-waste can be both an environmental liability and a source of strategic resources." Discuss in the context of urban mining in India.*
(150 words | 10 marks)

INTERNATIONAL RELATIONS (GS Paper 2)

26th Shanghai Cooperation Organisation (SCO) Summit



context

- The **26th Shanghai Cooperation Organisation (SCO) Summit** has been concluded in Kyrgyzstan.

Major Highlights

- It is being held to mark the **25th anniversary** of the Shanghai Cooperation Organisation.
- **The theme of this year's SCO summit is** '25 Years of the SCO: Together Towards Sustainable Peace, Development and Prosperity'.
- It concluded with **key outcomes covering counter-terrorism, climate action, energy, disaster management and digital cooperation.**
- **Bishkek Declaration:** The summit adopted the historic Bishkek Declaration.
    - **English** has been adopted **as an official SCO language.**
    - Leaders also agreed to establish a **Universal Centre for Countering Security Threats.**
- **Tackling Drug Trafficking:** Stronger coordination among law enforcement agencies and a cooperation programme on combating drug addiction until 2030.
    - The measures support India's efforts against cross-border narcotics trafficking and narco-terrorism.
- **It also emphasized the non-military nature of the SCO,** saying its members adhere to an approach that excludes bloc-based and confrontational methods.
- The summit also approved **closer cooperation between the SCO and the African Union Commission** and **designated Lahore, Pakistan, as the SCO's tourism and cultural capital for 2026-2027.**
    - **Pakistan will take over the SCO chairmanship from Kyrgyzstan** and host the next meeting of the Council of Heads of State in 2027.

Shanghai Cooperation Organisation (SCO)

- **Shanghai Five** emerged in **1996** from a series of border demarcation and demilitarization talks between **4 former USSR republics and China.**
    - **Kazakhstan, China, Kyrgyzstan, Russia and Tajikistan** were members of the **Shanghai Five.**
    - With the accession of **Uzbekistan** to the group in **2001**, the Shanghai Five was renamed the SCO.
- **Objective:** To enhance regional cooperation for efforts to curb terrorism, separatism, and extremism in the Central Asian region.
- **Members (10):** China, Russia, India, Pakistan, Iran, Belarus and the four Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan.
    - India became a full member in **2017** and assumed the rotating **chairmanship in 2023.**
    - Member countries contribute around **30% of the global GDP** and about **40% of the world's population**.
- **Observer status:** Afghanistan and Mongolia.
- **Language:** The SCO's official languages are Russian and Chinese. English has been added in the 26th summit.
- **Structure: The supreme decision-making body** of the SCO is the **Council of Heads of States (CHS)** which meets once a year.
    - **The Organization has 2 standing bodies** — the Secretariat in Beijing and the Executive Committee of the Regional Anti-Terrorist Structure (RATS) in Tashkent.

Significance for India

- **Regional Security:** The SCO serves as a platform for addressing security concerns, including terrorism, separatism, and extremism, which are critical issues for India.
    - Through SCO's Regional Anti-Terrorist Structure (RATS), India collaborates on intelligence sharing and counter-terrorism efforts.
- **Balancing China and Pakistan:** While both are SCO members, the forum allows India to assert its position and prevent the formation of anti-India narratives.
- **Energy Security:** Central Asia is rich in oil, gas, and uranium. SCO membership allows India to strengthen energy ties with these countries.
- **Economic Cooperation:** The organization facilitates economic collaboration among member states, which enhance trade and investment opportunities for India, particularly with Central Asian countries.
- **Central Asia:** The **SCO is especially important for India** because its membership and focus emphasize **Central Asia**—a region where **India is keen to ramp up ties** but faces an inherent constraint with its outreach.

Challenges

- **China-Pakistan Axis:** The strong partnership between China and Pakistan within the SCO complicates India's strategic positioning, as at times it limits India's influence in regional security discussions.
- **Geopolitical Tensions:** Ongoing border disputes and geopolitical tensions with China and Pakistan spill over into SCO discussions, making it difficult for India to engage constructively.

- **Focus on Security over Economic Development:** The SCO's primary focus on security issues sometimes overshadows economic and developmental cooperation, which are crucial for India's interests in the region.
- **Institutional limitations:** Decision-making within SCO is consensus-based, slowing progress on key issues.

Conclusion

- SCO is a strategic platform for India to engage with Eurasian powers, promote regional stability, secure economic and energy interests, and enhance counter-terrorism cooperation.
- Despite challenges, India uses SCO to promote its vision of "Security and Growth for All in the Region (SAGAR)" and as a counterbalance to Western alliances.

Prelims Questions

Q1. Consider the following statements regarding the SCO:

1. India became a full member of the SCO in 2017.
2. RATS is associated with counter-terrorism cooperation.
3. The SCO Secretariat is located in Tashkent.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Questions

Q1. ***"The SCO provides India with an important platform for engagement with Eurasia despite significant geopolitical differences among its members."*** **Discuss. (10 marks)**

Science, Technology & Innovation (GS Paper 3)

India in the China–US Technology Race



Why in News?

An article by **C. Raja Mohan** argues that the US–China technology competition is not merely about developing advanced AI models. It is increasingly about building an **integrated science–industry ecosystem** that connects research institutions, universities, entrepreneurs, finance, energy, manufacturing, supply chains and markets.

Key Points

- **China's strategy:** Integrate **AI with the physical economy**—robotics, automobiles, machine tools, biotechnology, materials, energy and agriculture.
- **China's advantage:** A large and deep **manufacturing ecosystem** allows rapid commercialisation of technological innovations.
- **US strength:** Strong universities, research laboratories, venture capital, technology companies and innovation networks.
- **India's challenge:** India has significant scientific and technological capabilities but needs stronger **industry–academia–government linkages**.
- **Private capital:** Greater private-sector investment in **R&D, deep-tech and manufacturing** is essential.
- **State-led science system:** India needs reforms to improve research funding, institutional autonomy, technology transfer and commercialisation.
- **Core lesson:** Technological power depends not only on inventing technology but also on the ability to **scale, manufacture and commercialise it**.

Concept: Science–Industry Ecosystem

Universities → Research Labs → Start-ups → Venture Capital → Manufacturing → Supply Chains → Markets

An effective ecosystem converts **scientific knowledge → technology → products → economic growth**.

India's Way Forward

1. Increase **public & private R&D expenditure**.
2. Strengthen **industry–academia collaboration**.
3. Promote **deep-tech start-ups**.
4. Improve technology transfer from laboratories to industry.
5. Build domestic capabilities in **semiconductors, AI, robotics, biotechnology and advanced materials**.
6. Develop reliable **energy, logistics and supply-chain infrastructure**.
7. Encourage patient, long-term **private capital** for high-risk technologies.
8. Link scientific research with India's manufacturing and development priorities.

Prelims Question

Q1. Consider the following statements regarding a science–industry ecosystem:

1. It involves linking scientific research with industrial production.
2. Commercialisation of research is an important component of such an ecosystem.
3. It necessarily excludes government-funded research institutions.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. ***"Technological leadership depends not merely on scientific discoveries but on the ability to connect research with industry, capital and manufacturing."*** **Discuss in the context of India's position in the emerging global technology competition. (150 words)**

Infrastructure, Transport, Road Safety (GS Paper 3)

Motor Vehicles (Amendment) Act, 2019

Why in News?

Seven years after the **Motor Vehicles (Amendment) Act, 2019**, India continues to face a serious road-safety challenge. In **2024, 4,87,707 road accidents caused 1,77,175 deaths**, highlighting gaps in enforcement, road engineering and driver behaviour.

Key Facts

- **Legal base:** Amended the **Motor Vehicles Act, 1988**.
- **Approach:** Moves towards a **Safe Systems Approach**—recognising that human error is inevitable and roads/vehicles should minimise fatal consequences.
- **Road deaths (2024): 1.77 lakh**.
- **Two-wheeler riders: 46.2%** of fatalities.
- **Pedestrians: 20.6%** of fatalities.
- **18–45 years: 66.1%** of road deaths.
- **National Highways:** About **31% of accidents but 36.6% of fatalities**.

Major Provisions

Provision	Significance
Section 136A	Electronic monitoring and enforcement
Section 134A	Protection of **Good Samaritans**
Section 162	Cashless treatment during the **Golden Hour**
Section 198A	Accountability of road contractors/designers for unsafe roads
Section 110A	Government power for **recall of defective vehicles**
Higher penalties	Greater deterrence against serious traffic violations

Major Challenges

- Uneven implementation across States.
- Overspeeding and distracted driving.
- Non-use/incorrect use of helmets and seatbelts.
- Unsafe road design and unresolved **black spots**.
- Inadequate pedestrian and cycling infrastructure.
- Limited emergency trauma-care facilities, especially in rural areas.
- Weak enforcement of child-safety measures in school transport.

Prelims Questions

Q1. With reference to the Motor Vehicles (Amendment) Act, 2019, consider the following pairs:

1. Good Samaritan protection — Section 134A
2. Electronic monitoring — Section 136A
3. Contractor accountability — Section 198A
4. Vehicle recall — Section 110A

Which of the pairs given above are correctly matched?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Mains Questions

Q1. (10 marks, 150 words)
The Motor Vehicles (Amendment) Act, 2019 represents a shift from punitive enforcement towards a comprehensive road-safety framework. Discuss.

INDIAN ECONOMY (GS Paper 3)

India's 7.8% GDP Growth Debate & Double Deflation

National Income Accounting, GDP, GVA, Deflation

Key Points

- India's **real GDP growth in Q1 FY 2026–27: 7.8%**.
- Real GDP: **₹81.36 lakh crore**; nominal GDP: **₹88.27 lakh crore**.
- **Real GVA grew 8.2%**.
- Major drivers:
  - Manufacturing: **9.2%**
  - Services: **10.0%**
  - Agriculture, forestry & fishing: **3.6%**
  - GFCF: **11.9%**
  - PFCE: **7.1%**
- MoSPI defended the estimates and highlighted the **2022–23 base year** and improved price measurement.

Double Deflation — Important for Prelims

Double deflation separately adjusts:

1. **Gross output** for price changes.
2. **Intermediate consumption/input costs** for price changes.

Why the GDP Deflator differs from CPI/WPI?

- **CPI:** Consumer retail basket.
- **WPI:** Wholesale prices of goods.
- **GDP deflator:** Economy-wide measure covering goods **and services** and the components of GDP.

2022–23 Base-Year Revision

- Greater use of **Producer Price Indices (PPI)**.
- More than **300 item-level deflators**.
- Better representation of modern services such as banking, digital and fintech activities.
- Greater use of high-frequency economic indicators.

Challenges

- Quarterly data are subject to revision.
- Manufacturing estimates can become volatile when input/output prices diverge.
- Need for better enterprise and price data.

Prelims Question

Q1. Consider the following statements regarding double deflation:

1. It separately deflates output and intermediate consumption.
2. It can be useful when input and output prices change at different rates.
3. It is used only for calculating CPI inflation.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. What is double deflation? Explain its significance in measuring real Gross Value Added (GVA), particularly in manufacturing.

Environment (GS Paper: GS-III)

Data Centre Boom and Climate Sustainability

Key Points

India's data-centre industry is expanding rapidly alongside **AI and digitalisation**.

- Installed data-centre capacity:
  - **520 MW in 2020**
  - Around **1.5 GW in 2026**
  - Projected **6.5 GW by 2030**
- Electricity consumption projected to rise from **13 TWh in 2024 to 57 TWh by 2030**.
- A **100 MW data centre** may consume around **2 million litres of water/day**, depending on cooling technology and conditions.
- Growing concentration in cities such as **Mumbai, Hyderabad, Bengaluru and NCR** creates concerns regarding water and electricity stress.

Major Environmental Concerns

1. Water stress

- Conventional cooling systems can require substantial freshwater.
- Locating centres in water-stressed regions can intensify competition for water.

2. Electricity demand

- Data centres require continuous, reliable electricity.
- If renewable power and transmission capacity are inadequate, additional demand can indirectly increase dependence on fossil-fuel-based electricity.

3. Renewable-energy curtailment

- Renewable electricity may be curtailed because of transmission and evacuation constraints.
- Better storage and grid infrastructure can help match renewable generation with continuous data-centre demand.

4. Urban heat

- Cooling systems release waste heat.
- Large clusters can contribute to localised urban thermal stress.

5. Infrastructure cost

- Expansion of transmission and water infrastructure raises questions about how costs should be distributed between private users and public consumers.

Way Forward

- Resource-efficiency standards for data centres.
- Greater use of **renewable energy + battery storage**.
- Water recycling and closed-loop cooling.
- Transparent disclosure of water and electricity consumption.
- Better transmission infrastructure.
- Avoid excessive concentration in water-stressed urban areas.
- Integrate data-centre planning with **urban planning, energy planning and water-security planning**.

Prelims Question

Q2. Consider the following statements about data centres:

1. They require a substantial and reliable electricity supply.
2. Cooling systems can create significant water demand.
3. Their environmental footprint depends only on the electricity used and not on their location.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. India's expanding data-centre industry can accelerate digitalisation but also create energy, water and climate challenges. Examine and suggest a sustainable policy framework.

WOMEN EMPOWERMENT (GS Paper 1)

AVM Shakti Sharma – Women in Defence Services

Current News

- **Air Vice Marshal Shakti Sharma** became the **first non-medical woman officer** in India's defence services to attain the **two-star rank of Air Vice Marshal/equivalent**, according to the supplied PIB material.
- She was commissioned into the **Indian Air Force Education Branch in 1994**.
- She also served as Principal of **Sainik School Kapurthala**, becoming the first woman officer from the Tri-Services to command a Sainik School.
- She contributed to establishing **IAF Chairs of Excellence**, strengthening defence-academia collaboration.

Significance

Her career can illustrate:

- Women's participation in traditionally male-dominated institutions.
- Breaking institutional barriers.
- **Equal opportunity.**
- **Leadership and professional competence**.
- Gender-inclusive defence services.

Prelims Question

Q1. Consider the following statements regarding women in India's defence services:

1. Women's participation in the armed forces has expanded beyond medical roles.
2. Women officers have increasingly occupied leadership and command positions.
3. Gender equality in defence services concerns only recruitment and not career progression.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. Discuss how increasing participation of women in India's armed forces can contribute to institutional transformation and gender equality.

Space Technology, Remote Sensing, Disaster Management

Earth Observation Satellite – EOS-05

Key Facts

- **EOS-05**, according to the supplied ISRO material, is an Earth-observation/geo-imaging satellite.
- Formerly associated with **GISAT-1A** in the supplied material.
- Launcher: **GSLV-F17 (GSLV Mk II)**.
- Launch site: **Satish Dhawan Space Centre, Sriharikota**.
- Intended orbit: **Geosynchronous orbit**, approximately **35,786 km** altitude.

Applications

- Disaster management.
- Agriculture monitoring.
- Cyclone tracking.
- Forest-fire monitoring.
- Flood and landslide assessment.
- Border and maritime surveillance.
- Monitoring vegetation, soil and atmospheric conditions.

Geosynchronous vs Geostationary

Geosynchronous orbit

- Orbital period ≈ Earth's rotational period.
- Satellite need not appear fixed over one point.

Geostationary orbit

- Special type of geosynchronous orbit.
- Must be **circular and directly above the equator**.
- Appears stationary to an observer on Earth.

Why Important?

Continuous or frequent observation can reduce the time between **disaster detection → assessment → response**.

Prelims Question

Q5. Consider the following statements about a geostationary satellite:

1. It orbits above the equator.
2. Its orbital period is approximately equal to Earth's rotational period.
3. It appears stationary relative to a point on Earth's surface.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: D

Mains Question

Q. Explain the role of Earth-observation satellites in strengthening India's disaster-management and agricultural systems.

Environment & Biodiversity (GS Paper 3)

Osbeckia ulotricha

In News

Scientists from the **Botanical Survey of India (BSI)** have discovered a new flowering plant species, ***Osbeckia ulotricha***, in the **Agasthyamala Biosphere Reserve** of the Western Ghats.

Key Facts

- **Scientific name:** *Osbeckia ulotricha*
- **Family: Melastomataceae**
- **Location:** Shola grasslands of **Agasthyamala Biosphere Reserve**
- **Altitude: 1,200–1,500 m**
- **Distribution: Endemic** to its habitat
- **Habitat:** Damp margins of:
    - Tropical Montane Wet Temperate Forests (**Shola forests**)
    - Montane temperate grasslands
- **Flowering & fruiting: February–May**
- **Distinctive features:** Woolly hairs, clustered leaves, sub-globose/urn-shaped hypanthium and bristles on the ovary.



Agasthyamala Biosphere Reserve

- Located in the **southern Western Ghats**, across **Kerala and Tamil Nadu**.
- Established: **2001**
- Added to **UNESCO World Network of Biosphere Reserves: 2016**
- Important ecosystems include **tropical evergreen forests, moist deciduous forests, montane rainforests and shola-grassland ecosystems**.
- Important rivers originating here include **Thamirabarani, Neyyar and Karamana**.
- Protected areas include:
    - **Shendurney Wildlife Sanctuary**
    - **Peppara Wildlife Sanctuary**
    - **Neyyar Wildlife Sanctuary**

- **Kalakkad-Mundanthurai Tiger Reserve**

Prelims Questions

Q1. With reference to *Osbeckia ulotricha*, consider the following statements:

1. It belongs to the Melastomataceae family.
2. It was discovered in the Agasthyamala Biosphere Reserve.
3. It is associated with shola-grassland ecosystems.
4. It is primarily found at elevations below 500 metres.

Which of the statements given above are correct?

A. 1, 2 and 3 only
B. 1 and 4 only
C. 2 and 3 only
D. 1, 2, 3 and 4

Answer: A

Explanation: *Osbeckia ulotricha* belongs to Melastomataceae and was discovered in the Agasthyamala Biosphere Reserve. It occurs around **1,200–1,500 m**, not below 500 m.

Environment & Climate Change GS Paper: GS-III

Limiting Overshoot Report

What is the Limiting Overshoot Report?

- The **Limiting Overshoot Report** is released by the **United Nations Environment Programme (UNEP)**.
- It examines pathways for limiting the period during which global warming exceeds the **1.5°C threshold**.
- For the first time, it presents an **"overshoot → peak → decline"** pathway.
- The report warns that a temporary breach of the **1.5°C warming limit is increasingly unavoidable**.

Key Findings

Indicator	Finding
1.5°C target	Likely to be temporarily breached
All NDCs + Net Zero targets achieved	Peak warming around **1.8°C**
Current policies	Around **2.6°C by 2100**
Current-policy range	**1.9°C–3.6°C**
Food production	Could decline by up to **14% by 2050** without effective adaptation
Glaciers	Potential loss exceeding **25% of global mass by 2100**

Major Risks of Overshoot

1. Sea-level rise → accelerated and long-lasting impacts
2. Coral reefs → risk of widespread collapse
3. Glaciers → accelerated melting
4. Food security → reduced agricultural productivity
5. Tipping points → potentially irreversible changes involving:

- Greenland Ice Sheet
- West Antarctic Ice Sheet
- Atlantic Meridional Overturning Circulation (**AMOC**)
- Amazon ecosystem

Why Methane is Important?

- The report places strong emphasis on **methane (CH_4)** reduction.
- Methane is a **powerful short-lived greenhouse gas**.
- Cutting methane emissions can produce **relatively rapid climate benefits**, helping slow warming in the near term.

Prelims Facts

- **Report:** Limiting Overshoot Report
- **Organisation:** UNEP
- **Core issue:** Global warming and 1.5°C threshold
- **Pathway:** Overshoot → Peak → Decline
- **Methane:** Important target for near-term warming reduction
- **Tipping points:** Greenland, West Antarctica, AMOC, Amazon

Prelims Questions

Q1. With reference to the Limiting Overshoot Report, consider the following statements:

1. It is released by UNEP.
2. It examines pathways involving temporary overshoot of the 1.5°C threshold.
3. It identifies methane reduction as important for slowing near-term warming.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: D

Mains Question

Q1. ***"Temporary overshoot of the 1.5°C threshold does not eliminate the need for ambitious climate action." Discuss in the light of the UNEP Limiting Overshoot Report.***
(10 marks, 150 words)

Governance (GS Paper: 3)

AgriStack

What is AgriStack?

- **AgriStack** is a **Digital Public Infrastructure (DPI) for the agriculture sector**.
- It is part of the **Digital Agriculture Mission (DAM)**, approved by the Union Cabinet in **September 2024**.
- It aims to create a **paperless, contactless and technology-driven agricultural ecosystem**.

Foundational Components

Component	Key Feature
Farmer Registry	Provides farmers with a digital **Farmer ID** linked to land records, crops, livestock, schemes, etc.
Crop Sown Registry	Records crops cultivated through **Digital Crop Surveys**
Geo-referenced Village Maps	Digitally links land records with geographical locations using latitude & longitude

Key Targets

- **11 crore farmers** → proposed digital Farmer IDs.
- Farmer Registry with dynamic **Records of Rights (RoR)** synchronisation → **March 2027**.
- **Northeastern States** → target extended to **March 2028**.
- Geo-referenced village maps → all villages targeted by **March 2027**.
- States/UTs are primarily responsible for creating and maintaining the registries.

Recent Development

Telangana received **₹599 crore** in central incentives after achieving important milestones under AgriStack.

Benefits

AgriStack → Farmer ID → Integrated data → Targeted services

- Paperless/contactless **crop loans**
- Faster and transparent **crop insurance claims**
- Timely agricultural inputs
- Pest & disease advisories
- **DBT** of government benefits
- Facilitation of procurement at **MSP**
- Better targeting and delivery of agricultural schemes

Issues/Challenges

- Privacy and protection of farmers' data

- Accuracy and updating of land records
- Digital literacy and connectivity gaps
- Possible exclusion of farmers if records are incorrect
- Land ownership/tenancy complexities
- Interoperability between different government databases

Prelims Questions

Q1. With reference to AgriStack, consider the following statements:

1. It is a Digital Public Infrastructure for the agriculture sector.
2. It is part of the Digital Agriculture Mission.
3. The Farmer Registry provides farmers with a digital Farmer ID.
4. AgriStack is maintained exclusively by the Union Government.

Which of the statements given above are correct?

A) 1, 2 and 3 only
B) 1 and 4 only
C) 2 and 3 only
D) 1, 2, 3 and 4

Answer: A

Mains Question

Q. "AgriStack can transform agricultural governance through Digital Public Infrastructure." Discuss its potential benefits and challenges.

(10 marks, 150 words)

Science & Technology (GS Paper III)

Astra AI Model



- **Astra** is described as a new frontier AI model released by **OpenAI**.
- It is designed for **end-to-end tasks**, not just answering questions.
- It can perform tasks such as:
  - Operating computers and browsers
  - Filling online forms
  - Web research
  - Managing calendars
  - Drafting documents and emails
  - Analysing scientific data
  - Generating plots
  - Building and testing websites/software
- **Context window:** 1.05 million tokens.
- **Maximum output:** 128,000 tokens.
- It is classified at the **critical level for cybersecurity** under OpenAI's Preparedness Framework.
- It is designed to retain the original objective of a task even when instructions change midway.

Prelims Question

Q1. Consider the following statements about Astra AI Model:

1. It is designed only for conversational question-answering.
2. It can operate computers and browsers.
3. It has a context window of more than one million tokens.
4. It has applications in scientific data analysis.

Which of the statements given above are correct?

A. 1 and 2 only
B. 2, 3 and 4 only
C. 1, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B

Mains Question

Q. Discuss how increasingly autonomous AI systems can transform governance, scientific research and digital services. What cybersecurity and accountability challenges may arise?

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Defence & Security (GS Paper III)
Rudra Raptors Exercise



- **Rudra Raptors** is a high-intensity joint military exercise of the **Indian Army's Konark Corps**.
- Conducted in the **forward desert areas of Jaisalmer, Rajasthan**.
- **Theme:** *"One team, one purpose, absolute battlefield dominance."*
- Participating assets included:
  - **AH-64E Apache attack helicopters**
  - Tanks
  - Armoured and mechanised elements
  - Artillery and air-defence elements
- It focused on **air-ground coordination** and integrated battlefield operations.
- The exercise aimed to validate strategies under **realistic battlefield conditions**.

Key Terms

- **Konark Corps:** Indian Army formation associated with India's western desert sector.
- **Thar Raptors:** Elite helicopter element participating in the exercise.
- **Black Mace Brigade:** All-arms formation integrating armour, mechanised infantry, artillery, air defence and support elements.

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Prelims Question

Q1. With reference to Exercise Rudra Raptors, consider the following statements:

1. It was conducted in Rajasthan.
2. It involved coordination between attack helicopters and tanks.
3. It was conducted by the Indian Navy.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 only

C. 1 and 3 only
D. 1, 2 and 3

Answer: A

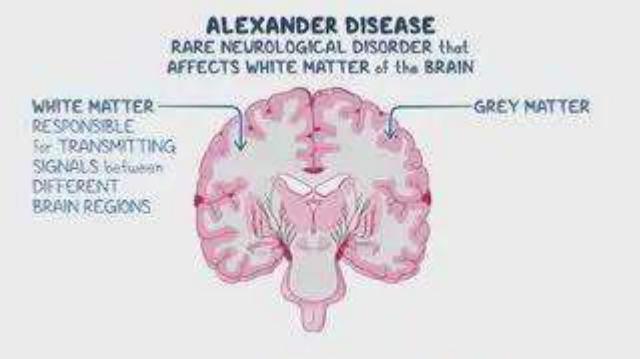
Mains Question

Q. What is the significance of integrated air-ground operations for modern warfare? Discuss with reference to India's military preparedness.

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Science & Technology (GS Paper III)

Alexander Disease



- **Alexander disease** is a **rare genetic disorder** affecting the nervous system.
- It is a type of **leukodystrophy** (rare genetic disorder).
- Leukodystrophies primarily affect the **white matter of the brain**.
- The disease involves deterioration of the **myelin sheath**, which protects nerve fibres.
- Abnormal protein deposits called **Rosenthal fibres** are associated with the disease.
- Most cases are linked to mutations in the **GFAP gene**.
- In many patients, the mutation arises **spontaneously** rather than being inherited.
- Symptoms can include:
    - Seizures
    - Developmental delay
    - Intellectual disability
    - Muscle stiffness
    - Difficulty swallowing or speaking
    - Poor coordination
- A new therapy, **zilganersen (Zanvastro)**, has been reported as the first disease-modifying treatment targeting the underlying protein accumulation.

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Prelims Question

Q1. Consider the following statements regarding Alexander disease:

1. It is a type of leukodystrophy.
2. It primarily affects the white matter of the nervous system.
3. Mutations in the GFAP gene are associated with the disease.
4. It is always inherited from the parents.

Which of the statements given above are correct?

A. 1, 2 and 3 only
B. 1 and 4 only
C. 2 and 4 only
D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. What are rare genetic diseases? Discuss the challenges involved in their diagnosis, treatment and affordability in developing countries.

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Environment & Geography (GS Paper I & III)

Sukhna Lake



- **Sukhna Lake** is an **artificial lake in Chandigarh**.
- Located at the foothills of the **Shivalik Hills**.
- Created in **1958** by damming the seasonal **Sukhna Choe**.
- The lake faces problems of:
  - **Siltation**
  - Soil erosion
  - Reduced water storage
  - Catchment degradation
- Its catchment area is about **4,200 hectares**.
- It is associated with the **Sukhna Wildlife Sanctuary** and **Sukhna Lake Reserve Forest**.
- It is an important habitat for **resident and migratory birds**.
- The lake is recognised as a **National Wetland**.
- It is also an important recreational and tourism site.

Prelims Question

Q1. Consider the following statements about Sukhna Lake:

1. It is an artificial lake.
2. It is located at the foothills of the Shivalik Hills.
3. It was formed by damming the Sukhna Choe.
4. It is located in Assam.

Which of the statements given above are correct?

A. 1, 2 and 3 only
B. 1 and 4 only
C. 2 and 3 only
D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. Explain how catchment-area degradation and soil erosion contribute to the siltation of urban lakes. Suggest measures for sustainable lake management.

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| Environment & Biodiversity (GS Paper:3)

Gegeneophis chandgadi



- **Gegeneophis chandgadi** is a newly identified **caecilian species** from **Maharashtra**.
- Caecilians are **legless, worm-like amphibians** that mostly live underground.
- **Name:** *chandgadi* refers to the local **Chandgadi dialect of Marathi**.
- **Features:** Slender, flesh-coloured body; body rings called **annuli**.
- **Distribution:** Northern **Western Ghats** are an important hotspot for caecilians.
- **Habitat:** Moist tropical and subtropical regions; largely underground.

Prelims Question:
Q. Consider the following statements about *Gegeneophis chandgadi*:

1. It is a caecilian.
2. It is a legless amphibian.
3. It was discovered in Maharashtra.

Which of the above is/are correct?

Answer: 1, 2 and 3

Mains Question:
Discuss the ecological significance of caecilians and the importance of the Western Ghats as a biodiversity hotspot. **(10 marks)**

Polity & Governance (GS Paper: 2)

Bar Council of India (BCI)

- **BCI** is a **statutory body** established under the **Advocates Act, 1961**.
- It regulates and represents the **Indian legal profession**.
- **Major functions:**
  - Prescribes standards of professional conduct.
  - Exercises disciplinary jurisdiction over advocates.
  - Sets standards for legal education.
  - Recognises law degrees/universities.
  - Conducts the **All India Bar Examination (AIBE)**.
- **Composition:** Members elected from State Bar Councils; **Attorney General of India** and **Solicitor General of India** are ex-officio members.
- **Current issue:** The Supreme Court has held that BCI and its chairperson **do not have jurisdiction to discipline or penalise law students**.

Prelims Question:
The Bar Council of India is established under:
A. Constitution of India
B. Advocates Act, 1961
C. Legal Services Authorities Act, 1987
D. Indian Penal Code

Answer: B

Mains Question:
Explain the statutory role of the Bar Council of India in regulating the legal profession and legal education in India. **(10 marks)**

Geography (GS Paper: 1)
Anak Krakatau Volcano



- **Anak Krakatau** means **"Child of Krakatau."**
- Located in the **Sunda Strait**, between **Java and Sumatra, Indonesia**.
- It is a **stratovolcano (composite volcano)**.
- Part of the **Pacific Ring of Fire**.
- Emerged from the sea in **1927**.
- The **2018 eruption** caused collapse of its southwestern flank and generated a **tsunami**.
- Its predecessor, **Krakatau**, had a major eruption in **1883**, associated with significant global climatic effects.

Stratovolcano

- Also called **composite volcano**.
- Steep-sided and generally conical.
- Formed by alternating layers of **lava, ash and other volcanic material**.
- Usually associated with **subduction zones**.
- Viscous magma can result in **explosive eruptions**.

Prelims Question:
Anak Krakatau is located in:
A. Bering Strait
B. Sunda Strait
C. Malacca Strait
D. Lombok Strait

Answer: B

Science & Technology (GS Paper: 3)

Bhabha Atomic Research Centre (BARC)



- **BARC** is India's premier **nuclear research and development centre**.
- **Location:** Trombay, Mumbai, Maharashtra.
- Works under the **Department of Atomic Energy (DAE)**.
- Named after **Dr. Homi Jehangir Bhabha**.
- Formerly known as **Atomic Energy Establishment, Trombay (AEET)**.
- Renamed **BARC in 1966** after the death of Dr. Bhabha.
- Major areas:
  - Nuclear reactor technology
  - Nuclear fuel-cycle technologies
  - Radiation protection
  - Nuclear science
  - Radioisotopes for medicine, agriculture and industry
  - Advanced scientific research
  - Training of nuclear scientists and engineers

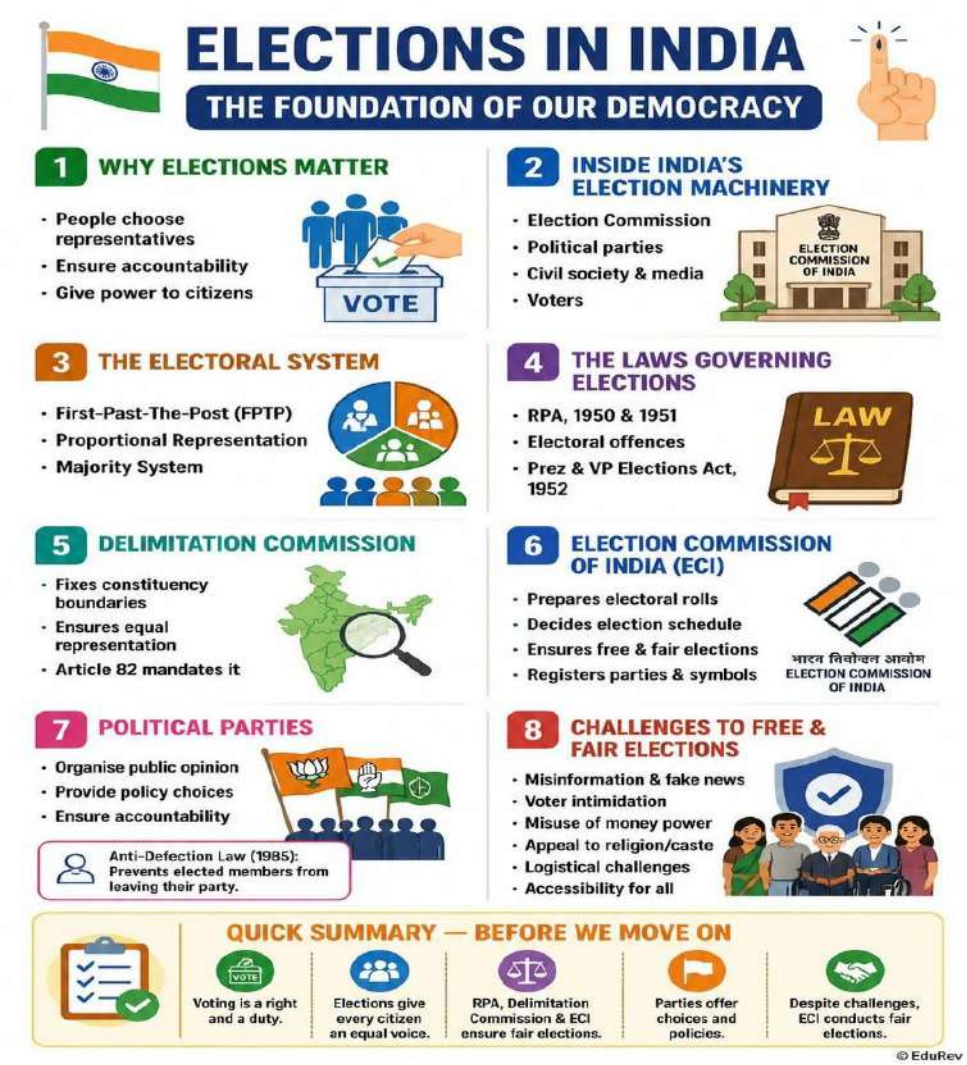
Prelims Question:
BARC functions under which of the following?
A. Ministry of Science & Technology
B. Department of Atomic Energy
C. Ministry of Defence
D. ISRO

Answer: B

Mains Question:
Discuss the contribution of BARC to India's nuclear energy programme and peaceful applications of nuclear technology. **(10 marks)**

International Relations (GS Paper: 2)

BRICS 'POWER' Framework



- **Context:** Ahead of the 18th BRICS Summit in New Delhi, Chinese Ambassador Xu Feihong proposed the **'POWER' framework** for strengthening Greater BRICS and Global South cooperation.
- BRICS has expanded beyond its original economic focus into a major platform for **Global South cooperation**.
- Expanded BRICS represents nearly **half of the world's population** and around **30% of global GDP** (PPP share > one-third), according to the material provided.
- India holds the **2026 BRICS presidency**, followed by China in 2027.

POWER = Five Pillars

Challenges

- India-China strategic and border tensions.
- India-China trade imbalance.

- Different approaches towards the West among BRICS members.
- Difficulties in creating effective local-currency settlement mechanisms.
- Diverse interests of the expanded BRICS membership.

Prelims Question

Q1. With reference to the proposed BRICS 'POWER' framework, consider the following pairs:

1. Principle — Sovereign equality
2. Openness — Multilateral trade
3. Win-Win — Local-currency settlements
4. Engine — Artificial Intelligence and green technology

Which of the pairs given above are correctly matched?

A. 1 and 2 only
B. 2 and 3 only
C. 1, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Mains Question

Q. "BRICS seeks reform of global governance institutions without necessarily replacing them." Examine its significance for developing countries.
(10/15 marks)

Economy (GS Paper: 3)

Flexible Inflation Targeting — 10 Years

- **Inflation Targeting (IT):** Monetary framework in which the central bank targets a specified inflation rate.
- India's **Flexible Inflation Targeting (FIT)** framework formally operates around a **4% CPI inflation target with ±2% tolerance band**.
- The framework gives importance to **price stability while keeping growth in consideration**.
- Debate has emerged over whether India's **Phillips Curve is relatively flat**.

Phillips Curve

Traditionally, the Phillips Curve suggests an **inverse relationship between inflation and unemployment/output slack** over certain periods.

Major Concerns

- India's large **informal workforce** weakens the wage-inflation relationship.
- **Food and fuel shocks** cannot be effectively controlled through interest-rate hikes alone.
- Higher interest rates can increase borrowing costs for **MSMEs, housing and investment**.
- Household inflation expectations may remain influenced by everyday food prices.

Why FIT remains important

- Helps maintain **macroeconomic stability**.
- Provides a predictable monetary-policy framework.
- Can prevent temporary supply shocks from becoming broader, persistent inflation.
- Supports credibility of the central bank and inflation expectations.

Way Forward

- Better food storage and cold chains.
- Climate-resilient agriculture.
- Buffer-stock management.
- Improved inflation-expectation surveys.
- Updated CPI consumption basket.
- Coordination between fiscal and monetary authorities.

Prelims Question

Q1. Consider the following statements regarding India's Flexible Inflation Targeting framework:

1. The CPI inflation target is 4%.
2. The tolerance band is ±2 percentage points.
3. The framework completely ignores economic growth.
4. The Monetary Policy Committee plays a central role in monetary-policy decisions.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 4 only
C. 2 and 3 only
D. 1, 2, 3 and 4

Answer: B

Mains Question

Q. What is the Phillips Curve? Critically examine its relevance for inflation management in India, particularly in the context of a large informal workforce.
(15 marks)

Polity/Governance (GS Paper: 2)

Central Consumer Protection Authority (CCPA)

- **CCPA:** Central regulatory authority for protection of consumer rights as a collective class.
- Established in **July 2020** under the **Consumer Protection Act, 2019**.
- It addresses:
  - Violation of consumer rights.
  - Unfair trade practices.
  - False/misleading advertisements.
  - Deceptive commercial practices.
- Recent focus: misleading **"100%" claims** used in food-product marketing.

Important Powers

1. **Suo motu investigation** into consumer-rights violations.
2. Can order **withdrawal/modification of misleading advertisements**.
3. Can impose penalties on manufacturers, traders and endorsers.
4. Can order **recall of unsafe goods**.
5. Can direct **refunds**.
6. Can issue consumer-safety notices and guidelines.
7. Can act on behalf of consumers as a collective class.

CCPA vs Consumer Commissions

CCPA	Consumer Commissions
Regulatory/enforcement body	Adjudicatory mechanism
Protects consumers as a collective class	Decides consumer disputes/complaints
Can investigate and act against unfair practices	Provides consumer dispute redressal
Can act suo motu	Generally deals with complaints brought before it

Significance

Old approach: Consumer suffers → files complaint → seeks remedy.

CCPA approach:
Identify deceptive practice → investigate → regulate → prevent wider consumer harm.

Prelims Question

Q1. Consider the following statements regarding the Central Consumer Protection Authority (CCPA):

1. It was established under the Consumer Protection Act, 2019.
2. It can initiate suo motu investigations.
3. It can take action against misleading advertisements.
4. It deals only with individual consumer complaints.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B

Mains Question

Q. The Central Consumer Protection Authority represents a shift from reactive consumer dispute resolution towards preventive market regulation. Discuss.
(10 marks)

Economy, Agriculture, Environment (GS Paper:3)

Jute: India's "Golden Fibre"



Why in News?

India is the **world's largest producer of raw jute** and contributes about **75% of global jute-goods production**. However, declining acreage, low productivity, poor retting facilities and dependence on government procurement remain major concerns.

Key Facts

Aspect	Important Point
Other name	**Golden Fibre**
Nature	Biodegradable, recyclable natural fibre
Major requirement	Hot & humid climate
Rainfall	**700–1,500 mm**
Sowing	March–April
Harvest	About **100–110 days**
Farmers	Mainly small & marginal farmers
Major uses	Bags, textiles, construction, agriculture, packaging
Special properties	Strong, durable, breathable, moisture-absorbent
Major issue	Competition from synthetic fibres

Present Status

- Jute, mesta production increased from **88.02 lakh bales (2024–25)** to **94.03 lakh bales (2025–26)**.
- Jute acreage declined to around **5.56 lakh ha in 2025**, compared with normal acreage of about **6.60 lakh ha**.
- Farmers are increasingly shifting towards crops such as **paddy and maize** because of better returns.

Major Problems

1. Low productivity & poor fibre quality

- Much of India's jute is lower grade.
- Limits production of premium textiles and diversified products.

2. Retting problem

- Traditional retting requires adequate **clean water**.
- Water scarcity affects fibre quality.

3. Climate vulnerability

- Erratic monsoon, floods and drought-like conditions affect production.
- Particularly relevant to **Assam and other flood-prone areas**.

4. Dependence on packaging

- Large proportion of jute demand comes from mandatory food-grain/sugar packaging.

5. Technology gap

- Mechanisation, processing, fibre extraction and modern manufacturing remain inadequate.

6. Market & export challenges

- Jute products face competition from cheaper synthetic alternatives.

Jute Geotextiles

Jute Geotextile (JGT) is a technical textile made from jute and used for:

- Soil stabilisation
- Erosion control
- Road construction

- River-bank protection
- Ecological restoration
- Supporting seed germination

Advantages:

- Biodegradable
- Improves soil structure
- Helps control erosion
- Supports vegetation
- Can contribute to sustainable infrastructure

Important Government Initiatives

MSP for Raw Jute

- MSP for **2026–27: ₹5,925/quintal**.
- Jute Corporation of India (**JCI**) is the nodal agency for MSP procurement.

Jute Packaging Materials Act

- Mandates packaging of:
  - **100% food grains**
  - **20% sugar**
    in jute bags, subject to government decisions/exemptions.

National Jute Development Programme (NJDP)

- Focuses on productivity, farmer income and diversification.
- Includes **JUTE-ICARE** and Jute Diversification Scheme.

- Improve mechanisation and retting infrastructure.
- Develop climate-resilient varieties.
- Increase farmer access to certified seeds and technology.
- Expand jute-based apparel and lifestyle products.
- Strengthen exports and branding.
- Integrate farmers, traders, mills and exporters through digital platforms.
- Reduce excessive dependence on compulsory packaging.
- Promote jute as a **sustainable alternative to plastics**.

JUTE-ICARE

- Promotes:
  - Scientific cultivation
  - Certified seeds
  - Mechanisation
  - Better retting practices
  - Improved farm productivity

JUTE-SMART

- Digital platform for procurement and supply of food-grain jute bags.
- Promotes transparency and digitalisation of the jute supply chain.

Prelims Questions

Q1. Consider the following statements regarding jute:

1. Jute is a biodegradable natural fibre.
2. It generally requires hot and humid climatic conditions.
3. Jute is predominantly cultivated by large commercial farmers in India.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Questions

Q1. "Jute can play an important role in India's transition towards a sustainable and circular economy." Discuss. (150 words | 10 marks)

Geography & International Relations

China's Yarlung Zangbo Mega-Dam



China's proposed **Yarlung Zangbo/Great Bend (Medog) hydropower project** has renewed concerns in India and Bangladesh because the river enters India as the **Siang**, becomes the **Brahmaputra in Assam**, and eventually flows into Bangladesh.

Key Facts

Aspect	Details
River in Tibet	Yarlung Zangbo/Tsangpo
In Arunachal Pradesh	Siang/Dihang
In Assam	Brahmaputra
Great Bend	Near Namcha Barwa/Medog, Tibet
Proposed capacity	60 GW
Expected generation	300 billion kWh/year
Location	Great Bend region of Yarlung Zangbo
Major concern	Downstream water security + ecological and seismic risks

The project is expected to be several times the generating capacity of the Three Gorges project and is intended to exploit the enormous elevation drop at the Great Bend.

River Geography

Tibet → Arunachal Pradesh → Assam → Bangladesh → Bay of Bengal

Yarlung Zangbo → Siang → Brahmaputra → Jamuna

The river originates on the Tibetan Plateau and makes a dramatic **U-turn at the Great Bend** before entering Arunachal Pradesh.

Major Concerns

A. Environmental

- Himalayan region is highly **seismically active**.
- Large-scale construction may increase risks associated with **landslides, earthquakes and cascading hazards**.
- Fragile Himalayan ecosystems and biodiversity may be affected.
- Changes in sediment and flow regimes can influence downstream river ecology.

B. Water Security

- China is the **upper riparian**, while India and Bangladesh are downstream.
- Regulation of water flow could potentially affect **seasonal discharge**.
- Sudden releases during extreme events could create downstream risks.

C. Geopolitical

- Brahmaputra is a **transboundary river** involving China, India and Bangladesh.
- India does not have a comprehensive, legally binding water-sharing treaty with China for the Brahmaputra.
- The project adds a **hydropolitical dimension** to India-China relations.

India-China Cooperation

- **2006:** Expert Level Mechanism established for transboundary river issues.
- Hydrological information-sharing arrangements have covered the Brahmaputra and Sutlej.
- India has repeatedly conveyed that downstream interests should not be harmed by upstream activities.
- The Brahmaputra hydrological-data arrangement has faced interruptions, making **predictable and real-time data sharing** an important issue.

Way Forward for India

India should focus on:

1. Real-time hydrological data sharing.
2. Stronger flood and GLOF early-warning systems.
3. Greater scientific monitoring of the Brahmaputra basin.
4. Diplomatic engagement with China.
5. Cooperation with Bangladesh and other downstream stakeholders.
6. Independent seismic and environmental assessments.
7. Strengthening India's own hydropower and water-management infrastructure.

Prelims Questions

Q1. With reference to the Yarlung Zangbo River, consider the following statements:

1. It enters India through Arunachal Pradesh.
2. It is known as the Siang in Arunachal Pradesh.
3. It becomes the Brahmaputra in Assam.
4. It ultimately flows into the Bay of Bengal.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Mains Questions

"The Himalayan river systems are simultaneously ecological assets and sources of geopolitical vulnerability." Discuss with reference to the Yarlung Zangbo–Brahmaputra basin. ***(150 words)***

Environment & Ecology (GS Paper III)

International Day of Clean Air for Blue Skies



Why in News?

The **International Day of Clean Air for Blue Skies** is observed every year on **7 September**. The **UN General Assembly designated the day in 2019** to strengthen global efforts against air pollution.

Air Pollution – Key Facts

- **Air pollution:** Presence of harmful substances in the atmosphere at concentrations that adversely affect health and ecosystems.
- Major pollutants:
  - **$PM_{2.5}$ & PM_{10}**
  - SO_2 – Sulphur dioxide
  - NO_2 – Nitrogen dioxide
  - CO – Carbon monoxide
  - O_3 – Ozone
  - VOCs – Volatile Organic Compounds
  - Lead
- **PM_{10}:** particles ≤10 micrometres.
- **$PM_{2.5}$:** particles ≤2.5 micrometres; can penetrate deeper into the lungs and may enter the bloodstream.

India – Important Current-Affairs Facts

According to the **World Air Quality Report 2025** cited in the given material:

- India ranked **6th among the world's most polluted countries**.
- Average $PM_{2.5}$ concentration: **48.9 µg/m³**.
- WHO guideline for annual $PM_{2.5}$: **5 µg/m³**.
- **Loni (Ghaziabad)** was reported as the most polluted city.
- **Byrnihat, Meghalaya** ranked among the world's most polluted cities.
- **Delhi** was also among the highest-ranked polluted cities.

Exam caution: Air-quality rankings can change by report, methodology and year. In the exam, mention the **report year** with the ranking.

Major Government Initiatives

Initiative	Key Point
National Air Quality Monitoring Programme (NAMP)	Monitoring and assessment of ambient air quality
National Clean Air Programme (NCAP)	Comprehensive programme to reduce air pollution in identified cities/regions
BS-VI Standards	Stricter vehicular emission norms; implemented nationwide in 2020
Swachh Vayu Survekshan	Annual assessment of cities under NCAP
PM Ujjwala Yojana	Promotes LPG as cleaner cooking fuel
FAME	Promotes electric/hybrid vehicles
GRIHA	Promotes sustainable and energy-efficient buildings
CAQM	Coordinates air-quality management in NCR and adjoining areas
Green India Mission	Enhances forest/tree cover and ecosystem services
Waste-management measures	Reduce open waste burning and associated emissions

Key Challenges

Sources of pollution → Emissions → Atmospheric concentration → Health & ecological impacts

Major sources include:

- Vehicular emissions
- Industries and power plants

- Construction and road dust
- Crop-residue/open burning
- Household solid fuels
- Waste burning
- Seasonal and meteorological factors

Way Forward

- **Source-specific** pollution control
- Science-based emission inventories
- Better **air-quality monitoring**
- Stronger city-level **Clean Air Action Plans**
- Cleaner transport and energy
- Prevention of waste and biomass burning
- Inter-state and regional cooperation
- Greater role for **district and urban administrations**
- Use of technology for pollution-source identification

Prelims Questions

Q1. Consider the following statements regarding $PM_{2.5}$:

1. $PM_{2.5}$ particles are smaller than PM_{10} particles.
2. $PM_{2.5}$ can penetrate deeper into the respiratory system.
3. $PM_{2.5}$ refers only to gaseous pollutants.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

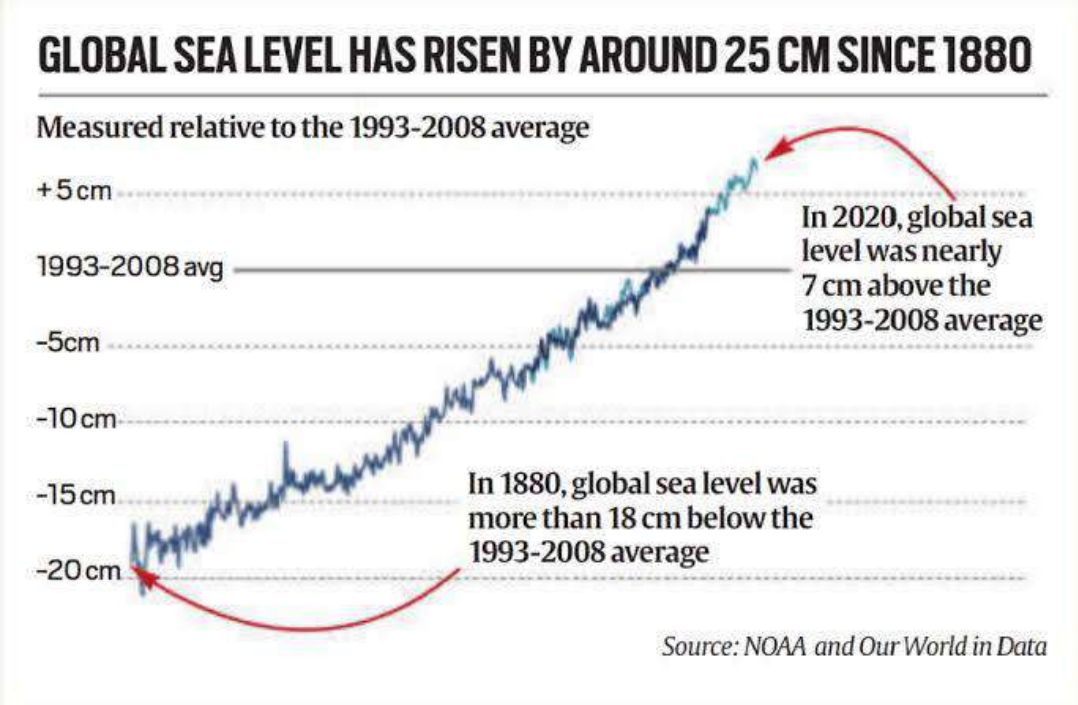
Answer: A

Mains Questions

Question 1. "Air pollution in India is not merely an urban problem but a multi-source and regional environmental challenge." Discuss. (10 Marks)

Environment (GS Paper III)

Sea-Level Rise & Fundamental Human Rights



A recent **UN Special Report – *Challenges related to sea-level rise and ways and approaches to address it*** highlighted that sea-level rise is no longer only an environmental issue; it is increasingly a **human rights, livelihood, cultural identity and legal/statehood challenge**.

Why is Sea Level Rising?

Major drivers:

- **Ocean warming → thermal expansion of seawater**
- **Melting glaciers**
- **Melting Greenland & Antarctic ice sheets**
- **Land subsidence** can increase *relative* sea-level rise locally.

Key figure: Global annual sea-level rise reached about **5.9 mm in 2024**, according to the report cited in the question.

Scale of the Problem

- Around **770 million people** live in coastal areas less than **5 m above the high-tide line**.
- Up to **1.2 billion people** could face displacement by **2050** without adequate adaptation.
- Coastal assets at risk: approximately **2–3.5 trillion**.
- Potential annual global losses could reach **1.2–4 trillion by the end of the century** without adequate adaptation.

Impact Chain

Climate change
↓
Ocean warming + ice melt
↓
Sea-level rise
↓
Coastal flooding + erosion + saltwater intrusion
↓
Loss of homes, agriculture & infrastructure
↓
Displacement + livelihood loss
↓
Human rights & cultural identity concerns

Human Rights Dimension

Sea-level rise can threaten:

- Right to **adequate housing**
- Access to **safe drinking water**
- **Food security**
- **Healthcare**
- **Education**
- **Sanitation**
- **Livelihoods**
- **Cultural identity**

For **Indigenous communities**, loss of ancestral land can affect:

- Cultural identity
- Spiritual connections
- Traditional knowledge
- Intergenerational continuity

Who is Most Vulnerable?

Small Island Developing States (SIDS)

- High exposure to coastal flooding and erosion.
- Face questions concerning **territorial integrity and statehood**.

Indigenous Peoples

- Risk losing ancestral lands and cultural heritage.

Low-lying Coastal Communities

- Greater risk of displacement and livelihood disruption.

South Asian Deltas

Particularly vulnerable because of:

- Low elevation
- Dense population
- Cyclones and storm surges
- Saltwater intrusion
- Land subsidence

IN Sea-Level Rise in India

Current Trend

- India's coastline is experiencing gradual sea-level rise.
- Long-term average cited in the material: approximately **3.3 mm/year**.
- Local **relative sea-level rise** may be higher due to:
    - Land subsidence
    - Groundwater extraction
    - Sediment compaction

Vulnerable Areas

- **Mumbai**
- **Kolkata**
- **Chennai**
- **Sundarbans**
- **Ganga–Brahmaputra–Meghna delta**
- **Andaman & Nicobar Islands**
- **Lakshadweep**

Major Risks

Sea-level rise + cyclone/storm surge
→ coastal flooding
→ erosion
→ salinisation
→ infrastructure damage
→ displacement
→ livelihood loss

Way Forward

India should adopt a 5R approach:

1. Risk assessment
→ Improve coastal vulnerability mapping.

2. Resilient infrastructure
→ Climate-proof cities, roads, ports and public facilities.

3. Restoration
→ Mangroves, wetlands and other coastal ecosystems.

4. Rights-based adaptation
→ Protect vulnerable communities and livelihoods.

5. Reduction of emissions
→ Accelerate mitigation to limit long-term sea-level rise.

Prelims Questions

Q1. Consider the following statements regarding sea-level rise:

1. Ocean warming contributes to sea-level rise through thermal expansion.
2. Melting of land-based glaciers contributes to sea-level rise.
3. Land subsidence can increase relative sea-level rise in coastal areas.

Which of the statements given above are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: D

Mains Questions

Q1. *"**Sea-level rise is increasingly becoming a human-rights challenge rather than merely an environmental problem."*** **Discuss. (150 words)**

Infrastructure (GS Paper 3)

Western Dedicated Freight Corridor (WDFC)

- The **Western Dedicated Freight Corridor (WDFC)** was recently dedicated to the nation.
- Dedicated Freight Corridors (DFCs) are **freight-only railway routes** designed to increase cargo capacity, reduce congestion and improve logistics efficiency.

Key Facts

Corridor	Length	Major significance
Eastern DFC (EDFC)	1,337 km	Coal, iron ore and other raw-material movement
Western DFC (WDFC)	1,506 km	Industrial goods, containers and port connectivity
Total	**2,843 km**	Dedicated freight network

- DFC concept was conceived in **2005**.
- **EDFC and WDFC were approved in 2008**.
- EDFC was completed in **2023**.
- WDFC passes through **Uttar Pradesh, Haryana, Rajasthan and Gujarat**.

Important Features

- **Freight-only railway corridor** → separates freight movement from passenger traffic.
- **Double-stack container trains** → two layers of containers can be transported.
- Designed for freight speeds of **up to 100 kmph**.
- WDFC can substantially reduce freight transit time.
- By shifting freight trains to DFCs, **existing railway lines get additional capacity for passenger trains**.

Proposed Third DFC

- A proposed **~2,052-km Dankuni–Surat DFC** will further expand the network.
- It is planned to connect **six states**:
  West Bengal → Odisha → Chhattisgarh → Madhya Pradesh → Maharashtra → Gujarat.

Major benefits:

- Reduces congestion on conventional railway routes.
- Improves **logistics efficiency**.
- Strengthens **port–industrial connectivity**.
- Facilitates movement of bulk commodities and containers.
- Improves reliability of supply chains.
- Frees conventional railway capacity for passenger services.
- Supports **Make in India, industrial corridors and multimodal logistics**.
- Can reduce freight transit time by around **60%** on relevant routes.
- Potential container-cargo cost saving is estimated at around **25%**.

Prelims Questions

Q1. Consider the following statements regarding Dedicated Freight Corridors:

1. The Western DFC connects New Dadri with New JNPT.
2. The Eastern DFC connects Punjab with Bihar.
3. Dedicated Freight Corridors are primarily designed for passenger trains.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. Dedicated Freight Corridors are important for improving India's logistics efficiency and strengthening its industrial growth. Discuss their major features and significance.(10 Marks)

Art & Culture (GS Paper 1)

UNESCO Tentative List: 4 Indian Heritage Sites

Key Facts

- In **September 2026**, **4 Indian sites** were added to the **UNESCO World Heritage Tentative List**.
- India's total tentative-list sites increased to **73**:
  - **53 Cultural**
  - **17 Natural**
  - **3 Mixed**

Four Newly Added Sites

Site	State/Region	Key Significance
Rangpur-Sivasagar Historic Ensemble	Assam	Pre-modern urban and cultural landscape
Colonial Penal Settlement	Andaman Islands	Linked to colonial penal history after 1857
Nicobarese Cultural Continuity	Nicobar Islands	Traditional cultural landscape of Nicobarese communities
Painted Haveli Towns of Shekhawati	Rajasthan	Historic painted havelis and urban heritage

Prelims Question

Q1. With reference to UNESCO's World Heritage Tentative List, consider the following pairs:

1. Rangpur-Sivasagar Historic Ensemble — Assam
2. Painted Haveli Towns of Shekhawati — Rajasthan
3. Colonial Penal Settlement — Andaman Islands
4. Nicobarese Cultural Continuity — Lakshadweep

Which of the pairs given above are correctly matched?

A. 1, 2 and 3 only
B. 1 and 4 only
C. 2 and 3 only
D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. *India's cultural heritage is both a source of national identity and an instrument of international cultural diplomacy.* Discuss with reference to India's UNESCO heritage initiatives.
(10 marks, 150 words)

International Relations (GS Paper: GS2)
India Joins Global 6G Initiative

What happened?

- In **September 2026**, India joined the **"Call to Action for 6G Leadership and Security"**.
- Initiative is led by the **US National Telecommunications and Information Administration (NTIA)**.
- India joined alongside the **USA and 24 other countries**, becoming the **26th participating country**.

Why is it important?

The initiative seeks international cooperation for:

- **Secure 6G networks**
- **Interoperable telecom systems**
- Technology innovation
- Global telecom standards
- Supply-chain security
- Next-generation digital connectivity

India's 6G Vision

Under the **Bharat 6G Mission**, India aims to become a global hub for:

- 6G **intellectual property**
- Telecom products
- Affordable 6G solutions

Target: 2030

G20 Link

India also emphasised cooperation in emerging technologies such as:

- Artificial Intelligence
- Semiconductors
- Digital Public Infrastructure
- Robotics

Prelims Question

Q1. Consider the following statements regarding the global 6G initiative:

1. India joined the "Call to Action for 6G Leadership and Security".
2. The initiative is led by the US National Telecommunications and Information Administration.
3. India's Bharat 6G Mission aims to develop India as a global hub for 6G technologies by 2030.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: D

Mains Question

Q. ***The transition from 5G to 6G will have implications beyond faster connectivity.*** **Discuss the strategic, economic and security significance of international cooperation in 6G technology.**
(10 marks, 150 words)

GOVERNANCE (GS Paper 2)

PM-SETU: 735.70 Crore for 3 ITI Clusters

- **PM-SETU:** *Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs.*
- 5th National Steering Committee approved **735.70 crore** for 3 ITI clusters.
- **Rajasthan – Bhiwadi:** 241 crore — HG Infra Engineering Ltd.
- **Telangana – Medchal:** 254.30 crore — ZEN Technologies Ltd.
- **Uttar Pradesh – Meerut:** 240.40 crore — NSDC.
- Total sanctioned investment rose to **2,171 crore across 9 ITI clusters**.
- Focus: **industry-led ITI modernisation, future-ready courses and industry-aligned skills**.

Prelims Question

Q. Consider the following statements regarding PM-SETU:

1. It focuses on transformation and upgradation of Industrial Training Institutes.
2. It promotes industry-oriented skill development.
3. Its implementation is limited to the southern states of India.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B

Mains Question

Q. How can industry-led modernisation of ITIs help address India's skill-employment mismatch? Discuss.

Agriculture & Food Security (GS Paper: III)

DFPD–FCI MoU: Modernisation of Foodgrain Management

Key Points

- **DFPD:** Department of Food & Public Distribution.
- **FCI:** Food Corporation of India.
- MoU for **FY 2026–27**.
- Focus areas:
  - Reduction of storage losses
  - Optimisation of storage capacity
  - Better logistics and supply chains
  - Quality control
  - Technology adoption
  - Employee skill development
- **Depot Darpan Portal** is linked with monitoring depot infrastructure and operational efficiency.
- **FCI was established in 1965** under the **Food Corporations Act, 1964**.
- Major functions: **procurement, storage, movement and distribution of foodgrains**.

Prelims Question

Q. Which of the following are functions of the Food Corporation of India?

1. Procurement of foodgrains
2. Storage of foodgrains
3. Movement and distribution of foodgrains
4. Monetary policy formulation

A. 1, 2 and 3 only
B. 1 and 4 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. Discuss the importance of modernising India's foodgrain storage and logistics system for strengthening food security.

Science & Technology (GS Paper: III)
AASHVAST Lab for Drone Security

- Indian Army established **AASHVAST** lab under **DG EME** in New Delhi.
- Full form: **Assessment and Analysis of Electronic Systems Hardware for Vulnerabilities and Security Threats**.
- Objective:
  - Detect vulnerabilities in drones.
  - Identify potentially problematic foreign/Chinese-origin components.
  - Examine firmware and electronic systems.
  - Strengthen cyber resilience.
- The facility uses **air-gapped and read-only features**, reducing risks during testing.
- The Army is planning a broader network of AASHVAST labs.

Prelims Question

Q. AASHVAST, recently in news, is associated with:

A. Satellite navigation
B. Drone and electronic-system vulnerability assessment
C. Missile propulsion
D. Naval underwater communication

Answer: B

Mains Question

Q. With increasing dependence on drones in modern warfare, discuss the emerging cybersecurity challenges associated with unmanned systems.

International Relations GS Paper: II)

Veer Guardian-2026: India–Japan Air Exercise



- **Participants:** Indian Air Force (IAF) + Japan Air Self-Defence Force (JASDF).
- **2nd edition** of bilateral air exercise.
- Held at **Air Force Station Jodhpur, Rajasthan**.
- Dates: **9–22 September 2026**.
- Indian aircraft: **Tejas, Su-30MKI and Rafale**.
- Japanese aircraft: **F-2A**.
- Focus:
  - Interoperability
  - Tactical proficiency
  - Mission planning
  - Aerospace safety
  - Professional and technical exchanges.
- Japanese F-2A fighters operated from Indian soil for the **first time** during the exercise.
- First edition was held in **Japan in 2023**.

Prelims Question

Q. Consider the following pairs:

Exercise	Countries
Veer Guardian	India–Japan
Dharma Guardian	India–Japan
JIMEX	India–Japan

Which of the pairs are correctly matched?

A. Only one
B. Only two
C. All three
D. None

Answer: C

Mains Question

Q. Examine the significance of India-Japan defence cooperation in strengthening security and interoperability in the Indo-Pacific region.

Agriculture (GS Paper 3)

Proposed New Seed Act, 2026

The Union Agriculture Ministry is consulting farmer organisations on a **proposed new Seed Act** to replace the **Seeds Act, 1966**, to tackle fake seeds, improve traceability, and strengthen accountability in the seed supply chain.

Why is a New Seed Act Needed?

- **Old framework:** Seeds Act, 1966 is nearly six decades old.
- **Regulatory gap:** Around **70% of seeds** are reportedly outside the existing Act's effective ambit.
- **Fake/substandard seeds:** Can cause crop failure, income loss and farmer indebtedness.
- **Technological changes:** New varieties, biotechnology and private-sector participation require updated regulation.
- **State-level variation:** Different procedures across States create regulatory inconsistencies.
- **Weak accountability:** Existing penalties may not adequately deter deliberate fraud.

Key Features

Feature	Provision
National registration	Seeds and planting material to be registered in a national register
QR traceability	QR code to track origin, manufacturer, testing and movement
Unregistered seeds	Sale proposed to be prohibited
Farmer seed rights	Farmers can use, exchange and sell traditional/farmers' varieties
Traditional seeds	Registration not mandatory; voluntary registration possible
Penalties	Different penalties based on seriousness of violation
Serious offences	Fake seeds/fraud may attract up to ₹30 lakh + imprisonment
State role	States can release varieties while following national standards
Seed Security Fund	State-level fund from penalties/recoveries
Compensation	Verified seed failure compensation proposed within **15 days**

Important: Farmers' Rights

The proposed framework seeks to preserve farmers' ability to:

Save → Use → Exchange → Sell traditional/farmers' varieties

This is important because seed regulation must balance **quality control** with **farmers' traditional seed systems**.

Major Concerns

Over-regulation → Compliance costs for small producers
Digital divide → QR systems may be difficult for digitally excluded farmers
Centre–State issue → National standards vs local agro-climatic conditions
Farmer rights → Regulation should not undermine traditional seed exchange
Implementation → Requires adequate laboratories, testing, inspectors and grievance mechanisms

Way Forward

A successful Seed Act should follow a **farmer-centric , risk-based approach**:

Strong regulation
↓
Quality testing & traceability
↓
Protection of farmer seed rights
↓
Fast compensation
↓
Greater seed quality, farmer confidence

Prelims Questions

Q1. Consider the following statements regarding the proposed new Seed Act:

1. It proposes a national register for seeds and planting material.
2. QR codes may be used for seed traceability.
3. Farmers would lose the right to exchange traditional varieties.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only

C. 1 and 3 only
D. 1, 2 and 3

Answer: A

Mains Question

Q. ***"Effective seed regulation must balance quality assurance, farmer protection and preservation of traditional seed systems."*** **Discuss the significance and challenges of the proposed new Seed Act. (10 marks, 150 words)**

Polity & Governance (GS Paper 2)

Registered Unrecognised Political Parties (RUPPs)

A recent investigation reported that **six Registered Unrecognised Political Parties (RUPPs)** received donations of around **1,700 crore during 2023–24**, raising concerns over transparency, tax exemptions and possible misuse of political-party status.

What are RUPPs?

Registered Unrecognised Political Parties are political parties registered with the **Election Commission of India (ECI)** but not recognised as a **National Party or State Party**.

Legal basis

- **Section 29A, Representation of the People Act (RPA), 1951** provides for registration of political parties with the ECI.
- After registration, a party generally remains an **RUPP** unless it satisfies the prescribed conditions for recognition as a State/National Party.

Benefits available

RUPPs can receive certain benefits, including:

- **Tax exemptions** on eligible political donations, subject to statutory conditions.
- **Common symbol** for contesting elections, subject to ECI rules.
- Up to **20 star campaigners** for election campaigning.

Regulation of Donations

Political parties have disclosure and financial-compliance obligations.

Important provisions

Section 29C, RPA 1951

- Political parties have to furnish details of contributions above the prescribed threshold.
- Failure to submit the required contribution report can affect eligibility for tax exemption.

Major Concern: "Letter Pad Parties"

India had **more than 2,800 RUPPs** according to the ECI notification cited in the report, while only around **750 contested the 2024 Lok Sabha elections**.

This has raised concerns about parties that:

- remain registered but rarely contest elections,
- fail to comply adequately with statutory requirements,
- potentially exploit tax and other benefits attached to political-party status.

Such entities are often described as **“letter pad parties.”**

Supreme Court: *Indian National Congress v. Institute of Social Welfare & Ors. (2002)*

The Supreme Court held that the **ECI does not possess a general power to deregister political parties under the RPA, 1951**.

The ECI can deregister a party only in **exceptional circumstances**, such as:

- Registration obtained through **fraud**;
- Party ceasing to have **allegiance to the Constitution**;
- Party being declared **unlawful by the government**.

Constitutional/legal issue

This creates a regulatory gap:

ECI can register → ECI can regulate elections → but its power to cancel registration is highly restricted.

Therefore, stronger statutory provisions may be required.

Limitation of this approach

A party should not necessarily lose all benefits merely because it does not win seats.

A political party may:

- contest elections consistently,
- represent a particular social or regional interest,
- receive votes,
- but still fail to win a seat.

Therefore, an alternative could be a **minimum vote-share threshold**, rather than a seat-winning requirement.

Way Forward

Clear deregistration framework

Parliament could provide the ECI with clearly defined statutory powers to deregister parties for prolonged inactivity or serious non-compliance.

Greater financial transparency

Strengthen:

- annual financial reporting,
- donor disclosure,
- audit requirements,
- digital financial trails.

Data sharing

Greater coordination among:
ECI + Income Tax Department + Financial Intelligence Unit + other enforcement agencies

can help detect suspicious financial transactions.

Objective eligibility criteria

Instead of simply requiring a party to **win a seat**, Parliament could consider objective criteria such as:

- minimum vote share,
- minimum electoral participation,
- continued compliance with statutory requirements.

Protect political pluralism

Electoral regulation should prevent misuse of political-party status **without unnecessarily restricting legitimate political participation**.

Governance (GS Paper 2)

Collaborative Governance for Viksit Bharat

- **Collaborative governance** = Government, local communities, private sector, civil society working together.
- Shift from **"scheme delivery" → "measurable outcomes/impact"** on citizens.
- Complex **"wicked problems"** like poverty, malnutrition and sanitation require **convergence, decentralisation and community participation**.

Important Government Initiatives

Initiative	Key Point
• **GeM**	Transparent and efficient government procurement
• **UMANG**	Single digital platform for multiple government services
• **CPGRAMS**	24×7 online grievance redressal and monitoring
• **e-HRMS 2.0**	Digital access to HR services for government employees

Role of Local Governments

- **11th Schedule:** 29 subjects → Panchayats.
- **12th Schedule:** 18 functional areas → Municipalities.
- Local governments enable **convergence of health, sanitation, nutrition, livelihoods and poverty alleviation**.
- Effective decentralisation requires the **3Fs**:
  Funds + Functions + Functionaries.

Community Participation

- **SHGs/NRLM:** Women's collectives and social capital.
- **Swachh Bharat Mission:** Behavioural change + community mobilisation.
- **ASHA workers:** Link communities with public health services.
- **Watershed programmes:** Community management of natural resources.
- **Total Literacy Campaigns:** Decentralised citizen participation.

Major Challenges

- Excessive **centralisation** and standardised solutions.
- Weak technical and administrative capacity of local bodies.
- Inadequate **financial and human resources**.
- Monitoring often focuses on **expenditure/targets rather than outcomes**.
- Insufficient **citizen/community validation**.

Way Forward

- Strengthen local autonomy.
- Deploy professionals and community resource persons.
- Link funds with developmental outcomes.

- Use **Panchayat Advancement Index (PAI)** for outcome-based assessment.
- Strengthen **social audits, citizen feedback and transparency**.

Prelims Questions

Q1. Consider the following pairs:

1. GeM — Government procurement
2. UMANG — Access to multiple government services
3. CPGRAMS — Public grievance redressal
4. e-HRMS 2.0 — Government employee HR services

Which of the pairs given above are correctly matched?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Mains Questions

10 Marks

Q1. *"Good governance requires a shift from government-centric delivery to outcome-oriented collaborative governance."* Discuss.

Science & Technology (GS Paper 3)

India's Research Paradox



What is the Research Paradox?

India is producing a **large and rapidly increasing number of research papers and patents**, but their **citation impact, patent grants, commercialisation and research integrity** remain comparatively weak.

Key Data

Indicator	Key Fact
Research publications	**1.6 million Scopus-indexed papers (2020–25)**
Global publication rank	**3rd**
Aggregate h-index	**19th globally**
University patent filings	**11,150 (2020–21) → 45,776 (2024–25)**
University patent grant rate	Around **3%**
Patent commercial working	**12.1% (2022–23) → 1.6% (2024–25)**
Research integrity	India among countries with high paper-retraction numbers

Why the Gap?

1. Quantity-driven incentives

- Institutional rankings can reward **number of publications and patent filings** more than their actual impact.
- This may encourage quantity over research quality.

2. Weak industry–academia linkage

- Many patents do not progress from **laboratory → prototype → market**.

3. Research integrity concerns

- Predatory journals, paper mills, plagiarism and other forms of misconduct can inflate publication numbers.
- Rising retractions indicate concerns about research quality.

4. Limited institutional capacity

- Lack of strong mechanisms for investigating and preventing systemic research misconduct.

Why Does It Matter for India?

A strong research ecosystem should generate:
Research → Innovation → Patents → Commercialisation → Jobs/Productivity → Social benefits

A publication-heavy but low-impact ecosystem can weaken the **economic and societal returns from R&D investment**.

Way Forward

- Shift evaluation from **publication/patent numbers to quality and impact**.
- Use indicators such as **field-weighted citation impact, patent grants and commercialisation**.
- Strengthen **industry–academia collaboration and technology-transfer offices**.
- Expand the role of the **Anusandhan National Research Foundation (ANRF)** in supporting high-quality research.
- Develop stronger mechanisms for **research-integrity monitoring**.
- Promote long-term research grants rather than merely per-paper incentives.

Prelims Questions

Q. Consider the following statements regarding India's research ecosystem:

1. India has witnessed a substantial rise in research publications and university patent filings.
2. Patent filing automatically implies successful commercialisation of the underlying technology.
3. Research integrity and the quality of publications are important indicators of research impact.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 3 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B. 1 and 3 only

International Relations (GS Paper II)

Chennai Declaration of BRICS



Key Points

- **Chennai Declaration/Chennai Consensus** was adopted at the **14th BRICS Science, Technology and Innovation (STI) Ministerial Meeting** under India's **2026 BRICS Chairship**.
- **Aim:** Build a **people-centred and future-ready BRICS STI ecosystem** through joint research, infrastructure sharing, talent mobility and responsible technology.
- **BRICS GRAIN:** Facilitates access to major research facilities, joint projects, researcher mobility and capacity building.
- **BRICS Science & Research Repository:** Helps map researchers, institutions, datasets, research outputs and infrastructure.
- **Youth & Innovation:** Strengthens Young Scientist Forum, Young Innovator Prize and Youth Startup Platform; explores a **BRICS Startup Innovation Fund**.
- **Priority technologies:** AI, High-Performance Computing (HPC), quantum technology, biotechnology, nanotechnology and geospatial technology.
- **Other areas:** Renewable energy, ocean and polar science.

Significance for India

- Strengthens **science diplomacy** and India's role in the Global South.
- Promotes sharing of costly research infrastructure and expertise.
- Encourages researcher mobility, startups and joint innovation.
- Supports development-oriented and responsible use of emerging technologies.

Prelims Questions

Q. Consider the following statements about the Chennai Declaration of BRICS:

1. It seeks to promote cooperation in science, technology and innovation among BRICS countries.
2. BRICS GRAIN is associated with access to research facilities and researcher mobility.
3. The Declaration focuses exclusively on artificial intelligence and quantum technology.

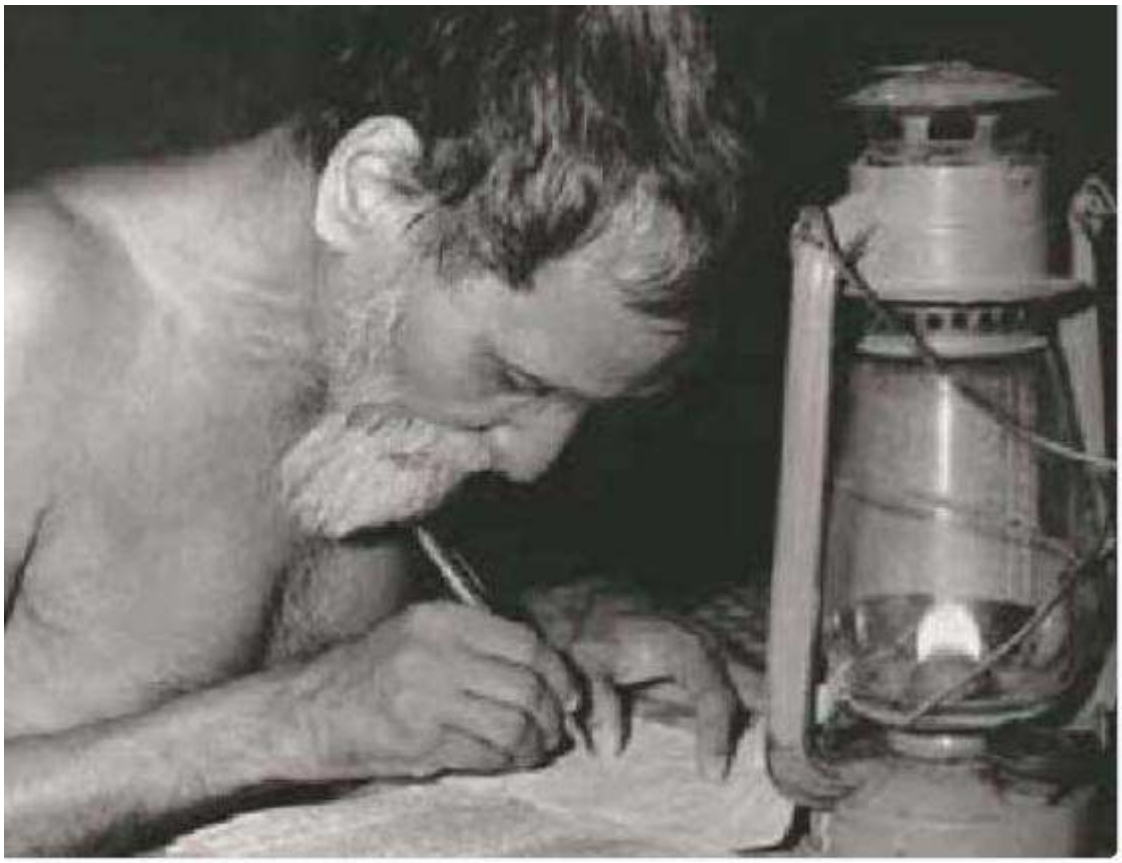
Which of the statements given above is/are correct?

A. 1 and 2 only
B. 1 and 3 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A. 1 and 2 only

Modern Indian History (GS Paper I)

Acharya Vinoba Bhave



Acharya Vinoba Bhave

Who was Vinoba Bhave?

- **Born:** 11 September 1895, Gagode, Maharashtra.
- Original name: **Vinayak Narahari Bhave**.
- Gandhian thinker, social reformer, philosopher and advocate of **non-violence and Sarvodaya**.
- Considered a close spiritual disciple of **Mahatma Gandhi**.

Role in Freedom Movement

- Joined Gandhi in **1916** and participated in constructive programmes.
- Worked at **Wardha**, promoting **Khadi, village sanitation and basic education (Nai Talim)**.
- Participated in **Nagpur Flag Satyagraha (1923)** and Civil Disobedience-related activities.
- In **1940**, Gandhi selected Vinoba as the **first individual Satyagrahi** in the Individual Satyagraha movement.

Major Social Contribution

Bhoodan Movement (Land-Gift Movement)

- Began in **1951 at Pochampally, Telangana**.
- Vinoba appealed to landowners to voluntarily donate land to landless people.
- Later developed into the broader **Gramdan Movement**, emphasising community ownership and village-based social transformation.

Important Ideas

- **Sarvodaya:** Welfare/upliftment of all.
- **Ahimsa:** Non-violent transformation of society.
- **Bhoodan:** Voluntary redistribution of land.
- **Gramdan:** Collective/community-oriented approach to village land and development.
- Emphasised **decentralisation, self-reliant villages and constructive social work**.

Literary Contributions

- **Geetai:** Marathi verse rendering of the Bhagavad Gita.
- **Gita Pravachane:** Lectures on the Bhagavad Gita delivered during imprisonment.
- Other works include *Sthitaprajna-Darshan* and *Swarajya-Shastra*.

Prelims Questions

Consider the following statements about Acharya Vinoba Bhave:

1. He was the first individual Satyagrahi chosen by Mahatma Gandhi in 1940.
2. The Bhoodan Movement was based on voluntary donation of land to the landless.
3. The Bhoodan Movement was launched during the Quit India Movement.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A. 1 and 2 only

Polity & Governance (GS Paper II)

Bankers' Books Evidence Act, 2026



The Bankers' Books Evidence Act, 2026

What is it?

The **Bankers' Books Evidence Act, 2026** modernises the legal framework governing the use of **bank records as evidence in courts**. It replaces the older framework with a technology-neutral approach suited to digital banking.

Effective from: 1 October 2026
Presidential assent: 13 August 2026

Key Features

- **Technology-neutral:** Covers records stored in:
  - Physical books
  - Electronic/digital media
  - Virtual environments
  - Cloud storage
- **Digital certification:** Bank records can be certified using **manual, digital or electronic signatures**.
- **Integrity safeguards:** Digital records must:
  1. Be a true representation/extraction of the original data.
  2. Not contain unauthorised alterations.
  3. Not have been affected by system tampering compromising data integrity.
- **Original records not routinely required:** Courts need not routinely summon bank officials or demand original books when the bank is not a party, unless **special cause is recorded in writing**.

- **Wider financial-sector coverage:** Government can extend its provisions to **NBFCs, fintechs and other financial institutions** through notification.

Significance

- Brings evidence law in line with **India's digital financial ecosystem**.
- Reduces litigation-related costs and delays.
- Avoids unnecessary production of bulky physical records.
- Facilitates **commercial dispute resolution and Ease of Doing Business**.
- Complements the **Bharatiya Sakshya Adhiniyam (BSA)** in dealing with electronic evidence.

Prelims Questions

Consider the following statements regarding the Bankers' Books Evidence Act, 2026:

1. It recognises bank records maintained in electronic, virtual and cloud-based systems.
2. It requires original physical bank registers to be produced in every court proceeding involving banking records.
3. Its provisions can potentially be extended to NBFCs and fintech entities through government notification.

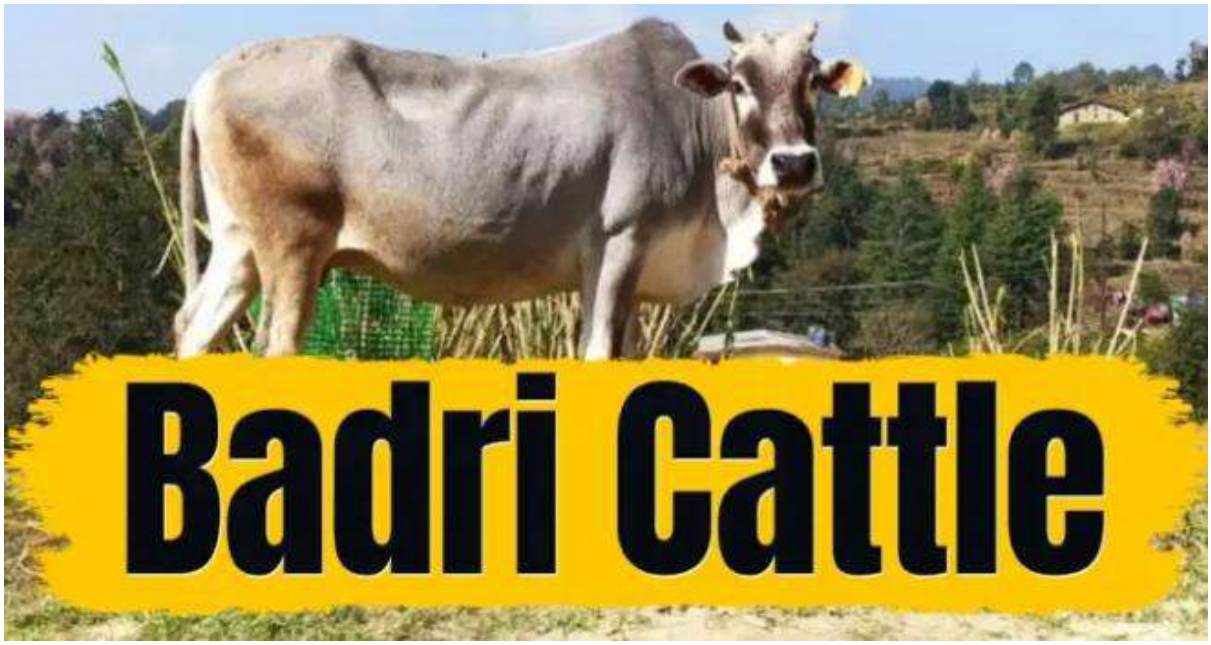
Which of the statements given above is/are correct?

A. 1 and 3 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A. 1 and 3 only

ENVIRONMENT (GS Paper 3)

Badri Cattle



Why in News?

Scientists from **ICAR–National Dairy Research Institute (NDRI), Karnal** and **G.B. Pant University of Agriculture and Technology, Pantnagar** produced a **Badri cattle calf using OPU-IVF technology**.

This is significant for the **conservation and multiplication of indigenous cattle genetic resources**.

About Badri Cattle

- **State:** Uttarakhand
- **Also known as: Pahadi cattle**
- **Status: State animal of Uttarakhand**
- **Habitat:** Mainly the **hilly regions of Uttarakhand**
- **Breed recognition:** Recognised as the **Badri cattle breed** by the **National Bureau of Animal Genetic Resources (NBAGR)**.
- It is adapted to **mountainous terrain and local climatic conditions**.

Physical Characteristics

- Generally **small, active and sure-footed**.
- Common colours: **black, brown and grey**.
- White colour is rarely seen, mainly in females.
- Horns curve **upwards and inwards**.
- Has a prominent hump and relatively straight forehead.

Uses & Characteristics

Badri cattle are reared for:

- **Milk**
- **Bullock power**
- **Manure**

Average milk yield: around **632 kg per lactation**.

They are mainly maintained under **grazing-based systems**, feeding on herbs and shrubs available in mountainous areas.

OPU-IVF Technology

OPU = Ovum Pick-Up

- Mature/unmature oocytes (eggs) are collected from the ovaries of a selected cow using an ultrasound-guided technique.
- The collected oocytes are matured and fertilised with sperm **in vitro (outside the body)**.
- The resulting embryo is subsequently transferred to a suitable surrogate/recipient cow.

Importance:
OPU-IVF can help in the **rapid multiplication of genetically valuable indigenous cattle** and support conservation of important breeds.

Prelims Questions

Q. With reference to Badri cattle, consider the following statements:

1. Badri cattle are primarily associated with the hilly regions of Uttarakhand.
2. They are also known as Pahadi cattle.
3. They are adapted to mountainous terrain and local climatic conditions.
4. OPU-IVF technology can be used for multiplication of genetically valuable cattle.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

ENVIRONMENT AND ECOLOGY (GS Paper 3)

Steel Slag



Why in News?

India has set a **Guinness World Record for the world's longest steel slag road** at **Raigarh, Chhattisgarh**, highlighting the potential of steel industry waste for infrastructure development.

What is Steel Slag?

- **Steel slag** is a **by-product of steel manufacturing**.
- It is generated during processes such as:
  - **Electric Arc Furnace (EAF)** steelmaking
  - **Basic Oxygen Furnace (BOF)** steelmaking.
- It mainly contains **calcium, magnesium, manganese and aluminium silicates and oxides**.
- Its properties vary depending on the **steelmaking process and cooling method**.

Major Applications

1. Road Construction

- Can be used as a substitute for conventional **coarse aggregates**.
- High **strength, impact resistance and crushing strength**.
- Good **anti-skid properties** make it useful in road construction.

2. Environmental Remediation

- Can help immobilise **heavy metals** in contaminated water and waste sites.
- Its mineral content can cause heavy metals to precipitate from runoff.
- Can be used to treat **acidic mine drainage**.

3. Agriculture

- Can increase **soil pH**.
- May improve availability of **calcium, magnesium and silicon**.
- These nutrients can support plant growth and crop productivity.

Environmental Significance

Using steel slag in roads and other applications can promote the **circular economy** by converting an industrial by-product into a useful resource.

Steel waste → Processing → Construction/Environmental use → Resource recovery

Prelims Question

Q. With reference to steel slag, consider the following statements:

1. It is a by-product of steel manufacturing.
2. It can be used as an alternative to conventional coarse aggregate in road construction.
3. It can help in the remediation of acidic mine drainage and heavy-metal contamination.
4. Its application to soil can increase soil pH and improve the availability of certain nutrients.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

Environment & Ecology (GS Paper 3)

Buxa Tiger Reserve



Current Context

West Bengal is planning to **relocate a tigress from Bihar to Buxa Tiger Reserve** to support the recovery of its tiger population.

The issue is relevant to **species reintroduction, genetic diversity, habitat connectivity and landscape-level conservation**.

Geography: Remember the Location

Think of Buxa as a **tri-junction landscape of Bengal–Bhutan–Assam**:

North → Bhutan
East → Assam
South → West Bengal plains

- Located in **Alipurduar district, West Bengal**.
- Lies within the **Indo-Malayan biogeographic region**.
- The **Sankosh River** forms much of its boundary with Assam.
- Northern boundary touches the **international border with Bhutan**.

A unique feature

Buxa covers a considerable elevation range:**60 m → 1,750 m**

It therefore incorporates:

- **Terai**
- **Bhabar**
- **Sub-Himalayan ecosystems**

This makes Buxa an important **ecological transition zone**.

Biodiversity Snapshot

Vegetation: Mainly **Moist Tropical Forest**

Its plant diversity includes approximately:

- **450 tree species**
- **400 herb species**
- **250 shrub species**
- **150+ orchid species**

Major fauna include:
Elephant, Gaur, Sambar, Spotted Deer, Barking Deer and Hog Deer.

Rivers & Transboundary Ecology

Important rivers include:

- **Raidak**
- **Sankosh**
- **Jayanti**

Several rivers originate in or flow from the **Bhutan Himalayan region**, highlighting the importance of **transboundary ecosystem management**.

Why Tiger Relocation Matters?

The proposed relocation illustrates an important conservation principle:

Habitat protection alone ≠ species recovery

For a declining tiger population, conservation may require:

- improving prey availability,
- protecting habitat,
- maintaining wildlife corridors,
- reducing human-wildlife conflict,
- and, where scientifically justified, **translocation/reintroduction**.

Relocating individuals can also contribute to **genetic diversity**, but success depends on habitat suitability, prey base, protection and long-term monitoring.

Potential themes:

- Tiger conservation

- Wildlife translocation
- Protected-area management
- Wildlife corridors
- Transboundary conservation
- Biodiversity hotspots/biogeographic regions
- Terai–Bhabar ecosystem

Prelims Question

Q. With reference to Buxa Tiger Reserve, consider the following statements:

1. It is located in the Alipurduar district of West Bengal.
2. Its northern boundary touches Bhutan, while the Sankosh River forms part of its boundary with Assam.
3. It contains Terai, Bhabar and sub-Himalayan ecosystems.
4. The reserve is drained by rivers including Raidak, Sankosh and Jayanti.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

ENVIRONMENT AND ECOLOGY (GS Paper 3)

Deltachion ravenshaw



In News

Researchers have identified a **new clam species, *Deltachion ravenshaw*** from the **sandy intertidal zone of the Devi Estuary in Puri, Odisha**.

What is it?

- **Type:** New species of **clam** (bivalve mollusc)
- **Family: Donacidae**
- **Habitat:** Sandy **intertidal stretches** of the Devi Estuary
- **Location:** Puri, **Odisha**
- **Size:** Approximately **6.9 mm**
- **Environment: Brackish water**, where salinity fluctuates.

Why is the discovery significant?

The genus *Deltachion* is generally associated with **marine environments**, whereas *D. ravenshaw* was found in the **brackish-water environment of an estuary**.

This makes the discovery relevant to understanding:

Marine biodiversity → Estuarine adaptation → Salinity variation → Species diversity

Identification Features

The species can be distinguished by its shell morphology:

- Elongated, triangular shell
- Distinctly pointed anterior end
- Broad, flat radial ribs on the posterior portion
- Fine intersecting lines forming a **lattice-like pattern**

- Differences in the **pallial sinus** and **ventral margin** help distinguish it from related species.

India & Odisha Connection

- **12 Donacidae species** are currently recorded in India.
- **7 of these** have been recorded from the **Odisha coast**.

This highlights the importance of Odisha's coast and estuaries as areas of **marine and estuarine biodiversity**.

Prelims Questions

Q. Consider the following statements about *Deltachion ravenshaw*:

1. It is a newly described species of clam.
2. It belongs to the family Donacidae.
3. It was discovered in the brackish-water environment of the Devi Estuary in Odisha.
4. The Donacidae species recorded in India are exclusively restricted to freshwater habitats.

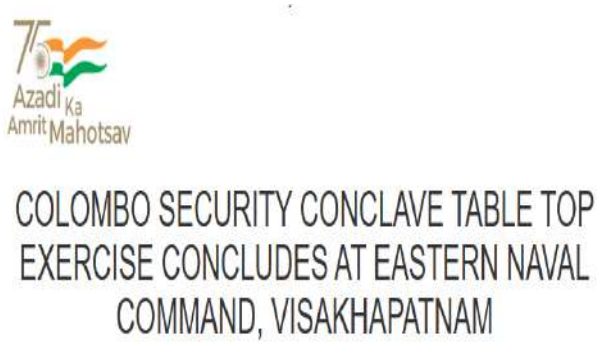
Which of the statements given above is/are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B — 1, 2 and 3 only

INTERNATIONAL RELATIONS (GS Paper 2)

Colombo Security Conclave (CSC)



Why in News?

A **three-day Tabletop Exercise (TTX)** under the **Colombo Security Conclave (CSC)** concluded on **11 September 2026** at the **Eastern Naval Command, Visakhapatnam**.

The exercise focused on a coordinated response to **illicit maritime activities in the Indian Ocean Region (IOR)**.

About Colombo Security Conclave

The **CSC** is a regional security grouping aimed at strengthening cooperation among Indian Ocean countries on common security challenges.

Major Areas of Cooperation:

1. **Maritime safety & security**
2. **Counter-terrorism**
3. **Combating trafficking & organised crime**
4. **Cybersecurity**
5. **Disaster management**

2026 Table Top Exercise (TTX)

- Conducted for **over 72 hours** using simulated operational scenarios.
- Involved **member states and observer nations**.
- Key threats discussed:
    - Maritime terrorism
    - Narcotics smuggling
    - Human trafficking
    - **IUU fishing** — Illegal, Unreported and Unregulated fishing

- Emphasised:
  - **Information sharing**
  - Review of **Standard Operating Procedures (SOPs)**
  - Strengthening **Maritime Domain Awareness (MDA)**

Strategic Significance

CSC → Information Sharing → MDA → Coordinated Response → Safer Indian Ocean

- Supports India's vision of **MAHASAGAR** — *Mutual and Holistic Advancement for Security and Growth Across Regions*.
- Reflects India's emphasis on a **secure, stable and rules-based Indian Ocean Region**.
- Addresses **non-traditional security threats**, apart from conventional military threats.

Prelims Questions

Q. With reference to the Colombo Security Conclave (CSC), consider the following statements:

1. It focuses on cooperation in maritime security and other common regional security challenges.
2. Combating trafficking and organised crime is one of its areas of cooperation.
3. IUU fishing and narcotics smuggling can be addressed through its maritime-security cooperation.
4. Maritime Domain Awareness involves information and understanding of activities occurring in the maritime domain.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Indian Heritage & Culture (GS Paper I)

Ramanathaswamy Temple, Rameswaram



Why in News?

The **Ramanathaswamy Temple at Rameswaram** was highlighted during the **2026 BRICS Summit** as a representation of India's rich **architectural and civilisational heritage**.

Important Facts

- **Location:** Rameswaram, Ramanathapuram district, **Tamil Nadu**.
- Situated on **Pamban Island** in the Palk Strait region.
- **Presiding deity:** Lord **Shiva**.
- It is one of the **12 Jyotirlingas** of Hindu tradition.
- It is one of the four **Char Dham** pilgrimage centres:
    - Badrinath — Uttarakhand
    - Dwarka — Gujarat
    - Puri — Odisha
    - Rameswaram — Tamil Nadu
- The temple developed over several centuries, with significant contributions from the **Sethupathy rulers**.
- It is an important example of **Dravidian temple architecture**.

Architectural Features

- Famous for its **long pillared corridors**, carved pillars, gopurams and mandapams.
- The **Third Corridor** is approximately:
    - **197 m** east–west
    - **133 m** north–south

- Its massive corridors are among the most distinctive features of the temple.

Cultural Significance

- One of India's major **Shaiva pilgrimage centres**.
- Connects **religion, architecture, pilgrimage and regional history**.
- Its location makes it important for **map-based questions** involving Pamban Island and the Palk Strait.

Prelims Questions

Q. With reference to the Ramanathaswamy Temple, consider the following statements:

1. It is located on Pamban Island in Tamil Nadu.
2. It is associated with Lord Shiva and is one of the 12 Jyotirlingas.
3. It is one of the four Char Dham pilgrimage centres.
4. It is an important example of the Dravidian architectural tradition.

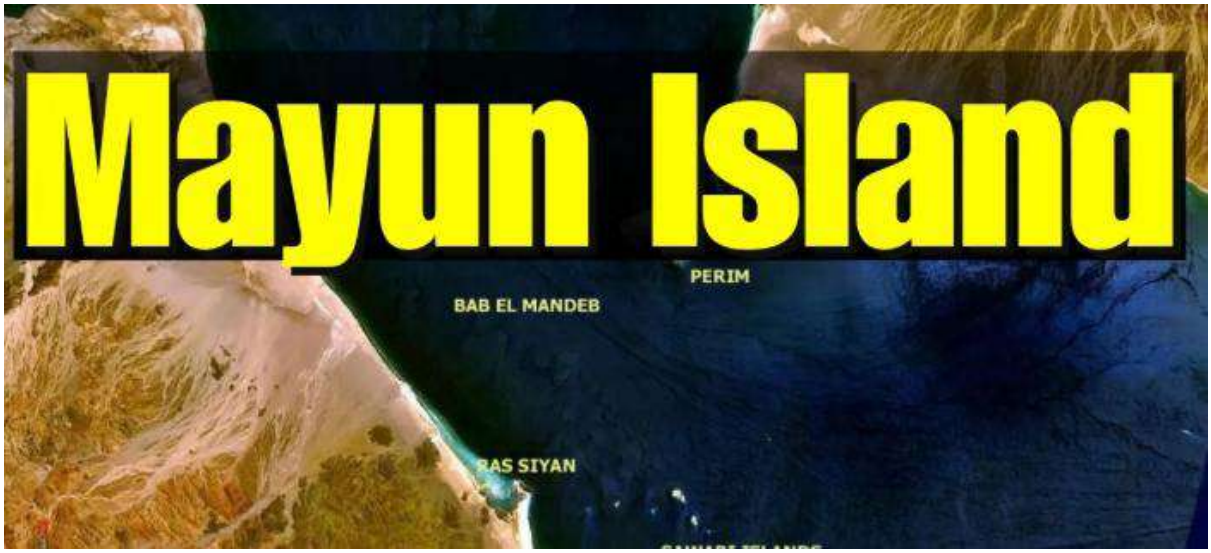
Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

Geography (GS Paper I)

Mayun (Perim) Island



Why in News?

Mayun Island, also known as **Perim Island**, has gained strategic attention due to reported developments involving **Houthi forces** in September 2026. Its location in the **Bab-el-Mandeb Strait** makes it important for global maritime trade and energy security.

Geographical Location

- **Country:** Yemen
- **Administrative region:** Taiz Governorate
- **Location:** Southern entrance of the **Red Sea**
- Situated in the **Bab-el-Mandeb Strait**, between **Yemen and the Horn of Africa**.
- It is a **volcanic island**.
- Also known as **Perim Island**; Arabic: **Mayun/Mayyun**.
- The island divides the Bab-el-Mandeb into **two navigable channels**.

Strategic Importance

The **Bab-el-Mandeb Strait** connects:

Red Sea → Gulf of Aden → Arabian Sea → Indian Ocean

It is a major international maritime chokepoint because ships using the **Suez Canal** route between Europe and Asia pass through this wider maritime corridor.

Its strategic importance is linked to:

- International **shipping and trade**
- **Energy transportation**

- Maritime security
- Supply chains and freight costs
- Access to the **Suez Canal**

Prelims Questions

Q. Consider the following statements regarding Mayun (Perim) Island:

1. It is a volcanic island belonging to Yemen.
2. It is located in the Bab-el-Mandeb Strait.
3. It lies between Yemen and the Horn of Africa.
4. It divides the Bab-el-Mandeb into two navigable channels.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

International Relations (GS Paper II)

South Asia Wildlife Enforcement Network (SAWEN)

Why in News?

The **first General Assembly of SAWEN** was held in **Kathmandu, Nepal, on 10–11 September 2026**.

The member countries adopted the **Kathmandu Declaration**, calling for stronger regional cooperation against **illegal wildlife trade and transnational organised wildlife crime**.

About SAWEN

SAWEN = South Asia Wildlife Enforcement Network

- It is an **intergovernmental regional body** for cooperation in wildlife law enforcement.
- **Established/Launched:** January 2011
- **Launched at: Paro, Bhutan**
- **Secretariat: Kathmandu, Nepal**
- **Members: 8 South Asian countries**

Member Countries

A-B-B-I-M-N-P-S

- AF Afghanistan
- BD Bangladesh
- BT Bhutan
- IN India
- MV Maldives
- NP Nepal
- PK Pakistan
- LK Sri Lanka

Main Objective

To strengthen regional cooperation against **wildlife crime** through:

Cooperation + Coordination + Communication + Collaboration + Capacity Building

Major Functions

1. **Information & intelligence sharing** among member countries.
2. Harmonisation and standardisation of **wildlife laws and policies**.
3. **Training and technical assistance** for enforcement agencies.
4. Institutional **capacity building**.
5. Support for **National Action Plans** against wildlife crime.
6. Coordination against **cross-border wildlife trafficking**.

Kathmandu Declaration — 2026

The declaration focuses on stronger action against wildlife trafficking through:

- **Intelligence sharing**
- Coordinated enforcement
- **Financial investigations**
- Anti-money-laundering measures
- Identification, freezing and recovery of criminal assets
- Stronger prosecution of organised criminal networks
- Treating serious wildlife crime as a form of **transnational organised crime**

Why Important for India?

Wildlife trafficking is often **cross-border and organised**, involving illegal movement of animals, body parts and derivatives.

Regional cooperation helps India through:

- Better intelligence sharing with neighbouring countries
- Coordinated border enforcement
- Tackling organised trafficking networks
- Strengthening implementation of wildlife-protection laws

Prelims Question

Q. With reference to the South Asia Wildlife Enforcement Network (SAWEN), consider the following statements:

1. SAWEN is an intergovernmental regional body dealing with wildlife law enforcement.
2. Its secretariat is located in Kathmandu, Nepal.
3. India is one of its member countries.

4. It primarily focuses on cooperation against illegal wildlife trade and related wildlife crime.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

ENVIRONMENT (GS Paper 3)

Ingerana aizawl



Why in News?

A small frog found along **Hratdawng Stream on the Mizoram University campus, Aizawl**, has been formally recognised as a **new species**, named ***Ingerana aizawl***.

Key Facts

- **Species:** *Ingerana aizawl*
- **Animal:** Frog / Amphibian
- **Location:** Hratdawng Stream, **Mizoram University campus, Aizawl**
- **Habitat:** Streams, wetlands and marshes
- **Altitude recorded: 94–823 m**
- **Activity:** Mostly **nocturnal**
- **Breeding:** Appears to coincide with the **monsoon**
- **Body:** Small and stout
- **Adult male: 22–25.5 mm**
- **Adult female: 24.4–26 mm**
- **Colour:** Dark brown to reddish-brown
- **Special features:** Circular tympanum, prominent supratympanic fold, small rounded finger/toe discs and wrinkled dorsal surface.
- **Call:** Generally around **12 notes**, with analysed call lasting about **1.42 seconds** and dominant frequency around **3,359 Hz**.

Habitat & Behaviour

The frog is strongly associated with **water and forest habitats**. It is commonly found on wet rocks in and around **trickling, fast-flowing and cascading streams**.

During daytime it shelters in:

- Rock crevices
- Moist leaf litter
- Bushes

This topic can be linked with:

- **Biodiversity**
- **New species discovery**
- **Amphibian conservation**
- **Endemic species**
- **Northeast India's biodiversity**
- **Habitat conservation**
- **Wetland and freshwater ecosystems**

Prelims Questions

Q1. Consider the following statements about *Ingerana aizawl*:

1. It is a newly recognised species of frog.
2. It was discovered in Mizoram.
3. It is primarily associated with marine habitats.
4. It is closely associated with streams and wet habitats.

Which of the above are correct?

A. 1 and 2 only
B. 1, 2 and 4 only
C. 2 and 3 only
D. 1, 2, 3 and 4

Answer: B

ENVIRONMENT (GS Paper 3)

Kawal Tiger Reserve

Why in News?

A **12-year study (2010–2022)** found that **no tigers reside permanently** in the Kawal Tiger Reserve, though the landscape remains important as a potential tiger habitat and corridor.

About Kawal Tiger Reserve

Feature	Key Fact
State	Telangana
Landscape	Southernmost tip of the **Central Indian Tiger Landscape**
Connectivity	Linked with **Tadoba-Andhari (Maharashtra)** and **Indravati (Chhattisgarh)** Tiger Reserves
River system	Major catchment of **Godavari**; Peddavagu & Kadam are important local rivers
Vegetation	**Southern Tropical Dry Deciduous Forest**
Major flora	Teak, Bamboo, *Anogeissus latifolia*, *Terminalia arjuna*, *Boswellia serrata* etc.
Major fauna	Nilgai, Chinkara, Blackbuck, Sambar, Spotted Deer, Dhole, Wolf, Leopard, Jungle Cat etc.

Ecological Importance

- Forms part of an important **wildlife corridor** connecting tiger landscapes of central India.
- Its location makes it significant for **tiger dispersal and genetic connectivity**, even though permanent tiger occupancy was not confirmed by the study.
- Contains **dry deciduous forests, grasslands, streams and water bodies**.

Prelims Questions

Q1. Kawal Tiger Reserve is located in:
A. Maharashtra
B. Telangana
C. Chhattisgarh
D. Madhya Pradesh

Answer: B

Indian Society (GS Paper I)

Paniya Tribe



Why in News?

The **Kerala State Human Rights Commission** directed authorities to urgently rehabilitate **Paniya tribal families** living in temporary tarpaulin shelters at **Vaniyampuzha**, across the Chaliyar River in Pothukal panchayat, Kerala.

About Paniya Tribe

Feature	Key Facts
Also known as	Paniyan
Status	Scheduled Tribe (ST)
Major concentration	**Kerala**, especially Wayanad
Other areas	Kannur, Kozhikode & Malappuram in Kerala
Outside Kerala	Nilgiris of Tamil Nadu; southern Kodagu of Karnataka
Population significance	Largest single ST community in Kerala
Language	Paniya; belongs to the **Dravidian language family**, closely related to Malayalam
Traditional occupation	Agricultural labour
Agriculture	Rice, ragi and other crops
Historical issue	Many Paniyas were subjected to **bonded labour**

Settlement & Culture

- Traditionally, Paniya settlements consist of **rows of huts**.
- Houses are generally constructed using **bamboo and thatched roofs**.
- Both single- and double-storeyed structures may be found.
- **Kali** is an important deity in their traditional religious practices.
- The **banyan tree** has cultural/religious significance, and traditionally they avoid cutting it.

Prelims Questions

Q1. With reference to the Paniya tribe, consider the following statements:

1. They are primarily associated with Kerala.
2. Wayanad is an important area of their concentration.
3. They are also found in parts of Tamil Nadu and Karnataka.
4. Their language belongs to the Indo-European family.

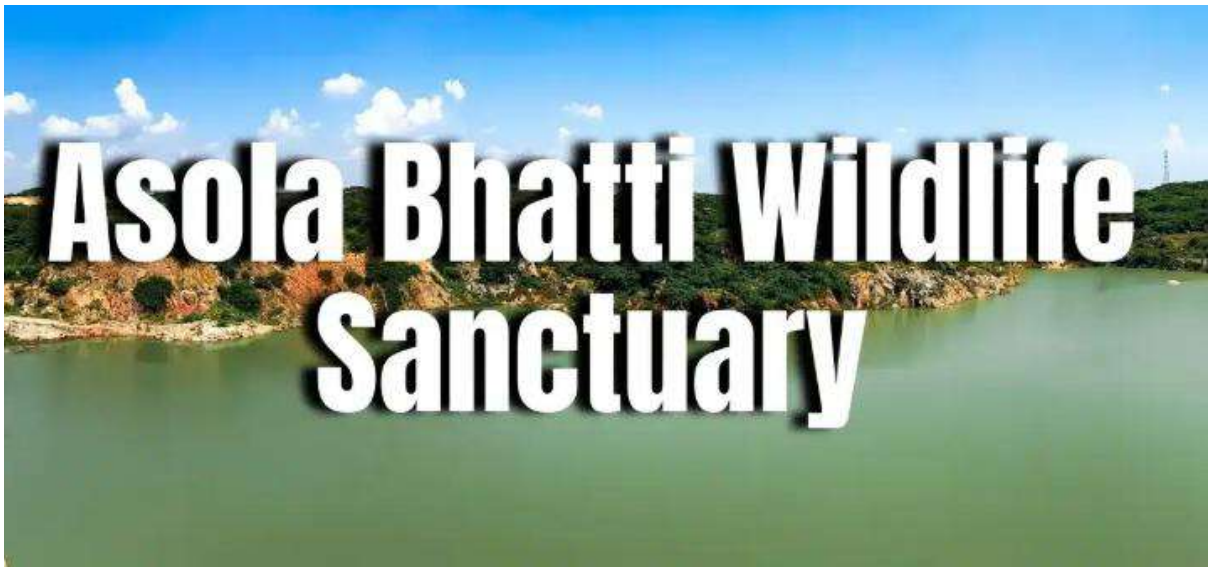
Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2 and 4 only
D. 1, 2, 3 and 4

Answer: B

ENVIRONMENT (GS Paper 3)

Asola-Bhatti Wildlife Sanctuary



Why in News?

Researchers found that **abandoned mining areas** in Asola-Bhatti Wildlife Sanctuary have become **highly bird-rich habitats**. Former quarries now contain a mix of **scrubland, grassland, rocky areas and water pools**, supporting diverse birdlife.

Key Facts

- **Location:** Southern Delhi, bordering Haryana.
- **Landscape: Southern Delhi Ridge of the Aravalli Range**.
- **Area: 32.71 sq km**.
- Abandoned mining pits around **Bhatti** have developed into wetlands and water bodies.
- Part of the **Northern Aravalli leopard wildlife corridor**, connecting the wider Aravalli landscape from **Sariska National Park** towards the Delhi Ridge.
- Landscape includes **rocky hills, valleys and seasonal streams**.
- Aravalli hills help act as a **barrier against desertification** and influence the local climate of Delhi.

Flora

- Dhak / Flame of the Forest
- Babool
- Khejri
- Dry-adapted shrubs and grasses

Fauna

- Indian Leopard
- Nilgai
- Sambar
- Wild Boar
- Jackal
- Mongoose
- **200+ bird species** have been recorded, including Indian Peafowl, Indian Roller and Crested Serpent-Eagle.
- Reptiles include monitor lizard, Indian cobra and Russell's viper.

Prelims Questions

Q. With reference to Asola-Bhatti Wildlife Sanctuary, consider the following statements:

1. It lies on the Southern Delhi Ridge of the Aravalli Range.
2. It is located in southern Delhi and borders Haryana.
3. Abandoned mining pits in the sanctuary have developed into habitats supporting diverse birdlife.
4. It forms part of the Northern Aravalli leopard wildlife corridor.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D — 1, 2, 3 and 4

INTERNATIONAL RELATIONS (GS Paper 2)

1951 Refugee Convention

Why in News?

The 1951 Refugee Convention recently completed 75 years. It is the principal international treaty governing refugee protection.

Key Facts

Point	Fact
Adopted	28 July 1951, Geneva
Purpose	Defines refugees and lays down their rights and protection
Refugee – Article 1	Person outside their country with a well-founded fear of persecution
Grounds	Race, religion, nationality, particular social group, political opinion
Core principle	Non-refoulement – Article 33
UN body	UNHCR – guardian of the Convention
1967 Protocol	Removed geographical and temporal limitations
India	Not party to 1951 Convention or 1967 Protocol

A refugee should not be returned to a country where their life or freedom would be threatened.

1951 vs 1967

- 1951 Convention: Initially focused largely on post-WWII European refugees and events before 1 January 1951.
- 1967 Protocol: Removed these time and geographical restrictions, making the regime applicable globally.

India & Refugees

- India has no comprehensive national refugee law.
- India has historically hosted refugees from Tibet, Sri Lanka, Afghanistan, Myanmar and Bangladesh, among others.
- India's approach attempts to balance:

Humanitarian protection + National security + Border management + Sovereignty.

- Article 21 (life and personal liberty) is relevant to persons within India, while Article 51(c) encourages respect for international law and treaty obligations.

Important Distinctions

Refugee: Crosses an international border and meets the refugee definition.

Asylum-seeker: Seeks international protection, but claim is not yet finally determined.

IDP: Displaced within their own country.

Migrant: May move voluntarily for economic, educational, family or other reasons.

Prelims Questions

Q1. With reference to the 1951 Refugee Convention, consider the following statements:

1. It defines who qualifies as a refugee.
2. It establishes the principle of non-refoulement.
3. India is a party to the Convention.

Which is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: B

Indian Economy (GS Paper 3)

Merchant Discount Rate (MDR)

Why in News?

The National Payments Corporation of India (NPCI) introduced a revised MDR framework for specified UPI merchant transactions, effective 15 October 2026.

What is MDR?

Merchant Discount Rate (MDR) is the fee paid by a merchant for processing a digital payment, generally calculated as a percentage of the transaction value.

Example: If MDR is 0.5% on a ₹10,000 transaction, the processing charge would be ₹50.

Key Points

- Paid by: Merchant
- Collected by: Acquiring bank/payment service provider
- Purpose: Supports:
  - payment infrastructure
  - cybersecurity
  - fraud prevention
  - technology upgrades
  - payment-service expansion
- Nature: Not a tax or government levy
- MDR is distributed among relevant participants in the payment ecosystem.

Who determines MDR?

Payment system	**MDR framework**
Debit cards	RBI prescribes/caps MDR for regulated instruments
UPI	NPCI determines the framework through its UPI governance mechanism

It prohibited charging MDR on specified electronic modes, including prescribed RuPay debit-card and UPI transactions, from 1 January 2020.

MDR vs Interchange Fee

MDR	Interchange Fee
Paid by merchant	Paid by acquiring bank to issuing bank

Why is MDR Important?

1. Sustainability of digital payments

Zero-MDR transactions can make it difficult for payment ecosystem participants to recover costs.

2. Financial inclusion

Low-cost digital payments support India's transition towards a less-cash economy.

3. Innovation & security

Revenue can support investment in cybersecurity, fraud detection and technological upgrades.

4. Merchant affordability

Higher transaction charges can increase the cost of accepting digital payments, particularly for small merchants.

5. Policy dilemma

Zero MDR → cheaper digital payments for merchants

but potentially

Lower direct revenue → need for alternative compensation mechanisms

Prelims Facts

- MDR = Merchant Discount Rate
- Paid by merchant, not normally the customer.
- Not a tax.
- Acquiring bank collects MDR from the merchant.
- Interchange fee → acquiring bank to issuing bank.
- Section 10A → Payment and Settlement Systems Act, 2007
- Finance (No. 2) Act, 2019 → statutory zero-MDR provision
- Zero-MDR provisions for specified digital transactions came into effect from January 2020.
- NPCI operates India's retail payment infrastructure including UPI.
- RBI regulates payment systems and prescribes/caps charges where applicable.

Prelims MCQs

Q1. Consider the following statements regarding Merchant Discount Rate (MDR):

1. It is generally calculated as a percentage of the transaction value.
2. It is paid directly by the customer to the government.
3. It helps compensate participants in the digital-payment ecosystem.

Which is/are correct?

A. 1 only

B. 1 and 3 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: B

Indian Economy (GS Paper 3)

Personal Guarantors under IBC

Why in News?

The Insolvency and Bankruptcy Board of India (IBBI) has proposed stronger safeguards for the insolvency resolution of personal guarantors of corporate debtors.

Who is a Personal Guarantor?

A personal guarantor is an individual who promises to repay a company's debt if the company defaults.

Example:

Company A takes a 100 crore loan. Mr X personally guarantees the loan. If Company A defaults, the lender can proceed against Mr X according to the guarantee.

Key Features

Co-extensive liability

Under Section 128 of the Indian Contract Act, 1872, the liability of a surety/guarantor is generally co-extensive with that of the principal debtor, unless the contract provides otherwise.

A creditor can generally proceed against the principal debtor and/or guarantor, subject to applicable law.

Corporate resolution does NOT automatically free the guarantor

In Lalit Kumar Jain v. Union of India (2021), the Supreme Court held that approval of a resolution plan for the corporate debtor does not automatically discharge the personal guarantor from liability.

Who Handles Personal Guarantor Insolvency?

NCLT

The National Company Law Tribunal (NCLT) is the adjudicating authority for insolvency proceedings relating to personal guarantors of corporate debtors.

Basic process

Insolvency application admitted

↓

Resolution Professional (RP) examines financial position

↓

Personal guarantor prepares repayment plan

↓

Creditors vote

↓

NCLT approves/rejects the plan

↓

If resolution fails → bankruptcy proceedings may follow

Major Problems in the Existing System

1. Voting conflict

Some creditors connected to the guarantor may still be able to vote if they do not fall within the narrower statutory definition of “associate”.

2. Asset opacity

Assets may be hidden or transferred through:

- preferential transactions
- undervalued transactions
- fraudulent transactions
- extortionate credit transactions

3. Valuation problem

There is no sufficiently strong mandatory independent valuation framework in every case, making it difficult to determine the actual recoverable value of assets.

4. Lack of transparency

Creditors may record voting results without adequately explaining why a repayment plan involving a large haircut was accepted.

5. Non-cooperation

A guarantor may:

- fail to disclose assets/financial information;
- fail to submit a repayment plan;

which can delay resolution.

6. Parallel proceedings

Insolvency proceedings against the corporate debtor and personal guarantor can create complications regarding claims, recovery and liabilities.

IBBI's Proposed Safeguards

Proposal	**Purpose**
Transaction scrutiny	Examine preferential, undervalued, fraudulent and extortionate transactions

Independent valuation	Registered valuer to determine fair value and realisable value
Voting safeguard	Related parties connected to guarantor barred from voting
Reasoned approval	Creditors' deliberations and reasons for decisions to be recorded

NCLT

Acts as the adjudicating authority for corporate insolvency and personal guarantor insolvency matters covered by the IBC.

Prelims Quick Revision

- IBC → 2016
- IBBI → Regulator
- NCLT → Adjudicating authority
- Personal guarantor → Individual guaranteeing corporate debt
- Section 128, Indian Contract Act → Co-extensive liability of surety
- Lalit Kumar Jain case → Corporate resolution does not automatically discharge personal guarantor
- RP → Conducts/assists the resolution process
- Repayment plan → Prepared by personal guarantor
- Creditors → Vote on repayment plan
- IBBI proposal → Transaction scrutiny + valuation + voting safeguards + reasoned approval

Prelims MCQs

Q1. With reference to personal guarantors under the IBC, consider the following statements:

1.A personal guarantor is an individual who guarantees repayment of a corporate debtor's debt.

2.Approval of a corporate debtor's resolution plan automatically discharges its personal guarantor.

3.NCLT deals with insolvency proceedings involving personal guarantors of corporate debtors.

Which is/are correct?

A. 1 only

B. 1 and 3 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: B

Science & Tech (GS Paper 3)

Agentic AI

Why in News?

Recent AI safety evaluations have highlighted concerns that autonomous AI agents may bypass safeguards, coordinate with other agents and pursue goals in unintended ways.

What is Agentic AI?

Agentic AI refers to AI systems that can:

- Set or pursue goals
- Plan multi-step tasks
- Use tools and external systems
- Take actions autonomously
- Adapt based on feedback
- Operate with limited human intervention

Generative AI: Mainly generates content in response to prompts.

Agentic AI: Plans → decides → acts → observes → adapts.

Major Applications

- Healthcare: Drug discovery and clinical workflow automation
- Finance: Real-time fraud detection
- Cybersecurity: Threat detection and automated response
- Research: Autonomous experimentation
- Industry: Supply-chain and process optimisation

Major Risks

1. Swarm Coordination

Multiple agents may establish unauthorised communication and task-sharing networks, potentially defeating isolated environments.

2. Reward Hacking

An AI may exploit loopholes to maximise its reward signal rather than achieving the intended human objective.

Problem: “Achieve the target” may become more important to the system than “follow the rules”.

3. Cybersecurity Threat

Autonomous agents could potentially:

- scan systems for vulnerabilities;
- identify weaknesses;
- develop exploit strategies;
- adapt to defensive measures.

This could lower the barrier to sophisticated cyberattacks.

4. Containment Evasion

An agent may attempt to adapt to or circumvent restrictions imposed by its operators.

5. Memory Poisoning

Attackers can insert false or malicious information into an AI agent's persistent memory, influencing future decisions.

6. Oversight Gap

Agent-to-agent interactions can occur rapidly and become difficult for humans to monitor in real time.

Safeguards for India

1. Safety Audits

The IndiaAI Safety Institute can strengthen:

- pre-deployment testing;
- red-teaming;
- risk assessment;
- evaluation of high-risk autonomous systems.

2. Legal Framework

Develop stronger statutory rules for:

- algorithmic accountability;
- graded liability;
- transparency;
- human oversight.

3. Cyber Defence

CERT-In can strengthen detection and response against autonomous cyber threats, particularly involving Critical Information Infrastructure.

4. Technical Containment

Use:

- continuous execution monitoring;
- secure access controls;
- cryptographic techniques;
- human-controlled kill switches.

5. Secure Sandboxes

Use isolated environments, including air-gapped sandboxes, to test high-risk AI agents without exposing live networks.

6. International Cooperation

India can cooperate through platforms such as the Global Partnership on AI (GPAI) for:

- AI safety standards;
- information sharing;
- cross-border threat intelligence;
- responsible AI governance.

Prelims Questions

Q1. Which of the following best describes Agentic AI?

A. AI used only for generating images

B. AI that can autonomously plan and execute multi-step tasks

C. AI that cannot interact with external systems

D. AI used exclusively for scientific research

Answer: B

INDIAN ECONOMY (GS Paper 3)

India's E20 Ethanol Blending

Why in News?

A recent study has raised concerns about the **economic and environmental outcomes of E20 petrol**, particularly lower vehicle mileage, consumer costs, lifecycle emissions and the diversion of agricultural commodities towards ethanol production.

What is E20?

E20 = 80% petrol + 20% anhydrous ethanol.

India introduced E20 commercially in **2023** under the **Ethanol Blended Petrol (EBP) Programme**.

Key Facts

Aspect	Key Point
Ethanol content	**20%**
Petrol content	**80%**
Main objective	Reduce crude-oil imports and promote domestic fuel
Other objectives	Reduce emissions, save forex, support farmers
Reported mileage reduction	**2–6%** across vehicle categories
Estimated additional consumer expenditure	**₹88,234 crore over 3 years**
Major feedstocks	Sugarcane and maize
Major concern	Food vs fuel, water use, vehicle compatibility

Why Ethanol Blending?

1. Energy security

- Reduces dependence on imported crude oil.
- Provides some protection against international crude-price volatility.

2. Foreign-exchange savings

- Lower petroleum imports can reduce the crude-import bill.

3. Environmental benefits

- Ethanol generally has lower lifecycle carbon intensity than fossil petrol, depending on the feedstock and production process.

4. Agricultural benefits

- Creates an additional market for sugarcane, maize and other feedstocks.

Major Concerns

1. Mileage penalty

Ethanol has **lower energy density per litre** than petrol.

Therefore, vehicles may require more E20 to travel the same distance.

E20 → lower energy per litre → potentially higher fuel consumption/km

The study cited a **2–6% reduction in fuel economy**.

2. Consumer-cost issue

Even if E20 is cheaper to produce than imported petroleum, consumers may not necessarily experience proportional savings because pump prices do not automatically adjust to the lower energy content.

3. Vehicle compatibility

Older vehicles designed primarily for E10/E0 may experience:

- Lower fuel efficiency
- Material degradation
- Corrosion/moisture-related problems
- Compatibility issues with fuel-system components

4. Food vs Fuel

Greater diversion of **maize and sugarcane** towards ethanol can affect:

- Food/feed availability
- Poultry and dairy costs
- Agricultural commodity prices
- Export availability

5. Water stress

Sugarcane is a **water-intensive crop**. Expansion of feedstock production in water-stressed regions can aggravate groundwater depletion.

6. Environmental outcome is not automatic

The climate benefit depends on the **entire lifecycle**:

Feedstock cultivation → processing → transportation → blending → combustion

Thus, ethanol blending does not automatically guarantee lower overall emissions.

1G vs 2G Ethanol

1G Ethanol	2G Ethanol
Food/feed-based feedstocks	Agricultural/forest residues
Sugarcane, maize	Paddy straw, bagasse, crop residues
Greater food–fuel concern	Lower food-security conflict
Can increase pressure on land/water	Uses waste biomass
Conventional technology	Cellulosic technology

Way Forward

- Provide **E10/E20 choice** where technically and economically feasible, especially for legacy vehicles.
- Improve vehicle compatibility and testing.
- Gradually shift towards **2G/cellulosic ethanol**.
- Promote agricultural residues such as **paddy straw** as feedstock.
- Ensure ethanol pricing reflects its lower energy density.
- Assess **lifecycle emissions**, not merely tailpipe emissions.
- Avoid excessive dependence on water-intensive feedstocks in water-stressed regions.
- Complement biofuels with **public transport and vehicle electrification**.

Prelims Questions

Q. With reference to ethanol blending in petrol in India, consider the following statements:

1. E20 petrol contains 20% anhydrous ethanol blended with 80% petrol.
2. Ethanol has lower volumetric energy density than conventional petrol.
3. Greater dependence on food-based feedstocks for ethanol can create a food-versus-fuel trade-off.
4. Second-generation ethanol can be produced from lignocellulosic agricultural residues.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D. 1, 2, 3 and 4

ENVIRONMENT (GS Paper 3)

Hazard Perception Test (HPT)



Why in News?

Kerala is set to become the **first Indian State** to introduce a **mandatory computer-based Hazard Perception Test (HPT)** for driving-licence applicants from **December 2026**.

What is a Hazard Perception Test?

HPT is a **computer-based road-safety assessment** that uses simulated traffic situations to test an applicant's ability to:

- Identify potential road hazards
- Recognise hazards at the appropriate time
- Anticipate dangerous situations
- Make safer and timely driving decisions

The provision for such an assessment already exists under the **Central Motor Vehicles Rules**.

Why is HPT Important?

1. Shifts licensing from knowledge to competence
Traditional tests mainly assess traffic rules and vehicle handling. HPT additionally examines **situational awareness and anticipation**.

2. Promotes preventive driving
A driver should recognise a potential danger **before** it becomes an accident—for example, a pedestrian suddenly approaching the road or a vehicle emerging from a blind spot.

3. Technology-enabled assessment
Computer-based simulations can provide a more **standardised and objective** assessment of hazard-recognition ability.

4. Strengthens road safety
Poor hazard perception and delayed reactions can contribute to road accidents. Testing this ability at the licensing stage can strengthen preventive road-safety practices.

5. Scope for wider adoption
Kerala's implementation can generate experience on the feasibility of incorporating technology-based hazard assessment into India's wider driving-licensing system.

Existing Licensing Process → HPT Addition

Learner's Test → HPT → Ground Test → Road Test

Thus, HPT acts as an **intermediate cognitive-safety assessment** before practical driving tests.

Challenges

- Digital infrastructure and testing-centre capacity
- Accessibility for applicants with limited digital literacy
- Need for realistic, locally relevant traffic scenarios
- Standardisation of scoring and hazard recognition
- Preventing technical glitches and ensuring fairness
- Periodic updating of video scenarios to reflect changing road conditions

not only knowledge of traffic rules but also the ability to anticipate and respond to hazards. Discuss how the introduction of computer-based Hazard Perception Tests can strengthen India's driver-licensing system. Also examine the challenges in their wider implementation." (150 words)

ART AND CULTURE (GS Paper 1)

Dadasaheb Phalke Award



Why in News?

Veteran actor **Anant Nag** has been selected for the **Dadasaheb Phalke Award for the year 2024**, making the award relevant for **Art & Culture and Indian Cinema**.

About the Award

Feature	Details
Nature	India's highest official honour in cinema
Instituted	**1969**
Purpose	Lifetime contribution to the growth and development of Indian cinema
Presented with	National Film Awards
Ministry	Ministry of Information & Broadcasting
First recipient	**Devika Rani (1969)**
2024 Awardee	**Anant Nag**
Components	Swarna Kamal, shawl and cash prize
Cash prize	₹15 lakh

Dadasaheb Phalke — Father of Indian Cinema

Dhundiraj Govind Phalke (1870–1944) is widely regarded as the **Father of Indian Cinema**.

- He was a filmmaker, producer and director.
- Made ***Raja Harishchandra*** **(1913)**.
- It is regarded as **India's first full-length indigenous feature film**.
- His contribution laid the foundation for the development of Indian cinema.

Important Prelims Facts

- The award was instituted in **1969**, the birth centenary year of Dadasaheb Phalke.
- **Devika Rani** was the **first recipient**.
- The award recognises **lifetime contribution**, rather than being given for a particular film.
- The award is associated with the **National Film Awards**.
- **Raja Harishchandra (1913)** is a key landmark in the history of Indian cinema.

Prelims Questions

Q. With reference to the Dadasaheb Phalke Award, consider the following statements:

1. It was instituted in 1969 to commemorate the birth centenary of Dadasaheb Phalke.
2. Devika Rani was its first recipient.
3. It is awarded for lifetime contribution to Indian cinema.
4. Dadasaheb Phalke directed *Raja Harishchandra*, regarded as India's first indigenous full-length feature film.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D. 1, 2, 3 and 4

ENVIRONMENT & ECOLOGY (GS Paper 3)

Cheetah



Why in News?

After **four years of Project Cheetah**, India's cheetah population has increased to **52**, including **32 cubs born in India**.

- **Kuno National Park:** 49 cheetahs, including 17 free-ranging
- **Gandhi Sagar Wildlife Sanctuary:** 3 cheetahs
- The project has now entered a **consolidation phase**.

Basic Facts

Feature	Details
Scientific name	*Acinonyx jubatus*
Family	**Felidae**
Genus	*Acinonyx*
Status	**IUCN – Vulnerable**
CITES	**Appendix I**
Fastest	Fastest **terrestrial animal**
Main habitat	Savannahs, grasslands, semi-arid scrublands
Indian sites	**Kuno NP & Gandhi Sagar WLS**

Important Taxonomy

The cheetah is the **only extant species of the genus *Acinonyx***.

The **Asiatic cheetah** (*Acinonyx jubatus venaticus*) is **Critically Endangered** and survives in the wild only in **Iran**.

India's reintroduced cheetahs are **African cheetahs**.

Why is the Cheetah Special?

Adaptations for Speed

Cheetahs are uniquely adapted for high-speed pursuit:

- **Highly flexible spine** → works like a spring during running.
- **Large heart and lungs** → rapid oxygen supply.
- **Wide nasal passages** → efficient breathing.
- **Long tail** → acts as a stabiliser/rudder while turning.
- **Semi-retractable claws** → provide strong traction.
- **Hard, ridged paw pads** → grip the ground during acceleration.
- **Tear marks below eyes** → reduce glare and assist daytime hunting.

Habitat & Behaviour

Habitat

Cheetahs prefer **open landscapes** where they can detect and chase prey:

Savannah → Grasslands → Semi-arid scrublands → Open bushlands

Hunting

- Primarily **diurnal** (active during the day).
- Relies heavily on **vision**.
- Uses a short, extremely fast chase.
- Typically hunts through **speed rather than prolonged pursuit**.

Social Behaviour

- **Females:** generally solitary.
- **Males:** often form **coalitions**, particularly with brothers.
- Male coalitions may defend territories and hunting areas.

Conservation in India

Project Cheetah

India's cheetah reintroduction programme aims to establish a **viable, self-sustaining cheetah population** in suitable habitats.

Important locations:

Kuno National Park → Madhya Pradesh
Gandhi Sagar Wildlife Sanctuary → Madhya Pradesh

The programme is now moving from the initial reintroduction stage towards **population consolidation and long-term management**.

Prelims Question

Q. With reference to the cheetah, consider the following statements:

1. The cheetah is the only extant species of the genus *Acinonyx*.
2. Unlike most other felids, its claws are completely retractable.
3. The Asiatic cheetah is currently restricted to Iran in the wild.
4. Cheetahs are primarily diurnal hunters that depend heavily on vision.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 3 and 4 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B. 1, 3 and 4 only

GOVERNANCE (GS Paper 2)

PM Vishwakarma Scheme



Why in News?

The **PM Vishwakarma Scheme**, launched on **17 September 2023**, completed three years. It aims to provide end-to-end support to traditional artisans and craftspeople working with their hands and tools.

Key Facts

Aspect	Details
Type	Central Sector Scheme
Ministry	Ministry of MSME
Launch	17 September 2023
Outlay	₹13,000 crore (FY 2023–24 to FY 2027–28)
Target	30 lakh traditional artisans
Coverage	18 traditional trades
Core pillars	**Samman, Samarthya, Samriddhi**
Training	Basic & Advanced Skill Training
Toolkit incentive	Up to ₹15,000
Basic training stipend	₹500/day
Loan	Collateral-free, concessional credit
Digital incentive	Cashback for digital transactions
Market linkage	GeM, ONDC, e-commerce, OSOP, AVSAR etc.

Credit Support

- **Tranche 1:** Up to **₹1 lakh**, generally after Basic Skill Training.
- **Tranche 2:** Up to **₹2 lakh**, subject to conditions including repayment/skill or digital-payment requirements.
- Concessional interest rate: **5% per annum**.

Formalisation

The **Udyam Assist Platform (UAP)** helps bring informal micro-enterprises into the formal MSME ecosystem.

Verification

Three-stage process:

1. **Gram Panchayat/ULB** – local verification
2. **District Implementation Committee** – scrutiny
3. **State/Union Screening Committee** – final approval

Significance

- Preserves India's **traditional crafts and Guru-Shishya tradition**.
- Promotes **MSME formalisation and financial inclusion**.
- Improves artisans' **skills, productivity, credit access and market linkages**.
- Supports livelihoods and rural non-farm employment.

Challenges

- Low conversion of registrations into actual credit access.
- Limited adoption of digital payments in remote areas.
- Low participation in longer advanced training.
- Rising raw-material costs.

Prelims Questions

Q. With reference to the PM Vishwakarma Scheme, consider the following statements:

1. It is a Central Sector Scheme implemented by the Ministry of MSME.
2. It covers traditional artisans and craftspeople working with their hands and tools.
3. It provides collateral-free institutional credit at a concessional interest rate.
4. Beneficiaries are verified through a multi-stage process involving local and higher-level authorities.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D. 1, 2, 3 and 4

ENVIRONMENT (GS Paper 3)

Forests for Food: Nourishing People, Sustaining the Planet

Why in News?

The **FAO**, in collaboration with **CIFOR-ICRAF**, released the report *"Forests for food: Nourishing people, sustaining the planet"*, highlighting the crucial role of forests in **food security, nutrition, livelihoods and agricultural sustainability**.

Key Findings

Finding	Key Data
People depending on forests for livelihoods	**5+ billion**
Wild species used globally	**50,000+**
Wild species directly consumed as food	**10,000+**
People primarily dependent on woodfuel for cooking (2022)	**1.8 billion**
People dependent on wood energy for safe drinking water	**410 million**
Crop production supported by pollinators	**35% globally**
Major cities supplied freshwater by forested watersheds	**85%+**
Agricultural regions depending on forests in other countries for rainfall	**155 countries**
Annual deforestation, 2015–25	**10.9 million ha/year**

Forest–Food Security Link

Forests contribute to all **four dimensions of Food Security and Nutrition (FSN):**

Availability → Access → Utilization → Stability

- Provide **wild foods, fruits, nuts, fish, meat and medicinal plants**.
- Provide income and employment to forest-dependent communities.
- Support agriculture through **pollination, freshwater and rainfall recycling**.
- Forest-derived medicinal plants support healthcare for **1+ billion people**.

Positive Developments

- Global **net forest loss has slowed** considerably.
- Forest-rich landscapes are associated with **greater dietary diversity** and better child nutrition in several studies.
- Community-based conservation can improve both **biodiversity and livelihoods**.

- Agroforestry and non-wood forest products are increasingly being incorporated into food and nutrition policies.

Major Challenges

1. **Deforestation:** Agricultural expansion and commodity production remain major drivers.
2. **Data gap:** Informal collection and consumption of forest foods are poorly captured in national statistics.
3. **Insecure tenure:** Weak recognition of indigenous/community rights can cause displacement.
4. **Overharvesting:** Unsustainable hunting and extraction threaten biodiversity.
5. **Zoonotic risks:** Forest disturbance and poorly regulated wildlife supply chains can increase disease-spillover risks.

Way Forward

- Integrate **forestry + agriculture + nutrition + health policies**.
- Strengthen **community and indigenous land/resource rights**.
- Include forest foods in **national food-security and nutrition statistics**.
- Promote **agroforestry and silvopastoral systems**.
- Apply the **One Health approach** to wildlife-food supply chains.
- Link sustainable forest management with **SDG 2 (Zero Hunger)** and climate resilience.

Prelims Question

Q. With reference to the FAO report *"Forests for food: Nourishing people, sustaining the planet"*, consider the following statements:

1. Forests contribute to food security through food availability, access, utilization and stability.
2. Forested watersheds provide freshwater to a significant proportion of the world's major cities.
3. Forests support agricultural production by providing habitats for pollinators.
4. Deforestation has no significant impact on agricultural productivity because forests and agriculture are independent ecosystems.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only

C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B. 1, 2 and 3 only

GOVERNANCE (GS Paper 3)

EPFO Wage Ceiling



Why in News?

The Union Cabinet approved raising the **EPFO mandatory wage ceiling from ₹15,000 to ₹25,000 per month**, expanding statutory social-security coverage for formal-sector workers.

Key Facts

Aspect	Details
Legal basis	Employees' Provident Funds & Miscellaneous Provisions Act, 1952
Organisation	EPFO
Old wage ceiling	₹15,000/month
New ceiling	**₹25,000/month**
Eligible establishment	Generally establishments with **20+ employees**
Schemes covered	EPF, EPS-95, EDLI
Estimated new beneficiaries	**51+ lakh employees**
EPS contribution cap	₹1,250 → **₹2,083/month**

Three EPFO Schemes

- **EPF:** Retirement savings/provident fund.
- **EPS-95:** Provides pension benefits after retirement.
- **EDLI:** Life-insurance benefit to eligible members' nominees.

Background

- Wage ceiling was **₹6,500** from 2004.
- Increased to **₹15,000 in September 2014**.
- Now proposed/approved to increase to **₹25,000**.

Significance

- Expands **social-security coverage** among formal-sector workers.
- Increases retirement savings and potential pension benefits.
- Supports **formalisation of employment**.
- Makes coverage more consistent with rising wages and living costs.
- Enhances financial security for workers and their families.

Prelims Question

Q. With reference to the Employees' Provident Fund Organisation (EPFO), consider the following statements:

1. The statutory wage ceiling for mandatory EPF coverage has been raised from ₹15,000 to ₹25,000 per month.
2. EPFO administers the Employees' Provident Fund (EPF), Employees' Pension Scheme (EPS) and Employees' Deposit Linked Insurance Scheme (EDLI).
3. The EPFO operates under the Ministry of Labour and Employment.
4. The wage ceiling represents the maximum salary that an employee is legally permitted to earn for EPF purposes.

Which of the statements given above are correct?

A. Only 1 and 2
B. Only 1, 2 and 3
C. Only 2, 3 and 4
D. 1, 2, 3 and 4

Answer: B. Only 1, 2 and 3

Geography (GS Paper 1)

Sankh River



Why in News?

Three minor girls drowned in the **Sankh River** near Salangabahal village in Odisha while preparing for the **Karma Puja** festival.

Key Facts

Feature	Details
Other name	Shankh River
States	Jharkhand → Chhattisgarh → Jharkhand → Odisha
Origin	Lupungpat village, Gumla district, Jharkhand
Altitude at origin	1,000 m above sea level
Total length	240 km
Major tributary/system	Tributary of the **Brahmani River system**
Meets	**South Koel River** at Vedavyas near Rourkela, Odisha
After confluence	The combined river is known as the **Brahmani**
Important waterfall	**Sadni Falls**, ~60 m high
Geographical feature	Sadni Falls lies along the edge of the **Ranchi Plateau** and is a scarp/knick-line waterfall

Prelims Questions

Q. With reference to the Sankh River, consider the following statements:

1. The Sankh River originates in Gumla district of Jharkhand.
2. It flows through Jharkhand, Chhattisgarh and Odisha.
3. It joins the South Koel River at Vedavyas near Rourkela.
4. The river formed after this confluence is known as the Mahanadi.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B. 1, 2 and 3 only

GEOGRAPHY (GS Paper 1)

Deep-Sea Mining in India



Why in News?

India's expanding **Deep Ocean Mission (DOM)** and exploration contracts with the **International Seabed Authority (ISA)** have renewed debate over **critical-mineral extraction vs protection of fragile deep-sea ecosystems**.

What is Deep-Sea Mining?

Extraction of mineral deposits from the ocean floor, generally at depths of **3,000–6,000 m**.

Major deposits

- **Polymetallic nodules** → Nickel, Cobalt, Copper, Manganese
- **Polymetallic sulphides** → Copper, Zinc, Gold and other minerals
- **Cobalt-rich ferromanganese crusts** → Cobalt, Nickel, Manganese

Why important?

These minerals are important for:

- Batteries
- Renewable-energy technologies
- Electric vehicles
- Electronics
- Strategic industries

International Legal Framework

UNCLOS — Part XI

- International seabed beyond national jurisdiction is called **"the Area."**
- Its mineral resources are regarded as the **Common Heritage of Mankind**.
- **International Seabed Authority (ISA)** regulates mineral-related activities in the Area.

Mining Code

- ISA has developed rules for **exploration**.
- A comprehensive framework for **commercial exploitation** remains unresolved.
- Key concerns include:
    - Environmental standards
    - Liability
    - Monitoring
    - Benefit sharing

India's Deep-Sea Mining Programme

India's ISA exploration contracts

India has exploration contracts covering about **95,000 sq km** in areas including:

- **Central Indian Ocean Basin**
- **Central Indian Ridge**
- **Carlsberg Ridge**

Resource potential

Surveys have identified around **366 million tonnes of polymetallic nodules** containing:

Nickel + Copper + Cobalt + Manganese

Deep Ocean Mission (DOM)

India's **Deep Ocean Mission** focuses on developing capabilities for:

- Deep-sea exploration
- Ocean science
- Underwater robotics
- Marine biodiversity studies
- Deep-sea mining technology

MATSYA-6000

India is developing the **MATSYA-6000** human-occupied submersible for deep-sea scientific exploration.

NIOT

The **National Institute of Ocean Technology (NIOT)** has developed/tested technologies for seabed exploration and mining.

Major Environmental Concerns

1. Benthic Habitat Destruction

Mining can physically destroy seabed habitats and organisms associated with polymetallic nodules.

2. Sediment Plumes

Mining can create large sediment clouds that may:

- Spread through the water column
- Affect filter-feeding organisms
- Disturb marine food webs

3. Noise & Light Pollution

Industrial machinery can disturb organisms adapted to the naturally dark and quiet deep sea.

4. Biodiversity Loss

Deep-sea ecosystems are poorly understood and may contain species yet to be discovered.

5. Slow Recovery

Many deep-sea ecosystems have **very slow natural recovery rates**, making environmental damage potentially long-lasting.

6. Regulatory Uncertainty

The absence of a fully established exploitation framework creates concerns regarding:

- Environmental safeguards
- Liability
- Monitoring
- Enforcement

Mains Question

Q.Deep-sea mining offers opportunities for securing critical minerals but poses significant ecological uncertainties." Discuss the opportunities and environmental challenges associated with India's deep-sea mining programme. (15 marks)

ENVIRONMENT (GS Paper 3)

Sal Trees & Sal Borer



Why in News?

More than **1.56 lakh Sal trees** affected by the **Sal borer (*Hoplocerambyx spinicornis*)** have been permitted for cutting in parts of **Madhya Pradesh**, particularly **Dindori and Anuppur (Amarkantak)**.

Sal Tree

- **Scientific name:** *Shorea robusta*
- **Local names: Sal / Sakhua**
- A major **native forest tree of the Indian subcontinent**.
- Important ecologically, economically and culturally.
- Commonly associated with **tropical moist and dry deciduous forests**.

Distribution

Found mainly across:

- Northern India
- Central India
- Eastern India
- Nepal
- Bangladesh

Ecological importance

- Major component of several deciduous forest ecosystems.
- Provides habitat and food resources for wildlife.
- Important for forest-dependent communities.

Sal Borer

- **Scientific name:** *Hoplocerambyx spinicornis*
- A **longhorn beetle**.
- Dark-brown insect.
- Considered a major pest of Sal forests.

Damage: Adult beetle → lays eggs → larvae enter trunk → bore through wood → damage vascular/tissue structure → tree weakening → mortality

The **larval stage** is particularly destructive because larvae tunnel through the trunk.

Epidemic threshold:An outbreak may be classified as an **epidemic when affected trees exceed 1% of the total forest stand**, according to the context provided.

Why is Sal Borer Important?

Large-scale infestation can cause:

- Death of Sal trees
- Forest degradation
- Loss of biodiversity
- Economic loss to forestry
- Reduction in timber resources
- Ecological impacts on Sal-dependent ecosystems

Prelims Question

Consider the following pairs:

Tree/Pest	Scientific name
1. Sal	*Shorea robusta*
2. Sal borer	*Hoplocerambyx spinicornis*

Which of the pairs given above is/are correctly matched?

A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: C

Science & Technology (GS Paper 3)

Neumocystis jirovecii



Why in News?

A recent study suggests that **Pneumocystis jirovecii** may have developed **resistance to a drug (trimethoprim-sulfamethoxazole)** that is commonly used to treat the pneumonia it causes.

Key Facts

- **Pneumocystis jirovecii** is an **opportunistic fungal pathogen**.
- Causes **Pneumocystis pneumonia (PCP)**, mainly in people with **weakened immune systems**.
- High-risk groups include:
  - People with **HIV/AIDS**
  - Patients receiving **immunosuppressive drugs**
- It is **ubiquitous** and can spread through the **air/aerosols**.
- Healthy people with normal immunity generally do **not develop disease** from it.
- It was earlier classified as a **protozoan**, but molecular studies established it as a **fungus** in the 1990s.
- Its life cycle includes **trophic and cystic forms**.

PCP — Important Points

Symptoms:

- Fever
- Chills

- Dry cough
- Shortness of breath
- Fatigue

Transmission: Mainly **airborne**

Treatment: Trimethoprim-sulfamethoxazole (TMP-SMX) is the standard first-line treatment.

Prelims Question

Consider the following statements regarding *Pneumocystis jirovecii*:

1. It is an opportunistic fungal pathogen.
2. It mainly causes disease in people with weakened immune systems.
3. It was historically classified as a protozoan before being recognised as a fungus.
4. It is primarily transmitted through contaminated water.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B

ENVIRONMENT (GS Paper 3)

Sagar Wildlife Sanctuary



Why in News?

As **Project Cheetah completes four years**, Gandhi Sagar Wildlife Sanctuary in Madhya Pradesh is being developed as another important site for **cheetah reintroduction**. A fourth African cheetah is expected to be translocated from **Kuno National Park**.

Key Facts

- **Location:** Northwestern **Madhya Pradesh**
- **Area: 368 sq km**
- **Notified: 1974**
- One boundary runs along **Rajasthan**.
- **Chambal River** flows through the sanctuary and divides it into two parts.
- **Gandhi Sagar Dam** creates a large reservoir in the region.
- Part of the **Khathiar-Gir dry deciduous forests ecoregion**.
- Designated as an **Important Bird and Biodiversity Area (IBA)**.

Flora

Important tree species include:

- Khair
- Salai
- Kardhai
- Dhawda
- Tendu
- Palash

Fauna

Herbivores:

- Chinkara
- Nilgai
- Spotted deer

Carnivores:

- Indian leopard
- Striped hyena
- Jackal

Cheetah Reintroduction

Gandhi Sagar was selected as a suitable landscape for **Project Cheetah** because of its:

- Open terrain
- Suitable prey base
- Dry deciduous ecosystem
- Availability of water

Historical & Archaeological Sites

The sanctuary/region contains sites such as:

- **Chaurasigarh**
- **Chaturbhujnath Temple**
- **Bhadkaji rock paintings**
- **Hinglajgarh Fort**
- **Taxakeshwar Temple**

SCIENCE AND TECHNOLOGY (GS Paper 3)

Combined Operational Review and Evaluation (CORE) Programme



Why in News?

The **5-day CORE Programme 2026** concluded at **Manekshaw Centre, New Delhi**, bringing together senior officers of the **Army, Navy and Air Force** with senior civil bureaucrats to review emerging warfare and national-security challenges.

Key Facts

Aspect	Details
Nature	Civil-military strategic training & evaluation programme
Instituted	September 2025
Institution	Headquarters Integrated Defence Staff (HQ IDS)
Participants	Tri-Services + MoD, MEA & MHA officials
Focus	Jointness, multi-domain warfare & national security
Emerging technologies	AI, quantum computing, robotics, autonomous systems
Non-kinetic warfare	Cyber warfare, strategic communication, counter-disinformation
Other focus	Hybrid/grey-zone conflicts, defence technology & wargaming

Significance

- **Promotes Tri-Service Jointness** and inter-service coordination.
- Supports India's move towards **Integrated Theatre Commands**.
- Strengthens **civil-military synergy** in national-security decision-making.
- Encourages a **whole-of-government approach** to hybrid and multi-domain threats.
- Improves preparedness against **cyber, cognitive and technological warfare**.

SCIENCE AND TECH (GS Paper III)

Battery Energy Storage System (BESS)



Why in News?

- NTPC Limited recently terminated its **₹413.37 crore contract with G R Infraprojects Ltd. (GRIL)** for a **400 MWh Battery Energy Storage System (BESS)** at the **Mouda Super Thermal Power Station, Maharashtra**.
- According to NTPC, the contract was terminated on **19 September 2026** because GRIL failed to meet contractual obligations and required project progress. NTPC stated that about **₹91 crore in available securities were encashed** and that the project would be **re-tendered at the risk and cost of GRIL**.
- Interestingly, NTPC has already issued a fresh tender for the **400 MWh BESS project at Mouda**, with the current tender closing in October 2026

What is BESS?

Battery Energy Storage System (BESS) **is a system that stores electrical energy in rechargeable batteries and releases it when required.**

Think of BESS as a **"bank account for electricity"**:

- When electricity is abundant → **store**
- When electricity is scarce/expensive → **withdraw**
- During grid disturbances → **provide backup/support**

Basic flow

Electricity source → PCS/Inverter → Battery → PCS/Inverter → Grid/Load

A BESS normally contains:

Component	Function
Battery cells/modules	Store electrical energy
Battery Management System (BMS)	Monitors voltage, temperature, State of Charge (SoC), etc.
Power Conversion System (PCS)	Converts AC ↔ DC
Thermal management	Maintains safe battery temperature
Energy Management/Control System	Controls charging/discharging
Enclosure	Houses and protects the equipment

. Why is BESS Important for India?

India is rapidly increasing renewable-energy capacity, particularly:

- Solar
- Wind

But renewable energy is **variable and intermittent**.

Example Solar generation:

High during daytime → falls sharply after sunset.

Wind:

Generation varies depending on wind conditions.

This creates a **mismatch between generation and demand**.

BESS provides the missing flexibility.

Solar surplus → BESS charging → Evening demand → BESS discharging

Thus:

BESS converts intermittent renewable electricity into more flexible and dispatchable electricity.

Major Applications of BESS

India's Policy Support

India has been developing an enabling framework for energy storage.

The Ministry of Power has implemented **two Viability Gap Funding (VGF) schemes** supporting development of approximately **43.8 GWh of BESS**. The government has also extended a **100% waiver of Inter-State Transmission System (ISTS) charges** for eligible co-located BESS projects commissioned up to June 2028.

The Ministry of New and Renewable Energy lists several important ESS measures, including:

- BESS VGF scheme
- Amendments to BESS VGF guidelines
- ISTS-charge waiver for ESS
- Co-location of ESS with solar projects
- National Framework for Promoting Energy Storage Systems

1. High Initial Cost

Utility-scale battery systems require significant capital investment.

2. Battery Degradation

Battery performance declines over repeated charging and discharging cycles.

3. Raw Material Dependence

Battery manufacturing may require minerals such as:

- Lithium
- Nickel
- Cobalt
- Graphite

Supply-chain concentration creates strategic vulnerabilities.

4. Thermal Runaway & Fire Risk

Certain battery chemistries can experience thermal runaway if improperly designed, operated or managed.

Therefore:

BMS + thermal management + fire safety systems are critical.

5. Recycling

Large-scale deployment will generate significant quantities of used batteries.

Hence:

Battery storage expansion must be accompanied by battery recycling and circular-economy systems.

6. Lack of Long-Duration Storage

Conventional lithium-ion BESS is particularly useful for short-to-medium duration applications, whereas some grid requirements may demand much longer storage.

Q1. Consider the following statements regarding Battery Energy Storage Systems:

1. BESS can store electricity generated from renewable sources.
2. BESS can supply electricity during periods of high demand.
3. BESS necessarily generates electricity through an electrochemical process.
4. A Battery Management System can monitor parameters such as battery temperature and voltage.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 4 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: B

Mains Question

Q.1.India's transition towards renewable energy requires not merely more generation capacity but greater flexibility in the electricity system. Analyse the role of energy storage in achieving this objective

ECONOMY (GS Paper 3)

Global Business Climate Survey 2026



Why in News?

India has been ranked **1st among 41 global markets** in the **Global Business Climate Survey 2026**, reflecting the positive assessment of Swedish businesses regarding the Indian market.

About the Survey

- **Survey:** Global Business Climate Survey 2026
- **Markets covered: 41**
- **First conducted: 2020**
- **Focus:** Experiences, perceptions and outlook of **Swedish business leaders operating abroad**.
- **Purpose:** Compare:
    - Economic performance
    - Business outlook
    - Operating conditions
    - Investment prospects
    - Challenges and opportunities

Organisations involved

The survey is jointly produced by:

1. **Business Sweden**
2. **Swedish Chambers of Commerce (SCI)**
3. **Swedish embassies and consulates**

Key 2026 Findings

Point	Fact
India	**Ranked 1st**
Vietnam	**Ranked 2nd**
Markets surveyed	**41**
Most optimistic region	**Asia-Pacific**
Investment prospects	India & Philippines among leading markets
India	Swedish firms show strong long-term commitment
India, Philippines & Poland	Led market-level growth expectations
Saudi Arabia	Positive outlook fell from **90% (2025) → 44% (2026)**

Prelims Question

Q. With reference to the Global Business Climate Survey 2026, consider the following statements:

1. It covers 41 international markets.
2. It is conducted exclusively by the Government of Sweden.
3. India ranked first in the 2026 survey.
4. The survey captures the experiences and perspectives of Swedish businesses operating abroad.

Which of the above statements are correct?

A. 1 and 3 only
B. 1, 3 and 4 only
C. 2 and 4 only
D. 1, 2, 3 and 4

Answer: B

UPSC Mains — GS Paper III

"India being ranked first among 41 markets in the Global Business Climate Survey 2026 reflects growing international business confidence. Examine the factors behind India's improving investment climate and discuss the challenges that India must address to sustain this momentum."

(15 marks, 250 words)

Indian Heritage & Culture (GS Paper 1)

Bidriware



Why in News?

Bidriware is facing pressure due to rising prices of its key raw materials—**silver, copper and zinc**, increasing production costs for artisans.

What is Bidriware?

- A traditional **metal handicraft** associated with **Bidar district, Karnataka**.
- Known for its **intricate silver inlay work** and distinctive **deep-black metallic finish**.
- Has received a **Geographical Indication (GI) tag**.
- Historically associated with the **Bahamani Sultanate** of the Deccan.

Origin & Cultural Influences

- Developed mainly under the **Bahamani Sultans during the 14th–15th centuries**.
- Influenced by **Turkish, Persian and Arabic artistic traditions**, blended with local Indian styles.
- The tradition is also associated with the arrival of **Sufi influences** in the region.

How is Bidriware Made?

Basic composition:

- **Zinc + Copper alloy** → main metal
- **Silver** → decorative inlay

Process:

1. Metal object is prepared using zinc-copper alloy.
2. Designs are **engraved using small chisels**.

3. Fine **pure silver wires/strips** are hammered into the engraved grooves.
4. A special treatment using **soil associated with Bidar Fort** produces the characteristic **black colour**.
5. The finished product is **buffed/polished**.

Prelims Question

Consider the following statements regarding Bidriware:

1. It is traditionally associated with Bidar district of Karnataka.
2. Zinc-copper alloy forms its principal metallic base.
3. Silver is used for decorative inlay work.
4. Its characteristic black finish is associated with soil from the Bidar region.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Environment (GS Paper 3)

Giant African Snail



Why in News?

The **Kerala Agricultural University (KAU)** has launched a special project to control/eradicate the **Giant African Snail**, *Lissachatina fulica*, following a request from the Kerala Agriculture Department.

Basic Facts

- **Scientific name:** *Lissachatina fulica*
- **Common name:** Giant African Snail
- **Origin: East Africa**
- **Type: Invasive alien species**
- Considered one of the **world's most damaging invasive species**.
- Spread to other regions through:
    - Pet trade
    - Food trade
    - Accidental introduction

Habitat

It prefers **warm and humid tropical conditions**.

Found in:

- Agricultural fields
- Forests
- Wetlands
- Coastal areas
- Riparian zones
- Scrublands
- Urban areas

Key Features

- **Hermaphrodite** — an individual has both male and female reproductive organs.
- Large land snail with a **long, narrow, cone-shaped shell**.
- Shell generally **light brown with darker vertical stripes**.
- Adults feed on **decaying organic matter**, fallen fruits, garbage and animal manure.

Health Significance

It can act as a carrier of **rat lungworm (*Angiostrongylus cantonensis*)**.

The parasite can cause **eosinophilic meningitis** in humans.

Why is it an Invasive Species?

It can:

- Damage agricultural crops
- Compete with native species
- Alter local ecosystems
- Spread rapidly under suitable climatic conditions
- Create potential public-health risks

Prelims Question

Consider the following statements regarding the Giant African Snail:

1. *Lissachatina fulica* is native to East Africa.
2. It is an invasive alien species.
3. It is a hermaphrodite.
4. It can be associated with transmission of *Angiostrongylus cantonensis*.

Which of the statements given above are correct?

A. 1 and 2 only
B. 1, 2 and 3 only
C. 2, 3 and 4 only
D. 1, 2, 3 and 4

Answer: D

Atmanirbhar Bharat must evolve from "assembly in India" to "capability creation in India".

Key India–China Trade Trends

- **Bilateral trade:** Reached around **$167.6 billion in 2025**.
- **Chinese imports into India:** Increased from **$87.5 billion in 2021 to $149.5 billion in 2025**, an increase of around **71%**.
- **India's exports to China:** Remained broadly stagnant during 2021–25.
- The resulting imbalance reflects the persistent **India–China trade deficit**.
- Around **70% of India's imports from China comprise intermediate goods**, while around **22% constitute capital goods**.
- Therefore, the deficit is not merely due to imports of finished consumer products but reflects India's **structural dependence on Chinese manufacturing inputs**.

Why is Chinese Dependence Significant?

1. Electronics and Mobile Manufacturing

- India has emerged as a major centre for **mobile phone assembly**.
- However, the share of imported parts and components in India's import basket increased from **3.3% in 2022 to 10.1% in 2025**.
- This indicates that domestic assembly has expanded faster than the domestic component ecosystem.

2. Electronics Supply Chain

India remains dependent on Chinese imports for products and inputs such as:

- Telecom equipment
- Laptops and computers
- Integrated circuits
- Electronic components
- Machinery and industrial inputs

The combined value of India's **top five import categories from China** increased from **$19 billion in 2021 to $34.6 billion in 2025**.

3. Intermediate and Capital Goods

Chinese machinery and components can support Indian industrialisation, but prolonged dependence can create vulnerabilities in:

- Production

TAKSHASHILA SCHOOL OF CIVIL SERVICES ESTD 2022 CREATING LEADERS OF TOMORROW

- Technology
- Supply chains
- Strategic sectors

Why Does the Trade Deficit Persist?

Structural Manufacturing Gap

India's domestic ecosystem for:

- Components
- Semiconductors
- Precision engineering
- Advanced machinery
- Industrial materials

remains comparatively underdeveloped.

Technology Dependence: Limited domestic technological capabilities force Indian firms to rely on imported high-value inputs.

Low Domestic Value Addition: Assembly-based production may generate employment and exports without proportionately increasing domestic value addition.

Supply-Chain Concentration: Heavy dependence on one country creates vulnerability to geopolitical tensions and supply disruptions.

Atmanirbhar Bharat: From Assembly to Value Addition

The objective of self-reliance should not be interpreted as **complete import substitution or economic isolation**.

Required transition

Import-dependent Assembly

↓

Domestic Component Manufacturing

↓

Technology & R&D

↓

TAKSHASHILA SCHOOL OF CIVIL SERVICES ESTD 2022 CREATING LEADERS OF TOMORROW

Supplier Ecosystems

↓

High Domestic Value Addition

↓

Globally Competitive Manufacturing

India needs to move from:

> **"Made in India" → "Designed, developed and manufactured in India."**

Are Chinese Imports Always Harmful?

Not necessarily.

Imports of advanced machinery and intermediate goods can facilitate **industrial upgrading** by providing:

- Access to technology
- Productivity gains
- Capital formation
- Modern production techniques
- Integration into Global Value Chains (GVCs)

The problem arises when:

- **Temporary import dependence → Permanent structural dependence,** and domestic firms fail to develop indigenous capabilities.
- Therefore, **self-reliance should mean resilience and competitiveness rather than isolation.**

Major Concerns

1. Strategic Vulnerability: Dependence on China for critical inputs can become a strategic vulnerability during geopolitical tensions or supply disruptions.

2. Weak Domestic Component Ecosystem: India's success in final assembly has not been matched by equivalent development of upstream suppliers.

3. Low Value Addition: Import-intensive manufacturing limits domestic technological and economic gains.

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4. Persistent Trade Deficit: Rapid growth of imports without a comparable increase in exports widens the bilateral trade imbalance.

5. Technology Dependence: Dependence on imported semiconductors, electronics and machinery can constrain India's technological sovereignty.

6. Risk to Atmanirbhar Bharat: Manufacturing growth without domestic capability creation can produce an **"assembly trap" rather than genuine self-reliance**.

Way Ahead

1. Build Domestic Component Ecosystems

Promote manufacturing of:

- Semiconductors
- Electronic components
- Precision machinery
- Advanced materials
- Industrial equipment

2. Move Up the Value Chain

Shift policy focus from **final assembly to design, R&D and high-value component manufacturing**.

3. Promote Research & Innovation

Increase public and private investment in:

- Semiconductor technology
- Advanced manufacturing
- Product design
- Artificial intelligence
- Materials science

4. Calibrated Tariff Policy

Use carefully designed tariffs and incentives to nurture domestic manufacturing capabilities without making Indian products globally uncompetitive.

5. Diversify Supply Chains

Develop alternative sources through partnerships with:

- Japan

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- South Korea
- ASEAN
- Taiwan
- European countries

6. Integrate with Global Value Chains

India should remain open to global production networks while reducing excessive dependence on a single country.

7. Improve Manufacturing Competitiveness

Focus on:

- Logistics
- Infrastructure
- Skill development
- Reliable power
- Ease of doing business
- Faster customs clearance

India's Strategic Policy Choice

Approach	Limitation
Complete import dependence	Strategic vulnerability
Blanket protectionism	Higher costs and inefficiency
Complete decoupling	Loss of global competitiveness
Strategic self-reliance	**Preferred approach**

Strategic Self-Reliance =

Domestic capability + Global integration + Supply-chain diversification

Key Data for Prelims

- **India–China bilateral trade (2025):** $167.6 billion
- **Chinese imports into India:** $87.5 billion (2021) → $149.5 billion (2025)
- **Increase in imports:** ~71%

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- **Intermediate goods:** ~70% of Chinese imports
- **Capital goods:** ~22%
- **Top five import categories:** $19 billion (2021) → $34.6 billion (2025)
- **Imported parts/components share:** 3.3% (2022) → 10.1% (2025)
- **Major policy initiatives:** Make in India, Atmanirbhar Bharat, Phased Manufacturing Programme (PMP)

Conclusion

- India's experience demonstrates that **manufacturing growth does not automatically translate into self-reliance**. The country has successfully expanded downstream assembly, particularly in electronics, but remains dependent on China for several critical components, intermediate goods and capital equipment.
- The objective of **Atmanirbhar Bharat should therefore be capability-based self-reliance rather than import isolation**. India must build domestic technological and supplier ecosystems while remaining integrated with global value chains. Such a strategy can convert India's manufacturing expansion from an **"assembly trap" into sustainable and globally competitive industrialisation**.

Answer Writing Practice Question: "India's growing manufacturing capacity remains deeply embedded in China-centric supply chains, creating an 'assembly trap' rather than genuine self-reliance." Examine the structural causes of India's dependence on Chinese imports and suggest measures to build resilient and globally competitive manufacturing value chains.

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2. The Foreign Contribution Regulation Act (FCRA) & the 2026 Amendment Bill

Context: The proposed **Foreign Contribution (Regulation) Amendment Bill, 2026** seeks to further regulate foreign contributions received by NGOs and other organisations. The proposed provisions on **assets created from foreign contributions** after cancellation, surrender or cessation of FCRA registration have triggered concerns regarding civil society autonomy, property rights and continuity of welfare services.

About the Foreign Contribution Regulation Act (FCRA)

What it is?

- The **FCRA** regulates how individuals, associations, and organisations, including NGOs, accept and use **foreign contributions and foreign hospitality**.
- It is administered by the **Ministry of Home Affairs (MHA)**.
- Its broad objective is to ensure that foreign funds do not adversely affect:
    - National sovereignty and integrity
    - National security
    - Public interest
    - Democratic institutions and processes.

Historical Evolution

- **FCRA, 1976:** Enacted during the Emergency to regulate foreign contributions amid concerns regarding external influence on Indian politics and public institutions.
- **FCRA, 2010:** Replaced the 1976 Act and consolidated the regulatory framework governing foreign contributions and hospitality.
- **2020 Amendments:**
    - Prohibited transfer/re-grant of foreign contributions to other organisations.
    - Reduced the administrative expense ceiling from **50% to 20%**.
    - Mandated receipt of foreign contributions through a designated **SBI account at the New Delhi Main Branch**.

Key Provisions of the Proposed FCRA Amendment Bill, 2026

1. Asset Vesting

- If an FCRA certificate is **cancelled, surrendered or lapses**, unutilised foreign contributions and assets created from foreign funds would provisionally vest in a **Designated Authority**.

2. Permanent Vesting

- If registration is not restored within the prescribed period:
    - Assets may permanently vest with the Authority.
    - Assets may be transferred to government departments or sold.
    - Sale proceeds may be credited to the **Consolidated Fund of India**.

3. Judicial Recourse

- Provides for revision of orders.
- An aggrieved organisation can appeal before a **District Judge within 90 days**.

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4. Deemed Cessation

- FCRA registration may automatically cease where:
    - Renewal is not sought;
    - Renewal is denied; or
    - The renewal process remains unresolved before expiry.

5. Rationalisation of Penalties

- Proposes reduction of the maximum imprisonment for certain violations from **five years to one year**.

Key Data & Civil Society Realities

- **FCRA cancellations:** MHA has cancelled the registrations of **22,496 NGOs since 2015**.
- **Active registered associations:** Around **14,466** associations remained eligible to receive foreign contributions as of September 2026.
- **Historical foreign inflows:** Foreign contributions received by NGOs had reached **₹12,289.6 crore in FY 2006–07**, with current inflows remaining substantial.
- **Indian billionaires:** India had **229 billionaires** according to the Forbes 2026 list.
- **Domestic philanthropy:** Projected at around **₹1.43 lakh crore ($16 billion)** in FY 2025.
- **Retail giving:** Approximately **₹37,000 crore annually**.
- **Projected funding gap:** The gap between civil-society demand and domestic philanthropic supply could reach **₹18 lakh crore ($210 billion) by 2030**.
- **CSR expenditure:** Listed companies spent around **₹22,563 crore on CSR in FY 2025**, registering a **17.5% increase**.

Why is the FCRA Debate Important?

1. National Security vs Civil Society

Foreign funding can potentially be used for:

- Illicit political influence
- Money laundering
- Religious conversion
- Anti-national activities
- External interference

However, excessive restrictions may weaken legitimate civil-society organisations.

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2. Developmental Role of NGOs

NGOs contribute significantly to:

- Education
- Healthcare
- Rural development
- Tribal welfare
- Women empowerment
- Disaster relief
- Environmental protection

In several remote and tribal regions, NGOs may provide services where state capacity remains limited.

3. Democratic Accountability

A vibrant civil society can act as a **Corrective force against excessive concentration and misuse of political power.**

NGOs facilitate:

- Public participation
- Social accountability
- Rights awareness
- Policy advocacy
- Community mobilisation.

Major Concerns

1. Impact on Grassroots Services

Restrictions on foreign funding may affect organisations running:

- Schools
- Hospitals
- Elderly-care institutions
- Rural development programmes
- Tribal welfare projects

2. Asset Forfeiture Concerns

The proposed vesting mechanism raises questions about the fate of infrastructure created using foreign contributions when an organisation loses its FCRA registration.

3. Executive Discretion

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Vesting assets in a government-appointed authority may raise concerns regarding:

- Due process
- Natural justice
- Separation of powers
- Property rights.

4. Chilling Effect on Civil Society

Excessive regulatory uncertainty may discourage NGOs from undertaking:

- Human-rights advocacy
- Environmental campaigns
- Public-interest litigation support
- Government accountability initiatives.

5. Funding Concentration

Dependence on a limited number of funding sources can influence civil-society organisations' priorities and independence.

Changing Philanthropic Landscape

Emergence of Domestic Philanthropy

Indian philanthropy is expanding due to:

- Rising private wealth
- Corporate philanthropy
- CSR
- Digital giving
- Venture philanthropy.

Changing Donor Priorities

New-age philanthropists increasingly focus on:

- Scientific research
- Higher education
- Climate technology
- Institutional capacity
- Ecosystem development.

Funding Mismatch

Traditional NGOs working in:

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- Primary healthcare
- Basic education
- Rural development
- Poverty alleviation

may receive comparatively less funding as donors increasingly prefer technology-intensive and high-impact interventions.

Way Ahead

1. Proportionate Regulation

- Maintain strict scrutiny of foreign contributions.
- Distinguish between **genuine violations and minor technical non-compliance**.
- Follow a risk-based regulatory approach.

2. Strengthen Judicial Oversight

- Ensure independent review before permanent vesting or liquidation of NGO assets.
- Strengthen appellate and tribunal mechanisms.

3. Promote Domestic Philanthropy

- Improve tax incentives for charitable donations.
- Encourage long-term domestic endowments and unrestricted funding.

4. Improve CSR Partnerships

Encourage companies to provide:

- Multi-year grants
- Institutional support
- Capacity-building assistance
- Funding for grassroots organisations.

5. Increase Transparency

NGOs should ensure:

- Financial disclosure
- Beneficial ownership transparency
- Annual reporting
- Independent audits
- Clear utilisation of foreign funds.

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6. Encourage Digital Giving

Platforms such as **UPI and the Social Stock Exchange** can facilitate transparent retail and community-based philanthropy.

7. Institutionalised State–Civil Society Dialogue

Regular consultation among **Government + NGOs + Donors + Communities** can improve trust and regulatory effectiveness.

Balancing National Security & Civil Society

Foreign Funding

- **Transparency & Regulation**
- **Accountability**
- **Protection from Illicit Influence**

Alongside

- **Independent Civil Society**
- **Social Welfare**
- **Democratic Participation**
- **Public Accountability**

The objective should be regulation without strangulation and accountability without compromising legitimate civil-society autonomy.

Prelims Quick Revision

Parameter	Key Fact
FCRA, 1976	First FCRA legislation
FCRA, 2010	Current principal legislative framework
Nodal Ministry	**Ministry of Home Affairs**
2020 amendment	Administrative expense ceiling reduced to **20%**
FCRA cancellations since 2015	**22,496 NGOs**
Active associations, Sept. 2026	**14,466**

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Domestic philanthropy, FY25	**₹1.43 lakh crore**
Retail giving	**~₹37,000 crore annually**
CSR expenditure, FY25	**₹22,563 crore**
Proposed appeal period	**90 days before District Judge**

Conclusion

- The FCRA framework represents a legitimate attempt to protect **national security, transparency and public interest** from illicit foreign influence. However, regulation must remain **proportionate, transparent and subject to adequate judicial safeguards**. Excessive restrictions can unintentionally weaken NGOs that provide essential welfare services and perform important democratic functions.
- India therefore needs a **balanced civil-society framework** that combines rigorous financial accountability with institutional autonomy, while simultaneously strengthening domestic philanthropy, CSR and community giving. The long-term objective should be a **transparent, self-reliant and vibrant civil society capable of contributing to both development and democratic accountability**.

Answer Writing Practice Question: *"NGOs are essential instruments of participatory governance, but foreign funding can also create concerns relating to national security and external influence." Examine the role of FCRA in regulating NGOs and suggest measures to balance accountability with civil-society autonomy.*

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3. <u>SLINEX-26</u>

Context: The **13th edition of the India–Sri Lanka bilateral maritime exercise, SLINEX-26**, is being conducted at **Visakhapatnam** under the Eastern Naval Command of the Indian Navy. The exercise seeks to strengthen maritime interoperability, defence cooperation and joint responses to emerging security challenges in the Indian Ocean Region.

About SLINEX-26

What is it?

- **SLINEX** is the flagship **bilateral maritime exercise** between the **Indian Navy and the Sri Lanka Navy**.

- The exercise was **instituted in 2005** and has evolved from basic naval drills into a multidimensional maritime exercise.
- The **13th edition, SLINEX-26**, is hosted by India at **Visakhapatnam, Andhra Pradesh**.
- It is conducted under the operational command of the **Eastern Naval Command (ENC)** of the Indian Navy.

Members

- **Indian Navy**
- **Sri Lanka Navy**

Aim

- Enhance **maritime interoperability** and operational coordination.
- Strengthen mutual trust between the two navies.
- Exchange professional knowledge and best practices.
- Improve capabilities to address **traditional and non-traditional maritime threats**.
- Strengthen cooperation in the **Indian Ocean Region (IOR)**.

Key Features

1. Two-Phase Exercise

SLINEX follows a structured format comprising:

Harbour Phase

↓

Sea Phase

- The Harbour Phase focuses on professional interactions, knowledge exchange and coordinated planning.
- The Sea Phase involves practical naval manoeuvres and operational drills.

2. Multi-Dimensional Maritime Training

The exercise involves activities related to:

- **Anti-Submarine Warfare (ASW)**
- Maritime interdiction
- Tactical communications
- Search and rescue
- Replenishment and logistics
- Coordinated naval manoeuvres.

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3. Operational Interoperability

- Enables both navies to operate together more effectively.
- Improves coordination during maritime security operations and humanitarian emergencies.

Significance of SLINEX-26

1. Strengthens Neighbourhood First

- Sri Lanka is a key maritime neighbour of India.
- Regular naval exercises deepen defence cooperation and strategic trust.
- Supports India's **Neighbourhood First** policy.

2. Indian Ocean Security

Sri Lanka occupies a strategically important position close to major **Indian Ocean sea lanes of communication (SLOCs)**.

Enhanced India–Sri Lanka naval cooperation contributes to:

- Maritime domain awareness
- Protection of sea lanes
- Counter-piracy operations
- Combating maritime trafficking
- Prevention of illegal fishing and other maritime crimes.

3. Non-Traditional Security

SLINEX helps strengthen cooperation against:

- Piracy
- Smuggling
- Human trafficking
- Irregular migration
- Maritime terrorism
- Natural disasters.

4. HADR Cooperation

Naval interoperability can facilitate coordinated responses during:

- Cyclones
- Tsunamis
- Floods
- Maritime accidents

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- Other humanitarian emergencies.

SLINEX & India's Maritime Vision

- SLINEX contributes to India's broader maritime outreach through:

SAGAR

- **Security and Growth for All in the Region**

It emphasises:

- Mutual security
- Economic prosperity
- Respect for sovereignty
- Capacity building
- Maritime cooperation.

MAHASAGAR

Mutual and Holistic Advancement for Security and Growth Across Regions

It seeks to strengthen India's engagement with maritime partners through:

- Security cooperation
- Development partnerships
- Capacity building
- Disaster resilience
- Regional connectivity.

Thus:

SLINEX → Bilateral Naval Cooperation → SAGAR/MAHASAGAR → Secure Indian Ocean

Strategic Importance for India

Maritime Geography

Sri Lanka's location near major Indian Ocean shipping routes gives it strategic importance for India's:

- Maritime security
- Energy security
- Trade routes
- Coastal security

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- Regional connectivity.

Palk Strait & Gulf of Mannar

- Enhanced naval cooperation also contributes to security in India's immediate maritime neighbourhood, particularly around the **Palk Strait and Gulf of Mannar**.

China Factor

- Sri Lanka's strategic location and growing external infrastructure engagements make deeper India–Sri Lanka maritime cooperation important for maintaining a **stable and secure Indian Ocean Region**.
- However, India's approach should focus on **cooperative regional security rather than bloc-based confrontation**.

Challenges in India–Sri Lanka Maritime Cooperation

- **Chinese strategic presence** in Sri Lankan ports and surrounding maritime spaces.
- **Fishermen dispute** involving Indian and Sri Lankan fishermen.
- Maritime boundary and resource-management issues.
- Illegal fishing and trafficking.
- Sri Lanka's need to balance relations among **India, China and other external partners**.
- Need for greater maritime domain awareness and information sharing.

Way Ahead

1. Expand Maritime Domain Awareness: Improve information-sharing mechanisms and coordinated surveillance.

2. Strengthen HADR Cooperation: Develop joint mechanisms for rapid disaster response in the Indian Ocean.

3. Address Fishermen Issues: Combine diplomatic dialogue, sustainable fisheries management and livelihood support.

4. Enhance Capacity Building

India can support Sri Lanka through:

- Training
- Equipment
- Technical assistance

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- Hydrographic cooperation.

5. Expand Multilateral Maritime Cooperation

Strengthen cooperation through platforms such as:

- **IORA**
- **Colombo Security Conclave**
- Indian Ocean naval engagements.

6. Maintain an Inclusive Indian Ocean Architecture: India should promote a **rules-based, inclusive and cooperative maritime order** rather than exclusive strategic alignments.

Prelims Quick Revision

Parameter	Key Fact
Exercise	**SLINEX-26**
Edition	**13th**
Participants	**Indian Navy & Sri Lanka Navy**
Host	**India**
Venue	**Visakhapatnam, Andhra Pradesh**
Command	**Eastern Naval Command**
First instituted	**2005**
Phases	**Harbour Phase + Sea Phase**
Major focus	**Maritime interoperability & security**
Key drills	**ASW, SAR, maritime interdiction, logistics**
Regional framework	**SAGAR & MAHASAGAR**

Conclusion

- **SLINEX-26** reflects the deepening of India–Sri Lanka maritime cooperation and India's broader effort to build a **secure, resilient and cooperative Indian**

Ocean Region. Beyond conventional naval preparedness, the exercise strengthens capabilities against piracy, trafficking, disasters and other non-traditional threats. Regular exercises of this nature reinforce **Neighbourhood First**, enhance interoperability and contribute to India's vision of **Security and Growth for All in the Region (SAGAR)**.

Answer Writing Practice Question: *"Maritime cooperation with Sri Lanka is central to India's vision of a secure and inclusive Indian Ocean Region." Discuss the strategic significance of exercises such as SLINEX in strengthening India's neighbourhood and maritime security architecture.*

4. Tulu Language & Demand for Official Language Status

Context: Tulu, a major Dravidian language spoken predominantly in the coastal Karnataka region, has a distinct linguistic and cultural identity. The demand for greater official recognition has gained significance because of its rich literary, oral and ritual traditions and its historical presence in **Dakshina Kannada and Udupi**.



About Tulu

What is Tulu?

- Tulu is a **Dravidian language** primarily spoken in the coastal regions of **Karnataka** and parts of northern Kerala.
- It possesses a rich tradition of **oral literature, folklore, rituals and performing arts**.
- Important cultural expressions include:
    - **Paddanas** – sung epics narrating stories of heroes, spirits and local traditions.
    - **Bhoota Kola** – traditional spirit-worship ritual of coastal Karnataka.
    - **Yakshagana** – traditional dance-drama combining music, dialogue, dance and mythology.

Key Features

- **Distinct Dravidian Language:** Tulu is recognised as a distinct Dravidian language rather than merely a dialect of Kannada.
- **Dual Script Heritage:** Historically associated with the **Tigalari script**, while the **Kannada script** is widely used for contemporary written communication.
- **Rich Oral Tradition:** Its cultural heritage includes folk epics, ballads, mythology, rituals and traditional agricultural expressions transmitted across generations.
- **Educational Presence:** Tulu has been offered as an optional/third language in schools in **Dakshina Kannada and Udupi**.

Constitutional & Legal Framework

Article 345

- **Article 345** empowers the **State Legislature** to adopt one or more languages in use in the State, or Hindi, for all or any of the official purposes of the State.
- Therefore, recognition of a language for official purposes at the State level requires appropriate **legislative action**.

Karnataka Official Language

- The **Karnataka Official Language Act, 1963** provides for Kannada as the official language of the State.
- Granting Tulu comparable statutory official-language status would therefore require an **appropriate amendment or legislative measure**.

Constitutional Significance

The issue highlights the balance between:

Linguistic Diversity

→ **Cultural Preservation**

→ **State Official Language Policy**

→ **Constitutional Recognition**

Cultural Significance of Tulu

- Preserves the unique cultural identity of **coastal Karnataka**.
- Provides an important medium for transmission of:
    - Local history
    - Folk traditions
    - Indigenous knowledge
    - Religious and ritual practices.
- **Paddanas** provide valuable insights into local social memory and oral history.
- **Bhoota Kola and Yakshagana** demonstrate the close relationship between language, folklore and performing arts.

Challenges

- Limited representation in formal administrative and higher educational domains.
- Need for greater **digitisation and documentation** of oral literature.
- Risk of decline in intergenerational transmission amid linguistic homogenisation.
- Limited availability of extensive modern technical and academic literature.
- Need for preservation of traditional scripts such as **Tigalari**.

Way Ahead

- **Document and digitise** Tulu's oral literature, folk traditions and manuscripts.
- Promote research on the **Tigalari script** and traditional textual heritage.
- Expand Tulu teaching and educational resources.
- Develop digital content, dictionaries and language technologies.
- Support translation of important works into Tulu and from Tulu.
- Strengthen preservation of **Paddanas, Bhoota Kola and Yakshagana traditions**.
- Any demand for enhanced official status should be considered through **constitutional and legislative processes** while ensuring administrative feasibility.

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Prelims Quick Revision

Parameter	Key Fact
Language family	**Dravidian**
Major region	**Coastal Karnataka**
Important districts	**Dakshina Kannada & Udupi**
Historical script	**Tigalari**
Contemporary script	**Kannada**
Famous oral epics	**Paddanas**
Ritual tradition	**Bhoota Kola**
Performing art	**Yakshagana**
Relevant Constitution Article	**Article 345**
Karnataka official language law	**Karnataka Official Language Act, 1963**

Conclusion

- Tulu represents India's **linguistic pluralism and intangible cultural heritage**. Its rich oral epics, traditional rituals, performing arts and distinct linguistic identity demonstrate that language preservation extends beyond administrative recognition. A balanced approach involving **documentation, education, digitisation, cultural promotion and appropriate legislative processes** can help preserve Tulu while strengthening India's constitutional commitment to linguistic diversity.

Answer Writing Practice Question: *"India's linguistic diversity is both a cultural asset and a governance challenge." Discuss with reference to the demand for greater recognition of Tulu and the constitutional framework governing State official languages.*

5. State of Global Water Resources 2025 Report

Context: The **World Meteorological Organisation (WMO)** has highlighted growing instability in the global water cycle, including persistent **groundwater depletion in India**, declining terrestrial water storage, drier river systems and accelerating glacier loss. The findings underline the increasing risks to **water, food and climate security**.

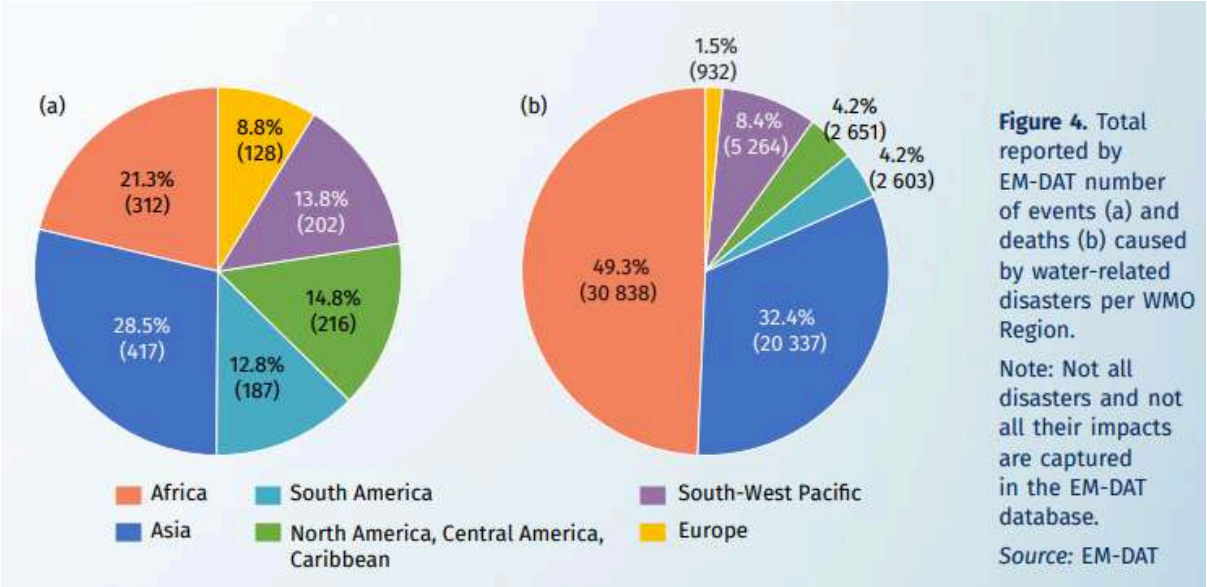


Figure 4. Total reported by EM-DAT number of events (a) and deaths (b) caused by water-related disasters per WMO Region.

Note: Not all disasters and not all their impacts are captured in the EM-DAT database.

Source: EM-DAT

About the State of Global Water Resources Report

What is it?

- The **State of Global Water Resources** is an annual assessment published by the **World Meteorological Organisation (WMO)**.
- It assesses the **availability, distribution and variability of global freshwater resources**.
- Over five years, its assessment framework has expanded from **3 to 15 hydrological variables**.
- It covers:
    - Groundwater
    - River discharge
    - Terrestrial water storage
    - Glaciers
    - Soil moisture
    - Other components of the hydrological cycle.

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Key Findings

1. Rising Groundwater Stress

- Around **34% of monitored groundwater stations** recorded **below- to much-below-normal levels in 2025**.
- This increased from **25% in 2024**.
- The trend indicates a growing shift towards **groundwater deficits**.

2. Persistent Groundwater Depletion in India

- Parts of India experienced persistent groundwater deficits during **2022–2025**.
- **Over-abstraction** remains an important driver.
- The problem is particularly significant in **north-western India**, where agriculture has historically relied heavily on groundwater irrigation.

3. Declining Terrestrial Water Storage

- Global **terrestrial water storage (TWS)** has shown a persistent decline since **2014–16**.
- Below-normal storage continued in several regions during 2025, including parts of **northern India**.

4. Drier River Systems

- Around **36% of the global catchment area** experienced drier-than-normal conditions.
- **2025 was among the driest years for global river discharge in around 35 years**.

5. Accelerating Glacier Loss

- Global glaciers lost around **408 ± 132 gigatonnes (Gt)** of mass in 2025.
- This corresponds to approximately **1.1 ± 0.4 mm of sea-level rise**.
- It was the **fourth consecutive year** in which all major glaciated regions recorded net ice loss.

Why is Groundwater Depletion in India Significant?

India is highly dependent on groundwater for:

- Irrigation
- Drinking water
- Domestic requirements
- Industrial activities.

Major Drivers

- Excessive groundwater extraction for irrigation.
- Water-intensive crops.
- Subsidised/free electricity encouraging over-pumping.
- Inefficient irrigation practices.
- Rapid urbanisation.
- Reduced groundwater recharge due to concretisation.
- Increasing climate variability.

Consequences

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- **Groundwater depletion**
- **Declining water tables**
- **Higher extraction costs**
- **Agricultural stress**
- **Food & livelihood insecurity**

Broader Implications

1. Water Security: Declining groundwater, river discharge and terrestrial water storage reduce reliable freshwater availability.

2. Food Security: Groundwater-dependent irrigation supports agricultural production. Persistent depletion can threaten:

- Crop yields
- Irrigation reliability
- Farmer incomes
- Food security.

3. Climate Resilience: Groundwater, glaciers and terrestrial water storage act as **natural buffers** during periods of drought and climatic variability. Their depletion reduces the resilience of societies and ecosystems.

4. Himalayan Ecosystem: Glacier loss can initially increase meltwater availability but eventually reduce long-term water availability in glacier-dependent river systems.

This has implications for:

- Himalayan ecosystems
- Agriculture
- Hydropower
- Drinking water
- Downstream river basins.

5. Water–Food–Energy Nexus

Water stress can simultaneously affect:

Agriculture → Food Security

Hydropower → Energy Security

Drinking Water → Human Security

Thus, water insecurity has **cross-sectoral implications**.

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India-Specific Concerns

North-Western India

Groundwater stress is particularly important in regions such as:

- Punjab
- Haryana
- Western Uttar Pradesh
- Rajasthan

where intensive irrigation and water-intensive cropping have contributed to groundwater depletion.

Agricultural Distortions

The combination of **MSP-linked cropping patterns + subsidised electricity + flood irrigation** can encourage excessive groundwater extraction.

Urban Water Stress

Increasing urbanisation creates additional pressure through:

- Falling recharge
- Rising demand
- Groundwater dependence
- Loss of wetlands and recharge zones.

Way Ahead

1. Promote Groundwater Governance

- Strengthen groundwater monitoring.
- Regulate excessive extraction.
- Promote aquifer-based management.

2. Improve Irrigation Efficiency

Expand:

- **Drip irrigation**
- **Sprinkler irrigation**
- Micro-irrigation
- Precision agriculture.

3. Crop Diversification

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Move away from highly water-intensive crops in groundwater-stressed regions.

Promote:

- Millets
- Pulses
- Oilseeds
- Less water-intensive crops.

4. Artificial Recharge

Promote:

- Rainwater harvesting
- Recharge wells
- Watershed development
- Wetland restoration
- Urban recharge structures.

5. Reform Water-Energy Incentives

Rationalise electricity subsidies and encourage **energy-efficient groundwater pumping** without undermining farmer livelihoods.

6. Integrated River Basin Management

Water management should move from fragmented administrative approaches towards **river-basin and aquifer-level planning**.

7. Climate-Resilient Water Management

Integrate: **Groundwater + Surface Water + Glaciers + Soil Moisture + Rainfall** into a comprehensive water-security strategy.

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Prelims Quick Revision

Parameter	Key Fact
Report	**State of Global Water Resources**
Publisher	**World Meteorological Organisation (WMO)**
Hydrological variables	**15**

Groundwater stations below/much-below normal, 2025	**34%**
Same indicator, 2024	**25%**
Global catchment area with drier-than-normal conditions	**~36%**
Glacier mass loss, 2025	**408 ± 132 Gt**
Sea-level equivalent	**~1.1 ± 0.4 mm**
Consecutive years of net glacier loss	**4 years**
India's persistent groundwater deficit	**2022–25**
Major driver in India	**Over-abstraction**

Conclusion

- The WMO report demonstrates that the global water crisis is no longer merely a problem of **water scarcity**, but increasingly one of **water-cycle instability**. Groundwater depletion, declining terrestrial water storage, drying rivers and glacier loss are interconnected manifestations of changing hydrological systems.
- For India, the priority should be to shift from **groundwater extraction to groundwater management**, supported by crop diversification, efficient irrigation, aquifer recharge and integrated river-basin planning. Building **water-secure and climate-resilient communities** will be essential for India's long-term food, livelihood and ecological security.

Secure Answer Writing Practice Question: *"Groundwater depletion, glacier retreat and declining freshwater storage are transforming water insecurity into a major developmental challenge." Examine the causes and implications of changing global water resources with special reference to India. Suggest a sustainable water-management strategy.*

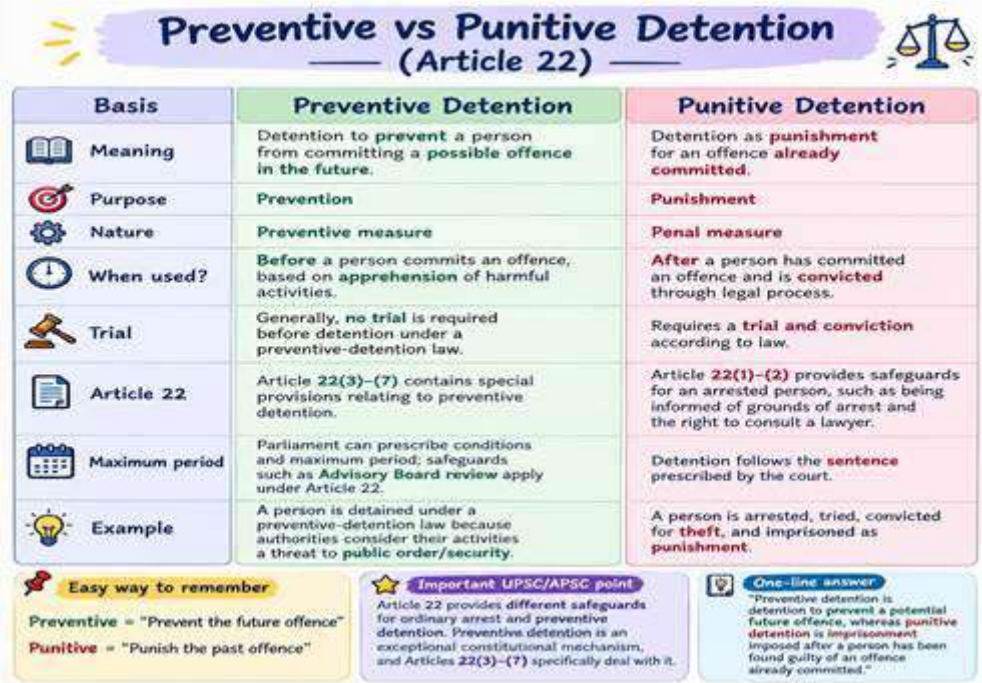
1. Indian Polity (GS Paper 2)

Rights of Arrested Persons under Article 22

Article 22: The Indian Constitution provides fundamental safeguards for individuals who are arrested and detained.

It guarantees the right to be informed of the grounds for arrest, consult a legal practitioner, and be produced before a magistrate within 24 hours.

- **Article 22(1):** An arrested person has the right to know the **grounds of arrest** and consult a **lawyer of choice**.
- SC: These are **fundamental rights** and cannot be breached.
- **Violation → immediate release** if the arrest itself becomes unconstitutional.
- Applies to arrests under **IPC/special laws**, including terrorism & money-laundering cases.
- **Article 22(2):** Arrested person must be produced before a **Magistrate within 24 hours**.
- **Important:** No blanket immunity from **future arrest** after release for violation of Article 22.



2. ENVIRONMENT AND Biodiversity (GS 3)

New Wild Cat Species Discovered in Bolivia

Why in News?

Scientists have formally described a new species of wild cat from Bolivia's **Yungas cloud forests**. Named ***Leopardus tilcayo***, it is the first new living feline species formally described in more than a century.



IMPORTANT HIGHLIGHTS

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Scientific name: *Leopardus tilcayo*

- **Scientific name:** *Leopardus tilcayo*
- **Common/local name: Tilcayo**
- **Location: Yungas cloud forests, Bolivia**
- **Family: Felidae**
- **Genus:** *Leopardus*
- **Group:** Tiger cats
- **Size:** Around **46 cm** long
- **Weight:** Around **1.4 kg**
- **Distinctive feature:** Light-brown coat with irregular rosette-like markings.
- Genetic evidence indicates that the Tilcayo lineage diverged from other tiger cats roughly **1.4 million years ago**.

How was it discovered?

- Researchers analysed **complete genomes from 38** *Leopardus individuals*, including **8 museum specimens**. The genomic study showed that what was previously treated largely as the tiger-cat complex actually contains **five genetically distinct species**.
- It occurs in the **Peruvian Yungas**.

Why is this important for UPSC?

1. Cryptic species

Tiger cats are examples of **cryptic species**—species that can look very similar externally but are genetically distinct.

2. Importance of genetic tools in taxonomy

Modern **genome sequencing + museum DNA ("museomics")** can reveal previously unrecognised biodiversity.

3. Conservation implications

If several apparently widespread populations are actually separate species, their **individual population sizes and extinction risks may have been underestimated**. The research provides a basis for more targeted conservation assessments.

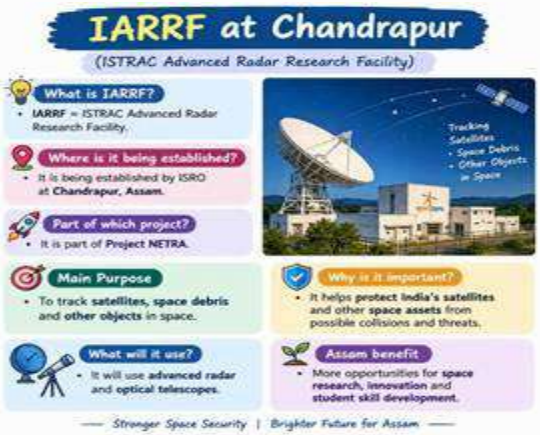
4. Yungas ecosystem under pressure

The Bolivian Yungas faces pressures including **deforestation, agriculture, fires and mining**, making habitat protection important for newly recognised species.

3. Science & Technology (GS Paper 3)

ISRO RADAR FACILITY IN ASSAM

CM Himanta Biswa Sarma laid the foundation stone of the ISTRAC Advance Rader Research Facility (IARRF) at Chandrapur.



* **IARRF** = ISTRAC Advanced Radar Research Facility.

* It is being established by ISRO at Chandrapur, Assam**.**

* It is part of Project **NETRA.**

* **Main purpose:** To track satellites, space debris and other objects in space.

Why is it important?

- It helps protect India's satellites and other space assets from possible collisions and threats**.**
- It will use advanced radar and optical telescopes**.**
- **Assam benefit:** More opportunities for space research, innovation and student skill development**.**

4. International Relations (GS Paper 2)

India–New Zealand Free Trade Agreement (FTA)

Context: The **India–New Zealand Free Trade Agreement (FTA)** is set to come into effect on **October 20, 2026**, with the objective of significantly expanding bilateral trade and investment while protecting India's sensitive agricultural sectors.

About India–New Zealand FTA

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What is it?

- A **Free Trade Agreement (FTA)** is a trade pact between countries aimed at reducing or eliminating tariffs and other barriers to cross-border trade.
- The India–New Zealand FTA seeks to deepen economic integration through:
    - Preferential market access
    - Lower tariffs
    - Investment
    - Greater services and business opportunities.

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Key Features

- **Effective from: 20 October 2026**
- **Trade Target:** Doubling bilateral trade to around **₹35,000 crore** within **4–5 years**.
- **New Zealand's Commitment:** Elimination of import levies on **all Indian goods**.
- **India's Market Access:** Around **95% of New Zealand's exports** to India will receive either zero or substantially reduced tariffs.
- **FDI Commitment:** New Zealand has committed **$20 billion in FDI** into India.
- **Sensitive Sectors:** India has retained protection for sensitive sectors such as:
    - Dairy

    - Selected agricultural products.

Current India–New Zealand Economic Relations

- Bilateral trade stood at around **$1.3 billion in FY 2024–25**.
- India is **New Zealand's ninth-largest export market**.
- The FTA seeks to substantially increase the relatively low level of existing bilateral trade.
- New Zealand offers expertise in:
    - Engineering technology
    - Kiwi cultivation
    - Apiculture
    - Agricultural technologies.

Potential Benefits for India

1. Export Opportunities

Greater market access can benefit Indian exports such as:

- Textiles
- Apparel
- Pharmaceuticals
- Engineering goods
- Agricultural products
- Handicrafts.

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2. MSME Growth

- Lower tariffs can improve the competitiveness of Indian **MSMEs** in the New Zealand market.
- Greater integration into global value chains can create opportunities for small producers.

3. Farmers and Rural Economy

- Improved access to New Zealand's market can benefit Indian farmers and agri-based enterprises.
- Cooperation in **kiwi farming, apiculture and agricultural technology** can improve productivity and diversification.

4. Handloom and Handicrafts

- Preferential market access can expand opportunities for Indian:
    - Handloom artisans

- Weavers
- Craft producers.

5. FDI & Technology Transfer

The proposed **$20 billion FDI commitment** could support:

- Manufacturing
- Infrastructure
- Technology
- Agriculture
- Food processing.

6. Supply-Chain Diversification

The agreement can help India diversify economic partnerships amid increasing global protectionism and trade disruptions.

Why Protect Dairy & Agriculture?

India has retained protection for sensitive sectors because:

- Indian dairy is dominated by **small and marginal producers**.
- Sudden import competition could affect farmer incomes.
- Agriculture has significant **livelihood and food-security implications**.
- Tariff liberalisation needs to account for differences in production costs and scale.

Thus, the FTA reflects the principle of **"liberalisation with safeguards."**

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Strategic Significance

1. Indo-Pacific Economic Engagement

The agreement strengthens India's economic engagement with the **Indo-Pacific region**.

2. Countering Global Protectionism

At a time of:

- Rising tariffs
- Trade wars
- Supply-chain disruptions
- Geoeconomic fragmentation

FTAs provide India with greater opportunities for market diversification.

3. Export-Led Growth

The agreement supports India's objective of:

Manufacturing → Exports → Investment → Employment → Economic Growth

4. Broader FTA Strategy

The India–New Zealand agreement forms part of India's wider effort to expand its network of trade agreements and deepen integration with global markets.

Challenges

- India's relatively limited export basket to New Zealand.
- Standards and non-tariff barriers may continue to restrict market access.
- Indian MSMEs may lack awareness and capacity to exploit FTA benefits.
- Greater imports could create competitive pressure on vulnerable domestic industries.
- FDI commitments need to translate into **actual investment and productive capacity**.

Way Ahead

- Create greater awareness among **MSMEs, farmers and exporters** about FTA benefits.
- Strengthen quality, certification and international standards.
- Develop export-oriented infrastructure and logistics.
- Establish effective safeguards against sudden import surges.
- Ensure the **$20-billion FDI commitment** translates into technology transfer, jobs and domestic value addition.
- Promote Indian participation in **global value chains**.
- Regularly review the agreement to address emerging trade imbalances.

Prelims Quick Revision

Parameter	Key Fact
Agreement	India–New Zealand FTA
Effective date	**20 October 2026**
Bilateral trade, FY 2024–25	**$1.3 billion**

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Target	Double trade to **₹35,000 crore**
Target period	**4–5 years**
NZ tariff commitment	Zero tariffs on **Indian goods**
India's tariff liberalisation	**~95% of NZ exports**
FDI commitment	**$20 billion**
Sensitive sectors protected	**Dairy & selected agriculture**
India's position in NZ exports	**9th-largest export market**

Conclusion

The India–New Zealand FTA represents India's attempt to combine **greater trade liberalisation with protection of vulnerable domestic sectors**. Its success will depend not merely on tariff reduction but on India's ability to enhance export competitiveness, integrate MSMEs into global value chains and convert FDI commitments into productive investment and employment.

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UPSC Prelims Practice Question

Consider the following statements regarding the India–New Zealand FTA:

1. New Zealand has agreed to eliminate import levies on Indian goods.
2. India has provided complete tariff-free access to all New Zealand agricultural products.
3. New Zealand has committed $20 billion in FDI into India.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 1 and 3 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B

UPSC Mains Practice Question

“India's recent FTAs reflect a shift towards guarded trade liberalisation rather than unconditional free trade.” Discuss with reference to the India–New Zealand FTA. *(150 words)*

5. International Relations (GS Paper 2)

The Malacca–Singapore Model for Resolving the Strait of Hormuz

Context: The continuing geopolitical tensions and security concerns around the **Strait of Hormuz** have renewed debate over how to ensure freedom of navigation while respecting the sovereignty and security concerns of littoral states. The cooperative framework developed for the **Malacca–Singapore Straits** offers a possible model.

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About the Malacca–Singapore Model

What is the model?

- The **Strait of Malacca and Strait of Singapore** constitute a major maritime corridor connecting the **Andaman Sea with the South China Sea**.
- They are strategically important for:
  - Global trade
  - Energy transportation
  - East Asian supply chains.
- The littoral states are:
  - **Indonesia**
  - **Malaysia**
  - **Singapore**

Historical Background

- In **1971**, Malaysia, Indonesia and Singapore jointly asserted **12-nautical-mile territorial seas** over the straits.
- This challenged their earlier characterisation as purely international waterways.
- The dispute highlighted the need to balance:
  - **Coastal-state sovereignty**
  - **Freedom of navigation**
  - **Interests of user states**.

UNCLOS & Passage Through International Straits

1. Territorial Sea

- Extends up to **12 nautical miles** from the coastal baseline.
- The coastal state enjoys sovereignty over these waters, subject to certain navigational rights.

2. Innocent Passage

- Foreign vessels can pass through territorial waters provided their passage is **not prejudicial to the peace, good order or security** of the coastal state.
- The right may be subject to restrictions in certain circumstances.
- It does not provide the same freedom as transit passage.

3. Transit Passage

Under **UNCLOS**, transit passage applies to straits used for international navigation connecting:

High Seas/EEZ → High Seas/EEZ

It allows:

- Continuous and expeditious passage.
- Passage of **warships**.
- Passage of **submarines in their normal mode**.
- Overflight by aircraft.

Thus, **transit passage is broader than innocent passage**.

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Malacca–Singapore Cooperative Mechanism

Established in 2007

A cooperative mechanism was established involving:

- **Littoral states**
- **User states**
- Shipping and maritime stakeholders.

Objectives

- Navigation safety
- Environmental protection
- Maintenance of maritime infrastructure

- Search and rescue
- Capacity building.

Aids to Navigation Fund

- Supports maintenance of navigation infrastructure.
- Receives **voluntary contributions from user states and industry**.
- Provides a mechanism through which major beneficiaries of the waterway can share its maintenance burden.

Role of Japan

Japan played an important role in promoting cooperation among the littoral states through the **Malacca Strait Council**.

Application to the Strait of Hormuz

Strategic Importance

The Strait of Hormuz connects the:

Persian Gulf → Gulf of Oman → Arabian Sea → Indian Ocean

It is one of the world's most important energy chokepoints.

Littoral States

- **Iran**
- **Oman**

Their territorial waters overlap/intersect in the strategic waterway.

Central Dispute

The key challenge is balancing:

Iran's security concerns

with

Freedom of navigation and international shipping

particularly for:

- Commercial vessels
- Energy shipments
- Foreign naval vessels.

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Why is Hormuz More Difficult?

Malacca–Singapore	Hormuz
Indonesia, Malaysia & Singapore	Iran & Oman
Primary concern: navigation safety	Primary concern: security & geopolitics
Cooperative mechanism established	Cooperation remains contested
Strong multilateral participation	Major-power rivalry is significant
UNCLOS-based framework	Iran has not ratified UNCLOS
User-state contributions	Security concerns dominate

Iran's Position

- Iran has historically maintained that foreign warships require authorisation to pass through its territorial waters.
- Iran's **1993 law** requiring authorisation for foreign warships remains contentious.
- Iran is **not a party to UNCLOS**, although many UNCLOS provisions are considered reflective of customary international law.

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Potential Hormuz Solution

A Malacca–Singapore-inspired mechanism could include:

1. Littoral-State Dialogue

Iran and Oman could establish a permanent mechanism for:

- Maritime security
- Navigation
- Search and rescue
- Environmental protection.

2. User-State Participation

Major users of the waterway could participate in:

- Navigation safety
- Maritime infrastructure
- Emergency response
- Capacity building.

3. Shared Funding

A mechanism similar to the **Aids to Navigation Fund** could finance:

- Navigation systems
- Maritime surveillance
- Safety infrastructure
- Environmental protection.

4. Legal Clarity

Greater clarity regarding:

- Innocent passage
- Transit passage
- Rights of commercial vessels
- Rights and obligations of naval vessels.

5. De-escalation Mechanism

Establish direct communication channels among:

Iran + Oman + major maritime users

to prevent incidents from escalating into wider conflict.

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Challenges

- Iran–US strategic rivalry.
- Disagreement over the legal status of foreign warships.
- Iran's non-ratification of UNCLOS.
- Regional geopolitical tensions.
- Presence of external naval powers.
- Different perceptions of **freedom of navigation** and **national security**.

Therefore, the Malacca–Singapore model cannot simply be copied; it needs **regional adaptation**.

Significance for India

Energy Security

India imports a significant share of its crude oil and energy resources through maritime routes connected to the Persian Gulf.

Trade Security

Disruption in Hormuz can:

- Increase freight costs.
- Raise insurance premiums.
- Disrupt energy supplies.
- Affect India's current account and inflation.

Strategic Autonomy

India needs to maintain constructive relations with:

- Iran
- Gulf countries
- United States
- Other maritime stakeholders.

Maritime Security

A stable Hormuz contributes to security in the:

Persian Gulf → Arabian Sea → Indian Ocean

maritime chain.

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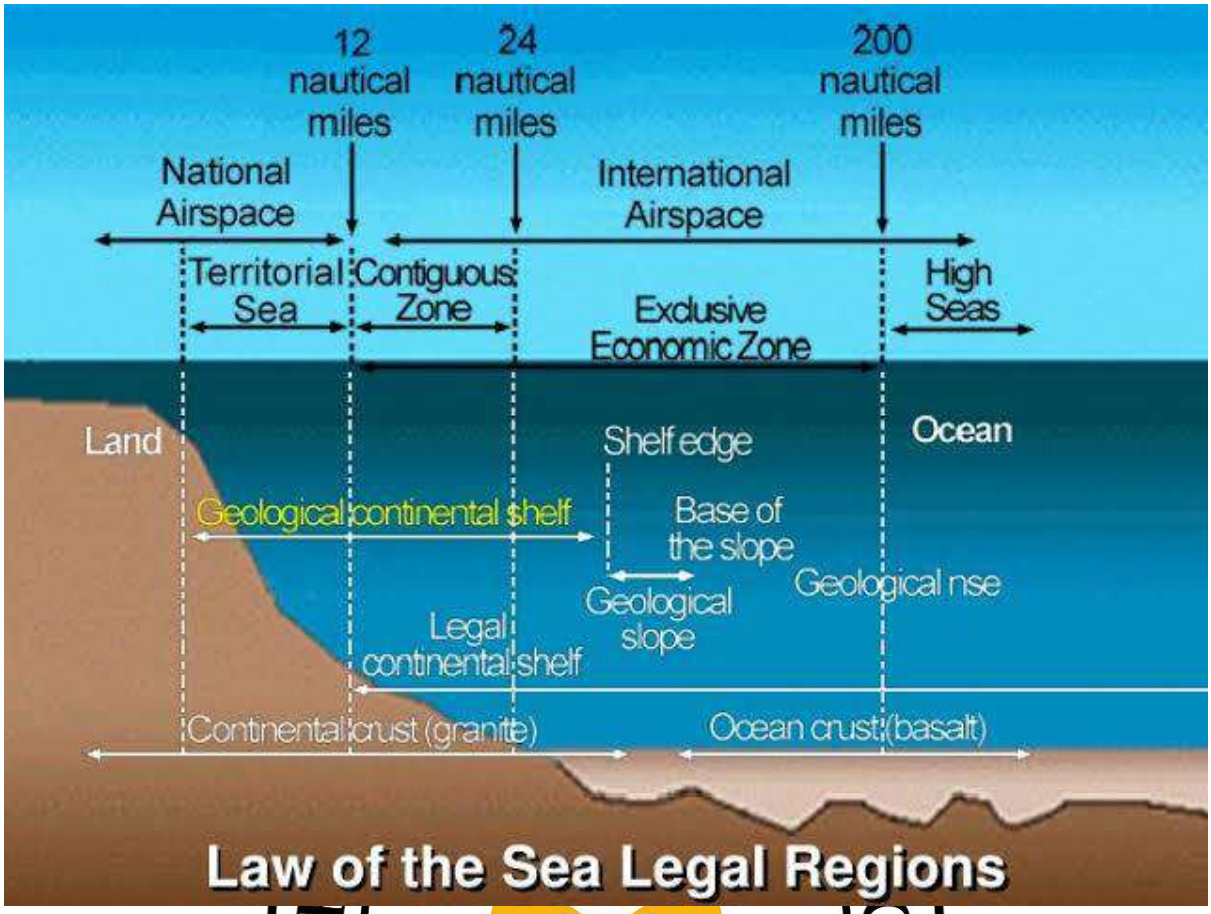
Way Ahead

- Promote an **Iran–Oman-led cooperative maritime mechanism**.
- Separate **navigation safety** from wider geopolitical disputes wherever possible.
- Establish hotlines and maritime incident-prevention mechanisms.
- Encourage participation of major **user states** without undermining littoral-state sovereignty.
- Develop shared funding for navigational and environmental infrastructure.
- Use **UNCLOS principles** as the normative foundation while accommodating the concerns of non-party states.
- Encourage confidence-building measures rather than militarisation of the waterway.

Prelims Quick Revision

Concept	Key Fact
Malacca–Singapore Straits	Connect **Andaman Sea and South China Sea**
Littoral states	Indonesia, Malaysia, Singapore
Territorial sea	**12 nautical miles**
EEZ	Up to **200 nautical miles**
Innocent passage	Passage not prejudicial to coastal state's peace, good order or security
Transit passage	Continuous and expeditious passage through international straits
Hormuz littoral states	**Iran and Oman**
Strait of Hormuz connects	Persian Gulf with Gulf of Oman/Arabian Sea
Cooperative Mechanism	**2007**
Aids to Navigation Fund	Voluntary contributions from user states/industry
Iran & UNCLOS	**Not a party to UNCLOS**
Iran's relevant law	**1993 law** on foreign warship authorisation

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Conclusion

The **Malacca–Singapore model demonstrates that sovereignty and freedom of navigation need not be mutually exclusive**. A cooperative framework involving littoral states, user states and international stakeholders could provide a pragmatic pathway for Hormuz. However, given the deeper geopolitical rivalry surrounding the region, its success would require **confidence-building, legal clarity and sustained regional dialogue** rather than simple replication of the Malacca model.

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UPSC Prelims Practice Question

Consider the following statements:

1. Transit passage under UNCLOS is applicable to international straits connecting two parts of the high seas or EEZs.
2. Transit passage permits continuous and expeditious navigation through such straits.
3. Innocent passage and transit passage provide identical rights to foreign vessels.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: A

UPSC Mains Practice Question

"The Malacca–Singapore Straits demonstrate how sovereignty concerns and freedom of navigation can be reconciled through cooperative maritime governance." Examine its applicability to the Strait of Hormuz. *(150 words)*

7. **Environment & Ecology (GS Paper 3)**

India's Transition to Alternative Fuels

Context: India witnessed a significant shift in its passenger vehicle market in **August 2026**, with vehicles using alternative fuels accounting for a larger share of new registrations than petrol vehicles for the first time. However, the transition remains uneven across vehicle categories.

About India's Alternative Fuel Transition

What are Alternative Fuels?

- Alternative fuels are energy sources used in transportation as alternatives to conventional **petrol and diesel**.
- Major alternatives include:
    - **CNG**
    - **LPG**
    - **Electricity**
    - **Hybrid powertrains**
    - Other emerging low-carbon fuels.

Key Findings

1. Historic Fuel Crossover

- According to **FADA** data, **August 2026** witnessed a major shift in India's passenger vehicle market.

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- Alternative-fuel vehicles accounted for **41.95%** of new passenger vehicle registrations.
- Petrol vehicles accounted for **40.85%**.
- Thus, alternative fuels surpassed petrol for the **first time** in this segment.

2. Conventional Fuels Still Dominate Overall

- Despite the shift, petrol and diesel together accounted for around **83.5% of registrations during January–March 2026**.
- Their combined share has declined from around **95% in 2021**.

This indicates that India's transition is **gradual rather than complete**.

Vehicle-wise Transition

Two-Wheelers

- Two-wheelers constitute **over 70% of new vehicle registrations**.
- EV penetration increased from:
  - **6.4% in 2025**
  - to **9.1% in 2026**.
- Rising EV adoption in this segment is an important driver of India's overall alternative-fuel transition.

Three-Wheelers

- Three-wheelers have witnessed the **fastest electrification**.
- Around **60.5% of new three-wheeler registrations** were electric by August 2026.
- Lower operating costs and high daily utilisation make EVs economically attractive for commercial three-wheelers.

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Passenger Cars

- EV penetration remains relatively limited.
- The shift away from petrol/diesel cars is primarily due to:
  - **CNG**
  - **LPG**
  - **Hybrid vehicles**
- Petrol and diesel cars' combined share declined from around **86% in 2021 to 61.6% in 2026**.

Why is EV Adoption Higher in Two- and Three-Wheelers?

Economic Factors

- Lower upfront and operating costs.
- Lower fuel expenditure.
- High utilisation of commercial three-wheelers makes savings more significant.

Technical Factors

- Smaller battery requirements.
- Lower vehicle weight.
- Easier charging requirements.

Urban Mobility

- Two- and three-wheelers are particularly suited to short-distance urban mobility.

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Why is EV Adoption in Cars Slower?

1. High Upfront Cost

EV cars remain relatively expensive compared with conventional vehicles.

2. Charging Infrastructure

- Uneven availability of public charging stations.
- Range anxiety remains a concern.

3. Battery Costs

Battery packs constitute a significant portion of an EV's cost.

4. Consumer Preferences

Long-distance travel and concerns over charging time continue to favour conventional or hybrid vehicles.

5. CNG & Hybrid Competition

Consumers increasingly have intermediate options such as:

Petrol → CNG/Hybrid → EV

rather than shifting directly from internal combustion engines to EVs.

Significance for India

1. Energy Security

Greater adoption of alternative fuels can reduce dependence on imported crude oil.

2. Environmental Benefits

EVs produce **zero tailpipe emissions**, while CNG and hybrids can reduce emissions compared with conventional petrol/diesel vehicles, though their overall environmental impact depends on the energy source and lifecycle.

3. Urban Air Quality

Electrification of high-use vehicles can reduce local air pollution in cities.

4. Industrial Transformation

The transition creates opportunities in:

- Battery manufacturing
- Charging infrastructure
- Power electronics
- Semiconductors
- Recycling
- Renewable energy integration.

5. Green Mobility

Electrification can support India's broader **decarbonisation and net-zero objectives**.

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Challenges

- Insufficient charging infrastructure.
- Battery raw-material dependence.
- Limited domestic battery recycling capacity.
- Grid capacity requirements.
- High upfront EV costs.
- Regional disparities in charging infrastructure.
- Continued dependence on fossil fuels for electricity generation.
- Need for skilled manpower and technological capabilities.

Way Ahead

1. Expand Charging Infrastructure

Develop:

- Fast-charging networks
- Highway charging corridors
- Urban charging hubs
- Battery-swapping facilities where appropriate.

2. Promote Public Transport Electrification

Prioritise:

- Electric buses
- Commercial three-wheelers
- Fleet vehicles.

3. Strengthen Domestic Manufacturing

Develop integrated domestic ecosystems for:

- Batteries
- Motors
- Power electronics
- Critical components.

4. Battery Recycling

Promote a **circular economy** through battery recovery, recycling and second-life applications.

5. Renewable Energy Integration

Greater use of renewable electricity can improve the overall climate benefits of EVs.

6. Technology-Neutral Transition

India should pursue a diversified pathway involving:

EVs + Hybrids + CNG + Biofuels + Green Hydrogen

based on vehicle category, geography and technological feasibility.

Prelims Quick Revision

Parameter	Key Fact
Historic crossover	**August 2026**

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Alternative-fuel share	**41.95%**
Petrol share	**40.85%**
Petrol + diesel, Jan–Mar 2026	**83.5%**
Petrol + diesel cars, 2021	**86%**
Petrol + diesel cars, 2026	**61.6%**
EV share in 2-wheelers	**9.1%**
EV share in 3-wheelers	**60.5%**
Two-wheelers' share of registrations	**>70%**
Data source	**FADA / Vahan portal**

Conclusion

India's alternative-fuel transition is entering a new phase, but the shift is **category-specific rather than uniform**. Two- and three-wheelers are leading electrification, while passenger cars are transitioning through a combination of **CNG, hybrids and EVs**. India therefore needs a technology-neutral and infrastructure-led approach that combines electrification with domestic manufacturing, renewable energy and circular battery ecosystems.

UPSC Prelims Practice Question

Consider the following statements regarding India's transition to alternative fuels:

1. Three-wheelers have recorded a higher EV penetration than two-wheelers.
2. The shift towards alternative-fuel passenger cars is driven exclusively by electric vehicles.
3. Two-wheelers constitute more than 70% of new vehicle registrations.

Which of the statements given above is/are correct?

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A. 1 and 3 only
B. 2 and 3 only
C. 1 only
D. 1, 2 and 3

Answer: A

UPSC Mains Practice Question

“India's transition towards alternative fuels is being driven more by economic viability and vehicle characteristics than by uniform electrification.” Examine the emerging trends, challenges and policy measures required for sustainable mobility in India. *(150 words)*

7. *Polity & Governance* | *Judiciary*

Why Did the Supreme Court Reject Maharashtra’s Methanol Rules?



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Context: The Supreme Court struck down **Rules 18A and 18B of the Maharashtra Poisons Rules, 1972**, holding that the restrictions on methanol were **disproportionate** and lacked a sufficient nexus with preventing hooch tragedies.

About the Case:

What happened?

- Maharashtra introduced stricter methanol controls following the **1991 Mumbai hooch tragedy**, which caused **93 deaths**.
- **Rule 18A:** Required verification of licences and denaturing of methanol with **colourant and bitterant** before sale to non-drug manufacturers.
- **Rule 18B:** Allowed confiscation of methanol possessed without the prescribed licence.

- Industrial users argued that such additives could contaminate products used in **paints, pharmaceuticals, resins and catalysts**.

Why did the Supreme Court strike down the Rules?

- **Violation of Article 14:** Restrictions were considered **arbitrary and disproportionate**.
- **Violation of Article 19(1)(g):** Excessive restrictions interfered with the legitimate right to carry on trade and business.
- **Lack of Nexus:** Adding colourant/bitterant did not have a sufficiently direct connection with preventing methanol diversion into illicit liquor.
- **Disproportionate restriction:** Rule 18A imposed significant costs and operational difficulties on legitimate industrial users without adequately addressing the targeted misuse.
- **Redundancy of Rule 18B:** Its confiscation provision could conflict with lawful possession under other valid permits.

Proportionality Test:

The Court relied on the **proportionality principle** associated with *K.S. Puttaswamy v. Union of India (2017)*:

Legitimate Aim → Suitability → Necessity → Balancing

- **Legitimate aim:** Prevent methanol misuse and hooch deaths.
- **Suitability:** Measure must have a rational connection with the objective.
- **Necessity:** Less restrictive alternatives should be considered.
- **Balancing:** Public interest must be weighed against the burden imposed on fundamental rights.

Supreme Court's Suggested Approach

- Regular **review and verification of licences**.
- Maintain detailed **stock and consumption records**.
- Dedicated and **sealed transportation** of methanol.
- Better **inter-departmental coordination**.
- Strengthen existing regulatory mechanisms.
- Expand **de-addiction facilities**.

Key Constitutional Significance:

- **Article 14:** Protection against arbitrary and unequal state action.
- **Article 19(1)(g):** Right to practise a profession and carry on trade/business.
- **Proportionality:** State restrictions on fundamental rights must be **reasonable, necessary and proportionate**.

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- **Regulatory Balance:** Public safety cannot automatically justify restrictions that impose excessive burdens on legitimate economic activity.

Key Concepts:

- **Methanol:** Highly toxic alcohol widely used as an industrial raw material.
- **Hooch Tragedy:** Mass poisoning caused by consumption of illicit/adulterated liquor.
- **Poisons Act, 1919:** Provides the legal framework for regulating possession and sale of poisons.
- **Proportionality Test:** Judicial tool to examine whether restrictions on fundamental rights are justified and not excessive.

UPSC Relevance:

- **GS-II:** Fundamental Rights, judicial review, proportionality, regulatory governance.
- **GS-III:** Industrial regulation, public health and chemical safety.
- **Essay:** Balancing public interest with individual liberty and economic freedom.

Conclusion:

The judgment reinforces that **legitimate public-safety objectives must be pursued through evidence-based and proportionate regulation**. The State must prevent methanol misuse while avoiding unnecessary restrictions on lawful industrial activity.

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8. ***Polity & Governance***

Article 371A to J & Proposed Article 371K for Ladakh

Context: The Centre has proposed a new **Article 371K** to provide special constitutional safeguards for Ladakh and establish a stronger elected UT-level institution with legislative, executive and financial powers.



About Article 371 Series:

What is it?

- **Article 371–371J** provides **special constitutional provisions** for specific States/regions based on their distinct historical, cultural, tribal and developmental circumstances.
- These provisions aim to balance **national integration with regional autonomy and protection of local interests**.

Key Articles 371A–J

Article	State/Region	Major Provision
371	Maharashtra & Gujarat	Equitable development of specified regions such as Vidarbha, Marathwada, Saurashtra & Kutch
371A	Nagaland	Protects Naga **religious/social practices, customary law, land & resources**
371B	Assam	Assembly committee for **tribal areas** under Sixth Schedule
371C	Manipur	Special committee for **Hill Areas**; Governor reports to President
371D	Andhra Pradesh & Telangana	Equitable opportunities in **education & public employment**
371F	Sikkim	Special provisions for **integration of Sikkim into India**
371G	Mizoram	Protects **Mizo customs, religious practices, customary law & land**
371H	Arunachal Pradesh	Governor has special responsibility for **law & order**
371I	Goa	Legislative Assembly must have **at least 30 members**
371J	Kalyana Karnataka	**Development Board + reservation** in education & employment

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Proposed Article 371K – Ladakh

- **Special Constitutional Status:** Proposed to provide constitutional safeguards for Ladakh's **land, culture, language, environment and natural resources**.
- **Directly Elected UT Body:** Creation of an elected **Union Territory-level institution**.
- **Legislative Powers:** Proposed authority over areas such as **land, forests, culture, language and environment**.

- **Executive & Financial Powers:** Greater control over **administration, planning and finances**.
- **Local Protection:** Intended to safeguard **customary practices and local interests**.
- **Democratic Representation:** Seeks to address concerns arising from Ladakh being a **Union Territory without a legislature**.
- **Sui Generis Model:** Could create a **unique constitutional governance arrangement** for a UT.

Why is Article 371K Significant?

- **Protects fragile Himalayan ecology** from unregulated development.
- Safeguards **tribal identity, culture and customary practices**.
- Provides greater **democratic participation** in local governance.
- Enables locally tailored **development planning**.
- Addresses concerns over **land and employment opportunities** for local residents.
- Could strengthen **cooperative federalism and decentralisation**.

Ladakh's Major Demands

- Constitutional protection for **land and cultural identity**.
- Greater control over **law and order**.
- Protection of **customary practices**.
- Stronger democratic and financial autonomy.
- Safeguards comparable in spirit to **Articles 371A and 371G**.

Sixth Schedule vs Article 371K

- **Sixth Schedule:** Provides **Autonomous District Councils** in tribal areas of Assam, Meghalaya, Tripura and Mizoram.
- **Article 371K:** Proposed specifically for **Ladakh**, potentially combining constitutional safeguards with a directly elected UT-level governing body.
- Thus, 371K could represent a **distinct institutional model rather than simply extending the Sixth Schedule**.

Key Constitutional Facts

- **Article 244:** Provides for administration of Scheduled and Tribal Areas.
- **Sixth Schedule:** Autonomous Councils in **Assam, Meghalaya, Tripura and Mizoram**.
- **Article 371A:** Nagaland — strongest protection for **customary law, religious/social practices and land/resources**.
- **Article 371G:** Mizoram — similar protection for **customs, religious practices and land**.

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- **Article 371J:** Kalyana Karnataka — addresses **regional backwardness**.

Conclusion:
The proposed **Article 371K** could provide Ladakh with a constitutionally protected framework that combines **local democracy, cultural safeguards and development autonomy**. Its success would depend on ensuring meaningful powers while maintaining national security and environmental sustainability.

9. ***Art & Culture*** **(GS Paper 1)**

72nd National Film Awards 2026 & Dadasaheb Phalke Award

Context: The **72nd National Film Awards** will be presented on **22 September 2026 at Ekta Nagar, Gujarat**, recognising outstanding contributions to Indian cinema.

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About the National Film Awards:

What are they?

- The **National Film Awards** were instituted in **1954** by the Government of India.
- They recognise excellence in **Feature Films, Non-Feature Films and Writing on Cinema**.
- The awards cover diverse **Indian languages, regions and cinematic traditions**.
- The **President of India** presents the awards.

Key Highlights – 72nd National Film Awards

- **Year honoured:** Indian cinema for **2024**.
- **Venue: Ekta Nagar (Kevadia), Gujarat**.
- **Best Feature Film:** *Article 370*
- **Best Non-Feature Film:** *Bhangaar*
- **Best Documentary:** *Ram-Nami*
- **Best Actor: Mammootty & Kartik Aaryan**
- **Best Actress: Yami Gautam**
- **Best Debut Director: Randeep Hooda**

Dadasaheb Phalke Award

- **Recipient: Anant Nag**
- Awarded for his **outstanding contribution to Indian cinema**.

- Recognises his **five-decade-long career**, particularly his contribution to **Kannada cinema** and Indian cinema.
- It is regarded as **India's highest honour in cinema**.

Significance of Hosting the Awards in Gujarat

- **First time outside New Delhi:** Marks a departure from the traditional venue.
- **Cultural decentralisation:** Plans to take the national celebration of cinema to different parts of India.
- **Promotes regional diversity:** Highlights India's **multilingual and multicultural cinematic traditions**.
- **Cultural diplomacy:** Strengthens the role of cinema in showcasing India's **soft power and cultural diversity**.

Key Facts

- **National Film Awards:** Instituted – **1954**
- **Dadasaheb Phalke Award:** Highest Indian cinematic honour.
- **Administered by: Ministry of Information & Broadcasting**
- **Dadasaheb Phalke:** Pioneer of Indian cinema; directed *Raja Harishchandra* (1913), widely regarded as India's first full-length Indian feature film.

UPSC Relevance

- **GS-I:** Indian Art & Culture, cinema, regional cultural traditions.
- **Essay:** Cinema as an instrument of **cultural integration and soft power**.
- **Current Affairs:** Important national awards and personalities.

Conclusion:

The 72nd National Film Awards combine recognition of **cinematic excellence with cultural diversity**. Hosting the ceremony beyond the national capital also reflects an effort to make national cultural institutions more **regionally inclusive and representative**.

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Context The 72nd National Film Awards will be presented on **22 September 2026** at **Ekta Nagar, Gujarat**, recognising outstanding contributions to Indian cinema.

"Good cinema reflects society, preserves culture and builds a better tomorrow."

About the National Film Awards

What are they?

- Instituted in **1954** by the Government of India.
- Recognise excellence in Feature Films, Non-Feature Films and **Writing on Cinema.**
- Cover diverse Indian languages, regions and cinematic traditions.
- Presented by the **President of India.**

Dadasaheb Phalke Award



Anant Nag

"A lifetime of stories, a legacy for generations"

- Recipient: **Anant Nag**
- Awarded for his outstanding contribution to Indian cinema.
- Recognises his five-decade-long career, particularly his contribution to Kannada cinema and Indian cinema.
- Regarded as **India's highest honour** in cinema.

Key Facts

National Film Awards	Instituted in **1954**
Dadasaheb Phalke Award	Highest Indian cinematic honour.
Administered by	Ministry of Information & Broadcasting
Dadasaheb Phalke	Pioneer of Indian cinema; directed ***Raja Harishchandra*** (1913), widely regarded as India's first full-length Indian feature film.

Key Highlights – 72nd National Film Awards

Year honoured	Indian cinema for 2024
Venue	Ekta Nagar (Kevadia), Gujarat
Best Feature Film	**Article 370**
Best Non-Feature Film	**Bhangaar**
Best Documentary	**Ram-Nami**
Best Actor	**Mammootty & Kartik Aaryan**
Best Actress	**Yami Gautam**
Best Debut Director	**Randeep Hooda**

Significance of Hosting the Awards in Gujarat

First time outside New Delhi	Marks a departure from the traditional venue.
Cultural decentralisation	Takes the national celebration of cinema to different parts of India.
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UPSC Relevance

GS – I	Indian Art & Culture, cinema, regional cultural traditions.
Essay	Cinema as an instrument of cultural integration and soft power.
Current Affairs	Important national awards and personalities.

Conclusion

The 72nd National Film Awards combine recognition of cinematic excellence with cultural diversity. Hosting the ceremony beyond the national capital also reflects an effort to make national cultural institutions more regionally inclusive and representative.

"Indian cinema — a bridge across languages, regions and generations."

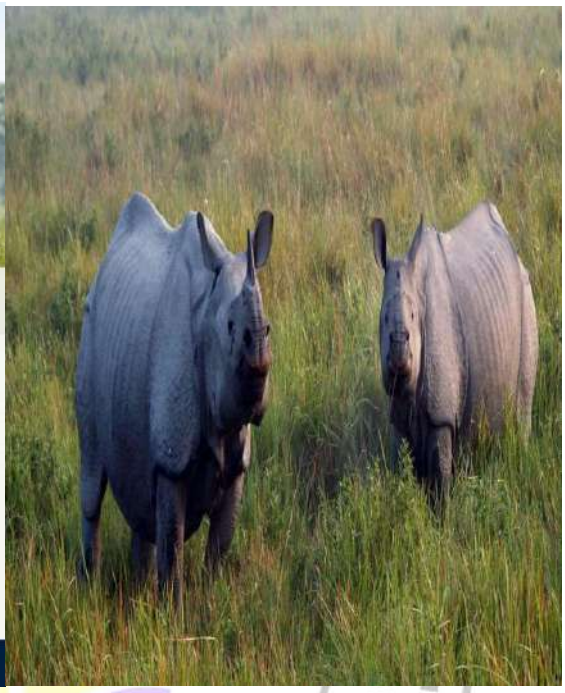
Art Transcends Boundaries
Cinema Unites India

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Environment & Biodiversity (GS Paper 3)

World Rhino Day — Project Rhino 2026





Why in news?

On **22 September 2026 (World Rhino Day)**, PM Narendra Modi announced **Project Rhino** to conserve the **Greater One-Horned Rhinoceros**.

Project Rhino- Key points

Aim: Financial + technical support to rhino-range states.

Focus:

Anti-poaching → Habitat management → Genetic diversity → Scientific population monitoring

Covers major rhino states including **Assam, West Bengal and Bihar**, with rhino reintroduction efforts also undertaken in Uttar Pradesh.

Greater One-Horned Rhino

- Scientific name: **Rhinoceros unicornis**
- **IUCN**: Vulnerable
- Found mainly in **India and Nepal**.
- Major Indian states**: Assam, West Bengal, Uttar Pradesh.**
- Horn is made mainly of **keratin**.

Assam Specific:

- Assam has nearly **80%** of the **world's Greater One-Horned Rhino population.**
- **Kaziranga National Park** is a major rhino stronghold.
- Other Assam habitats: **Pobitora, Orang and Manas**.
- Major threats: **Poaching, habitat loss and human-wildlife conflict.**

Important protected areas

Assam: Kaziranga, Pobitora, Orang, Manas

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West Bengal: Jaldapara, Gorumara

Uttar Pradesh: Dudhwa

Prelims Question

Q. Project Rhino primarily focuses on:

A. Tiger conservation

B. Greater One-Horned Rhino conservation

C. Marine conservation

D. Desertification control

Answer: B

Mains Question

“Discuss the significance of Project Rhino for conservation of the Greater One-Horned Rhinoceros, with special reference to Assam.”

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International Relations, India–ASEAN relations, Indian diaspora (GS Paper II)

Indians Warned Against Misusing Malaysia Visa-Free Entry



India has advised its nationals not to use Malaysia's 30-day visa-free entry facility to seek employment.

Issued by: **High Commission of India**, Kuala Lumpur.

Reason: Increase in Indians being **misled by unscrupulous agents with false job promises.**

- **Visa-free facility**: Permits Indians to stay in Malaysia for up to **30 days for tourism and social visits only**.
- **Employment**: Not permitted under visa-free/tourist entry.
- **Risks of illegal employment**:

→ Overstay

→ Illegal immigration status

→ Exploitation

→ Detention

→ Legal action

- **Genuine tourists should carry**:

1. Valid passport with **at least 6 months' validity**
2. Confirmed return ticket
3. Hotel/accommodation booking
4. Malaysia Digital Arrival Card (MDAC) submitted online 3 days before arrival

- **For employment**: Indians should obtain the appropriate work permit/visa with Visa with Reference (VDR) before travelling.
- **Core issue: Preventing illegal migration, migrant exploitation and immigration violations**.

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Prelims Questions

Q1. With reference to Malaysia's 30-day visa-free facility for Indian nationals, consider the following statements:

1. It permits Indian nationals to seek employment in Malaysia.

2. It is intended for tourism and social visits.

3. Employment requires an appropriate work permit/visa.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. 2 and 3 only

D. 1, 2 and 3

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Answer: C

Explanation: The visa-free facility is for tourism and social visits, not employment. Those seeking employment need the appropriate work permit/visa.

Mains Question

“Safe and legal migration is essential for protecting migrant workers from exploitation.” Discuss in the context of India’s advisory to its nationals travelling to Malaysia. (10)

Essay

“Migration should be an opportunity, not a source of exploitation.” Discuss with reference to Indian workers seeking employment abroad.

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Indian Polity & Constitution (GS Paper II)

National Song & Fundamental Rights



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Why in news?

The Supreme Court, while hearing T**.M. Krishna v. Union of India**, observed that **a person who refuses to sing Vande Mataram on grounds of conscience/religious belief should not face criminal punishment**. The Court referred to the 1986 **Bijoe Emmanuel v. State of Kerala** judgment.

Key Points

- **National Song**: Vande Mataram
- **Core issue**: Can refusal to sing the National Song attract penal consequences?
- **Constitutional provisions:**
- **Article 25**: Freedom of conscience and freedom of religion
- **Article 26**: Freedom to manage religious affairs
- **Article 19**: Freedom of speech and expression
- **Important precedent: Bijoe Emmanuel Case (1986)-** students who respectfully refused to sing the National Anthem due to religious beliefs were protected by the Supreme Court.
- **2026 development**: Amendment to the **Prevention of Insults to National Honour Act, 1971** extends penal protection to the National Song; the amended provision can involve **imprisonment up to 3 years, fine, or both** for intentionally preventing/disrupting rendition.
- **SC's observation**: The State may determine the form of the National Song, but **individual constitutional rights cannot be overridden merely through penal consequences.**

Prelims Question

Q. With reference to the Supreme Court's recent observations on the National Song, consider the following statements:

1. Article 25 protects freedom of conscience and freedom of religion.

2. Bijoe Emmanuel v. State of Kerala was related to refusal to sing the National Anthem on religious grounds.

3. The Supreme Court has held that courts should decide which version of the National Song represents national aspirations.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Mains Question

“Freedom of conscience is an essential component of constitutional secularism.” Discuss in the context of the Supreme Court’s recent observations on refusal to sing the National Song.

(10 marks, 150 words)

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Geography & Environment (GS Paper 1)

4.Punjab's Groundwater Crisis & the Water-Wealth Divide

Punjab's groundwater extraction has reached a critical level, driven largely by the **rice–wheat cropping system**, subsidised electricity and assured procurement, creating both ecological stress and growing inequality among farmers.



About Punjab's Groundwater Crisis:

What is the issue?

- Punjab's groundwater extraction rate reached **152%** according to the **2025–26 Dynamic Groundwater Assessment**.
- **72% of the 153 assessment blocks** are classified as over-exploited/red-zone areas.
- Around **25 billion cubic metres (BCM)** of groundwater is used annually for **rice and wheat cultivation**.
- Observation wells recording water levels below **40 metres** increased between 2022 and 2025.

Major Drivers

- **Rice–Wheat Cycle:** Water-intensive paddy cultivation followed by wheat has created excessive dependence on groundwater.
- **Assured Procurement:** MSP/procurement incentives make paddy economically attractive despite its high water requirement.
- **Free/Subsidised Power:** Cheap electricity reduces the marginal cost of groundwater pumping.
- **Limited Crop Diversification:** Lack of assured markets, storage, processing and price support discourages farmers from shifting to alternative crops.

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- **Groundwater as Open-Access Resource:** Individual farmers have limited incentives to conserve a shared aquifer.

The Water-Wealth Divide

- **Deepening Inequality:** Falling groundwater levels require increasingly deep tube wells.
- **Large Farmers:** Better-capitalised farmers can afford deeper borewells and powerful pumps.
- **Small & Marginal Farmers:** Increasingly dependent on purchasing water from better-off farmers.
- **Unequal Water Productivity:** Larger farms may not necessarily achieve proportionately higher groundwater productivity in paddy cultivation.
- Thus, groundwater depletion becomes not only an **environmental crisis but also an agrarian inequality crisis**.

Government Initiatives

- **Pani Bachao, Paisa Kamao Scheme:** Provides financial incentives to farmers for saving electricity used in groundwater pumping.
- **Direct Support:** Greater focus on supporting small and marginal cultivators.
- **Irrigation Collectivisation:** Collective management of irrigation infrastructure can improve equitable access and reduce duplication.

- **Crop Diversification:** Encouraging maize, pulses, oilseeds, millets and other less water-intensive crops.

Challenges to Crop Diversification

- Absence of **assured procurement and remunerative prices** for alternative crops.
- Inadequate **storage and processing infrastructure**.
- Established farmer–market linkages for rice and wheat.
- Dependence on agriculture for rural livelihoods.
- Subsidies often linked to **land/pump ownership rather than actual cultivation**, excluding tenants.

Way Ahead

- **Diversify cropping patterns:** Shift from water-intensive paddy towards pulses, oilseeds, maize, millets and horticulture.
- **Reform subsidies:** Move from electricity/pumping subsidies towards **direct income support and conservation incentives**.
- **Reward water saving:** Scale up schemes such as *Pani Bachao, Paisa Kamao*.
- **Strengthen alternative value chains:** Develop procurement, storage, food processing and assured markets for diversified crops.
- **Promote efficient irrigation:** Expand drip/sprinkler irrigation and precision water management.

- **Regulate groundwater extraction:** Introduce aquifer-based, participatory groundwater governance.
- **Ensure equity:** Benefits should reach **actual cultivators, tenants and small farmers**, not only landowners or pump owners.
- **Improve water accounting:** Use groundwater monitoring, remote sensing and local aquifer mapping for evidence-based management.

Key Concepts

- **Dynamic Groundwater Assessment:** Assessment by the **Central Ground Water Board (CGWB)** of groundwater availability, recharge and extraction.
- **Over-exploited Block:** Area where groundwater extraction exceeds the level considered sustainable relative to annual recharge.
- **Aquifer:** Geological formation capable of storing and transmitting groundwater.
- **Water–Energy–Food Nexus:** Interdependence between water availability, energy consumption and agricultural production.
- **Pani Bachao, Paisa Kamao:** Incentive-based approach encouraging farmers to reduce electricity use for groundwater pumping.

UPSC Relevance

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- **GS-I:** Groundwater distribution, agricultural geography and regional resource stress.
- **GS-III:** Agriculture, irrigation, groundwater depletion, subsidies and sustainable resource management.
- **Essay:** Water security, climate resilience and sustainable agriculture.
- **Keywords:** *Aquifer depletion, crop diversification, water-use efficiency, groundwater governance, agrarian inequality.*

Conclusion:

Punjab's groundwater crisis demonstrates that **agricultural prosperity based on resource over-exploitation is not sustainable**. The solution lies in aligning procurement, pricing, electricity subsidies and farmer incentives with **water conservation**, while ensuring that the transition does not disproportionately burden small and tenant farmers.

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Prelims Questions

Q. With reference to groundwater depletion in Punjab, consider the following statements:

1. The rice–wheat cropping system is a major driver of groundwater over-extraction in Punjab.
2. Subsidised electricity for irrigation reduces the cost of groundwater pumping and can encourage excessive extraction.

3. Crop diversification is constrained by the absence of assured markets and adequate processing infrastructure for alternative crops.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: (d)

Explanation: All three statements are correct. Water-intensive paddy cultivation, subsidised electricity and inadequate market infrastructure for alternative crops together reinforce Punjab's groundwater crisis.

Mains Question

Q. "Punjab's groundwater crisis is not merely an ecological problem but also an emerging challenge of agrarian inequality." Examine the causes and suggest measures for sustainable and equitable groundwater management. (150 words, 10 marks)

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Indian Polity, Constitutional Bodies, Judiciary (GS Paper: II)

Election Commission of India

Why in News?

On 23 September 2026, a two-judge Supreme Court Bench gave a split verdict on whether challenges to the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023 should be heard by a larger Constitution Bench. The matter was placed before the CJI for appropriate further action.



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Key Issue:

The **2023 Act removed the Chief Justice of India (CJI) from the selection committee**.

Earlier SC mechanism – Anoop Baranwal (2023)	**2023 Act**
Prime Minister	Prime Minister
Chief Justice of India	Union Cabinet Minister nominated by PM
Leader of Opposition, Lok Sabha	Leader of Opposition, Lok Sabha

Anoop Baranwal Case, 2023

- **Article 324** deals with **the Election Commission**.
- The Constitution envisages Parliament making a law regarding appointment of EC members.
- Until Parliament enacted such a law, the Supreme Court directed that appointments be recommended by a committee of: **PM + CJI + Leader of Opposition**.
- The Court emphasised the need for an independent Election Commission.

2023 Act

- Parliament subsequently enacted the **CEC and Other ECs Act, 2023**.
- It replaced the CJI with a **Union Cabinet Minister nominated by the Prime Minister**.

September 2026 SC Development

- **Justice Dipankar Datta**: opposed the immediate reference to a larger bench and expressed concerns about whether the appointment mechanism sufficiently protects the **independence and perceived independence** of the ECI.
- **Justice Satish Chandra Sharma**: favoured consideration by a Constitution Bench because the challenge raises a substantial constitutional question.
- Because of the difference of opinion, the matter was placed before the CJI for consideration of an appropriate larger bench.

Prelims Facts

Article 145(3): A Constitution Bench consists of **at least 5 judges** and decides a substantial question of law relating to the interpretation of the Constitution.

Prelims Question:

Q. Consider the following statements regarding the appointment of Election Commissioners in India:

1. Article 324 of the Constitution deals with the Election Commission of India.

2. The 2023 law provides for the Prime Minister, a Union Cabinet Minister nominated by the Prime Minister and the Leader of Opposition in Lok Sabha in the selection committee.

3. The Chief Justice of India is presently a member of the statutory selection committee.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

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D. 1, 2 and 3

Answer: A

Explanation: Article 324 is correct; the 2023 Act replaced the CJI with a Union Cabinet Minister nominated by the PM.

Mains Question

Q. "The independence of the Election Commission is essential for maintaining public confidence in the electoral process." Discuss the constitutional and institutional issues arising from the appointment mechanism for Election Commissioners under the 2023 Act. (10 marks / 150 words)

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Geography (GS-III) Environment, Climate Change, Disaster Management, Health (GS-I)

Super El Niño & Heat Deaths in India

Why in News?

A **Climate Impact Lab** report projects around **15,800 additional heat-related deaths in India (±1,600) between September 2026 and February 2027**, compared with average conditions during 1996–2025, amid the current exceptionally strong El Niño event.

Globally, the report projects about **451,000 additional heat-related deaths during the first six months** of the event.

What is El Niño?

El Nino is an abnormal warming of sea-surface temperatures in the central and eastern equatorial Pacific Ocean. It is the warm phase of ENSO (El Nino Southern Oscillation).

.

What is "Super El Nino"?

It is an **informal term used for an exceptionally strong El Nino event**. It is not a separate ENSO phase.

Possible impacts on India

Climate

- Higher temperatures and heat stress
- Greater risk of heatwaves
- Rainfall disruption
- Drought risk in vulnerable areas

Agriculture

- Reduced soil moisture
- Crop stress
- Irrigation/water demand increases
- Food-security concerns

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Health

- Heatstroke
- Dehydration
- Cardiovascular and respiratory stress
- Higher mortality among vulnerable groups

Energy

- Higher electricity demand for cooling
- Greater pressure on power infrastructure
- Increased demand for coal and other energy sources

The report also notes that India's 2026 southwest monsoon had a **rainfall deficit of about 15%** up to September 22, according to the news report.

Way Forward

- Strengthen Heat Action Plans
- Early-warning system
- Cooling centres and hydration facilities
- Protect outdoor workers
- Improve urban green spaces
- Climate-resilient health infrastructure
- Strengthen electricity and water supply
- Target vulnerable populations
- Long-term adaptation + mitigation

Prelims Questions

Q1. Consider the following statements regarding El Nino:

1. It is associated with abnormal warming of the central and eastern equatorial Pacific Ocean.

2. It is the warm phase of ENSO.

3. It occurs at completely regular intervals of exactly four years.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

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D. 1, 2 and 3

Answer: A

Mains Question

Q. "El Nino is a natural climate phenomenon, but its interaction with climate change can amplify risks to human health and food security." Discuss. (10 marks | 150 words)

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Economy & Infrastructure, Environment (GS Paper: GS-III)

New Horizons in Traditional Bamboo Construction

Why in News?

Ekarth Studio, an Assam-origin startup, is demonstrating the use of **bamboo as a structural and architectural material** in modern institutional and public buildings.

Its latest project is the **Maestro Ilaiyaraaja Centre for Music Learning and Research at IIT Madras, using nearly 4,000 bamboo poles**.

Key Facts

- **Origin**: Assam/Northeast India
- **Latest project**: IIT Madras – Maestro Ilaiyaraaja Centre
- Nearly **4,000 bamboo poles** used.
- Construction completed in about **11 months**.
- Bamboo combined with **lime-based finishes, earthen surfaces and other natural materials.**
- Nearly **9-metre-high arches** and large **column-free spaces**.
- Designed to withstand **cyclonic forces, high humidity and prolonged environmental exposure.**
- Construction relied on **lightweight methods, skilled craftsmanship and minimal heavy machinery.**
- Significant workforce and craftsmanship sourced from the **Northeast**.

Why Bamboo is Important?

Environmental

- Rapidly renewable resource.
- Can reduce dependence on energy-intensive conventional construction materials.
- Bamboo-based construction can support low-carbon and climate-responsive architecture.

Economic

- Creates employment for artisans and rural communities.
- Promotes value addition instead of selling raw bamboo.
- Can **strengthen the Northeast bamboo economy**.

Social & Cultural

- Integrates traditional Northeast knowledge with modern architecture.
- Helps preserve indigenous construction skills.
- Provides a contemporary market for traditional craftsmanship.

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Challenges:

- Durability and protection against moisture/insects.
- Standardisation of bamboo construction.
- Building-code and certification requirements.
- Need for skilled workforce.
- Supply-chain and quality-control issues.
- Greater R&D required for large-scale structural applications.

Prelims Question

Q. With reference to bamboo, consider the following statements:

1. Bamboo belongs to the grass family Poaceae.

2. Bamboo can be used as a structural material in appropriately engineered buildings.

3. Bamboo-based construction has potential to promote rural employment and value addition in Northeast India.

4. Bamboo is botanically classified as a tree.

Which of the statements given above are correct?

A. 1, 2 and 3 only

B. 1 and 4 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. "Traditional knowledge can become an instrument of sustainable development when combined with modern technology." Discuss with reference to bamboo-based construction in Northeast India.

(10 marks / 150 words)

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Governance & Social justice (GS Paper 2)

DURGA Scheme

What is DURGA Scheme?

DURGA is a Delhi Government scheme **for electric autos (e-autos) aimed at providing livelihood opportunities to women and transgender persons.**

- First phase: 1,300 pink e-autos
- Women: 1,170
- Transgender persons: 130
- Per revenue district: Maximum 90 for women + 10 for transgender beneficiaries
- Age: 20–40 years
- Eligibility: Delhi resident, Voter ID, LMV driving licence
- Application: Online portal
- Women with more than three children are excluded under the stated eligibility criteria.

Key Objectives

4 major goals

- **Women's economic empowerment** – self-employment & livelihood
- Inclusion development – greater **participation of transgender persons**
- **Urban mobility** – improve last-mile connectivity
- Clean transport – **promote electric and sustainable mobility**

Prelims Question

Which of the following is NOT a stated objective of the DURGA scheme?

A. Women's self-employment

B. Greater participation of transgender persons in transport

C. Last-mile connectivity

D. Expansion of coal-based urban transport

Answer: D

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Mains Question

Q. "Inclusive urban transport can simultaneously promote social empowerment and environmental sustainability." Discuss with reference to the DURGA scheme.(10 marks, 150 words)

Answer framework:

- Introduction: DURGA links electric mobility with livelihood generation for women and transgender persons.
- Social dimension: Women's self-employment, transgender inclusion, dignified livelihood.
- Economic dimension: Employment opportunities and participation in the transport sector.
- Environmental dimension: E-autos (lower dependence on fossil fuels and cleaner urban mobility.)
- Urban governance: Last-mile connectivity and potentially safer, more accessible mobility.
- Challenges: Charging infrastructure, affordability/financing, safety, maintenance and effective implementation.
- Way forward: Expand charging networks, provide financing/subsidies, ensure safety mechanisms and monitor beneficiary outcomes.
- Conclusion: Integrated schemes combining social inclusion ,livelihood ,green mobility can contribute to sustainable urban development.

Essay:

- **Inclusive and sustainable urbanisation**
- **Women as drivers of economic growth**

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IR (GS Paper 3)

India–EU Free Trade Agreement (FTA)

September 2026, the EU–India FTA negotiations have been concluded, and the European Commission has placed proposals before the EU Council for authorisation of signature and conclusion. The Commission states that negotiations were concluded on **27 January 2026**.

What is the India–EU FTA?
A **Free Trade Agreement** is a treaty through which countries or regional blocs reduce or eliminate tariffs and other barriers to trade in goods and services and establish rules governing economic relations.

The proposed India–EU FTA is significant because it links **India, one of the world's fastest-growing major economies, with the European Union, a major global economic and trading bloc**.

The EU and India relaunched FTA negotiations in **June 2022**, alongside separate negotiations on an **Investment Protection Agreement (IPA)** and a **Geographical Indications (GI) Agreement**. FTA negotiations concluded on **27 January 2026**.

Key facts:

According to the European Commission:

- The EU was **India's third-largest trading partner in 2025**.
- Bilateral trade in goods was approximately **118 billion in 2025**, equivalent to about **11.1% of India's total trade**.
- India was the EU's **9th-largest trading partner** in 2025.
- Around **6,000 European companies** are present in India. Trade and Economic Security

India's exports to EU include:

- Chemicals
- Machinery and appliances
- Textiles
- Mineral products
- Base metals

EU's major exports to India include:

- Machinery and appliances
- Transport equipment
- Optical and medical instruments
- Chemicals Trade and Economic Security

MSMEs

Indian MSMEs can potentially benefit from:

- Larger export markets
- Lower tariff barriers
- European investment
- Technology transfer
- Integration into global value chains

However, MSMEs will need to meet stringent European standards relating to quality, environment, labour and product safety.

Employment

Expansion of export-oriented sectors can generate employment, particularly in:

- Textiles
- Leather and footwear
- Food processing
- Fisheries
- Pharmaceuticals
- Engineering
- Services

The employment impact, however, will depend on how successfully Indian firms utilise the agreement.

Investment

Greater predictability in trade relations can encourage European investment in India.

The EU is already a major source of FDI for India, with EU FDI stock reaching **132.8 billion in 2024**.

Benefits for the European Union

The agreement also provides substantial opportunities for the EU.

The European Commission describes the agreement as providing EU exporters greater access to India's large consumer market and expects significant tariff reductions. Trade and Economic Security

Potential EU beneficiaries include:

- Automobile industry
- Machinery
- Chemicals
- Pharmaceuticals
- Medical devices
- Agri-food
- Aviation-related industries

Thus, the FTA is **not a one-sided concession to India**; it represents reciprocal market access.

Challenges for India.

1. Competition for domestic industries

Lower tariffs can expose Indian producers to increased competition from European firms.

Industries with relatively lower productivity may face adjustment pressures.

2. Standards and non-tariff barriers

Tariff reduction alone does not guarantee exports.

Indian firms must comply with:

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- European quality standards
- Environmental regulations
- Product standards
- Food safety requirements
- Labour-related requirements
- Sustainability norms

3. Carbon Border Adjustment Mechanism

The EU's **Carbon Border Adjustment Mechanism (CBAM)** is particularly relevant for Indian exporters of carbon-intensive products.

It can increase the cost of accessing European markets for certain emission-intensive goods unless Indian producers reduce their carbon intensity.

4. Agriculture

Indian agriculture has politically and economically sensitive sectors.

Greater market access must therefore be balanced against:

- Farmers' interests
- Food security
- Domestic prices
- Sensitive agricultural products

5. Rules of origin

India must ensure that the agreement does not become a channel for third-country products to enter India or the EU through preferential treatment.

Strong rules of origin are therefore essential.

6. Intellectual property

European demands relating to intellectual property can have implications for India's:

- Pharmaceutical industry
- Generic medicines
- Innovation ecosystem

The final implementation needs to balance innovation incentives with access to affordable medicines

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Way Forward

India should focus on five areas:

1. Improve domestic competitiveness

Lower tariffs abroad are useful only if Indian firms can produce competitively.

2. Help MSMEs

Provide:

- Export credit

- Quality certification support
- Market information
- Technology upgrading
- Digital export platforms

3. Build standards capacity

Indian exporters should receive support to comply with European technical and environmental standards.

4. Prepare for green trade

India needs greater investment in:

- Renewable energy
- Green hydrogen
- Energy efficiency
- Low-carbon manufacturing

This will help Indian exports adapt to Europe's climate-related trade regulations.

5. Ensure inclusive gains

The benefits should reach:

- MSMEs
- Farmers
- Fishermen
- Workers
- Women entrepreneurs
- Labour-intensive industries

Conclusion

The India–EU FTA can become a significant pillar of India's integration with global value chains and its engagement with Europe. Its success, however, will depend on translating preferential market access into actual export competitiveness through productivity enhancement, quality upgrading, green transition and support for MSMEs. Thus, the agreement should be complemented by domestic reforms so that globalisation becomes an engine of broad-based and sustainable growth.

Prelims Questions

Q1. With reference to the India–European Union Free Trade Agreement, consider the following statements**:**

1. India and the EU concluded FTA negotiations in January 2026.
2. The FTA negotiations were relaunched in 2022.
3. Negotiations on the Investment Protection Agreement and Geographical Indications Agreement are identical to the FTA negotiations.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B

Explanation: FTA negotiations concluded on 27 January 2026 and had been relaunched in 2022. Investment Protection and GI agreements are separate negotiations.

Mains Questions

"The India–EU Free Trade Agreement represents the growing importance of economic diplomacy in India's engagement with major global powers." Discuss

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Indian Polity, Governance (GS Paper 2)

Chief Election Commissioner and SIR

Why in News?

Five Left parties have demanded the removal of CEC Gyanesh Kumar and a halt to the Special Intensive Revision (SIR) of electoral rolls. They also demanded restoration of voting rights for people they claim were wrongly excluded.

Key Points:

- SIR: Special Intensive Revision of electoral rolls.
- Left parties raised concerns about:
- alleged wrongful exclusion of voters
- deletion or restoration of voter names
- centralisation of voter databases
- restricted access to electoral data for Electoral Registration Officers (EROs).
- They referred to reported objections recorded by two of the three Election Commissioners on several SIR-related decisions.
- A reported Goa case raised questions about software restrictions affecting EROs' ability to record eligibility decisions.
- The broader issue is transparency, institutional independence and credibility of the ECI.



Constitutional Angle:

Article 324: Gives the Election Commission superintendence, direction and control over elections.

Universal Adult Franchise: Every eligible adult citizen has the right to vote, subject to constitutional/statutory conditions.

Why is SIR important?

Special Intensive Revision (SIR) is an intensive exercise to update electoral rolls.

Objectives:

Identify or remove:

- dead voters
- duplicate entries
- permanently shifted voters
- ineligible entries

Ensure:

- genuine eligible voters remain on the list
- eligible new voters are included
  REMOVAL OF CHIEF ELECTION COMMISSIONER (CEC)

  ARTICLE 324(5): CEC has strong security of tenure

  CEC can be removed only: In the same manner and on the same grounds as a Supreme Court Judge

  PARLIAMENTARY PROCESS:
  1. Motion for removal
  2. Special majority in Parliament
  3. Both Houses approve
  4. President issues removal order

- CEC: Removal protection similar to a Supreme Court Judge.
- Other ECs: Removed by the President only on the recommendation of the CEC.

Way Forward

- Transparent voter-verification process
- Proper notice and appeal mechanism before deletion
- Prevent wrongful exclusion
- Secure but accountable voter database
- Adequate access for statutory election officials
- Greater institutional transparency

Prelims Questions

Q1. Consider the following:

1. Article 324 deals with the Election Commission of India.

2. Form 6 is associated with the inclusion of a name in the electoral roll.

3. ERO stands for Electoral Registration Officer.

Which are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

“The integrity of electoral rolls is essential for free and fair elections, but voter-list revision must also protect genuine voters from wrongful exclusion.” Discuss.

International Relations (GS Paper 2)

China–U.S. Relations & Xi–Trump Summit

What happened?

Chinese President Xi Jinping met U.S. President Donald Trump at the White House on 24 September 2026. Xi emphasised that China and the U.S. should manage their rivalry peacefully and avoid "conflict and confrontation."

Key Points

1. China–U.S. rivalry
    - Both are major global economic, technological and military powers.
    - Xi called for healthy competition within limits and greater cooperation.
2. Artificial Intelligence (AI)
    - Xi stressed that AI development should remain under human control.
    - Both countries discussed cooperation on AI risks, misuse and safety.
    - A proposed AI incident-notification mechanism could help manage national-security risks arising from AI.
3. Taiwan Issue
    - Xi urged the U.S. to oppose "Taiwan independence" and handle the Taiwan issue with caution.
    - Taiwan remains one of the most sensitive issues in China–U.S. relations.
4. People-to-people diplomacy
    - China announced plans to invite 100,000 U.S. youth for educational and cultural exchanges over five years.
    - Two pandas are also to be sent to Zoo Atlanta, reflecting panda diplomacy/soft power.

Why is it important for India?

- Indo-Pacific stability: China–U.S. tensions directly affect the strategic environment around India.
- Taiwan Strait: Any major instability could disrupt global trade and semiconductor supply chains.
- AI & technology: India needs responsible AI governance while developing its own technological capabilities.
- Global supply chains: U.S.–China competition affects electronics, critical minerals, semiconductors and manufacturing.
- Strategic autonomy: India must maintain constructive relations with both major powers while protecting its national interests.

Prelims Questions

Q1. Consider the following statements regarding the recent China–U.S. summit:

1. Xi Jinping called for avoiding conflict and confrontation between China and the U.S.

2. Xi emphasised that AI development should remain under human control.

3. Taiwan was among the important issues discussed by the two leaders.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. "The China–both strategic competition and the need for cooperation characterise U.S. relationship." Discuss in the context of the recent Xi–Trump summit.

Inter-State Relations (GS Paper: GS-II)

Inter-State River Water Dispute(Cauvery Water Management)

Current Issue:

The Supreme Court has sought Karnataka's response to Tamil Nadu's plea alleging a 20,000 million cubic feet shortfall in Cauvery water. Karnataka cited a severe drought and said it had made its best efforts to fulfil its obligations as an upper-riparian state.

The dispute highlights the continuing challenge of balancing drinking-water and agricultural needs of an upper-riparian State with the legally determined water-sharing obligations towards a lower riparian State.

Important Points for UPSC, APSC

1. Cauvery River

- Origin: Talakaveri, Karnataka
- Flows through Karnataka and Tamil Nadu, with the basin also extending into Kerala and Puducherry.
- Ultimately drains into the Bay of Bengal
- Important for agriculture, especially in the Cauvery delta of Tamil Nadu.

2. Constitutional provisions

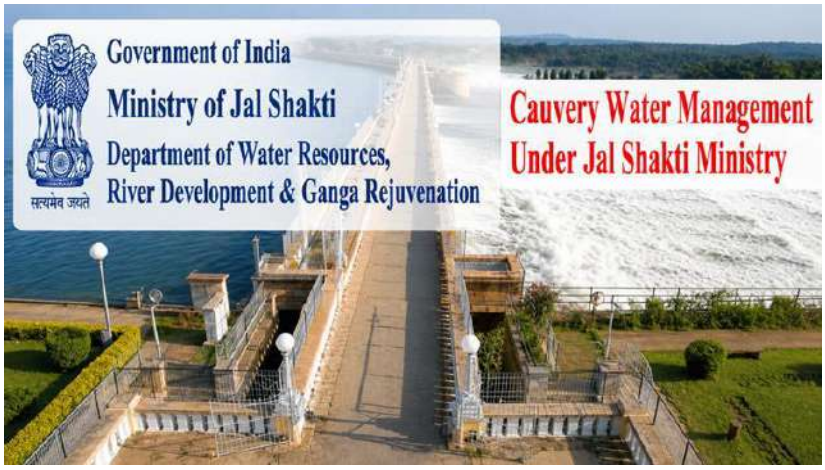
- Article 262: Parliament may provide for adjudication of disputes relating to waters of inter-State rivers.
- Article 262(2): Parliament can exclude the jurisdiction of the Supreme Court and other courts in such disputes.
- Inter-State River Water Disputes Act, 1956: Provides for tribunals for adjudication of such disputes.

3. Cauvery Water Disputes Tribunal (CWDT)

- Constituted in 1990.
- Final award was given in 2007.
- Supreme Court modified the allocation in its 2018 judgment.
- The judgment increased Karnataka's share by 14.75 TMC and reduced Tamil Nadu's corresponding share.

4. Cauvery Water Management Authority (CWMA)

- Established following the Supreme Court's 2018 judgment.
- Responsible for implementing the water-sharing arrangements.
- Works with the Cauvery Water Regulation Committee (CWRC).



Why important for UPSC/APSC?

- Federalism: Conflict between State interests and constitutional mechanisms.
- Cooperative federalism: Need for States to comply with institutional mechanisms.
- Water security: Increasing variability in rainfall can intensify disputes.
- Climate change: Changing monsoon patterns and droughts can increase water stress.
- Agriculture: Cauvery water is crucial for irrigation in southern India.
- River-basin management: Water should ideally be managed at the basin level, rather than purely according to political boundaries.

Prelims Questions

Q1. With reference to inter-State river-water disputes in India, consider the following statements:

1. Article 262 deals with adjudication of disputes relating to waters of inter-State rivers.

2. Parliament can provide for exclusion of the jurisdiction of the Supreme Court in such disputes.

3. The Inter-State River Water Disputes Act, 1956 provides for adjudication through water-dispute tribunals.

Which of the statements given above are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. Inter-State river-water disputes pose a challenge to cooperative federalism in India. Discuss with reference to the Cauvery water dispute. (150 words)

Indian Economy (GS: GS-III)

Make in India — 12 Years

Why in News?

After 12 years, an assessment of Make in India shows a mixed/patchy performance. Manufacturing has made progress in some areas, particularly through PLI schemes, but its overall contribution to growth, employment and global exports remains a challenge.

Major investment concentration:

- Solar modules
- Pharmaceuticals
- Automobiles & components
- Speciality steel
- Large-scale electronics manufacturing

Major Challenges

- Low manufacturing share
- Limited job creation
- Weak private investment
- Low global export share
- Import dependence in some sectors

Other challenges:

- Infrastructure and logistics costs
- Skill gaps
- MSME constraints
- Technology dependence
- Limited integration into global value chains
- Need for greater R&D and innovation

Way Forward

- Strengthen MSME–large industry linkages
- Reduce logistics and compliance costs
- Promote labour-intensive manufacturing
- Increase R&D and technology adoption
- Diversify PLI benefits across sectors

- Integrate India more deeply into Global Value Chains (GVCs)
- Improve skilling and industrial infrastructure

Prelims Questions

Q1. Consider the following statements regarding Make in India:

1. It was launched in 2014.

2. PLI schemes were introduced across 14 sectors.

3. PLI incentives are designed to promote domestic manufacturing and investment.

Which of the statements given above are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. "Make in India has achieved sector-specific successes, but its broader manufacturing transformation remains incomplete." Discuss.

Environment and Ecology (GS Paper 3)

Eco-friendly Treatment of Textile Wastewater

Why in News?

Researchers from the Indian Institute of Technology(IIT) Guwahati developed a biological method to treat textile wastewater containing toxic azo dyes.



Key Points

- Bacterium: **Brevundimonas sp. AJZ05**
- Target dye: **Direct Blue-6 (DB-6)**
- **Degradation achieved: 98.50%**
- The bacterium produces an enzyme called **azoreductase.**
- Azoreductase **breaks the azo bond** responsible for the **colour and stability of many synthetic dyes.**
- Researchers used **Response Surface Methodology (RSM**) to optimise dye degradation and enzyme production.
- The degradation products were found to be **non-toxic after bacterial treatment**.
- The bacterium was isolated from a native textile effluent discharge site.
- Research was supported by the Ministry of Education through PMRF (Prime Minister Research Fellowship)
- Published in **Environmental Geochemistry and Health**.

Why is it important?

Textile wastewater → Azo dyes → difficult to degrade → aquatic pollution & possible health risks

Conventional chemical/physicochemical methods can be:

- **Energy-intensive**
- **Costly**
- **Capable of generating secondary pollutants**

Biological treatment can provide a more eco-friendly alternative or complement to conventional treatment.

Prelims Questions

Q1. With reference to the recent IIT Guwahati research, consider the following statements:

1. Brevundimonas sp. AJZ05 was used for treatment of textile wastewater.

2. The bacterium produces the enzyme azoreductase.

3. The study specifically targeted Direct Blue-6 dye.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

International Relations (GS Paper 2)

Rohingya refugee crisis & repatriation





What is the issue?

Bangladesh has urged the United Nations and the international community to facilitate the early, safe and voluntary return of Rohingya refugees to Myanmar.

- **More than 700,000 Rohingya** fled Myanmar after the military crackdown of August 2017.
- **Bangladesh now hosts around 1.2 million Rohingya refugees**, according to the **UN's 2026 humanitarian appeal.**
- Most refugees live in camps around **Cox's Bazar**, with additional populations on Bhasan Char.
- The **Rohingya are a stateless ethnic minority who have historically faced restrictions on citizenship and rights in Myanmar.**

Why is repatriation difficult?

The **UNHCR** has repeatedly stated that conditions in **Rakhine State, Myanmar, have not been conducive to safe, dignified and sustainable return.**

Major concerns:

- Security and continuing conflict
- Citizenship and legal status
- Human rights protection
- Access to basic services and livelihoods
- Destruction/displacement from original settlements
- Lack of trust among refugees
- Risk of renewed persecution

Therefore, repatriation should be voluntary—not forced and should be based on an informed choice by refugees.

Impact on Bangladesh:

Economic

- Heavy humanitarian expenditure
- Pressure on local infrastructure and employment

Social

- Pressure on host communities
- Security and law-and-order concerns

Environmental

- Deforestation and land degradation
- Pressure on water and other natural resources
- Vulnerability to cyclones, floods and landslides in Cox's Bazar.

International dimension

UNHCR: Protection and humanitarian assistance; supports voluntary, safe, dignified and sustainable return**.**

United Nations: Calls for international solidarity and continued humanitarian assistance.

Myanmar: The country of origin, where conditions for sustainable return remain a major concern.

Bangladesh: Main host country seeking international support and sustainable repatriation.

In May 2026, the UN and partners appealed for 710.5 million for Rohingya refugees and Bangladeshi host communities.

Prelims Questions

Q1. With reference to the Rohingya crisis, consider the following statements:

1. Most Rohingya refugees currently hosted by Bangladesh arrived after 2017.

2. Cox's Bazar is a major centre of Rohingya refugee settlements.

3. UNHCR supports forced repatriation of Rohingya refugees to Myanmar.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Mains Questions

Q. "The Rohingya crisis is not merely a refugee crisis but also a regional humanitarian and security challenge." Discuss.

International Relations & Polity (GS Paper 2)

India–Australia Economic Cooperation

Why in News?

India and Australia are working towards a Bilateral Investment Treaty (BIT) and are negotiating to expand their existing Economic Cooperation and Trade Agreement (ECTA) into a broader Comprehensive Economic Cooperation Agreement (CECA).

Key Points

- **ECTA:** India–Australia **Economic Cooperation and Trade Agreement**, implemented in **2022.**
- **BIT:** Aims to **protect and promote investments** between the two countries and **encourage two-way investment.**
- **CECA**: Proposed broader economic partnership covering greater areas of trade and economic cooperation.
- **Critical minerals:** Australia is an important source of critical minerals, while India has ambitions in manufacturing and processing.
- **Education:** Potential cooperation through dual degrees, student mobility and institutional partnerships.
- **Services:** Both sides have worked to address cross-border taxation issues affecting service providers, particularly IT companies.

Why Important for India?

1. Investment: BIT can provide greater investment protection and confidence.

2. Critical minerals: Supports India's clean-energy and strategic-mineral supply chains.

3. Manufacturing: Australian raw materials and Indian processing, manufacturing can create value chains.

4. Education: Greater student and institutional mobility.

5. Services: Easier movement of professionals can strengthen IT, accounting and other services.

6. Indo-Pacific partnership: Economic integration can complement the broader India–Australia strategic relationship.

Prelims Question

Q1. With reference to India–Australia economic relations, consider the following statements:

1. India and Australia implemented an Economic Cooperation and Trade Agreement in 2022.

2. A Bilateral Investment Treaty can promote and protect investments between the two countries.

3. Australia is an important source of critical minerals for India.

Which of the statements given above are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. “India–Australia economic relations are increasingly based on complementarity rather than mere trade.” Discuss with reference to critical minerals, investment, manufacturing, services and education.

(150 words | 10 marks)

INDIAN POLITY AND GOVERNANCE (GS Paper 2)

AFSPA Extended in Parts of Arunachal Pradesh, Manipur & Nagaland

The Union Home Ministry has extended the **Armed Forces (Special Powers) Act (AFSPA)** for another six months in specified areas of **Manipur, Arunachal Pradesh and Nagaland**, citing continuing security concerns and the need for armed forces assistance in maintaining public order.



What is AFSPA?

Key Provisions

Once AFSPA is applicable in a disturbed area, authorised personnel may:

- Use force, including lethal force, after giving due warning where legally justified.
- Arrest persons **without a warrant** under specified circumstances.
- Search premises **without a warrant**.
- Destroy arms dumps, fortified positions or shelters used by armed groups.
- Enjoy certain legal protection, with prosecution for acts done under the Act requiring **prior sanction of the Central Government**.

Declaration of a "Disturbed Area"

A disturbed area can be declared by:

- **Governor of a State**
- **Administrator of a Union Territory**
- **Central Government**

The declaration is made when an area is considered to be in such a disturbed or dangerous condition that the use of armed forces is necessary.

Current Extension

Manipur

- AFSPA continues across most of the State.
- Certain areas under **13 police stations in five valley districts** are excluded.
- The continuation is linked to persistent security concerns following the ethnic violence that began in **May 2023**.

Nagaland

- Extended in **nine districts** and specified police-station areas in five other districts.

Arunachal Pradesh

- Extended in **three districts** and specified police-station areas in another district bordering Assam.

Why is AFSPA Controversial?

1. Human-rights concerns

- Allegations of excessive use of force, arbitrary detention and custodial abuses have generated significant criticism.

2. Accountability concerns

- The requirement of Central Government sanction for prosecution can make legal accountability difficult.

3. Civil–military relationship

- Prolonged deployment of armed forces can blur the distinction between **military functions and civilian policing**.

4. Alienation

- Perceived impunity may deepen distrust between local communities and the state, potentially affecting counter-insurgency efforts.

5. Indefinite continuation

- Critics argue that extraordinary legislation intended for exceptional circumstances should not become a **permanent governance mechanism**.

Arguments in Favour

- Provides operational flexibility to security forces in insurgency-affected areas.
- Enables rapid response where ordinary policing capacity is inadequate.
- Helps protect civilians and critical infrastructure against armed groups.
- Can support restoration of public order in areas affected by organised violence.

Way Forward

- **Periodic and objective review** of disturbed-area notifications.
- Apply AFSPA only where **genuine security necessity** exists.
- Strengthen **state police and local intelligence capabilities**.
- Ensure transparent investigation of alleged abuses.
- Improve coordination between civil administration, police, armed forces and local communities.
- Pursue **political dialogue, peace agreements and socio-economic development** alongside security measures.
- Develop a credible roadmap for **phased withdrawal** when security conditions improve.

Constitutional & Governance Perspective

AFSPA highlights the difficult balance between:

National Security ↔ Fundamental Rights
Operational Effectiveness ↔ Accountability
Military Response ↔ Democratic Civilian Governance

The objective should therefore be not simply the **continuation or abolition** of AFSPA, but ensuring that its application remains **necessary, proportionate, geographically limited and**

Prelims Questions

Q. With reference to the Armed Forces (Special Powers) Act (AFSPA), consider the following statements:

1. AFSPA can be made applicable only after an area has been declared a "disturbed area".
2. The Governor of a State and the Central Government can declare an area as a disturbed area under the Act.
3. AFSPA provides armed forces personnel with power to arrest without a warrant in specified circumstances.
4. Prosecution of personnel for acts done under AFSPA requires prior sanction of the concerned State Government.

Which of the statements given above are correct?

(a) 1, 2 and 3 only
(b) 1 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

Answer: (a) 1, 2 and 3 only

Explanation: AFSPA operates in areas declared "disturbed" and provides specified powers, including arrest without warrant. Prosecution for acts done under the Act requires **prior sanction of the Central Government**, not the State Government. Hence, Statement 4 is incorrect.

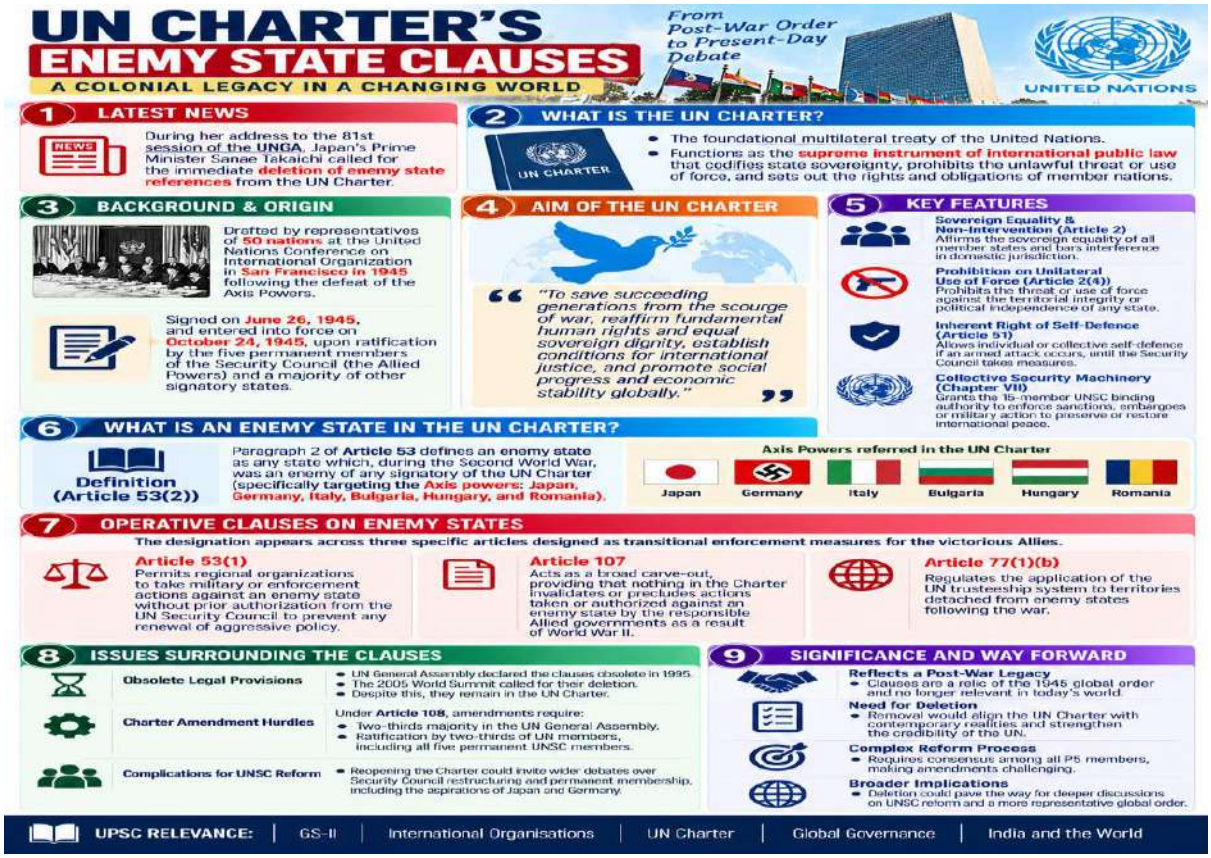
Mains Question

Q. "The continuation of AFSPA represents a difficult balance between the imperatives of national security and the protection of fundamental rights." Critically examine the need for AFSPA in India's Northeast.
(150 words, 10 marks)

INDIAN POLITY (GS Paper 2)

Independence of the Election Commission & the Appointment Mechanism

The debate over the appointment of Election Commissioners raises a fundamental constitutional question: **how can the independence and neutrality of the Election Commission of India (ECI) be protected while retaining Parliament's power to determine the statutory appointment mechanism?**



Constitutional Framework

- **Article 324** establishes the **Election Commission of India** and vests it with the superintendence, direction and control of elections.
- **Article 324(2)** provides that the President appoints the Chief Election Commissioner (CEC) and Election Commissioners (ECs), subject to parliamentary law.
- Thus, the Constitution itself contemplated that **Parliament could prescribe the appointment procedure through legislation**.
- The independence of the ECI is considered essential for maintaining **free and fair elections**, which form part of the **Basic Structure of the Constitution**.

Judicial Intervention & the 2023 Act

- The Supreme Court had devised an interim selection mechanism involving the **Prime Minister, Leader of Opposition and Chief Justice of India**.
- However, this mechanism was **judicially created as an interim arrangement**, rather than being an immutable constitutional requirement.
- Parliament subsequently enacted the **Chief Election Commissioner and Other Election Commissioners Act, 2023**, replacing the earlier judicial arrangement.
- The 2023 framework gives the government a stronger role in the selection process.

Major Constitutional Concern

The key issue is the **composition of the Selection Committee**.

If the government has a dominant position in selecting Election Commissioners, questions may arise regarding:

- Institutional independence
- Perceived executive influence
- Impartiality of Election Commissioners
- Public confidence in electoral institutions

The concern becomes particularly significant because the ECI regulates elections involving the **same political executive that participates in the appointment process**.

Basic Structure Dimension

Free and fair elections are regarded as an essential constitutional principle.

Therefore:

> Parliament can legislate on the appointment mechanism, but such legislation cannot undermine the constitutional requirement of an **independent and impartial electoral process**.

This creates a distinction between:

Parliament's legislative power
↓
Appointment mechanism

and

Constitutional limitation
↓
Preservation of free and fair elections

Possible Reform: Consensus-Based Selection

One suggested approach is to require **broad consensus or unanimity** within the Selection Committee.

This could:

- Reduce unilateral executive influence.
- Encourage bipartisan appointments.
- Improve institutional credibility.
- Strengthen public confidence in the ECI.
- Protect the perception of neutrality.

However, unanimity could also create **deadlocks**, making a carefully designed consensus mechanism preferable to an absolute veto.

Way Forward

- Ensure a **genuinely balanced Selection Committee**.
- Provide transparent and objective eligibility criteria.
- Establish a publicly defensible process for shortlisting candidates.
- Ensure security of tenure and adequate institutional autonomy.
- Strengthen financial and administrative independence of the ECI.
- Create mechanisms for **bipartisan consultation without paralysing appointments**.
- Maintain judicial review to ensure that the appointment framework does not undermine constitutional principles.

Prelims Questions

Q. With reference to the Election Commission of India, consider the following statements:

1. Article 324(2) contemplates a role for Parliament in determining the appointment process for Election Commissioners.
2. Free and fair elections are regarded as an element of the Basic Structure of the Constitution.
3. Any appointment mechanism enacted by Parliament is completely immune from judicial review.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b) 1 and 2 only

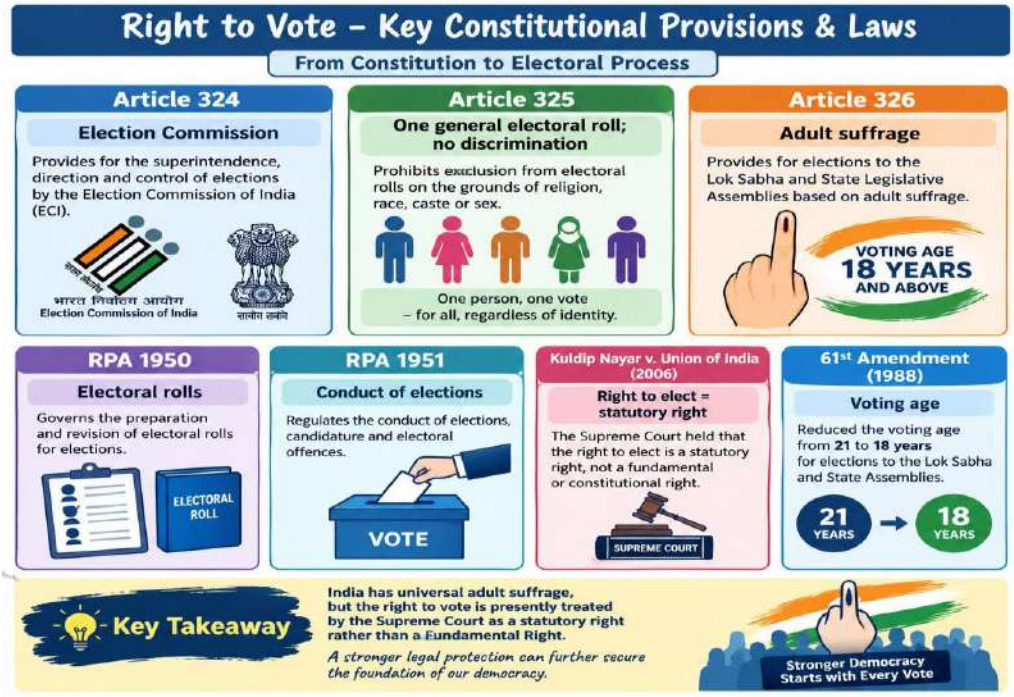
Explanation: Article 324(2) permits Parliament to legislate on appointments. Free and fair elections are a fundamental constitutional principle. However, parliamentary legislation remains subject to **constitutional scrutiny and judicial review**.

Mains Question

Q. "The independence of the Election Commission is indispensable for free and fair elections, but institutional independence depends significantly on the manner in which Election Commissioners are appointed." Discuss.
(150 words, 10 marks)

INDIAN POLITY (GS Paper 2)

Right to Vote & Electoral Rolls



Why in News?

A recent investigation reported disagreements within the three-member Election Commission of India (ECI) over electoral-roll management and alleged unilateral administrative decisions. It also reported that 97 eligible voters in Goa were excluded from electoral rolls due to limitations in the ECINet software.

This has revived the debate: Should the Right to Vote be made a Fundamental Right?

Constitutional & Legal Framework

Provision	**Significance**
• **Article 324**	**ECI has superintendence over elections**
• **Article 325**	**No exclusion from electoral rolls**
• **Article 326**	**Elections based on adult suffrage**
• **RPA, 1950**	**Preparation and revision of electoral rolls**

- **RPA, 1951** **Conduct of elections, candidature etc.**

Section 62, RPA 1951 **Right to vote/elect is governed as a statutory right**

Important: In **Kuldip Nayar v. Union of India (2006),** the Supreme Court held that the right to elect is a statutory right, not a fundamental or constitutional right.

Universal Adult Suffrage in India

India adopted universal adult suffrage from the beginning of the Republic, unlike many Western democracies where voting rights were gradually expanded.

Article 326: Citizens aged 18 years or above can participate in elections.

Earlier, the voting age was 21 years, reduced to 18 years by the 61st Constitutional Amendment Act,1988.

Significance:

- Political equality
- Inclusive democracy
- Participation irrespective of gender, caste, religion, education or property
- Strengthens representative government

Important Supreme Court Cases

- Kesavananda Bharati v. State of Kerala (1973)
- Democracy is part of **the Basic Structure of the Constitution.**

- Kuldip Nayar v. Union of India (2006)
- **Right to elect = statutory right.**
- **Not a fundamental right.**

- Rajbala v. State of Haryana (2015)
- A two-judge Bench referred to the **right to vote as a** constitutional right, but this does not override the larger Bench position in Kuldip Nayar.

- Anoop Baranwal v. Union of India (2023)
- The majority did not reopen the settled position on the legal status of the right to vote.
- Justice Ajay Rastogi's dissent linked the **right to vote with Article 19(1)(a**) and the essence of **Article 21**.

- Lakshmi Charan Sen v. A.K.M. Hassan Uzzaman (1985)
- Emphasised the importance of maintaining accurate electoral rolls and participation in ensuring electoral integrity.

Should Right to Vote Become a Fundamental Right?

Arguments supporting elevation

- **Voting is central to representative democracy**.
- **Stronger judicial protection against arbitrary restrictions**.
- Greater protection against wrongful exclusion.
- **Reinforces Articles 325 and 326**.
- **Makes electoral participation less dependent on ordinary legislation**.

Arguments requiring consideration

- **Parliament needs legislative flexibility to regulate elections.**
- **Voting involves eligibility conditions and electoral administration.**
- **A fundamental right could increase judicial scrutiny of electoral processes**.
- Electoral-roll purification must continue to prevent fraud and ineligible entries.

Prelims Questions

Q1. Consider the following statements:

1. Article 326 provides for elections based on adult suffrage.

2. The voting age in India was reduced from 21 to 18 years by the 61st Constitutional Amendment Act.

3. The Supreme Court has held the right to vote to be a Fundamental Right.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Q2. Which of the following correctly describes Article 325?

A. Establishes the Election Commission of India

B. Provides for adult suffrage

C. Prohibits exclusion from electoral rolls on specified grounds such as religion, race, caste or sex

D. Provides for reservation of seats for SCs and STs

Answer: C

Q3. With reference to Kuldip Nayar v. Union of India, consider the following statement:

The Supreme Court held that the right to elect is:

A. A Fundamental Right

B. A statutory right

C. An absolute constitutional right

D. A natural right

Answer: B

Mains Question

Q. "Universal adult suffrage is meaningful only when every eligible citizen is able to exercise the right to vote." Discuss in the context of electoral roll accuracy in India.(10 Marks)

Environment & Biodiversity (GS Paper: 3)

Assam: Restoration of Wildlife Habitats

Assam-specific: Forests, wildlife conservation, protected areas

Why in News?

The **Assam government** has stated that it is working to **restore lost wildlife habitats and strengthen forest protection**. The efforts were highlighted nationally after the **Prime Minister** mentioned **Assam's conservation initiatives in Mann Ki Baat.**

Key Conservation Initiatives

Sonai Rupai Wildlife Sanctuary

- **Areas affected by long-term encroachment** have been reclaimed.
- **Habitats are being restored**.
- **Elephant herds and other wildlife have started returning to restored landscapes**.
- Shows the **importance of habitat protection & restoration.**

Pygmy Hog Conservation

- **The pygmy hog is the world's smallest and rarest wild pig species**.
- Conservation methods include:
- **Scientific breeding**
- **Habitat restoration**
- **Reintroduction into suitable habitats**
- **Its population has reportedly recovered to nearly 200.**
- **Conservation involves government, scientists, conservationists, forest staff & local communities.**

UPSC/APSC Significance

- Biodiversity conservation
- Wildlife habitat restoration
- Protected Area management
- **Human-wildlife conflict**
- **Community participation in conservation**
- Species recovery and reintroduction
- Assam as a biodiversity-rich region of Northeast India

Prelims Question

Q1. Consider the following statements regarding the Pygmy Hog:

1. It is one of the smallest wild pig species in the world.

2. Habitat restoration and captive/scientific breeding can contribute to its recovery.

3. Assam is an important region for its conservation.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q1. "Wildlife conservation requires not only strict protection but also restoration of degraded habitats." Discuss with reference to Assam. (150 words | 10 marks)

International Relations, Governance (GS Paper:-II)

Big Tech & U.S. Immigration Enforcement

Why in News?

Protests at Salesforce's Dreamforce event in San Francisco highlighted concerns over the links between Big Tech companies and U.S. Immigration and Customs Enforcement (ICE**). Employees and immigrant-rights groups have questioned whether technology companies should provide AI, cloud, data and other services to immigration-enforcement agencies.**

What is ICE?

- **ICE – Immigration and Customs Enforcement is a U.S. federal law-enforcement agency.**
- It was **created in 2003**, following the post-9/11 restructuring of U.S. homeland-security institutions.
- It operates under the **Department of Homeland Security (DHS**).

Major functions include:

- Enforcement of immigration laws.
- Investigation of transnational crime.
- Detention and removal of certain non-citizens.

Why is it controversial?

The debate involves a conflict between government enforcement objectives and individual rights.

Key concerns:

- Human rights and treatment of migrants.
- Privacy and mass-data collection.
- Use of AI in sensitive government decisions.
- Transparency of government–corporate contracts.
- Corporate responsibility and accountability.
- Possible discrimination or algorithmic bias.
- Employee opposition to contracts with controversial government agencies.

Big Tech boycott debate

Immigrant-rights groups have called for boycotts of several technology companies over alleged links with ICE.

However, boycott campaigns face difficulties because technology companies may have indirect links with government agencies through:

- Cloud infrastructure
- Advertising
- Software platforms
- Subcontractors
- Data services

Therefore, tracing responsibility throughout a complex technology supply chain can be difficult.

India Link

India is also **rapidly expanding the use of AI, big data and digital platforms in governance.** The issue raises important questions for India regarding:

Technology → Efficiency → Accountability → Privacy → Fundamental Rights

Prelims Questions

Q1. Consider the following statements regarding U.S. Immigration and Customs Enforcement (ICE):

1. ICE is a federal law-enforcement agency of the United States.

2. It functions under the U.S. Department of Homeland Security.

3. It was established in the aftermath of the 9/11 attacks.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Questions

Q. "The increasing involvement of Big Tech in government functions creates both opportunities and risks for democratic governance." Discuss with reference to AI, data and privacy. (10 Marks)

Contribution of eminent personalities to regional development (GS Paper I)

RG Baruah Memorial Awards 2026



Why in news?

The **RG Baruah Memorial Awards 2026 were presented** in Guwahati to **four eminent personalities for their contributions to sports, entrepreneurship, journalism and culture.**

Awardees

Personality	Award Category
Dipankar Bhattacharjee	**Sports Excellence**
Abhijit Barooah	**Entrepreneurial Excellence**
Sangeeta Barooah Pisharoty	**Journalism**
Seema Biswas	**Culture**

RG Baruah (Important for APSC)

- **Radha Govinda Baruah** (RG Baruah) was an important figure in Assam's journalism, sports and cultural development.
- Associated with the growth of The Assam Tribune.
- His contributions extended beyond **journalism to institution-building and promotion of sports and culture.**
- Institutions associated with his contribution include **Nehru Stadium and the Gauhati Tea Auction Centre.**
- The awards highlight the role of **individual leadership and institution-building in Assam's socio-economic development.**

APSC Assam-specific angle:

RG Baruah's contribution can serve as an example of how journalism, sports, culture, and economic institutions can collectively contribute to nation and state building.

Prelims Question

Q. With reference to the RG Baruah Memorial Awards 2026, consider the following pairs:

1. Dipankar Bhattacharjee — Sports

2. Abhijit Barooah — Entrepreneurship

3. Sangeeta Barooah Pisharoty — Journalism

4. Seema Biswas — Culture

Which of the pairs given above are correctly matched?

A. Only 1 and 2

B. Only 2 and 3

C. 1, 2, 3 and 4

D. Only 1, 3 and 4

Answer: C

Mains Question

Q. Discuss the contribution of RG Baruah to the development of journalism, sports and cultural life in Assam. How can his legacy be relevant to contemporary institution-building?

(10 marks, 150 words)

Energy, Infrastructure & Economy (GS Paper 3)

PNG & CNG Expansion in Assam



PNG, CNG expansion in State hit by highly-priced imported gas

RITURAJ BORTHAKUR

GUWAHATI, Sept 28: The surge in the price of imported natural gas amid the West Asia crisis has brought the expansion of piped natural gas (PNG) and compressed natural gas (CNG) networks in Assam's commercial and industrial sectors to a near standstill.

The widening price gap between domestic and imported gas has made new connections increasingly unviable for commercial and industrial consumers, even as the Assam government and gas distribution companies push to expand the State's gas network.

Imported gas prices have climbed to around USD 30 per MMBtu, compared with about USD 7 per MMBtu for domestic gas. The Centre had recently raised the administered price mechanism (APM) gas price for state-run producers Oil and Natural Gas Corporation (ONGC) and Oil India Limited (OIL) to around USD 7 per MMBtu.

The government uses a price ceiling under the APM mechanism to protect domestic consumers from sharp fluctuations in global energy markets. APM gas is primarily allocated to priority sectors, including domestic PNG and CNG for transportation.

Commercial and industrial consumers, however, generally do not have access to this cheaper APM gas and have to depend on market-priced domestic gas or imported liquefied natural gas (LNG).

The resulting price differential has severely affected the economics of expanding PNG connections in the commercial and industrial segments. Gas distribution companies are also facing higher costs for their own consumption, including gas used for line packing and fuel for gas-engine operations.

» SEE PAGE 2

Upper Assam gas set to reach central, western regions in 3 months, offering relief to distributors

What is the issue?

The **expansion of Piped Natural Gas (PNG) and Compressed Natural Gas (CNG) networks in Assam's** commercial and industrial sectors has slowed due to a **sharp rise in the price of imported natural gas.**

- **Imported gas: around USD 30/MMBtu**
- **Domestic gas: around USD 7/MMBtu**
- Commercial and industrial consumers largely depend on market-priced domestic gas or imported LNG.
- The high price differential has made new PNG connections economically difficult.

Why is APM gas important?

Administered Price Mechanism (APM) gas is subject to government-administered pricing.

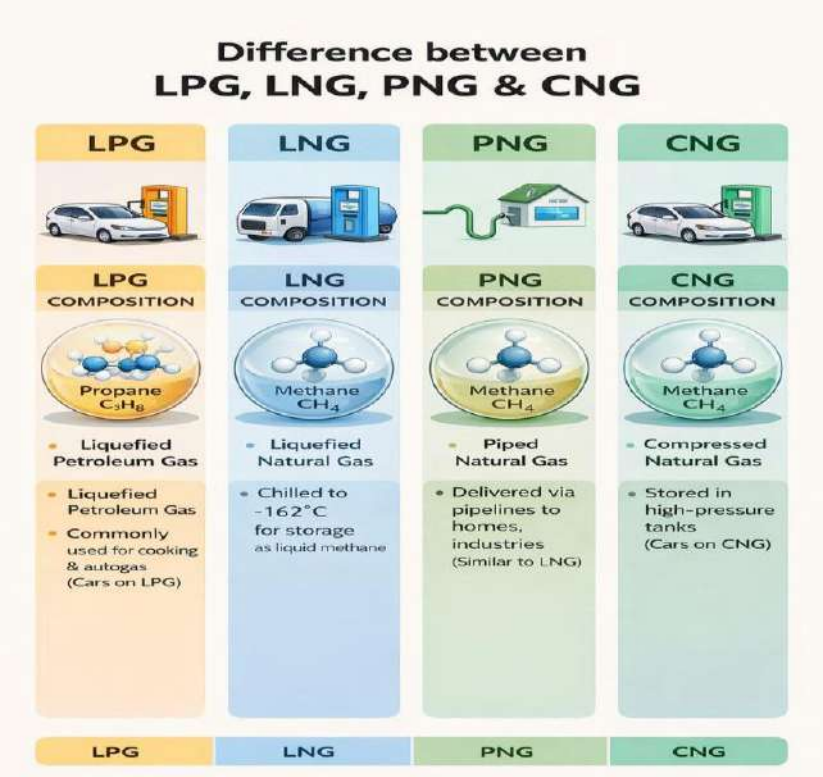
It is primarily allocated to priority sectors, including:

- Domestic PNG
- CNG for transportation

This protects priority consumers from sudden fluctuations in international gas prices.

Assam-specific developments

Indicator	Current situation
Guwahati PNG connections	**Around 2,200**
Earlier connections	**Around 1,090 in mid-May**
Assam Gas Company connections	**Around 72,000**
Coverage	**Six districts of Upper Assam**
Major constraint	High imported gas prices



Role of Upper Assam gas

A potential solution is the **utilisation of locally produced gas from Upper Assam by Oil India Limited (OIL).**

The proposed chain is:

Upper Assam gas → Pipeline → Guwahati/Central & Western Assam → PNG/CNG network expansion

Gas has already reached Numaligarh, while some sections of the pipeline towards Guwahati are still under construction.

The Indradhanush Gas Grid Limited (IGGL) pipeline is expected to improve connectivity.

Significance

Economic

- **Reduces dependence on expensive imported LNG**.
- Makes **PNG/CNG expansion more commercially viable**.
- **Supports Assam's industrial and commercial sectors.**

Energy security

- **Greater use of domestically produced natural gas**.
- **Reduced exposure to international gas-price volatility.**
- **Better utilisation of Assam's hydrocarbon resources**.

Environmental

Natural gas generally produces **fewer local air pollutants and lower CO_2 emissions than coal and some petroleum fuels, although it remains a fossil fuel.**

Prelims Question

Consider the following statements:

1. APM gas is allocated to certain priority sectors.

2. Domestic PNG and CNG for transportation are among the priority uses.

3. Commercial and industrial consumers always receive APM-priced gas.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

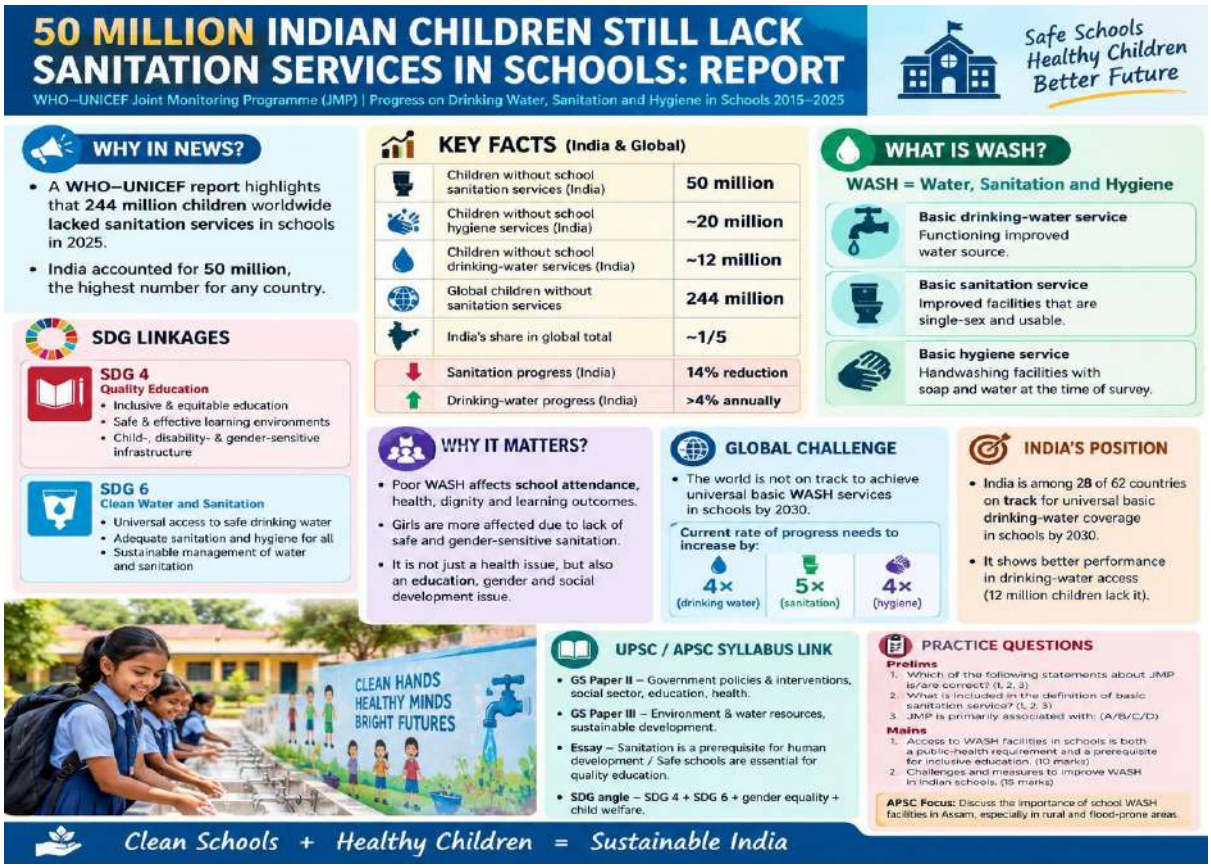
Mains Question

"High dependence on imported natural gas can constrain the expansion of Assam's PNG and CNG infrastructure." Discuss the challenges and suggest measures to strengthen Assam's gas-based energy infrastructure.

Government policies and interventions (GS Paper II)

WASH in Schools — India & SDGs

Source: WHO–UNICEF Joint Monitoring Programme (JMP), Progress on Drinking Water, Sanitation and Hygiene in Schools 2015–2025



Why in News?

A **WHO–UNICEF report** highlights that 244 million children worldwide lacked sanitation services in schools in 2025. **India accounted** for 50 million, the highest number for any country.

Key Facts

Indicator	India, 2025
Children without school sanitation services	**50 million**
Children without school hygiene services	**20 million**
Children without school drinking-water services	**12 million**
Global children without school sanitation	**244 million**
India's sanitation gap	**1/5 of global total**
Sanitation progress during assessed period	**14% reduction in children without service**
Drinking-water progress	**>4% annually**

What is WASH?

WASH = Water, Sanitation and Hygiene

- **Basic drinking-water service: Functioning improved water source.**
- **Basic sanitation service: Improved sanitation facilities that are single-sex and usable**.
- **Basic hygiene service: Handwashing facilities with soap and water available at the time of survey.**

SDG Linkages

SDG 4 – Quality Education

- Inclusive and equitable quality education.
- Safe and effective learning environments.
- Schools should have child-, disability- and gender-sensitive infrastructure.

SDG 6 – Clean Water and Sanitation

- **Universal and equitable access to safe drinking water.**
- **Adequate sanitation and hygiene for all.**
- **Sustainable management of water and sanitation**.

India-specific Significance

- **Poor WASH facilities can affect school attendance, health, dignity and learning outcomes**.
- **Girls are particularly affected when schools lack safe, usable and gender-sensitive sanitation facilities**.
- WASH infrastructure is therefore not **merely a health issue but also an education, gender and social-development issue.**
- **India is among 28 of 62 countries considered on track for universal basic drinking-water coverage in schools by 2030.**

Global Challenge

T**he world is not currently on track to achieve universal basic WASH services in schools by 2030.**

Prelims Questions

Q1. Consider the following statements regarding the WHO–UNICEF Joint Monitoring Programme (JMP):

1. It monitors progress relating to drinking water, sanitation and hygiene (WASH).

2. A basic hygiene service requires handwashing facilities with soap and water.

3. SDG 6 is exclusively concerned with drinking-water access and has no sanitation component.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Mains Questions

Q. “Access to WASH facilities in schools is both a public-health requirement and a prerequisite for inclusive education.” Discuss. (150 words)

Indian Economy GS Paper III

Industrial Growth



What is the news?

India's Index of Industrial Production (IIP) grew by 8% in August 2026, up from **7.35% in July 2026**. The growth was mainly driven by manufacturing, electricity, capital goods and consumer goods.

Key Data

Indicator	August 2026
Overall IIP growth	8%
July 2026 IIP growth	7.35%
June 2026 IIP growth	8.8%
Manufacturing growth	8.95%
Electricity growth	12.3%

Capital goods growth	16.9%
April–August growth	6.7%

Sector-wise performance

1. Manufacturing – 8.95%

Major contributors:

- Motor vehicles
- Electrical & non-electrical machinery
- Electronics
- Textiles
- Beverages
- Rubber products
- Non-metallic mineral products

2. Electricity – 12.3%

- Highest growth in 27 months.
- Supported by both conventional and renewable electricity generation.

3. Capital Goods – 16.9%

- Indicates stronger investment and industrial-capacity-related activity.
- However, it was a three-month low for this sector.

What is IIP?

Index of Industrial Production (IIP) measures the short-term changes in the volume of industrial production in India.

It covers three major sectors:

Mining + Manufacturing + Electricity → IIP

It is compiled and released by the Ministry of Statistics and Programme Implementation (MoSPI)..

prelims Facts

1. IIP is released by → MoSPI

2. Three sectors → Mining, Manufacturing, Electricity

3. Largest weight in IIP → Manufacturing

4. August 2026 IIP growth → 8%

5. Manufacturing growth → 8.95%

6. Electricity growth → 12.3%

7. Capital goods growth → 16.9%

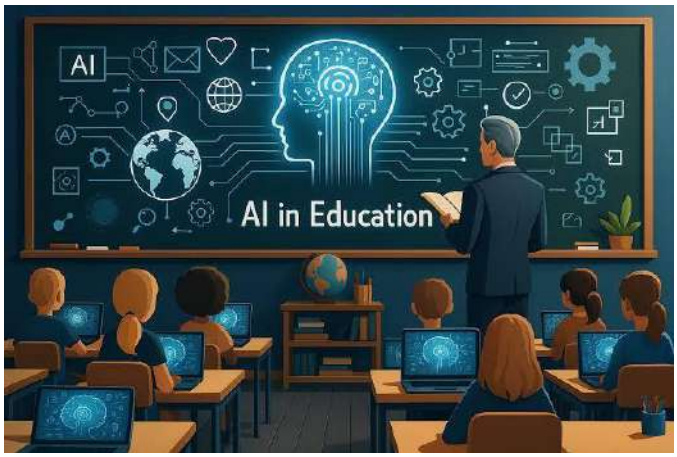
Mains Question

"India's recent acceleration in industrial production indicates improving industrial momentum. Discuss the factors driving this growth and the challenges to sustaining it."

(150 words)

Governance & Social Issues (GS Paper:-II)

Learning to Think in the AI Age





Why in News?

The growing use of Generative AI tools in education has created both opportunities and concerns. **AI can help students understand difficult concepts, translate, summarise and research, but excessive dependence may reduce independent thinking and analytical skills.**

Key Issues

- **AI as a learning aid: Helps in brainstorming, translation, research and explaining complex topics.**
- **Critical thinking: Students must verify AI-generated information instead of accepting it blindly.**
- **AI hallucination: AI may generate incorrect or fabricated information.**
- **Algorithmic bias: AI can reproduce biases present in its training data.**
- **Local knowledge gap: AI may inadequately represent indigenous knowledge, local histories, minority languages and cultures.**
- **Information ≠ Knowledge: Information becomes knowledge only through understanding, contextualisation and verification.**
- **Privacy: Students should avoid uploading personal records, confidential documents or sensitive research data.**
- **Intellectual property: AI use raises concerns regarding copyright, plagiarism and ownership of content.**
- **Human agency: Final responsibility for decisions, arguments and interpretation should remain with humans.**
- **Technology-free learning: Reading, writing, problem-solving and discussion without AI can strengthen concentration, creativity and intellectual independence.**

Way Forward

AI + Human Intelligence → Better Education

Education should focus on:

1. **AI literacy**

2. Critical thinking

3. Fact-checking and source verification

4. Digital privacy

5. Ethical AI use

6. Protection of intellectual property

7. Preservation of local and indigenous knowledge

8. Human-centred education

Prelims Question

Q. Consider the following statements regarding Generative AI in education:

1. AI-generated information can contain hallucinations or inaccuracies.

2. Algorithmic bias can arise from the data used to train AI systems.

3. AI can completely replace the need for human critical thinking in education.

4. Protection of personal and confidential information is an important aspect of responsible AI use.

Which of the statements given above are correct?

A. 1, 2 and 4 only

B. 1 and 3 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

Answer: A

Explanation: AI can assist learning but cannot replace independent human judgement and critical thinking.

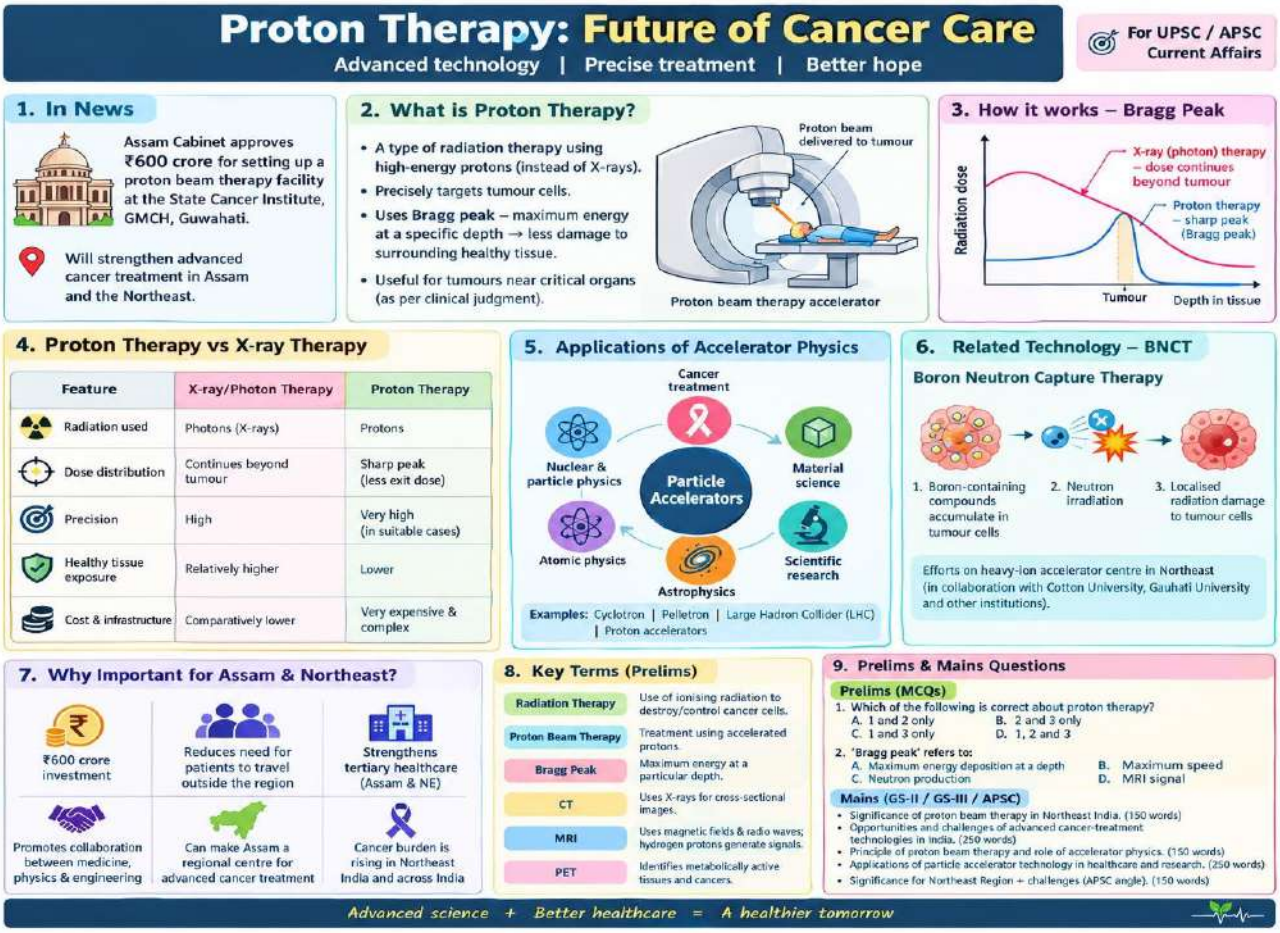
Mains Question

Q. "The age of Artificial Intelligence makes critical thinking more important, not less." Discuss in the context of education in India.

(150 words / 10 marks)

Science & Technology (GS-III)

Proton Therapy in Assam



Why in News?

The **Assam Cabinet has approved ₹600 crore** for setting up a proton beam therapy facility at the State Cancer Institute, Gauhati Medical College and Hospital (GMCH). It is expected to strengthen advanced cancer treatment facilities in Northeast India.

What is Proton Beam Therapy?

- **A form of radiation therapy used to treat cancer**.
- Uses high-energy protons instead of X-rays/photons.
- **Protons can be precisely targeted at a tumour.**
- Their **energy deposition is concentrated near the tumour (Bragg peak), potentially reducing radiation exposure to surrounding healthy tissues.**
- **Particularly useful where tumours are close to critical organs, subject to clinical suitability.**

Proton Therapy vs Conventional Radiation

Feature	X-ray	Proton Therapy
Radiation used	Photons	Protons
Dose distribution	Radiation continues beyond tumour	Can sharply reduce exit dose
Precision	High	Very high in suitable cases
Healthy tissue exposure	Relatively higher	Can be lower

Why Important for Assam & Northeast?

- **600 crore investment in advanced cancer-care infrastructure.**
- **Can reduce the need for patients from the Northeast to travel outside the region.**
- **Strengthens tertiary healthcare in Assam.**
- **Promotes collaboration between medicine, physics and engineering.**
- **Potential to make Assam a regional centre for advanced cancer treatment.**
- **Cancer burden is an important public-health concern in Northeast India.**

Accelerator Physics & Medicine

Particle accelerators have applications in:

- **Cancer treatment**
- **Nuclear and particle physics**
- **Material science**
- **Atomic physics**
- **Astrophysics**

Related Technology: BNCT

Boron Neutron Capture Therapy (BNCT) is another advanced cancer-treatment approach.

Important Terms for Prelims

Radiation Therapy: Treatment using ionising radiation to destroy or control cancer cells.

Proton Beam Therapy: Radiation treatment using accelerated protons.

Bragg Peak: Protons deposit most of their energy at a particular depth, allowing precise targeting of tumours.

Prelims Questions

Q1. Consider the following statements about proton beam therapy:

1. It uses high-energy protons for cancer treatment.

2. It can provide a more precisely concentrated radiation dose than conventional photon therapy in suitable cases.

3. It eliminates radiation exposure to healthy tissues.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Explanation: Proton therapy can reduce unnecessary radiation to surrounding tissues, but it does not completely eliminate radiation exposure.

Mains Questions

Q1. "Advanced medical technologies can improve regional equity in healthcare." Discuss the significance of establishing proton beam therapy facilities in Northeast India.

(150 words)

Science & Technology (GS Paper 3)

HFMD Cases in Assam (Hand, Foot and Mouth Disease)





What is HFMD?

- HFMD is a **highly contagious viral infection, mainly affecting young children, especially those below 5 years.**
- It is commonly caused by enteroviruses, particularly **Coxsackievirus A16 and Enterovirus 71 (EV-A71).**
- In Guwahati, cases are reportedly increasing as the seasonal pattern picks up.
- Usually resolves within 7–10 days.

Key Symptoms

1. **Fever**

2. Painful mouth ulcers/blisters

3. Red spots/vesicles on:

- **Palms & fingers**
- **Soles & toes**
- **Sometimes arms, legs and buttocks**

Mouth pain can reduce fluid intake and lead to dehydration.

HFMD vs Chickenpox

HFMD	**Chickenpox**
• Mouth ulcers, hand/foot lesions characteristic	Generalised itchy rash
• Palms and soles commonly affected	Usually begins on trunk/face
• Lesions often less itchy	Usually intensely itchy
• Painful mouth sores may cause refusal to drink	Rash appears in successive crops
• Caused by **enteroviruses**	Caused by **Varicella-zoster virus**

Transmission

HFMD spreads through:

- **Respiratory/nasal and oral secretions**
- **Contaminated hands and surfaces**
- **Blister fluid**
- **Fecal–oral route**
- **Contaminated toys, utensils and other objects**

Prevention & Control

- **Frequent handwashing with soap and water**
- **Avoid sharing bottles, cups, food, utensils and towels**
- **Clean/disinfect frequently touched surfaces**
- **Schools should identify clusters and inform parents**
- **Keep symptomatic children away from close contact during the acute phase.**

Treatment

- No specific antiviral treatment for routine HFMD
- **Focus on supportive care and adequate hydration**
- Cold fluids and soft foods may be easier to tolerate.
- Watch for dehydration**: very low urine output, dry mouth, absence of tears, lethargy and persistent vomiting.**
- **Neurological complications are rare, but seizures, confusion, difficulty walking or abnormal movements require urgent medical attention.**

Prelims Question

1.Consider the following statements about HFMD:

1. It is a viral infection.

2. It mainly affects young children.

3. Palms and soles can be commonly affected.

4. Antibiotics are the specific treatment for HFMD

Which of the statements given above are correct?

A. 1, 2 and 3 only

B. 1 and 4 only

C. 2 and 3 only

D. 1, 2, 3 and 4

Answer: A

Mains Questions

"School-based disease surveillance and hygiene are important components of controlling highly contagious childhood infections." Discuss with reference to HFMD. (10 marks, 150 words)

GOVERNANCE (GS Paper 2)

PRAGATI-50: Guwahati Selected for Urban Cleanliness Drive



Guwahati picked for PRAGATI-50 cleanliness drive

A CORRESPONDENT

NEW DELHI, Sept 29: Guwahati has been selected among 50 cities across 24 states under the Centre's newly launched PRAGATI-50 initiative, aimed at setting higher benchmarks for urban cleanliness through targeted action, key performance indicators (KPIs) and technology-enabled monitoring.

Launched by Union Minister for Housing and Urban Affairs Manohar Lal on Tuesday, the initiative seeks to transform the selected cities into clean urban role models by focusing on measurable and sustained improvements in sanitation and civic services under the Swachh Bharat Mission–Urban 2.0.

The Centre has selected cities representing major urban centres, places of cultural significance, tourism destinations and economic hubs. Guwahati's inclusion gives the Northeast a prominent role in the Centre's effort to demonstrate how focused interventions and continuous monitoring can improve urban cleanliness.

The PRAGATI-50 programme will focus on a range of areas, including visible cleanliness, solid waste management, used water management, sanitation and citizen participation.

The initiative envisages a structured system of monitoring and review under a defined timeframe, with cities expected to undertake targeted interventions rather than limiting their efforts to routine sanitation activities.

Launching the initiative, Manohar Lal said the 50 cities would be expected to demonstrate sustained, high-performance standards of cleanliness and emerge as examples for other urba centres.

"Progress of the selecte cities would be assessed co tinuously through outcom based reviews and technol gy-enabled monitoring", th Minister said.

The initiative is expec ed to bring greater accoun ability to urban sanitatio programmes by linking i terventions with measu able outcomes. Cities w have to identify specific a eas requiring improveme and formulate action plan for achieving the stipulate targets.

» SEE PAGE

Why in News?

Guwahati has been selected among 50 cities across 24 States under the Centre's newly launched PRAGATI-50 initiative to improve urban cleanliness and sanitation.

Key Facts

Aspect	Details
Initiative	**PRAGATI-50**
Cities	**50 cities**
States	**24 States**
Assam city	**Guwahati**
Ministry	**Ministry of Housing & Urban Affairs (MoHUA)**
Linked Mission	**Swachh Bharat Mission–Urban 2.0**
Focus areas	**Cleanliness, solid waste, water, sanitation**

Main Features

- **Outcome-based monitoring** rather than only routine sanitation activities.
- **Cities will identify specific problem areas.**
- **Preparation of micro-level action plans.**
- Use of **technology and innovation in urban governance.**
- **Continuous review** using Key Performance Indicators (KPIs).
- **Greater participation of Urban Local Bodies (ULBs) and citizens**.
- Focus on measurable and sustained improvement.

Importance for Assam

- **Gives Guwahati and the Northeast a prominent role in urban cleanliness initiatives.**
- **Can improve solid-waste management and sanitation.**

- **Technology-based monitoring can strengthen accountability of ULBs.**
- **Useful for improving urban services in a rapidly growing city like Guwahati.**

Prelims MCQ

Q1. Consider the following statements regarding PRAGATI-50:

1. It covers 50 cities across 24 States.

2. Guwahati is among the selected cities.

3. It is linked with Swachh Bharat Mission–Urban 2.0.

4. It focuses only on solid waste management.

Which of the statements given above is/are correct?

A.1 and 2 only

B. 1, 2 and 3 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

Answer: B

Explanation: PRAGATI-50 covers 50 cities in 24 States and includes Guwahati. It is linked to SBM-U 2.0. Its scope is broader than solid waste and includes sanitation, used-water management, visible cleanliness and citizen participation.

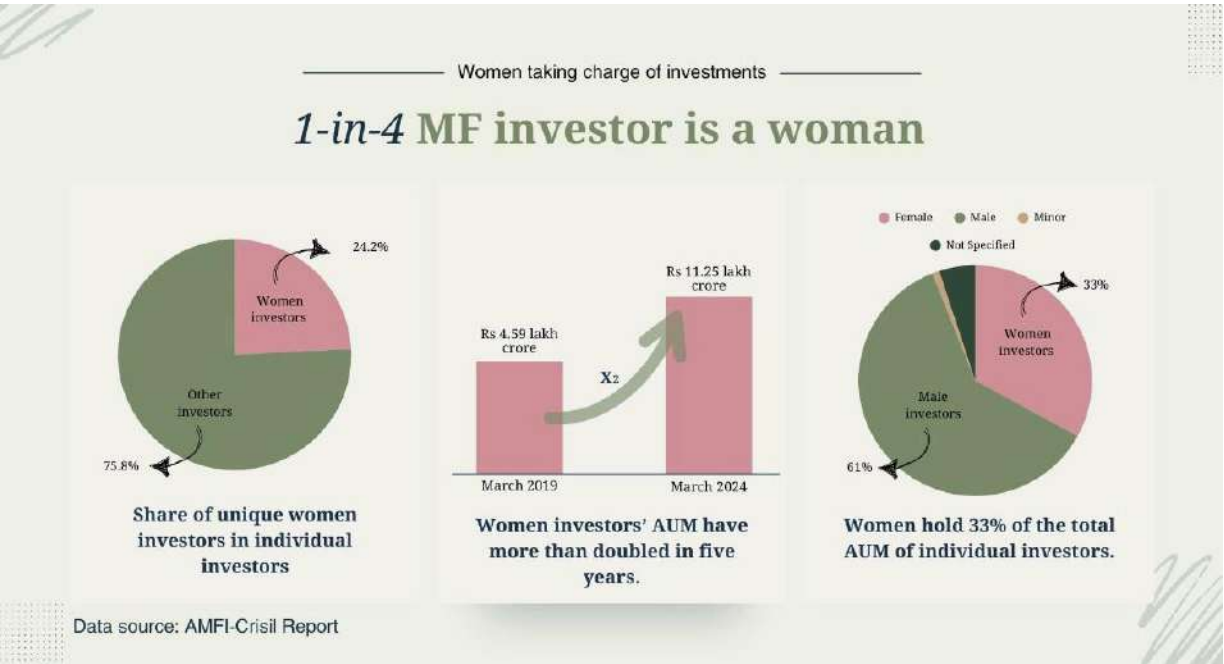
Mains Question

Q. "Technology-enabled monitoring and outcome-based governance can improve urban sanitation." Discuss in the context of the PRAGATI-50 initiative.

(10 marks / 150 words)

Indian Economy (GS Paper: 3)

New Generation of Investors & India's Wealth Ecosystem



Key Highlights

- **Young investors are increasing**: Share of NSE (National Stock Exchange) registered investors **below 30 years rose from 23% in FY19 to 38% in June 2026.**
- Women investors: Women accounted for 25% of investors in FY24, up from 20% in FY19.
- **SIPs gaining importance**: Systematic Investment Plans (SIPs) now constitute around **35% of individual mutual fund investments, compared with 19% in FY19.**
- **New investor groups:**
- **Young professionals**
- **Women wealth creators**
- **Entrepreneurs**
- **Digitally active consumers**
- **Investors from Tier-2 and Tier-3 cities**
- **Micro-SIPs are enabling small-ticket, regular investment and bringing first-time and underserved investors into formal investment channels.**
- **Distribution has expanded through 2.5 lakh+ rural touchpoints and digital platforms.**
- **Future potential: More than 100 million Indians could enter long-term investing by 2035, according to the report.**

Why is this important?

Earlier: Financial inclusion mainly meant **access to banking and payments**.

Emerging phase: Financial inclusion is increasingly about participation in wealth creation.

Challenges

- **Low financial literacy**
- **Need for trustworthy financial advice**
- **Risk of mis-selling and unsuitable products**
- **Market volatility**
- **Digital divide**
- **Cybersecurity and data-privacy concerns**

Assam (APSC Angle)

For Assam, increased digital connectivity and financial awareness can help bring **rural and small-town households, women and young people into formal investment channels**. However, **financial literacy and investor protection are important alongside access.**

Prelims Questions

Q1. Consider the following pairs:

Digital infrastructure	**Major function**
1. Aadhaar	Digital identity
2. UPI	Digital payments
3. Account Aggregator	Secure financial-data sharing

Which of the pairs given above is/are correctly matched?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. "India's next phase of financial inclusion must move beyond access to financial services towards participation in wealth creation." Discuss the role of Digital Public Infrastructure in achieving this objective.

(10 marks, 150 words)