

May 2026 Edition



UPSC MONTHLY MAGAZINE

AI Powered Magazine for Smarter UPSC Prep'



From the Editor's Desk

Welcome to the May Issue of PadhAI – an AI-powered magazine designed by UPSC experts to make your preparation smarter, faster, and deeply exam-oriented.

Why This Magazine Exists

Dear Aspirant, PadhAI Magazine was created from a simple observation: most failures occur not due to lack of effort, but due to three critical gaps—delayed content, scattered resources, and weak exam linkage. We built this magazine to solve those exact problems. Most current affairs resources reach you 15–30 days late. By then, exam relevance has already faded. Relevance is everything in UPSC preparation. A topic that matters today becomes a sideshow in a month.

What Makes This Magazine Different

At PadhAI, we operate differently:
Speed & Relevance

- We publish within a week—so you learn while the topic is still relevant for exams
- You grasp concepts before they become old news, giving you a real head start
- Early understanding means better retention and confidence when these topics appear in questions

Exam-Aligned Restructuring

- We don't report news. We extract exam-aligned concepts
- Every article is built around three core questions:- What will Prelims ask?- How will Mains expect you to analyze it?- What concepts build from this topic?

Complete Integration

- Every article links to previous year questions, practice MCQs, and structured answers
- Alongside this magazine: daily PIB summaries, Current Affairs & GS topics explained, and AI tutor chat support
- One integrated system instead of scattered resources that are wasting your time

What's Inside This Edition

This May edition brings you the most relevant national and international updates, rewritten into crisp, high-retention smart notes. Each topic is restructured to focus on:

- Concept clarity – What you need to understand
- Governance relevance – Why it matters to India's systems
- Analytical value – How to think about it for both Prelims and Mains

Our Guiding Philosophy

At PadhAI, everything is built on three principles:

- Learn only what matters
- Learn it the right way
- Learn it at the right time

Let's make learning intelligent – not overwhelming.

–The PadhAI Team

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Subject

Polity



I. SHOULD THE PIL JURISDICTION BE RECONSIDERED?

WHY IN NEWS?

- Recent judicial debates have raised concerns over the expanding scope and misuse of **Public Interest Litigation (PIL)**, prompting discussions on whether PIL jurisdiction requires reconsideration and reform.

BACKGROUND / CONTEXT

- I. **Public Interest Litigation (PIL):**
 - A. Legal mechanism allowing courts to hear matters affecting public interest.
- II. **Constitutional Basis:**
 - A. Linked to Articles 32 and 226 of the Constitution.
- III. **Evolution:**
 - A. Expanded during the 1980s through judicial activism.
- IV. **Key Figures:**
 - A. Associated with judges like Justice P. N. Bhagwati and Justice V. R. Krishna Iyer.

OBJECTIVES OF PIL

- Provide **access to justice** for marginalised sections.
- Address issues of **human rights, environment, and governance**.
- Ensure **accountability of public authorities**.

- Strengthen **constitutional governance**.

ARGUMENTS FOR RECONSIDERING PIL JURISDICTION

Judicial Overreach

- Courts entering domains of executive and legislature.
- Risk of disturbing separation of powers.

Frivolous & Motivated Petitions

- PILs sometimes filed for publicity or political motives.
- Burden on the judicial system.

Delay in Genuine Cases

- Excessive PILs contribute to pendency of cases.

Lack of Clear Standards

- Broad interpretation leads to inconsistent application.

ARGUMENTS AGAINST RESTRICTING PILS

Access to Justice

- Vital for vulnerable and marginalised communities.



Rights Protection

- Instrument for enforcing fundamental rights.

Governance Accountability

- Exposes corruption, environmental damage, and administrative failures.

Judicial Innovation

- Enabled expansion of rights jurisprudence in India.

SIGNIFICANCE OF PILs

- **Democratisation of Justice:** Easier access to courts.
- **Social Justice:** Protection of weaker sections.
- **Environmental Protection:** Landmark environmental judgments.
- **Human Rights Enforcement:** Expanded interpretation of Article 21.

CHALLENGES

- **Misuse for Private Interest:** "Publicity Interest Litigation."
- **Judicial Burden:** Increased case load.
- **Institutional Conflict:** Tension with executive authority.
- **Need for Screening Mechanisms:** Filtering non-serious petitions.

PRELIMS BOOSTER BOX

- **Article 32:** Right to constitutional remedies.
- **Article 226:** Writ jurisdiction of High Courts.
- **Judicial Activism:** Proactive judicial intervention.
- **Judicial Overreach:** Excessive interference in other branches.
- **Locus Standi:** Right to bring a case before court.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding PIL:
 1. It relaxes the traditional rule of locus standi.
 2. It is linked to Articles 32 and 226.
 3. It can only be filed by affected individuals.

Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"Public Interest Litigation has transformed Indian democracy, but also raised concerns of judicial overreach."
Discuss.



PadhAI MAINS PRACTICE QUESTION

- Critically examine the role of Public Interest Litigation in India. Should PIL jurisdiction be reconsidered in light of concerns over misuse and judicial overreach? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Public Interest Litigation (PIL):

1. It relaxes the rule of locus standi.
2. It is aimed at promoting access to justice.
3. It completely eliminates separation of powers concerns.

Which of the statements given above is/are correct?

Options:

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

Answer: A

2. EC TO USE QR CODES FOR COUNTING CENTRE ACCESS

WHY IN NEWS?

- The Election Commission of India has decided to introduce **QR code-based access systems at counting centres** to strengthen security and streamline the vote-counting process.

BACKGROUND / CONTEXT

- I. **Counting Centres:**
 - A. Secure locations where votes are counted after elections.
- II. **Election Management Challenges:**
 - A. Large-scale logistics, crowd management, and security concerns.
- III. **Digital Governance Push:**
 - A. Increasing use of technology in electoral processes.

KEY FEATURES

- I. **QR Code-Based Entry:**
 - A. Authorised personnel receive digital passes with QR verification.
- II. **Enhanced Security:**
 - A. Prevents unauthorised access to counting centres.
- III. **Real-Time Verification:**
 - A. Faster identity authentication and monitoring.
- IV. **Efficient Crowd Management:**
 - A. Streamlines movement at sensitive locations.



OBJECTIVES

- Ensure **secure and transparent counting processes**.
- Reduce risks of **impersonation and unauthorised entry**.
- Promote **efficient election administration**.
- Strengthen **public confidence in electoral integrity**.

SIGNIFICANCE

- **Electoral Transparency:** Enhances trust in counting procedures.
- **Administrative Efficiency:** Faster and organised access management.
- **Technology Integration:** Supports digital transformation in governance.
- **Security Strengthening:** Minimises disruptions and risks.

CHALLENGES

- **Technical Glitches:** Dependence on digital systems.
- **Cybersecurity Risks:** Need to protect data and systems.
- **Training Requirements:** Officials must be trained in usage.
- **Connectivity Issues:** Digital systems may face operational hurdles.

PRELIMS BOOSTER BOX

- **Election Commission of India (ECI):** Constitutional body conducting elections.

- **QR Code:** Machine-readable digital code for verification.
- **Counting Centre:** Place where votes are counted.
- **Electoral Integrity:** Fairness and credibility of elections.
- **Digital Governance:** Use of technology in administration.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the Election Commission of India:
 1. It is a constitutional body.
 2. It conducts elections to Parliament and State Legislatures.
 3. It functions under the Ministry of Home Affairs.

Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"Technology can strengthen transparency and efficiency in elections."
Discuss in the context of electoral reforms in India.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of using QR code-based systems in election management.



- What challenges may arise in integrating technology into electoral processes? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding QR code-based access in elections:

1. It can improve security at counting centres.
2. It helps in efficient verification of authorised personnel.
3. It eliminates all cybersecurity concerns.

Which of the statements given above is/are correct?

Options:

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

Answer: A

3. MAKE RIGHT TO VOTE A FUNDAMENTAL RIGHT: CONGRESS

WHY IN NEWS?

- The Indian National Congress has demanded that the **right to vote** be made a **Fundamental Right**, reigniting debate on electoral rights and democratic participation in India.

BACKGROUND / CONTEXT

- I. **Constitutional Provision:**
 - A. Article 326 provides for elections based on adult suffrage.
- II. **Statutory Basis:**
 - A. Voting rights are governed by the Representation of the People Act 1951.
- III. **Current Legal Position:**
 - A. The Supreme Court has held that the right to vote is a **statutory right**, though aspects like informed voting relate to Fundamental Rights under Article 19(1)(a).

WHAT DOES THE DEMAND MEAN?

- The proposal seeks to elevate voting rights to the level of **Fundamental Rights enforceable under Article 32**.
- It would mean stronger constitutional protection against arbitrary restrictions.

ARGUMENTS IN FAVOUR

Strengthening Democracy

- Voting is central to representative democracy.

Enhanced Constitutional Protection

- Citizens could directly approach courts for violations.



Promoting Electoral Participation

- Encourages inclusion and voter confidence.

Alignment with Democratic Principles

- Recognises voting as intrinsic to political equality.

ARGUMENTS AGAINST

Administrative Complexity

- Elections involve extensive logistical and regulatory issues.

Existing Safeguards Already Present

- Universal adult suffrage is already constitutionally guaranteed.

Judicial Burden

- Could increase litigation related to elections.

4. Constitutional Structure Concerns

- Fundamental Rights traditionally protect civil liberties rather than procedural electoral rights.

SIGNIFICANCE

- **Democratic Deepening:** Strengthens citizen participation.
- **Electoral Accountability:** Greater scrutiny of electoral processes.

- **Rights-Based Governance:** Expands constitutional protections.
- **Political Debate:** Revives discussions on electoral reforms.

CHALLENGES

- **Constitutional Amendment Requirement:** Would require amendment under Article 368.
- **Balancing Regulation & Rights:** Elections need procedural controls.
- **Judicialisation of Elections:** Risk of excessive court intervention.
- **Consensus Building:** Political agreement may be difficult.

PRELIMS BOOSTER BOX

- **Article 326:** Elections based on adult suffrage.
- **Fundamental Rights:** Rights enforceable by courts.
- **Statutory Right:** Right created by legislation.
- **Article 32:** Right to constitutional remedies.
- **Representation of the People Act, 1951:** Governs elections in India.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the right to vote in India:
 1. It is explicitly listed as a Fundamental Right.
 2. It is governed by statutory law.



3. Universal adult suffrage is provided under Article 326. Which of the statements given above is/are correct?

Answer: 2 and 3 only.

• **Mains PYQ:**

“Free and fair elections are the foundation of democracy.”

Discuss the constitutional and legal framework governing electoral rights in India.

PadhAI MAINS PRACTICE

QUESTION

- Critically examine the proposal to make the right to vote a Fundamental Right in India.
- What could be its constitutional and democratic implications? (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding the right to vote in India:

1. It is currently a statutory right.
2. Article 326 provides for adult suffrage.
3. Citizens can directly enforce voting rights under Article 32 as a Fundamental Right.

Which of the statements given above is/are correct?

Options:

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

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

Answer: A

4. SC: LIFT ABORTION LIMIT FOR MINOR RAPE VICTIMS

WHY IN NEWS?

- The Supreme Court of India has observed the need to reconsider or relax the legal abortion time limit in cases involving **minor rape survivors**, highlighting concerns of bodily autonomy, trauma, and access to reproductive healthcare.

BACKGROUND / CONTEXT

- I. **Medical Termination of Pregnancy (MTP) Act, 1971:**
 - A. Governs legal abortion in India.
- II. **2021 Amendment:**
 - A. Increased upper gestation limit from 20 to 24 weeks for specific categories including rape survivors and minors.
- III. **Beyond 24 Weeks:**
 - A. Abortion permitted only in cases of substantial foetal abnormalities through medical boards.



KEY ISSUES INVOLVED

Delay in Reporting

- Minor rape survivors often report pregnancies late due to trauma, stigma, or lack of awareness.

Bodily Autonomy & Reproductive Rights

- Courts increasingly recognise reproductive choice under Article 21.

Mental and Physical Health

- Forced continuation of pregnancy may worsen trauma and health risks.

Medical and Ethical Concerns

- Late-term abortions involve greater medical complexity and ethical debate.

ARGUMENTS FOR RELAXING THE LIMIT

- **Protection of Minor Survivors:** Prevents additional psychological suffering.
- **Right to Dignity & Privacy:** Linked to constitutional rights under Article 21.
- **Practical Realities:** Many cases come to light after statutory limits.
- **Victim-Centric Justice:** Focus on welfare and rehabilitation of survivors.

ARGUMENTS AGAINST RELAXATION

- **Medical Risks:** Late-term abortions can endanger the mother's health.
- **Foetal Viability Concerns:** Ethical questions regarding advanced pregnancies.
- **Need for Regulatory Safeguards:** Prevent misuse of provisions.

SIGNIFICANCE

- **Women's Rights:** Strengthens reproductive autonomy.
- **Child Protection:** Addresses vulnerabilities of minor survivors.
- **Judicial Activism:** Expands interpretation of dignity and privacy.
- **Healthcare Access:** Highlights need for timely reproductive services.

CHALLENGES

- **Limited Medical Infrastructure:** Shortage of specialised healthcare facilities.
- **Delay in Judicial Processes:** Court approvals may take time.
- **Social Stigma:** Discourages reporting and medical consultation.
- **Variation in Medical Board Decisions:** Lack of uniform standards.



PRELIMS BOOSTER BOX

- **MTP Act, 1971:** Law regulating abortion in India.
- **Gestational Limit:** Maximum pregnancy duration for legal abortion.
- **Article 21:** Right to life and personal liberty.
- **Reproductive Rights:** Rights related to reproductive healthcare and choices.
- **Foetal Viability:** Ability of foetus to survive outside the womb.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding the MTP Act:

1. The 2021 amendment increased the abortion limit for certain categories to 24 weeks.
2. Minor rape survivors are included among eligible categories.
3. Abortions beyond 24 weeks are freely permitted in all cases.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

“Reproductive rights are an integral part of personal liberty.”

Discuss in the context of abortion laws and judicial interpretation in India.

PadhAI MAINS PRACTICE

QUESTION

- Examine the legal and ethical issues surrounding abortion limits for minor rape survivors in India.
- Should the gestational limit under the MTP Act be further relaxed? (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding abortion laws in India:

1. The MTP Act regulates medical termination of pregnancy.
2. The 2021 amendment extended the abortion limit to 24 weeks for certain categories.
3. Abortions beyond 24 weeks are automatically permitted in all situations.

Which of the statements given above is/are correct?

Options:

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

Answer: A



5. HOW 'BULLDOZER JUSTICE' UNDERMINES THE LAW

WHY IN NEWS?

- Recent incidents of demolition drives against properties of accused persons have reignited debate over **"bulldozer justice"**, with concerns that such actions bypass due process and undermine the rule of law in India.

BACKGROUND / CONTEXT

- I. **Demolition Drives:**
 - A. Authorities have used municipal and administrative laws to demolish allegedly illegal structures.
- II. **Judicial Concerns:**
 - A. The Supreme Court of India has emphasised that punishment cannot precede conviction.
- III. **Constitutional Framework:**
 - A. Rule of law and equality before law are basic constitutional principles.

WHAT IS "BULLDOZER JUSTICE"?

- Use of demolition as a form of **instant punitive action**.
- Often linked to criminal allegations or public unrest.
- Seen as a symbolic assertion of state authority.

HOW IT UNDERMINES THE LAW

Violation of Due Process

- Punitive action taken without proper judicial adjudication.
- Contradicts principles of natural justice.

Erosion of Rule of Law

- Executive agencies appear to act as judge and punisher.
- Weakens institutional separation of powers.

Presumption of Innocence Ignored

- Individuals treated as guilty before trial and conviction.

Selective Enforcement Concerns

- Allegations of targeting specific groups or communities.

Threat to Property Rights

- Article 300A protects property from arbitrary deprivation.

CONSTITUTIONAL & LEGAL DIMENSIONS

- **Article 14:** Equality before law.
- **Article 21:** Protection of life and personal liberty.



- **Article 300A:** No person shall be deprived of property except by authority of law.
- **Natural Justice:** Fair hearing and due process.

ARGUMENTS SUPPORTING SUCH ACTIONS

- **Strong Deterrence:** Seen as quick action against crime.
- **Removal of Illegal Structures:** Authorities cite municipal violations.
- **Public Perception:** Project image of strict governance.

CRITICISMS

- **Extra-Judicial Punishment:** Punishment without conviction.
- **Potential Abuse of Power:** Risk of arbitrary state action.
- **Undermining Judiciary:** Weakens trust in legal processes.
- **Human Rights Concerns:** Impacts families and vulnerable persons.

SIGNIFICANCE

- **Democratic Governance:** Rule of law is foundational to democracy.
- **Civil Liberties:** Protects citizens against arbitrary action.
- **Institutional Balance:** Reinforces role of the judiciary.
- **Constitutional Morality:** State action must remain within legal boundaries.

CHALLENGES

- **Balancing Law Enforcement & Rights:** Need effective governance without violating liberties.
- **Administrative Accountability:** Ensuring legality of demolitions.
- **Political Polarisation:** Issue often linked to identity politics.
- **Judicial Delays:** Public frustration with the slow justice system.

PRELIMS BOOSTER BOX

- **Rule of Law:** Governance based on law, not arbitrariness.
- **Natural Justice:** Principles of fairness in legal processes.
- **Article 14:** Equality before law.
- **Article 21:** Right to life and liberty.
- **Article 300A:** Right to property as legal right.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements:
 1. Article 300A protects individuals from arbitrary deprivation of property.
 2. Rule of law requires due process before punishment.
 3. Executive authorities can impose punishment without judicial process.Which of the statements given above is/are correct?
Answer: 1 and 2 only.



- **Mains PYQ:**

"The rule of law is the foundation of constitutional democracy."

Discuss in the context of executive actions and due process in India.

PadhAI MAINS PRACTICE QUESTION

- Critically examine the concept of "bulldozer justice."
- How does it raise concerns regarding rule of law, due process, and constitutional governance in India? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding "bulldozer justice":

1. It refers to punitive demolitions linked to accused individuals.
2. It raises concerns regarding due process and presumption of innocence.
3. Article 300A is irrelevant to demolition-related disputes.

Which of the statements given above is/are correct?

Options:

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

Answer: A

6. CJI'S ROLE IN EC APPOINTMENTS TEMPORARY: SC

WHY IN NEWS?

- The Supreme Court of India observed that the inclusion of the **Chief Justice of India (CJI)** in the appointment committee for Election Commissioners was intended as a **temporary arrangement** until Parliament enacted a law on the matter.

BACKGROUND / CONTEXT

- I. **Constitutional Provision:**
 - A. Article 324 vests superintendence of elections in the Election Commission of India (ECI).
- II. **Constitutional Gap:**
 - A. The Constitution left the appointment procedure to be determined by Parliament.
- III. **2023 Supreme Court Judgment:**
 - A. In the absence of a law, the Court directed appointments through a committee consisting of:
 1. Prime Minister
 2. Leader of Opposition
 3. Chief Justice of India
- IV. **Subsequent Legislation:**
 - A. Parliament enacted the Chief Election Commissioner and Other Election Commissioners (Appointment Conditions of Service and Term of Office) Act



2023 replacing the CJI with a Union Cabinet Minister.

KEY ISSUE

- Whether judicial participation in appointments is necessary for ensuring independence of the Election Commission.

ARGUMENTS FOR INCLUDING THE CJI

Institutional Independence

- Reduces executive dominance in appointments.

Checks and Balances

- Enhances neutrality and credibility of ECI.

Public Confidence

- Judicial presence increases trust in electoral processes.

ARGUMENTS AGAINST INCLUDING THE CJI

Separation of Powers

- The judiciary should not participate in executive appointments.

Temporary Judicial Innovation

- The Court itself described the arrangement as interim until Parliament legislates.

Parliamentary Supremacy in Law-Making

- The Constitution explicitly leaves procedure to Parliament.

SIGNIFICANCE

- **Electoral Integrity:** Appointment process impacts independence of ECI.
- **Constitutional Governance:** Reflects balance between judiciary, executive, and legislature.
- **Democratic Accountability:** Free and fair elections are part of basic structure.
- **Judicial Restraint:** Highlights temporary nature of court-created mechanisms.

CHALLENGES

- **Perception of Executive Dominance:** Concerns over neutrality of appointments.
- **Need for Consensus-Based Selection:** Avoiding politicisation.
- **Institutional Independence:** Ensuring autonomy of constitutional bodies.
- **Judicial vs Legislative Roles:** Debate over constitutional boundaries.



PRELIMS BOOSTER BOX

- **Article 324:** Deals with Election Commission of India.
- **CEC:** Chief Election Commissioner.
- **Election Commission:** Conducts free and fair elections.
- **Separation of Powers:** Division among organs of government.
- **Basic Structure Doctrine:** Core constitutional principles beyond amendment.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the Election Commission of India:
 1. Article 324 deals with the Election Commission.
 2. Parliament can regulate appointment conditions of Election Commissioners.
 3. The Constitution explicitly mandates inclusion of the CJI in EC appointments.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.
- **Mains PYQ:**
"The independence of constitutional bodies is essential for democratic governance."
Discuss in the context of the Election Commission of India.

PadhAI MAINS PRACTICE QUESTION

- Examine the constitutional and institutional issues surrounding the appointment of Election Commissioners in India.
- Should judicial participation be part of the selection process? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding appointment of Election Commissioners:

1. Article 324 empowers Parliament to regulate appointment procedures.
2. The Supreme Court's inclusion of the CJI in the selection committee was described as temporary.
3. The Constitution permanently mandates judicial participation in EC appointments.

Which of the statements given above is/are correct?

Options:

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

Answer: A



7. SC QUESTIONS DEBATE ON CEC, EC APPOINTMENT LAW

WHY IN NEWS?

- The Supreme Court of India questioned the ongoing debate surrounding the law governing the appointment of the **Chief Election Commissioner (CEC)** and Election Commissioners (ECs), while hearing petitions challenging the appointment framework enacted by Parliament.

BACKGROUND / CONTEXT

- I. **Article 324:**
 - A. Vests superintendence, direction, and control of elections in the Election Commission of India (ECI).
- II. **2023 Supreme Court Judgment:**
 - A. Directed interim appointments through a committee comprising:
 1. Prime Minister
 2. Leader of Opposition
 3. Chief Justice of India (CJI)
- III. **Subsequent Legislation:**
 - A. Parliament enacted the Chief Election Commissioner and Other Election Commissioners (Appointment Conditions of Service and Term of Office) Act 2023.
 - B. Replaced the CJI with a Union Cabinet Minister in the selection committee.

KEY FEATURES OF THE LAW

- I. **Selection Committee Composition:**
 - A. Prime Minister
 - B. Leader of Opposition in Lok Sabha
 - C. Union Cabinet Minister nominated by PM
- II. **Search Committee:**
 - A. Prepares a panel of eligible candidates.
- III. **Service Conditions:**
 - A. Defines tenure and conditions for CEC and ECs.

KEY ISSUES BEFORE THE COURT

Independence of the Election Commission

- Whether executive dominance affects institutional neutrality.

Free and Fair Elections

- The Election Commission's independence is linked to democratic integrity.

Judicial vs Legislative Domain

- Parliament has constitutional authority to legislate under Article 324.

Checks and Balances

- Debate on whether inclusion of judiciary is necessary.



ARGUMENTS AGAINST THE LAW

- I. **Executive Dominance:**
 - A. Two out of three committee members belong to the executive side.
- II. **Threat to Institutional Independence:**
 - A. May weaken the autonomy of ECI.
- III. **Departure from Judicial Safeguards:**
 - A. Removal of CJI seen as dilution of neutrality.

ARGUMENTS SUPPORTING THE LAW

- I. **Parliamentary Authority:**
 - A. The Constitution empowers Parliament to regulate appointments.
- II. **Separation of Powers:**
 - A. Judiciary should not be involved in executive appointments.
- III. **Democratic Accountability:**
 - A. Elected executive accountable to Parliament and people.

SIGNIFICANCE

- **Electoral Integrity:** Appointment process affects trust in elections.
- **Constitutional Governance:** Tests balance among institutions.
- **Democratic Legitimacy:** Independent ECI essential for free and fair polls.
- **Judicial Review:** Reinforces constitutional accountability.

CHALLENGES

- **Politicisation of Appointments:** Concerns over impartiality.
- **Institutional Trust Deficit:** Public perception issues.
- **Balancing Independence & Accountability:** Need for credible mechanism.
- **Constitutional Ambiguity:** Article 324 leaves scope for interpretation.

PRELIMS BOOSTER BOX

- **Article 324:** Deals with Election Commission.
- **CEC:** Chief Election Commissioner.
- **ECI:** Constitutional body conducting elections.
- **Judicial Review:** Power of courts to examine constitutionality.
- **Separation of Powers:** Division among branches of government.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding the Election Commission of India:

 1. Article 324 deals with the Election Commission.
 2. Parliament can legislate on appointment conditions of Election Commissioners.
 3. The Constitution mandates inclusion of the judiciary in the appointment committee.



Which of the statements given above is/are correct?

Answer: 1 and 2 only.

• **Mains PYQ:**

“The credibility of elections depends upon the independence of the Election Commission.”

Discuss in the context of appointment mechanisms in India.

PadhAI MAINS PRACTICE QUESTION

- Critically examine the constitutional issues surrounding the appointment of the Chief Election Commissioner and Election Commissioners in India.
- How can institutional independence be balanced with democratic accountability? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding appointment of Election Commissioners in India:

1. Article 324 empowers Parliament to regulate appointment procedures.
2. The current law includes the Chief Justice of India in the selection committee.
3. Institutional independence of the Election Commission is linked to free and fair elections.

Which of the statements given above is/are correct?

Options:

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

Answer: A

8. CJI WARNS OF JUDICIARY 'ATTACKS' BY 'PARASITES'

WHY IN NEWS?

- Justice B. R. Gavai cautioned against increasing attacks on the judiciary by what he described as “parasites,” highlighting concerns over attempts to weaken judicial independence and public trust in constitutional institutions.

BACKGROUND / CONTEXT

- I. **Judiciary in India:**
 - A. Independent pillar of democracy under the Constitution.
- II. **Judicial Independence:**
 - A. Considered part of the **basic structure doctrine**.
- III. **Growing Public Scrutiny:**
 - A. Courts increasingly face criticism through media, politics, and social platforms.



KEY ISSUES HIGHLIGHTED

Threats to Judicial Independence

- Attempts to influence or delegitimize courts can weaken constitutional balance.

Misinformation & Public Perception

- Misleading narratives may erode trust in judicial institutions.

Institutional Credibility

- The judiciary relies heavily on public confidence for legitimacy.

Need for Accountability vs Respect

- Criticism is valid in democracy, but attacks aimed at intimidation raise concerns.

CONSTITUTIONAL DIMENSIONS

- I. **Separation of Powers:**
 - A. Judiciary acts independently from executive and legislature.
- II. **Article 50:**
 - A. Separation of judiciary from executive in public services.
- III. **Contempt of Court:**
 - A. Protects authority and dignity of courts.
- IV. **Basic Structure Doctrine:**
 - A. Judicial independence cannot be undermined through constitutional changes.

SIGNIFICANCE OF JUDICIAL INDEPENDENCE

- **Rule of Law:** Ensures laws apply equally.
- **Protection of Fundamental Rights:** Judiciary safeguards constitutional liberties.
- **Checks and Balances:** Prevents concentration of power.
- **Democratic Stability:** Independent courts maintain constitutional order.

CHALLENGES FACED BY THE JUDICIARY

- **Politicisation of Judgments:** Judicial decisions viewed through a political lens.
- **Social Media Pressure:** Rapid spread of misinformation and criticism.
- **Case Pendency:** Delays affect public trust.
- **Balancing Transparency & Authority:** Courts must remain accountable without losing institutional dignity.

ARGUMENTS ON CRITICISM OF JUDICIARY

Legitimate Criticism

- Essential in democracy for transparency and accountability.
- Academic and public scrutiny improve institutional functioning.

Harmful Attacks



- Personalised or motivated campaigns may intimidate judges.
- Risks undermining confidence in justice delivery.

PRELIMS BOOSTER BOX

- **Judicial Independence:** Freedom from external influence.
- **Basic Structure Doctrine:** Core constitutional principles beyond amendment.
- **Contempt of Court:** Offence against authority of courts.
- **Rule of Law:** Governance through law, not arbitrariness.
- **Article 50:** Separation of judiciary from executive.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding judicial independence:
 1. It is part of the basic structure of the Constitution.
 2. Separation of powers supports judicial independence.
 3. Courts are completely immune from public criticism.*Which of the statements given above is/are correct?*
Answer: 1 and 2 only.
- **Mains PYQ:**
"Judicial independence is essential for constitutional democracy."
Discuss the challenges faced by the

judiciary in maintaining institutional autonomy and public confidence.

PadhAI MAINS PRACTICE QUESTION

- Examine the importance of judicial independence in India.
- How can democratic accountability and institutional dignity of the judiciary be balanced? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding judicial independence in India:

1. It forms part of the basic structure doctrine.
2. Separation of powers helps maintain judicial autonomy.
3. Any criticism of the judiciary automatically amounts to contempt of court.

Which of the statements given above is/are correct?

Options:

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

Answer: A



9. WHAT IS THE GOVERNOR'S ROLE IN A HUNG ASSEMBLY?

WHY IN NEWS?

- Recent political developments in various states have revived debate over the constitutional role of the **Governor** in situations where no political party secures a clear majority in the Legislative Assembly, resulting in a **hung Assembly**.

WHAT IS A HUNG ASSEMBLY?

- Situation where no single party or alliance crosses the majority mark in the Legislative Assembly.
- Leads to uncertainty regarding government formation.

CONSTITUTIONAL FRAMEWORK

- I. **Article 163:**
 - A. The Governor acts on aid and advice of the Council of Ministers except in discretionary matters.
- II. **Article 164:**
 - A. Chief Minister appointed by the Governor.
- III. **No Explicit Constitutional Procedure:**
 - A. The Constitution does not clearly prescribe order of preference in a hung Assembly.

GOVERNOR'S ROLE IN A HUNG ASSEMBLY

Inviting a Party/Coalition to Form Government

The Governor may invite:

- Pre-poll alliance with majority
- Single largest party with support
- Post-poll coalition commanding majority

Ensuring Majority Support

- Governors may require the Chief Minister to prove majority through a **floor test** in the Assembly.

Appointment of Chief Minister

- The governor appoints the leader most likely to command confidence in the House.

Avoiding Constitutional Breakdown

- Ensures continuity of governance while respecting democratic principles.

JUDICIAL PRINCIPLES & COMMISSION RECOMMENDATIONS

S. R. Bommai Case

- The floor test is the proper method to determine the majority.



Sarkaria Commission Recommendations

Preferred order for government formation:

1. Pre-poll alliance with majority
2. Single largest party with support
3. Post-electoral coalition with majority
4. Post-electoral alliance where partners join government

Punchhi Commission

- Emphasised neutrality and transparency in gubernatorial decisions.

KEY ISSUES & CONTROVERSIES

Discretion vs Neutrality

- Allegations of partisan conduct by Governors.

Delay in Floor Tests

- Can encourage defections and instability.

Inviting Single Largest Party vs Coalition

- Debate over legitimacy and democratic morality.

Judicial Intervention

- Courts frequently intervene during political crises.

SIGNIFICANCE

- **Federal Stability:** Governor acts as constitutional link between Centre and State.
- **Democratic Legitimacy:** Ensures elected representatives determine government.
- **Constitutional Governance:** Prevents arbitrary use of power.
- **Political Stability:** Facilitates orderly transition of power.

CHALLENGES

- **Politicisation of Governor's Office:** Questions over impartiality.
- **Horse-Trading & Defections:** Political instability in hung Assemblies.
- **Constitutional Ambiguity:** Lack of detailed guidelines.
- **Frequent Litigation:** Judicial scrutiny delays governance.

PRELIMS BOOSTER BOX

- **Hung Assembly:** No party gets majority.
- **Floor Test:** Vote in Assembly to prove majority.
- **Article 163:** Governor's discretionary powers.
- **Article 164:** Appointment of Chief Minister.
- **Collective Responsibility:** Council accountable to Assembly.



PadhAI PYQ BOOSTER

SECTION

- **Prelims PYQ:**

Consider the following statements regarding the Governor.

1. The Governor appoints the Chief Minister.
2. Floor tests determine majority support in the Assembly.
3. The Constitution clearly specifies the order of preference in a hung Assembly.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"The Governor's discretionary powers in government formation often generate constitutional controversy."

Discuss with reference to hung Assemblies in India.

1. It occurs when no party secures a majority in the Legislative Assembly.
2. A floor test is used to determine majority support.
3. The Constitution explicitly prescribes a fixed order for inviting parties to form government.

Which of the statements given above is/are correct?

Options:

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

Answer: A

PadhAI MAINS PRACTICE

QUESTION

- Explain the constitutional role of the Governor in a hung Assembly.
- Discuss the challenges associated with the exercise of gubernatorial discretion in government formation. (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding a hung Assembly.



Subject

International Relations



1. INDIA–BANGLADESH TIES: COMMITMENT FIRM

WHY IN NEWS?

- India and Bangladesh have reiterated their commitment to strengthening bilateral relations amid ongoing cooperation in connectivity, trade, security, and regional development.

BACKGROUND / CONTEXT

- I. **Historical Linkages:**
 - A. India supported Bangladesh's liberation during the Bangladesh Liberation War.
- II. **Neighbourhood First Policy:**
 - A. Bangladesh is central to India's regional diplomacy.
- III. **Act East Policy:**
 - A. Bangladesh serves as a gateway to Northeast India and Southeast Asia.

KEY AREAS OF COOPERATION

Connectivity

- Rail, road, inland waterways, and port connectivity projects.
- Revival of pre-1965 rail links.

Trade & Economy

- Bangladesh is among India's largest trading partners in South Asia.

- Cooperation in textiles, energy, and digital economy.

Energy Cooperation

- Cross-border electricity trade and pipeline projects.
- Collaboration in power generation and grid connectivity.

Security Cooperation

- Counter-terrorism and anti-smuggling coordination.
- Border management cooperation.

Water Sharing

- Discussions on transboundary rivers including Teesta.

STRATEGIC SIGNIFICANCE

- **Regional Stability:** Strong ties important for South Asian cooperation.
- **Northeast Connectivity:** Bangladesh improves access to India's Northeast.
- **Maritime Importance:** Bay of Bengal cooperation and Indo-Pacific relevance.
- **Countering External Influence:** Strategic balancing in the region.

CHALLENGES IN RELATIONS

- **Teesta Water Sharing Issue:** Pending agreement remains sensitive.
- **Border Management:** Illegal migration and smuggling concerns.



- **Trade Imbalance:** Bangladesh seeks greater market access.
- **Political Sensitivities:** Domestic politics occasionally affect ties.

SIGNIFICANCE

- **Neighbourhood Diplomacy:** Key pillar of India's foreign policy.
- **Economic Integration:** Enhances regional connectivity and trade.
- **Security Cooperation:** Supports counter-terrorism and stability.
- **Cultural Ties:** Shared linguistic and historical heritage strengthens people-to-people relations.

PRELIMS BOOSTER BOX

- **Neighbourhood First Policy:** India's focus on neighbouring countries.
- **Act East Policy:** Enhancing engagement with Southeast Asia.
- **Teesta River:** Transboundary river between India and Bangladesh.
- **Bay of Bengal:** Strategic maritime region.
- **BBIN Initiative:** Bangladesh-Bhutan-India-Nepal connectivity framework.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding India-Bangladesh relations:
 1. Bangladesh shares a border with India's Northeast region.

2. The Teesta River issue relates to water sharing.
3. Bangladesh is geographically unrelated to India's Act East Policy.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
"India's relations with Bangladesh are crucial for regional connectivity and security."
Discuss the opportunities and challenges in bilateral relations.

PadhAI MAINS PRACTICE QUESTION

- Examine the strategic significance of India-Bangladesh relations in South Asia.
- What are the major challenges affecting bilateral ties? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding India-Bangladesh relations:

1. Bangladesh is important for connectivity to India's Northeast.
2. Energy cooperation is a component of bilateral relations.
3. The Teesta issue concerns maritime boundary disputes.

Which of the statements given above is/are correct?



Options:

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

Answer: A

2. NEPAL RAISES LIPULEKH ISSUE; INDIA COUNTERS

WHY IN NEWS?

- Nepal recently reiterated its claim over the Lipulekh region, while India responded by asserting that the area falls within Indian territory, reviving the long-standing border dispute.

BACKGROUND / CONTEXT

- I. **Location:**
 - A. Lipulekh Pass lies near the tri-junction of India, Nepal, and China (Tibet).
- II. **Strategic Importance:**
 - A. Important for trade, border security, and pilgrimage routes to Kailash Mansarovar.
- III. **Historical Basis of Dispute:**
 - A. Origin linked to differing interpretations of the Kali River source under the Treaty of Sugauli (1816).

WHAT IS THE DISPUTE?

Nepal's Position

- Claims Limpiyadhura, Kalapani, and Lipulekh areas as part of Nepal.
- Argues that the Kali River originates at Limpiyadhura.
- Published revised political map in 2020 including disputed areas.

India's Position

- States that the region falls within Uttarakhand and has been under Indian administrative control.
- Maintains that boundary alignment is based on established historical and administrative practices.

STRATEGIC SIGNIFICANCE OF LIPULEKH

Connectivity & Trade

- Pass serves as a route for India–Tibet trade.

Kailash Mansarovar Yatra

- Important pilgrimage route for Indian pilgrims.

Border Security

- The region has strategic military significance near China.



Geopolitical Importance

- Sensitive due to India–China–Nepal dynamics.

KEY ISSUES INVOLVED

- **Boundary Demarcation Ambiguity:** Colonial-era treaty interpretation differences.
- **Nationalism & Domestic Politics:** Border issues influence domestic political narratives.
- **China Factor:** Regional strategic competition affects sensitivities.
- **Diplomatic Balancing:** Nepal balances ties with India and China.

INDIA–NEPAL RELATIONS: BROADER CONTEXT

- Open borders and deep people-to-people ties.
- Economic, cultural, and religious connections.
- Cooperation in hydropower, trade, and connectivity.

SIGNIFICANCE

- **Regional Stability:** Border disputes affect South Asian diplomacy.
- **Strategic Security:** Important in Himalayan geopolitics.
- **Neighbourhood First Policy:** Nepal central to India's regional outreach.
- **Bilateral Trust:** Peaceful resolution important for long-term cooperation.

CHALLENGES

- **Historical Ambiguities:** Lack of mutually accepted interpretation.
- **Political Sensitivities:** National identity concerns in Nepal.
- **External Geopolitics:** China's presence influences regional dynamics.
- **Diplomatic Management:** Need to avoid escalation.

PRELIMS BOOSTER BOX

- **Lipulekh Pass:** Himalayan pass near India–Nepal–China tri-junction.
- **Kalapani Dispute:** Territorial dispute between India and Nepal.
- **Treaty of Sugauli (1816):** Defined boundaries after Anglo–Nepalese War.
- **Kailash Mansarovar Yatra:** Pilgrimage route through Lipulekh.
- **Neighbourhood First Policy:** India's policy toward neighbours.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the India–Nepal border dispute:
 1. Lipulekh lies near the India–Nepal–China tri-junction.
 2. The dispute is linked to the interpretation of the Treaty of Sugauli.
 3. The issue concerns maritime boundaries in the Indian Ocean.Which of the statements given



above is/are correct?

Answer: 1 and 2 only.

• **Mains PYQ:**

“India–Nepal relations are shaped by geography, history, and strategic interests.”

Discuss with reference to contemporary border disputes.

PadhAI MAINS PRACTICE

QUESTION

- Examine the origins and strategic significance of the Lipulekh–Kalapani dispute between India and Nepal.
- How can the two countries manage such disputes while preserving bilateral cooperation? (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding the Lipulekh dispute:

1. It involves differing interpretations of the Treaty of Sugauli.
2. Lipulekh Pass is strategically important for the Kailash Mansarovar Yatra.
3. The dispute is between India and Bhutan.

Which of the statements given above is/are correct?

Options:

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

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

3. GOVT. ON MAJOR DIPLOMATIC OUTREACH IN MAY

WHY IN NEWS?

- India undertook extensive diplomatic engagements in May, focusing on strengthening bilateral partnerships, regional cooperation, and India’s strategic position in global affairs.

BACKGROUND / CONTEXT

- I. India’s foreign policy increasingly focuses on:
 - A. Regional integration
 - B. Strategic partnerships
 - C. Supply chain resilience
 - D. Energy security
 - E. Geopolitical balancing
- II. Diplomatic outreach aligns with India’s aspiration to play a larger global role.

KEY FEATURES OF THE DIPLOMATIC OUTREACH

Neighbourhood Engagement

- Enhanced engagement with neighbouring countries in South Asia.
- Focus on connectivity, trade, and developmental cooperation.



Strategic Partnerships

- Strengthening ties with major powers and Indo-Pacific partners.
- Cooperation in defence, technology, and critical infrastructure.

Global South Leadership

- Continued emphasis on representing concerns of developing countries.
- Focus on climate finance, debt concerns, and equitable development.

Economic Diplomacy

- Promotion of trade, investment, and supply-chain partnerships.
- Push for technology and manufacturing collaboration.

Multilateral Cooperation

- Active participation in global and regional forums.
- Support for reform of global governance institutions.

KEY OBJECTIVES

- Strengthen India's strategic and economic partnerships.
- Enhance regional stability and connectivity.
- Expand India's influence in global governance.
- Secure energy, trade, and technological interests.

SIGNIFICANCE

- **Strategic Positioning:** Enhances India's global diplomatic profile.
- **Regional Stability:** Reinforces leadership role in South Asia.
- **Economic Growth:** Expands trade and investment opportunities.
- **Geopolitical Balancing:** Helps navigate evolving global power dynamics.

CHALLENGES

- **Regional Geopolitical Competition:** Increasing influence of major powers in South Asia.
- **Border & Security Issues:** Ongoing regional tensions.
- **Economic Uncertainty:** Global slowdown and supply chain disruptions.
- **Balancing Multiple Partnerships:** Managing ties among competing powers.

PRELIMS BOOSTER BOX

- **Neighbourhood First Policy:** Priority to India's neighbours.
- **Act East Policy:** Engagement with Southeast Asia and Indo-Pacific.
- **Global South:** Developing and emerging economies.
- **Economic Diplomacy:** Use of economic tools in foreign policy.
- **Multilateralism:** Cooperation through international institutions.



PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding India's foreign policy:

1. The Neighbourhood First Policy prioritises relations with neighbouring countries.
2. Act East Policy focuses on engagement with Southeast Asia.
3. Economic diplomacy excludes trade and investment cooperation.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"India's foreign policy increasingly reflects the interplay of strategic, economic, and regional priorities."

Discuss in the context of India's recent diplomatic outreach.

PadhAI MAINS PRACTICE QUESTION

- Examine the objectives and significance of India's recent diplomatic outreach initiatives.
- How do they reflect India's evolving foreign policy priorities? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding India's diplomatic outreach:

1. Economic diplomacy includes trade and investment partnerships.
2. The Act East Policy focuses on engagement with Southeast Asia.
3. Multilateralism refers to bilateral negotiations only.

Which of the statements given above is/are correct?

Options:

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

Answer: A

4. 8 MoUs SIGNED IN JAISHANKAR'S TRINIDAD VISIT

WHY IN NEWS?

- S. Jaishankar visited Trinidad and Tobago, during which eight Memorandums of Understanding (MoUs) were signed to strengthen bilateral cooperation.



BACKGROUND / CONTEXT

- I. **Historical Linkages:**
 - A. Strong Indian diaspora presence in Trinidad & Tobago dating back to indentured labour migration during colonial rule.
- II. **India-CARICOM Relations:**
 - A. India has been strengthening engagement with Caribbean countries through trade, development assistance, and capacity building.
- III. **Global South Outreach:**
 - A. India emphasises cooperation with developing countries in areas like healthcare, digital public infrastructure, and climate resilience.

KEY AREAS OF COOPERATION UNDER MoUs

Digital & Technological Cooperation

- Collaboration in digital governance and public service delivery.

Healthcare & Pharmaceuticals

- Cooperation in medical supplies, pharmaceuticals, and healthcare systems.

Education & Capacity Building

- Academic exchanges, scholarships, and skill development initiatives.

Culture & People-to-People Ties

- Promotion of cultural exchanges reflecting shared heritage.

Development Partnership

- India's assistance in infrastructure and developmental projects.

SIGNIFICANCE OF THE VISIT

Strengthening Diaspora Diplomacy

- Indian-origin population forms a significant part of Trinidad & Tobago society.

Expanding India's Caribbean Outreach

- Reinforces India's presence in the Caribbean region.

Global South Cooperation

- Supports India's vision of inclusive and equitable global development.

Economic & Strategic Engagement

- Opens opportunities in trade, technology, and investment.

CHALLENGES

- **Geographical Distance:** Limits economic integration.
- **Trade Volume Constraints:** Bilateral trade remains modest.



- **Competition from Major Powers:**
Strategic influence in the Caribbean region.
- **Implementation of Agreements:**
Ensuring effective follow-up of MoUs.

SIGNIFICANCE FOR INDIA'S FOREIGN POLICY

- I. Reflects emphasis on:
 - A. South-South Cooperation
 - B. Diaspora engagement
 - C. Development diplomacy
 - D. Strategic diversification of partnerships

PRELIMS BOOSTER BOX

- **CARICOM:** Caribbean Community regional grouping.
- **Diaspora Diplomacy:** Engagement with overseas Indian communities.
- **MoU:** Memorandum of Understanding.
- **Global South:** Developing and emerging economies.
- **Development Partnership:** Cooperation through aid, infrastructure, and capacity building.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding India's engagement with the Caribbean region:

1. Trinidad & Tobago has a significant Indian-origin population.
 2. CARICOM is a regional grouping in the Caribbean.
 3. India's outreach to the Caribbean is unrelated to Global South cooperation.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
"Diaspora and development partnerships are important pillars of India's foreign policy."
Discuss with reference to India's engagement with the Caribbean region.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of India's diplomatic engagement with Trinidad & Tobago and the Caribbean region.
- How does it reflect India's broader foreign policy priorities? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding India-Trinidad & Tobago relations:

1. The relationship is strengthened by a large Indian diaspora.
2. CARICOM is a regional organisation in the Caribbean.



3. India's Caribbean outreach focuses only on military cooperation.

- B. Increasingly addresses geopolitical and developmental issues.

Which of the statements given above is/are correct?

Options:

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

Answer: A

5. INDIA SUPPORTS TWO-STATE SOLUTION AT BRICS

WHY IN NEWS?

- India reiterated its support for a **Two-State Solution** to the Israel–Palestine conflict during discussions at the BRICS forum.

BACKGROUND / CONTEXT

- I. **Two-State Solution:**
 - A. Proposal for creation of an independent Palestinian state alongside Israel.
- II. **India's Traditional Position:**
 - A. Supports peaceful resolution through dialogue and diplomacy.
 - B. Balances ties with both Israel and Palestine.
- III. **BRICS Platform:**
 - A. Forum comprising Brazil, Russia, India, China, and South Africa.

WHAT IS THE TWO-STATE SOLUTION?

- I. Envisions:
 - A. Independent State of Palestine
 - B. Secure State of Israel
 - C. Peaceful coexistence based on negotiated borders.
- II. Often linked to pre-1967 boundaries with mutually agreed adjustments.

INDIA'S POSITION

Support for Palestine

- India historically supported Palestinian self-determination.

Strong Ties with Israel

- Simultaneously expanded cooperation with Israel in defence, agriculture, and technology.

Balanced Diplomacy

- Advocates dialogue, restraint, and peaceful negotiations.



SIGNIFICANCE OF INDIA'S STAND

Strategic Balancing

- Maintains relations with both Israel and Arab countries.

West Asia Stability

- Regional peace is important for energy security and diaspora interests.

Global South Diplomacy

- Reflects support for sovereignty and decolonisation principles.

Multilateral Engagement

- BRICS is increasingly becoming a platform for geopolitical coordination.

CHALLENGES TO TWO-STATE SOLUTION

- Continued violence and mistrust.
- Settlement expansion and territorial disputes.
- Political divisions within Palestinian leadership.
- Security concerns of Israel.

SIGNIFICANCE FOR INDIA

- **Energy Security:** West Asia critical for oil imports.
- **Diaspora Protection:** Large Indian workforce in the Gulf region.

- **Geopolitical Interests:** Stable West Asia supports trade and connectivity.
- **Diplomatic Credibility:** Reinforces India's image as a balanced global actor.

PRELIMS BOOSTER BOX

- **Two-State Solution:** Independent Palestine alongside Israel.
- **BRICS:** Brazil, Russia, India, China, South Africa.
- **West Asia:** Strategically important energy-producing region.
- **Palestine Liberation Organization (PLO):** Palestinian representative body.
- **1967 Borders:** Reference point in peace negotiations.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the Two-State Solution:
 1. It seeks peaceful coexistence of Israel and Palestine.
 2. India has historically supported Palestinian self-determination.
 3. BRICS is exclusively a military alliance.

Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"India's West Asia policy reflects strategic balancing and pragmatic diplomacy."



Discuss in the context of the Israel–Palestine issue.

PadhAI MAINS PRACTICE QUESTION

- Examine India’s position on the Two–State Solution to the Israel–Palestine conflict.
- How does this stance reflect India’s broader strategic interests in West Asia? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding the Two–State Solution:

1. It proposes an independent Palestine alongside Israel.
2. India supports peaceful resolution through dialogue and diplomacy.
3. BRICS functions solely as a security alliance.

Which of the statements given above is/are correct?

Options:

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

Answer: A

6. JAISHANKAR CRITICIZES UNILATERAL SANCTIONS

WHY IN NEWS?

- S. Jaishankar criticised the use of **unilateral sanctions**, emphasising the importance of respecting sovereignty, multilateralism, and rules-based international cooperation.

WHAT ARE UNILATERAL SANCTIONS?

- I. Restrictions imposed by a country or group of countries without approval of multilateral institutions like the UN Security Council.
- II. Can include:
 - A. Trade restrictions
 - B. Financial restrictions
 - C. Asset freezes
 - D. Technology export controls

INDIA’S POSITION

Support for Multilateralism

- India prefers sanctions authorised through international consensus, especially via the UN.

Respect for Sovereignty

- Emphasis on non-interference in internal affairs of states.



Strategic Autonomy

- India avoids alignment with unilateral coercive measures imposed by major powers.

Dialogue-Based Resolution

- Advocates diplomacy and peaceful engagement instead of coercive restrictions.

WHY INDIA OPPOSES UNILATERAL SANCTIONS

Impact on Developing Countries

- Sanctions can worsen food, fuel, and economic crises.

Disruption of Global Supply Chains

- Affect trade, energy security, and financial systems.

Selective & Politicised Use

- Perceived as tools of geopolitical pressure.

Threat to Rules-Based Order

- Circumvent multilateral institutions and collective decision-making.

SIGNIFICANCE FOR INDIA

Energy Security

- India imports energy from diverse regions, including sanctioned countries.

Economic Interests

- Trade and payment systems may be affected by sanctions regimes.

Foreign Policy Independence

- Reinforces India's doctrine of strategic autonomy.

Global South Leadership

- India positions itself as the voice of developing nations affected by sanctions.

GLOBAL CONTEXT

- Sanctions have become common tools in geopolitical conflicts.
- Increasing use of financial systems and technology controls as instruments of pressure.
- Debate continues over legality, effectiveness, and humanitarian impact.



CHALLENGES

- **Balancing Global Relations:** Managing ties with competing major powers.
- **Financial Vulnerabilities:** Exposure to dollar-dominated systems.
- **Geopolitical Pressures:** Strategic choices amid international conflicts.
- **Compliance Complexities:** Businesses face uncertainty in international trade.

PRELIMS BOOSTER BOX

- **Unilateral Sanctions:** Restrictions imposed without multilateral approval.
- **UN Security Council:** Can authorise international sanctions.
- **Strategic Autonomy:** Independent foreign policy decision-making.
- **Multilateralism:** Cooperation through international institutions.
- **Secondary Sanctions:** Penalties on third parties dealing with sanctioned states.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding unilateral sanctions:
 1. They may be imposed without approval of the UN Security Council.
 2. They can affect global trade and financial systems.
 3. India consistently supports coercive economic restrictions outside multilateral frameworks.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
“Strategic autonomy remains a defining feature of India’s foreign policy.”
Discuss in the context of global sanctions and geopolitical conflicts.

PadhAI MAINS PRACTICE QUESTION

- Critically examine India’s opposition to unilateral sanctions.
- How does this position reflect India’s strategic autonomy and broader foreign policy objectives? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding unilateral sanctions:

1. They can be imposed without authorisation of the UN Security Council.
2. They may disrupt global trade and supply chains.
3. India fully endorses all unilateral sanctions imposed by major powers.

Which of the statements given above is/are correct?

Options:

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



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

Answer: A

7. INDIA, UAE SIGN ENERGY, DEFENCE PACTS

WHY IN NEWS?

- India and the United Arab Emirates signed agreements in the fields of **energy and defence cooperation**, further strengthening their Comprehensive Strategic Partnership.

BACKGROUND / CONTEXT

- I. **Comprehensive Strategic Partnership:**
 - A. India and UAE elevated ties in 2017.
- II. **Economic Relations:**
 - A. UAE is among India's major trading partners and investors.
- III. **Diaspora Linkages:**
 - A. A large Indian community resides in the UAE.
- IV. **Recent Agreements:**
 - A. Bilateral ties strengthened through the Comprehensive Economic Partnership Agreement (CEPA).

KEY AREAS OF COOPERATION

Energy Cooperation

- Collaboration in oil, gas, renewable energy, and strategic petroleum reserves.
- Focus on long-term energy security and clean energy transition.

Defence Cooperation

- Joint military exercises and defence technology cooperation.
- Maritime security and counter-terrorism collaboration.

Economic & Investment Ties

- Infrastructure, logistics, fintech, and digital economy investments.

Technology & Innovation

- Emerging technologies, AI, and digital public infrastructure cooperation.

SIGNIFICANCE OF THE PARTNERSHIP

Energy Security

- UAE is an important energy supplier for India.

Strategic Importance in West Asia

- Strengthens India's presence in the Gulf region.



Trade & Investment Expansion

- CEPA has boosted bilateral trade and economic integration.

Maritime Security

- Cooperation important for Indian Ocean and Gulf stability.

CHALLENGES

- **Regional Geopolitical Tensions:** Instability in West Asia.
- **Energy Transition Pressures:** Shift toward renewables.
- **Global Economic Volatility:** Trade and investment uncertainties.
- **Balancing Multiple Partnerships:** Complex regional diplomacy.

SIGNIFICANCE FOR INDIA'S FOREIGN POLICY

- I. Reflects India's emphasis on:
 - A. Strategic partnerships in the Gulf
 - B. Economic diplomacy
 - C. Energy diversification
 - D. Maritime security cooperation

PRELIMS BOOSTER BOX

- **CEPA:** Comprehensive Economic Partnership Agreement.
- **Strategic Petroleum Reserve:** Emergency oil storage facility.
- **Indo-Pacific:** Strategic maritime region from Indian Ocean to Pacific.

- **Energy Security:** Reliable and affordable energy supply.
- **Maritime Security:** Protection of sea routes and maritime interests.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding India-UAE relations:

1. UAE is an important energy partner of India.
2. CEPA is a trade agreement between India and UAE.
3. India-UAE relations are limited only to diaspora issues.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"India's engagement with the Gulf region has evolved beyond energy ties."

Discuss with reference to India-UAE relations.

PadhAI MAINS PRACTICE QUESTION

- Examine the strategic significance of India-UAE relations in the context of energy security, defence cooperation, and economic diplomacy. (150 words)



PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding India-UAE relations:

1. UAE is among India's major energy partners.
2. CEPA aims to enhance trade and economic cooperation.
3. India and UAE have no defence cooperation.

Which of the statements given above is/are correct?

Options:

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

Answer: A

8. INDIA REJECTS CoA's AWARD ON INDUS TREATY

WHY IN NEWS?

- India rejected the award issued by the Court of Arbitration (CoA) regarding disputes under the Indus Waters Treaty with Pakistan, reiterating that the arbitration process itself is invalid.

BACKGROUND / CONTEXT

- I. **Indus Waters Treaty (1960):**
 - A. Brokered by the World Bank.

- B. Allocated:
 1. Eastern Rivers (Ravi, Beas, Sutlej) to India
 2. Western Rivers (Indus, Jhelum, Chenab) largely to Pakistan
- II. **Disputed Projects:**
 - A. Pakistan raised objections over Indian hydroelectric projects such as Kishanganga and Ratle.

DISPUTE RESOLUTION MECHANISM UNDER THE TREATY

Permanent Indus Commission (PIC)

- First level mechanism for bilateral discussion.

Neutral Expert (NE)

- Handles technical differences.

Court of Arbitration (CoA)

- Deals with legal disputes under treaty provisions.

INDIA'S POSITION

Parallel Proceedings Invalid

- India contends that simultaneous use of Neutral Expert and CoA mechanisms is inconsistent with treaty provisions.



Preference for Neutral Expert Process

- India maintains disputes are technical rather than legal.

Treaty Interpretation

- Argues CoA exceeded jurisdiction.

PAKISTAN'S POSITION

- Pakistan seeks legal adjudication through CoA.
- Raises concerns regarding design and operation of Indian hydroelectric projects on western rivers.

SIGNIFICANCE OF THE INDUS WATERS TREATY

Successful Water-Sharing Framework

- Survived wars and political tensions since 1960.

Regional Stability

- Critical for water security in both countries.

International Treaty Mechanism

- Often cited as a successful example of transboundary water cooperation.

KEY ISSUES INVOLVED

- **Hydroelectric Project Design:** Storage and flow regulation concerns.
- **Water Security:** Agriculture and livelihoods dependent on Indus basin.
- **Climate Change:** Glacier melt and changing river flows increase stress.
- **Geopolitical Tensions:** India–Pakistan relations affect treaty functioning.

SIGNIFICANCE FOR INDIA

- **Hydropower Development:** Important for Jammu & Kashmir energy needs.
- **Strategic Interests:** Managing treaty within legal framework.
- **International Image:** Treaty compliance linked to global credibility.
- **Regional Stability:** Preventing escalation over water disputes.

CHALLENGES

- **Interpretational Differences:** Technical vs legal disputes.
- **Climate Stress:** Water availability uncertainties.
- **Political Tensions:** Bilateral relations remain strained.
- **Complex Arbitration Mechanisms:** Overlapping processes create disputes.

PRELIMS BOOSTER BOX

- **Indus Waters Treaty (1960):** India–Pakistan water-sharing agreement.



- **World Bank:** Brokered the treaty.
- **Permanent Indus Commission:** Bilateral implementation body.
- **Neutral Expert:** Technical dispute resolution mechanism.
- **Court of Arbitration:** Legal adjudication body under treaty.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding the Indus Waters Treaty:

1. It was brokered by the World Bank.
2. India received exclusive rights over all western rivers.
3. The treaty includes dispute resolution mechanisms.

Which of the statements given above is/are correct?

Answer: 1 and 3 only.

- **Mains PYQ:**

"Water-sharing agreements are critical for regional stability in South Asia."

Discuss with reference to the Indus Waters Treaty.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of the Indus Waters Treaty in India–Pakistan relations.
- What are the major issues involved in the current dispute over arbitration mechanisms? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding the Indus Waters Treaty:

1. It was signed between India and Pakistan in 1960.
2. The treaty provides mechanisms such as Neutral Expert and Court of Arbitration.
3. India has exclusive rights over the Indus River.

Which of the statements given above is/are correct?

Options:

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

Answer: A



Subject

Economy



1. GST REVENUE HITS RECORD ₹2.43 LAKH CRORE IN APRIL

WHY IN NEWS?

- India recorded its highest-ever monthly Goods and Services Tax (GST) collection of ₹2.43 lakh crore in April, reflecting strong economic activity and improved tax compliance.

WHAT IS GST?

- I. **Goods and Services Tax (GST):**
 - A. Destination-based indirect tax introduced in 2017.
 - B. Replaced multiple indirect taxes levied by Centre and States.
- II. **Constitutional Basis:**
 - A. Introduced through the 101st Constitutional Amendment Act.

COMPONENTS OF GST

CGST

- Central Goods and Services Tax collected by Centre.

SGST

- State Goods and Services Tax collected by States.

IGST

- Integrated GST on inter-state trade and imports.

UTGST

- GST applicable in Union Territories.

REASONS FOR RECORD COLLECTION

Strong Economic Activity

- Increase in consumption and business transactions.

Improved Compliance

- Better return filing and digital monitoring systems.

Formalisation of Economy

- Greater integration of businesses into the tax network.

Higher Imports

- Import-related GST contributed to collections.

SIGNIFICANCE

Indicator of Economic Health

- Reflects consumption and business growth.

Fiscal Strengthening

- Enhances revenue position of Centre and States.



Cooperative Federalism

- GST Council facilitates Centre-State coordination.

Digital Tax Governance

- Technology-driven compliance improves transparency.

CHALLENGES IN GST REGIME

Complex Rate Structure

- Multiple tax slabs create compliance burdens.

Compliance Issues for MSMEs

- Smaller businesses face procedural challenges.

Compensation Concerns of States

- Revenue dependency and fiscal stress issues.

Tax Evasion & Fake Invoicing

- Persistent enforcement challenges.

GST COUNCIL

- Constitutional body under **Article 279A**.
- Recommends GST rates, exemptions, and policies.
- Promotes cooperative federalism.

SIGNIFICANCE FOR THE ECONOMY

- Boosts ease of doing business.
- Enhances tax buoyancy and revenue stability.
- Encourages a unified national market.
- Supports long-term fiscal reforms.

PRELIMS BOOSTER BOX

- **GST:** Destination-based indirect tax.
- **101st Constitutional Amendment Act:** Introduced GST.
- **Article 279A:** Provides for GST Council.
- **IGST:** Tax on inter-state supplies.
- **Destination-Based Tax:** Revenue accrues to place of consumption.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding GST:
 1. GST is a destination-based indirect tax.
 2. Article 279A provides for the GST Council.
 3. GST completely eliminated all indirect taxes in India.Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"GST represents a major reform in India's indirect taxation system."



Discuss its achievements and challenges.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of record GST collections for the Indian economy.
- What are the major challenges that continue to affect the GST regime? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding GST in India:

1. GST is a destination-based tax.
2. The GST Council was created under Article 279A.
3. IGST applies only to intra-state transactions.

Which of the statements given above is/are correct?

Options:

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

Answer: A

2. INSTITUTIONS BARRED FROM COMMODITY DERIVATIVES

WHY IN NEWS?

- The Securities and Exchange Board of India (SEBI) barred certain institutions from participating in commodity derivatives markets to curb excessive speculation and strengthen market stability.

WHAT ARE COMMODITY DERIVATIVES?

- I. Financial contracts whose value is derived from underlying commodities such as:
 - A. Gold
 - B. Crude oil
 - C. Agricultural products
 - D. Metals
- II. Common types include:
 - A. Futures contracts
 - B. Options contracts

PURPOSE OF COMMODITY DERIVATIVES

Price Discovery

- Helps determine future prices based on market expectations.

Risk Hedging

- Producers, traders, and consumers protect against price fluctuations.



Market Liquidity

- Facilitates smoother trading and efficient markets.

WHY WERE INSTITUTIONS BARRED?

Excessive Speculation

- Non-genuine trading may increase volatility.

Market Manipulation Risks

- Large institutional positions can distort prices.

Systemic Financial Concerns

- Unchecked derivatives exposure may create financial instability.

Protecting Genuine Hedgers

- Markets intended primarily for risk management, not speculation alone.

ROLE OF SEBI

- Regulates securities and commodity derivatives markets in India.
- Ensures investor protection and market integrity.
- Prevents unfair trade practices and excessive speculation.

SIGNIFICANCE OF THE MOVE

Market Stability

- Reduces abnormal price fluctuations.

Improved Transparency

- Enhances confidence in commodity exchanges.

Protection of Farmers & Businesses

- Prevents speculative distortions in commodity prices.

Financial Discipline

- Limits risky institutional exposure.

CHALLENGES

Reduced Liquidity

- Restrictions may lower trading volumes.

Balancing Regulation & Efficiency

- Excess regulation may affect market development.

Monitoring Speculative Activity

- Difficult to distinguish hedging from speculation.

Global Commodity Volatility

- External shocks continue to affect prices.



COMMODITY DERIVATIVES IN INDIA

- Traded on recognised commodity exchanges.
- SEBI became regulator of commodity derivatives after merger with Forward Markets Commission (FMC) in 2015.

PRELIMS BOOSTER BOX

- **Commodity Derivatives:** Contracts linked to commodity prices.
- **Futures Contract:** Agreement to buy/sell assets at a future date.
- **Hedging:** Reducing risk from price fluctuations.
- **SEBI:** Regulator of securities and commodity markets.
- **Speculation:** Trading aimed at profit from price movements.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding commodity derivatives:
 1. They derive value from underlying commodities.
 2. Hedging is one purpose of derivatives trading.
 3. SEBI has no role in regulating commodity markets.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
"Commodity derivatives markets can aid risk management but also create financial vulnerabilities."
Discuss the role of regulation in ensuring market stability.

PadhAI MAINS PRACTICE QUESTION

- Explain the significance of commodity derivatives markets in India.
- Why do regulators impose restrictions on speculative institutional participation? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding commodity derivatives:

1. They are financial contracts linked to underlying commodities.
2. Hedging helps reduce price risk.
3. SEBI regulates commodity derivatives markets in India.

Which of the statements given above is/are correct?

- Options:**
- A. 1 and 2 only
 - B. 2 and 3 only
 - C. 1 and 3 only
 - D. 1, 2 and 3

Answer: D



3. GOVT OKs 5th CREDIT GUARANTEE SCHEME

WHY IN NEWS?

- India approved the fifth Credit Guarantee Scheme aimed at improving credit access for businesses and supporting economic growth, particularly for MSMEs and priority sectors.

WHAT IS A CREDIT GUARANTEE SCHEME?

- A mechanism where the government guarantees a portion of loans provided by banks and financial institutions.
- If borrowers default, part of the loss is covered by the guarantee provider.

OBJECTIVES OF THE SCHEME

Enhancing Credit Access

- Encourages banks to lend to risk-prone sectors.

Supporting MSMEs

- Improves financing for micro, small, and medium enterprises.

Boosting Economic Growth

- Encourages entrepreneurship, production, and employment generation.

Reducing Lending Risk

- Lowers fear of defaults among financial institutions.

KEY FEATURES

- Government-backed guarantee coverage for eligible loans.
- Focus on sectors facing credit constraints.
- Encourages collateral-free or easier lending.
- Promotes financial inclusion and formalisation.

SIGNIFICANCE

MSME Development

- MSMEs are major contributors to employment and exports.

Financial Inclusion

- Expands formal credit access to smaller enterprises.

Economic Recovery & Investment

- Stimulates business activity and industrial growth.

Employment Generation

- Easier credit supports expansion of businesses and jobs.



CHALLENGES

Risk of Rising NPAs

- Poor credit assessment may increase defaults.

Moral Hazard

- Guarantee coverage may weaken lending discipline.

Awareness & Accessibility Issues

- Small businesses may lack information about schemes.

Implementation Challenges

- Delays in claim settlement and procedural complexities.

ROLE OF MSMES IN INDIA

- Major source of employment generation.
- Contribute significantly to manufacturing and exports.
- Important for inclusive and balanced regional development.

SIGNIFICANCE FOR THE ECONOMY

- Encourages entrepreneurship and innovation.
- Strengthens credit ecosystem.
- Supports inclusive economic development.

- Enhances resilience of small enterprises.

PRELIMS BOOSTER BOX

- **Credit Guarantee:** Government assurance against loan default risk.
- **MSME:** Micro, Small and Medium Enterprises.
- **Collateral-Free Loans:** Loans without pledged assets.
- **NPA:** Non-Performing Asset.
- **Financial Inclusion:** Access to affordable financial services.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding credit guarantee schemes:

1. They reduce lending risk for financial institutions.
2. MSMEs are important beneficiaries of such schemes.
3. Credit guarantees eliminate all possibilities of loan default.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

“Access to institutional credit remains crucial for MSME growth in India.”

Discuss the role of credit guarantee schemes in improving financial inclusion and economic development.



PadhAI MAINS PRACTICE QUESTION

- Examine the significance of credit guarantee schemes in promoting MSME growth and financial inclusion in India.
- What are the major challenges associated with such schemes? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding credit guarantee schemes:

1. They encourage lending by reducing default risk for banks.
2. MSMEs are among the important beneficiaries of such schemes.
3. Credit guarantees completely remove the risk of NPAs.

Which of the statements given above is/are correct?

Options:

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

Answer: A

4. OMCs LOSING ₹30K CR MONTHLY ON FUEL, LPG

WHY IN NEWS?

- India's Oil Marketing Companies (OMCs) reportedly faced heavy monthly losses on the sale of fuel and LPG due to rising global energy prices and controlled domestic retail prices.

WHAT ARE OMCs?

Oil Marketing Companies are firms involved in:

- Refining
- Distribution
- Marketing of petroleum products

Major public sector OMCs include:

- Indian Oil Corporation
- Bharat Petroleum Corporation Limited
- Hindustan Petroleum Corporation Limited

REASONS FOR LOSSES

High Global Crude Oil Prices

- Rising international oil prices increase import costs.

Controlled Retail Fuel Prices

- Domestic fuel prices may not rise proportionately due to inflation concerns.



LPG Subsidy Burden

- OMCs bear losses on subsidised domestic LPG cylinders.

Exchange Rate Pressures

- Rupee depreciation increases import bills.

WHAT ARE UNDER-RECOVERIES?

- I. Difference between:
 - A. Actual cost of supplying fuel
 - B. Government-controlled selling price
- II. OMCs either absorb losses or receive compensation from the government.

SIGNIFICANCE OF THE ISSUE

Impact on Energy Companies

- Reduced profitability and investment capacity.

Fiscal Implications

- Government compensation increases subsidy burden.

Inflation Management

- Controlled fuel prices help contain inflation temporarily.

Energy Security Concerns

- Financial stress may affect long-term energy investments.

CHALLENGES

Balancing Consumer Welfare & Fiscal Stability

- Fuel price control vs financial sustainability.

Global Oil Price Volatility

- India is heavily dependent on imported crude oil.

Subsidy Burden

- Rising subsidy commitments affect fiscal health.

Transition to Clean Energy

- Long-term shift away from fossil fuel dependence remains slow.

GOVERNMENT MEASURES

- Excise duty adjustments.
- Targeted LPG subsidy support.
- Promotion of ethanol blending and renewable energy.
- Diversification of crude import sources.



SIGNIFICANCE FOR INDIA

- **Energy Security:** Stable fuel supply crucial for the economy.
- **Inflation Control:** Fuel prices influence transportation and food costs.
- **Fiscal Management:** Subsidies affect budgetary resources.
- **Economic Growth:** Energy availability linked to industrial activity.

PRELIMS BOOSTER BOX

- **OMCs:** Oil Marketing Companies.
- **Under-Recovery:** Loss due to controlled pricing.
- **LPG:** Liquefied Petroleum Gas.
- **Crude Oil Import Dependence:** India imports the majority of its crude oil needs.
- **Ethanol Blending:** Mixing ethanol with petrol to reduce oil dependence.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding India's petroleum sector:
 1. OMCs market and distribute petroleum products.
 2. Under-recoveries occur when selling prices are below supply cost.
 3. India is fully self-sufficient in crude oil production.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
"India's energy security is closely linked with global crude oil prices."
Discuss the implications of rising oil prices on the economy and public finances.

PadhAI MAINS PRACTICE QUESTION

- Examine the reasons behind losses faced by Oil Marketing Companies (OMCs) in India.
- What are the broader economic implications of fuel price controls and subsidies? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Oil Marketing Companies (OMCs):

1. They are involved in refining and distribution of petroleum products.
2. Under-recoveries arise when fuel selling prices are below actual costs.
3. India produces all of its crude oil domestically.

Which of the statements given above is/are correct?

Options:

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

Answer: A



5. RETAIL INFLATION HITS 13-MONTH HIGH AT 3.5%

WHY IN NEWS?

- India recorded retail inflation of 3.5%, marking a 13-month high due to rising prices of food and essential commodities.

WHAT IS RETAIL INFLATION?

- I. Increase in prices of goods and services consumed by households.
- II. Measured using the **Consumer Price Index (CPI)**.
- III. Compiled by:
 - A. National Statistical Office (NSO).

KEY DRIVERS OF THE INFLATION RISE

Food Inflation

- Rising prices of vegetables, cereals, and pulses.

Supply Chain Disruptions

- Weather-related and logistical issues affecting supply.

Fuel & Transportation Costs

- Increase in energy costs affecting overall prices.

Global Economic Factors

- International commodity price volatility.

CPI VS WPI

Consumer Price Index (CPI)

- Measures retail prices faced by consumers.
- Used by RBI for inflation targeting.

Wholesale Price Index (WPI)

- Measures price changes at wholesale level.

RBI'S INFLATION TARGETING FRAMEWORK

- I. Flexible Inflation Targeting adopted in 2016.
- II. RBI aims to maintain inflation at:
 - A. **4% ± 2%**.
- III. Based on recommendations of the:
 - A. Urjit Patel Committee.

SIGNIFICANCE OF HIGHER INFLATION

Impact on Household Budgets

- Reduces purchasing power of consumers.

Monetary Policy Implications

- RBI may adjust interest rates to control inflation.



Economic Growth Concerns

- Persistent inflation may slow consumption demand.

Impact on Poor & Vulnerable Sections

- Food inflation disproportionately affects low-income households.

CHALLENGES IN CONTROLLING INFLATION

Food Supply Volatility

- Agriculture depends on monsoon conditions.

Imported Inflation

- Higher crude oil and global commodity prices.

Balancing Growth & Price Stability

- Tight monetary policy may affect economic growth.

Structural Bottlenecks

- Storage, transport, and distribution inefficiencies.

GOVERNMENT & RBI RESPONSES

- Monitoring food supply and buffer stocks.
- Export/import policy adjustments.
- Monetary policy actions by RBI.

- Supply-side interventions to stabilise prices.

PRELIMS BOOSTER BOX

- **CPI:** Consumer Price Index measuring retail inflation.
- **WPI:** Wholesale Price Index.
- **Inflation Targeting:** RBI targets 4% inflation $\pm 2\%$.
- **Monetary Policy Committee (MPC):** Sets repo rate.
- **Repo Rate:** Rate at which RBI lends to banks.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding inflation in India:
 1. CPI measures retail inflation.
 2. RBI uses CPI for inflation targeting.
 3. WPI directly measures household consumption expenditure.Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"Inflation management requires coordination between monetary and fiscal measures."
Discuss in the context of rising food inflation in India.



PadhAI MAINS PRACTICE QUESTION

- Examine the causes and implications of rising retail inflation in India.
- How do inflation trends influence monetary policy decisions? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding retail inflation in India:

1. Retail inflation is measured using the Consumer Price Index (CPI).
2. RBI follows a flexible inflation targeting framework.
3. WPI is the primary index used by RBI for inflation targeting.

Which of the statements given above is/are correct?

Options:

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

Answer: A

6. MSP HIKED; FARMERS CONCERNED ON TRADE DEAL

WHY IN NEWS?

- India increased the **Minimum Support Prices (MSP)** for key crops, while farmer groups expressed concerns that ongoing international trade agreements could affect domestic agriculture and price protection mechanisms.

WHAT IS MSP?

- I. **Minimum Support Price (MSP):**
 - A. Guaranteed procurement price announced by the government for certain crops.
 - B. Acts as a safety net against sharp price falls.
- II. Recommended by:
 - A. Commission for Agricultural Costs and Prices (CACP).

OBJECTIVES OF MSP

Income Security for Farmers

- Protects farmers from distress sales.

Encouraging Production

- Incentivises cultivation of important crops.

Food Security



- Supports procurement for Public Distribution System (PDS).

Price Stabilisation

- Helps maintain agricultural market stability.

WHY ARE FARMERS CONCERNED ABOUT TRADE DEALS?

Cheap Agricultural Imports

- Reduced tariffs may increase foreign competition.

Pressure on Domestic Prices

- Imports could reduce profitability for Indian farmers.

Subsidy & Procurement Concerns

- Trade agreements may influence support measures like MSP.

Unequal Global Competition

- Farmers fear competition from heavily subsidised agriculture in developed countries.

LINK BETWEEN TRADE & AGRICULTURE

- I. Trade agreements often involve:
 - A. Tariff reduction
 - B. Market access commitments

- II. Agriculture remains sensitive due to livelihood and food security concerns.
 - C. Agricultural subsidy discussions

SIGNIFICANCE OF MSP HIKE

Rural Income Support

- Enhances purchasing power in the rural economy.

Agricultural Stability

- Encourages continued cultivation of essential crops.

Food Security

- Ensures availability of food grains for welfare schemes.

Political & Social Stability

- Agriculture remains central to livelihoods in India.

CHALLENGES IN MSP SYSTEM

Limited Procurement Coverage

- Effective procurement concentrated in a few states and crops.

Fiscal Burden

- Large procurement and storage costs.

Crop Diversification Issues

- MSP may encourage water-intensive crops.



WTO Concerns

- Agricultural support measures debated internationally.

WTO & AGRICULTURE

- I. Agriculture governed under the:
 - A. Agreement on Agriculture (AoA).
- II. Key pillars:
 - A. Market access
 - B. Domestic support
 - C. Export subsidies

SIGNIFICANCE FOR INDIA

- **Food Security:** MSP supports national food procurement.
- **Farmer Welfare:** Important for rural livelihoods.
- **Trade Negotiations:** Agriculture remains a sensitive sector.
- **Economic Stability:** Agriculture supports a large workforce.

PRELIMS BOOSTER BOX

- **MSP:** Minimum Support Price for crops.
- **CACP:** Commission for Agricultural Costs and Prices.
- **Procurement:** Government purchase of crops.
- **WTO Agreement on Agriculture (AoA):** Governs global agricultural trade.
- **Public Distribution System (PDS):** Food security mechanism.

PadhAI PYQ BOOSTER SECTION

• Prelims PYQ:

Consider the following statements regarding MSP:

1. MSP is announced for selected crops by the Government of India.
 2. CACP recommends MSP levels.
 3. MSP guarantees procurement of every crop in all states.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

• Mains PYQ:

"Agricultural pricing policies and international trade commitments often create policy dilemmas."
Discuss with reference to MSP and trade agreements in India.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of the MSP mechanism in India.
- Why do farmers express concerns regarding international trade agreements and agricultural liberalisation? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding MSP and agricultural trade:



1. MSP is recommended by the CACP.
2. Trade liberalisation may expose farmers to foreign competition.
3. WTO's Agreement on Agriculture deals only with industrial goods.

Which of the statements given above is/are correct?

Options:

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

Answer: A

7. WPI MORE THAN DOUBLES TO 8.3% IN APRIL

WHY IN NEWS?

- India recorded a sharp rise in **Wholesale Price Index (WPI)-based inflation** to 8.3% in April, driven mainly by higher prices of fuel, manufactured goods, and primary articles.

WHAT IS WPI?

- I. **Wholesale Price Index (WPI):**
 - A. Measures average change in prices of goods at the wholesale level.
 - B. Tracks price movement before goods reach consumers.
- II. Compiled by:
 - A. Office of Economic Adviser under the Ministry of Commerce and Industry.

COMPONENTS OF WPI

Primary Articles

- Food articles, minerals, crude materials.

Fuel & Power

- Petrol, diesel, electricity, coal.

Manufactured Products

- Industrial and manufactured goods.

REASONS FOR RISE IN WPI INFLATION

Global Commodity Price Increase

- Rising crude oil and metal prices.

Higher Fuel Costs

- Increased transportation and production expenses.

Supply Chain Disruptions

- International logistical bottlenecks.

Imported Inflation

- Dependence on imported energy and raw materials.



DIFFERENCE BETWEEN WPI & CPI

WPI

- Measures wholesale-level prices.
- Includes mainly goods.

CPI

- Measures retail prices faced by consumers.
- Includes goods and services.
- Used by RBI for inflation targeting.

SIGNIFICANCE OF HIGH WPI INFLATION

Cost Push Inflation

- Higher input costs increase production expenses.

Impact on Consumers

- Wholesale price rise may pass on to retail inflation.

Industrial Profitability

- Higher raw material costs affect businesses.

Macroeconomic Stability

- Persistent inflation impacts growth and investment.

CHALLENGES

Global Economic Uncertainty

- Commodity price volatility remains high.

Energy Dependence

- India imports a large share of crude oil needs.

Balancing Inflation & Growth

- Tight policy measures may affect economic recovery.

Supply Constraints

- Logistics and production disruptions continue.

GOVERNMENT & RBI RESPONSE

- Monitoring inflation trends closely.
- Monetary policy measures by RBI.
- Supply-side interventions and duty adjustments.
- Promotion of domestic production and energy diversification.

SIGNIFICANCE FOR INDIA

- **Industrial Growth:** Input cost pressures affect manufacturing.
- **Consumer Prices:** WPI may influence retail inflation trends.
- **Fiscal Management:** Inflation affects subsidies and expenditure.



- **Economic Stability:** Stable prices important for sustainable growth.

PRELIMS BOOSTER BOX

- **WPI:** Wholesale Price Index.
- **CPI:** Consumer Price Index.
- **Cost-Push Inflation:** Inflation caused by rising production costs.
- **Imported Inflation:** Inflation resulting from higher import prices.
- **Fuel & Power Weight:** Important contributor in WPI basket.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding WPI:
 1. WPI measures price changes at the wholesale level.
 2. CPI is used by RBI for inflation targeting.
 3. WPI includes only services.*Which of the statements given above is/are correct?*
Answer: 1 and 2 only.
- **Mains PYQ:**
"Inflation in India is increasingly influenced by global supply-side factors."
Discuss with reference to rising wholesale inflation.

PadhAI MAINS PRACTICE QUESTION

- Examine the causes and implications of rising WPI inflation in India.
- How does wholesale inflation affect the broader economy? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Wholesale Price Index (WPI):

1. WPI measures changes in prices at the wholesale level.
2. Fuel and manufactured products are components of WPI.
3. RBI primarily uses WPI for inflation targeting.

Which of the statements given above is/are correct?

Options:

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

Answer: A



8. CENTRE APPROVES SEMI HIGH-SPEED RAIL FUNDS

WHY IN NEWS?

- India approved funding for semi high-speed rail projects aimed at improving rail connectivity, reducing travel time, and modernising transportation infrastructure.

WHAT IS SEMI HIGH-SPEED RAIL?

- I. Rail systems operating at speeds generally between:
 - A. **160–200 km/h.**
- II. Faster than conventional rail but slower than dedicated bullet trains.

OBJECTIVES OF THE PROJECT

Reducing Travel Time

- Faster connectivity between major cities and economic hubs.

Modernising Rail Infrastructure

- Upgrading tracks, signalling, and rolling stock.

Boosting Economic Growth

- Improved logistics and passenger movement support economic activity.

Sustainable Transportation

- Rail transport is more energy-efficient than road and air transport.

KEY FEATURES

- Track strengthening and electrification.
- Advanced signalling and safety systems.
- Modern train sets and upgraded stations.
- Enhanced passenger comfort and operational efficiency.

SIGNIFICANCE

Infrastructure Development

- Supports India's long-term transport modernisation goals.

Regional Connectivity

- Better integration of urban and industrial centres.

Economic Efficiency

- Faster movement of people and goods.

Environmental Benefits

- Promotes cleaner and more efficient public transport.



CHALLENGES

High Capital Costs

- Large investment required for infrastructure upgrades.

Land Acquisition Issues

- Delays in corridor expansion projects.

Technological & Operational Constraints

- Need for advanced rail technology and maintenance.

Safety & Capacity Management

- Balancing high-speed operations with existing rail traffic.

RELATED INITIATIVES

- Indian Railways modernisation programmes.
- Dedicated Freight Corridors (DFCs).
- High-speed rail initiatives such as bullet train projects.
- Station redevelopment and electrification drives.

SIGNIFICANCE FOR INDIA

- **Economic Integration:** Improved national connectivity.
- **Ease of Travel:** Faster and more reliable passenger transport.
- **Logistics Competitiveness:** Supports industrial and trade efficiency.

- **Sustainable Mobility:** Encourages shift toward rail transport.

PRELIMS BOOSTER BOX

- **Semi High-Speed Rail:** Rail services operating around 160–200 km/h.
- **Dedicated Freight Corridor (DFC):** Freight-only railway corridor.
- **Rail Electrification:** Use of electric traction instead of diesel.
- **Bullet Train:** High-speed rail system generally above 250 km/h.
- **Signalling System:** Technology ensuring train safety and movement control.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding semi high-speed rail.

 1. It aims to improve rail speeds and reduce travel time.
 2. Rail electrification contributes to cleaner transportation.
 3. Dedicated Freight Corridors are designed mainly for passenger trains.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.
- **Mains PYQ:**

“Transport infrastructure is crucial for economic growth and regional integration.”

Discuss with reference to railway modernisation initiatives in India.



PadhAI MAINS PRACTICE QUESTION

- Examine the significance of semi high-speed rail projects in India's infrastructure development strategy.
- What are the major challenges in implementing such projects? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding semi high-speed rail projects:

1. They aim to improve rail connectivity and reduce travel time.
2. Rail electrification supports sustainable transportation.
3. Semi high-speed rail projects operate at speeds higher than all bullet trains.

Which of the statements given above is/are correct?

Options:

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

Answer: A

9. RBI APPROVES ₹2.86L CR SURPLUS TRANSFER

WHY IN NEWS?

- Reserve Bank of India approved a surplus transfer of ₹2.86 lakh crore to the Government of India, providing a major boost to public finances.

WHAT IS RBI SURPLUS TRANSFER?

- I. RBI earns income through:
 - A. Interest on government securities
 - B. Foreign exchange operations
 - C. Currency management
 - D. Liquidity operations
- II. After maintaining contingency reserves and operational requirements, surplus income is transferred to the government under the:
 - A. Reserve Bank of India Act, 1934.

ECONOMIC CAPITAL FRAMEWORK (ECF)

- Determines how much capital RBI should retain and how much can be transferred.
- Recommended by the Bimal Jalan Committee in 2019.

Key Components:

- Contingency Risk Buffer (CRB)



- Realised Equity
- Revaluation Balances

SIGNIFICANCE OF THE SURPLUS TRANSFER

Fiscal Support to Government

- Provides additional non-tax revenue.

Helps Fiscal Deficit Management

- Reduces pressure on government borrowing.

Supports Public Expenditure

- Funds infrastructure, welfare, and development programmes.

Macroeconomic Stability

- Enhances the government's financial flexibility.

HOW RBI EARNS PROFITS

Interest Income

- Holdings of domestic and foreign securities.

Foreign Exchange Operations

- Gains from currency and reserve management.

Liquidity Management

- Repo and reverse repo operations.

Investment Returns

- Returns from reserve assets.

CONCERNS & CHALLENGES

Maintaining RBI Independence

- Excessive dependence on transfers may raise concerns.

Adequate Risk Buffer

- RBI must maintain sufficient reserves against financial risks.

Inflation & Liquidity Concerns

- Fiscal expansion may affect macroeconomic stability.

Balancing Fiscal & Monetary Objectives

- Need for coordination without compromising institutional autonomy.

SIGNIFICANCE FOR INDIA

- **Fiscal Space:** Helps manage expenditure commitments.
- **Economic Growth:** Supports infrastructure and welfare spending.
- **Financial Stability:** Reflects strong central bank balance sheet.
- **Policy Coordination:** Shows fiscal-monetary interaction.



PRELIMS BOOSTER BOX

- **RBI Surplus Transfer:** Excess RBI income transferred to government.
- **Economic Capital Framework (ECF):** Framework for RBI reserves and transfers.
- **Bimal Jalan Committee:** Recommended ECF structure.
- **Fiscal Deficit:** Excess of government expenditure over revenue.
- **Contingency Risk Buffer:** Reserve maintained against financial risks.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding RBI surplus transfer.

1. RBI transfers excess surplus income to the Government of India.
2. The Bimal Jalan Committee dealt with RBI's Economic Capital Framework.
3. RBI surplus transfer is unrelated to fiscal management.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"The relationship between fiscal policy and central banking has important implications for macroeconomic stability."

Discuss in the context of RBI surplus transfers to the government.

PadhAI MAINS PRACTICE

QUESTION

- Examine the significance of RBI surplus transfers to the Government of India.
- What are the concerns associated with balancing fiscal needs and central bank autonomy? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding RBI surplus transfer.

1. RBI transfers part of its excess income to the Government of India.
2. The Economic Capital Framework was recommended by the Bimal Jalan Committee.
3. RBI surplus transfers have no impact on fiscal management.

Which of the statements given above is/are correct?

Options:

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

Answer: A



Subject

Geography



1. MEXICO CITY SINKING VISIBLE FROM SPACE

WHY IN NEWS?

- Scientists reported that Mexico City is sinking at an alarming rate, with land subsidence now visible through satellite and space-based observations.

WHAT IS LAND SUBSIDENCE?

- I. Gradual sinking or downward settling of the Earth's surface.
- II. Usually caused by:
 - A. Excessive groundwater withdrawal
 - B. Mining
 - C. Natural geological processes
 - D. Urban construction pressures

WHY IS MEXICO CITY SINKING?

Excessive Groundwater Extraction

- Overuse of underground aquifers for urban water demand.

Geological Conditions

- Mexico City was built on the bed of an ancient lake.
- Soft clay-rich sediments compress easily.

Rapid Urbanisation

- Increasing population and infrastructure pressure.

Climate Stress

- Water scarcity increases dependence on groundwater.

HOW IS IT OBSERVED FROM SPACE?

- I. Satellites use technologies such as:
 - A. Interferometric Synthetic Aperture Radar (InSAR).
- II. Enables precise measurement of ground deformation over time.

IMPACTS OF LAND SUBSIDENCE

Infrastructure Damage

- Roads, buildings, pipelines, and rail systems were affected.

Flooding Risk

- Lower elevation increases flood vulnerability.

Water Supply Problems

- Damage to water distribution systems.

Economic Costs

- Expensive urban repair and adaptation measures.



GLOBAL SIGNIFICANCE

- Many megacities face similar risks due to groundwater depletion.
- Highlights links between urbanisation, climate stress, and resource management.

RELEVANCE FOR INDIA

Indian cities also face subsidence risks due to:

- Over-extraction of groundwater
- Rapid urban expansion
- Weak urban planning

Examples include:

- Parts of Delhi
- Joshimath subsidence concerns
- Coastal urban regions

MITIGATION MEASURES

Sustainable Groundwater Management

- Regulate extraction and recharge aquifers.

Rainwater Harvesting

- Reduce dependence on groundwater.

Urban Planning Reforms

- Scientific land-use planning and resilient infrastructure.

Satellite Monitoring

- Early detection and monitoring of subsidence patterns.

CHALLENGES

- High population pressure in cities.
- Growing water demand.
- Climate-induced droughts.
- Weak enforcement of groundwater regulations.

PRELIMS BOOSTER BOX

- **Land Subsidence:** Sinking of Earth's surface.
- **Aquifer:** Underground water-bearing rock layer.
- **InSAR:** Satellite-based ground deformation monitoring technology.
- **Groundwater Depletion:** Excess extraction of underground water.
- **Urban Resilience:** Capacity of cities to withstand environmental stress.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding land subsidence:
 1. Excessive groundwater extraction can cause land subsidence.
 2. InSAR technology can monitor ground deformation from space.



3. Subsidence has no impact on urban infrastructure.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

“Rapid urbanisation and unsustainable groundwater extraction are increasing environmental vulnerabilities in cities.”

Discuss with reference to land subsidence.

PadhAI MAINS PRACTICE

QUESTION

- What is land subsidence?
- Examine the causes and impacts of urban land subsidence with reference to Mexico City and its relevance for Indian cities. (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding land subsidence:

1. Excessive groundwater extraction is a major cause of subsidence.
2. Satellite technologies such as InSAR help detect ground deformation.
3. Land subsidence improves flood resilience in urban areas.

Which of the statements given above is/are correct?

Options:

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

Answer: A

2. STUDY: UTTARAKHAND FLOOD MAPS UNDERESTIMATE RISK

WHY IN NEWS?

- A recent study highlighted that existing flood hazard maps in Uttarakhand may significantly underestimate actual flood risks, raising concerns over disaster preparedness in the Himalayan region.

WHAT ARE FLOOD HAZARD MAPS?

- I. Scientific maps identifying areas vulnerable to flooding.
- II. Used for:
 - A. Disaster preparedness
 - B. Urban planning
 - C. Infrastructure development
 - D. Evacuation planning

WHY MAY RISKS BE UNDERESTIMATED?

Extreme Rainfall Events

- Climate change increases the intensity of cloudbursts and heavy rainfall.



Glacial Lake Outburst Floods (GLOFs)

- Rapid release of water from glacial lakes can trigger sudden floods.

Complex Himalayan Terrain

- Steep slopes and fragile geology complicate modelling.

Outdated Data & Modelling

- Existing maps may not include recent climatic and land-use changes.

Unplanned Development

- Construction along riverbanks and slopes increases vulnerability.

FLOOD VULNERABILITY OF UTTARAKHAND

Geographic Factors

- Young fold mountains with unstable slopes.

Climatic Factors

- Monsoon rainfall and cloudburst events.

Human-Induced Factors

- Deforestation
- Hydropower projects
- Road expansion
- Tourism pressure

SIGNIFICANCE OF THE STUDY

Disaster Risk Reduction

- Better hazard mapping can save lives and infrastructure.

Climate Adaptation

- Helps prepare for increasing extreme weather events.

Sustainable Development

- Supports environmentally sensitive planning in Himalayan states.

Improved Early Warning Systems

- Accurate mapping strengthens preparedness and evacuation.

RELATED CONCEPT: GLOF

- I. **Glacial Lake Outburst Flood (GLOF):**
 - A. Sudden release of water from glacial lakes due to breach of natural dams.
- II. Increasing glacier melting is linked to climate change.

CHALLENGES

Data Gaps

- Limited high-resolution terrain and hydrological data.



Climate Uncertainty

- Difficult to predict extreme weather accurately.

Development Pressures

- Infrastructure expansion in ecologically fragile areas.

Weak Enforcement

- Environmental regulations are often poorly implemented.

MITIGATION MEASURES

- Updated flood hazard mapping using advanced satellite data.
- Regulation of construction in vulnerable zones.
- Strengthening early warning systems.
- Ecosystem-based disaster management.
- Climate-resilient infrastructure planning.

PRELIMS BOOSTER BOX

- **Flood Hazard Map:** Identifies flood-prone regions.
- **GLOF:** Glacial Lake Outburst Flood.
- **Cloudburst:** Sudden extreme rainfall event.
- **Himalayan Fragility:** Ecologically sensitive mountain environment.
- **Disaster Risk Reduction (DRR):** Measures to minimise disaster impacts.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding flood risks in the Himalayan region:

1. Glacial Lake Outburst Floods are associated with glacier-fed lakes.
2. Cloudbursts can trigger flash floods in mountainous areas.
3. Flood hazard maps have no role in disaster preparedness.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

“Climate change and unplanned development are increasing disaster vulnerability in the Himalayan region.” Discuss with reference to flood risks in Uttarakhand.

PadhAI MAINS PRACTICE QUESTION

- Examine the factors responsible for increasing flood vulnerability in Uttarakhand.
- Why is accurate flood hazard mapping important for disaster risk reduction in Himalayan states? (150 words)



PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding flood vulnerability in Uttarakhand:

1. Glacial Lake Outburst Floods can intensify flood risks.
2. Climate change is increasing the frequency of extreme rainfall events.
3. Flood hazard maps are unrelated to disaster management planning.

Which of the statements given above is/are correct?

Options:

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

Answer: A

3. HOW INDIA IS GOVERNING ITS WATER RESOURCES

WHY IN NEWS?

- Water governance in India has gained renewed attention amid rising water stress, groundwater depletion, interstate river disputes, climate change, and increasing demand from agriculture, industry, and urban areas.

CONSTITUTIONAL & LEGAL FRAMEWORK

State Subject

- Water is primarily a State subject under **Entry 17 of the State List**.

Union Role

- The Centre can regulate interstate rivers under **Entry 56 of the Union List**.

Article 262

- Provides for adjudication of interstate river water disputes.

Right to Water

- Recognised as part of **Article 21** (Right to Life) through judicial interpretation.

KEY INSTITUTIONS INVOLVED

Ministry of Jal Shakti

- Nodal ministry for water resources, river development, and drinking water.

Central Water Commission (CWC)

- Technical organisation for water resource management.

Central Ground Water Board (CGWB)

- Monitors and regulates groundwater resources.



State Water Departments

- Manage irrigation, drinking water, and local water infrastructure.

MAJOR WATER GOVERNANCE INITIATIVES

Jal Jeevan Mission

- Provides tap water connections to rural households.

Atal Bhujal Yojana

- Focuses on sustainable groundwater management.

Namami Gange Programme

- River conservation and pollution control initiative.

Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

- Promotes irrigation efficiency and water conservation.

National Water Policy

- Advocates integrated and sustainable water management.

MAJOR CHALLENGES IN WATER GOVERNANCE

Groundwater Depletion

- India is among the largest groundwater users globally.

Interstate River Disputes

- Conflicts over river water sharing among states.

Water Pollution

- Industrial waste, sewage, and agricultural runoff degrade water quality.

Climate Change Impacts

- Erratic monsoon and extreme weather affect water availability.

Fragmented Governance

- Multiple agencies with overlapping responsibilities.

ISSUES IN WATER MANAGEMENT

Agriculture Dominance

- Agriculture consumes nearly 80% of freshwater resources.



Urban Water Stress

- Rapid urbanisation increasing water demand.

Inefficient Irrigation

- Flood irrigation leads to wastage.

Ecological Concerns

- River ecosystems and wetlands under stress.

SIGNIFICANCE OF EFFECTIVE WATER GOVERNANCE

Water Security

- Ensures sustainable access to water resources.

Food Security

- Agriculture dependent on reliable water supply.

Economic Development

- Industry and urban growth require adequate water.

Environmental Sustainability

- Protects aquatic ecosystems and biodiversity.

REFORM PRIORITIES

- Integrated Water Resource Management (IWRM).
- Demand-side water management.
- River basin-based planning.
- Groundwater regulation and recharge.
- Community participation in water conservation.
- Use of technology and data-driven governance.

PRELIMS BOOSTER BOX

- **Article 262:** Interstate river water dispute resolution.
- **Entry 17, State List:** Water as State subject.
- **CWC:** Central Water Commission.
- **CGWB:** Central Ground Water Board.
- **IWRM:** Integrated Water Resource Management.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding water governance in India:
 1. Water is primarily a State subject under the Constitution.
 2. Article 262 deals with interstate river water disputes.
 3. Groundwater depletion is not a major issue in India.Which of the statements given above is/are correct?
Answer: 1 and 2 only.



- **Mains PYQ:**

"India's water crisis is fundamentally a governance crisis."

Discuss with reference to groundwater depletion, river disputes, and climate change.

PadhAI MAINS PRACTICE QUESTION

- Examine the institutional and constitutional framework governing water resources in India.
- What are the major challenges affecting effective water governance? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding water governance in India:

1. Article 262 relates to interstate river water disputes.
2. Water is primarily a State subject under the Constitution.
3. Agriculture consumes only a small share of India's freshwater resources.

Which of the statements given above is/are correct?

Options:

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

Answer: A

4. IMD UNVEILS 'BLOCK-LEVEL' MONSOON FORECAST MODEL

WHY IN NEWS?

- India Meteorological Department (IMD) launched a new **block-level monsoon forecast model** to provide more localised and accurate rainfall predictions across India.

WHAT IS THE BLOCK-LEVEL MONSOON FORECAST MODEL?

- A high-resolution weather forecasting system providing rainfall predictions for smaller administrative units (blocks).
- Improves upon district-level forecasting by offering more localised climate information.

OBJECTIVES OF THE MODEL

Improved Agricultural Planning

- Helps farmers make informed sowing and irrigation decisions.

Disaster Preparedness

- Early warning for floods, droughts, and extreme rainfall events.



Water Resource Management

- Supports reservoir operations and groundwater planning.

Climate Adaptation

- Enhances resilience against climate variability.

KEY FEATURES

- High-resolution weather data.
- Localised rainfall forecasts.
- Integration of satellite observations and numerical weather prediction models.
- Better short-term and medium-term forecasting capability.

SIGNIFICANCE FOR AGRICULTURE

Precision Farming Support

- Crop planning based on local rainfall forecasts.

Reducing Crop Losses

- Early warnings help farmers respond to extreme weather.

Efficient Irrigation Management

- Better water-use efficiency in agriculture.

Strengthening Food Security

- Supports stable agricultural production.

SIGNIFICANCE FOR DISASTER MANAGEMENT

Flood Management

- Better prediction of intense rainfall and flash floods.

Drought Preparedness

- Improved monitoring of rainfall deficits.

Climate Risk Reduction

- Supports local-level disaster response planning.

INDIA'S MONSOON IMPORTANCE

- I. Southwest monsoon contributes the majority of annual rainfall.
- II. Critical for:
 - A. Agriculture
 - B. Drinking water
 - C. Hydropower
 - D. Rural livelihoods
- III. Large share of Indian agriculture remains monsoon-dependent.

CHALLENGES IN MONSOON FORECASTING

Climate Variability



- Increasing unpredictability due to climate change.

Complex Monsoon Dynamics

- Influenced by oceanic and atmospheric interactions.

Extreme Weather Events

- Rising frequency of cloudbursts and heavy rainfall.

Data & Infrastructure Gaps

- Need for dense observation networks and computing capacity.

RELATED CONCEPTS

Numerical Weather Prediction (NWP)

- Use of mathematical models for weather forecasting.

Doppler Weather Radar

- Tracks rainfall and storm movement.

El Niño

- Pacific Ocean warming phenomenon affecting Indian monsoon.

SIGNIFICANCE FOR INDIA

- **Climate Resilience:** Better preparedness against climate risks.
- **Farmer Welfare:** Improved agricultural advisories.

- **Disaster Risk Reduction:** Stronger local-level warning systems.
- **Water Security:** Supports efficient water management.

PRELIMS BOOSTER BOX

- **IMD:** India Meteorological Department.
- **Monsoon:** Seasonal reversal of winds bringing rainfall.
- **Block-Level Forecasting:** Weather prediction for smaller administrative regions.
- **Doppler Radar:** Weather monitoring technology.
- **El Niño:** Climatic phenomenon influencing monsoon variability.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding monsoon forecasting:

1. IMD is India's nodal weather forecasting agency.
 2. El Niño can influence Indian monsoon rainfall.
 3. Doppler Weather Radar is unrelated to rainfall monitoring.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Accurate weather forecasting is critical for agricultural resilience and disaster management in India."
Discuss with reference to



advancements in monsoon forecasting systems.

PadhAI MAINS PRACTICE

QUESTION

- Examine the significance of block-level monsoon forecasting in India.
- How can improved weather prediction strengthen agricultural resilience and disaster preparedness? (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding India's monsoon forecasting system:

1. IMD is responsible for weather forecasting in India.
2. Block-level forecasting provides more localised weather predictions.
3. El Niño has no influence on Indian monsoon rainfall.

Which of the statements given above is/are correct?

Options:

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

Answer: A

5. UNSEASONAL STORMS LEAVE 111 DEAD IN UTTAR PRADESH

WHY IN NEWS?

- Severe unseasonal storms, accompanied by heavy rainfall, lightning, and strong winds, caused widespread destruction and loss of life in Uttar Pradesh.

WHAT ARE UNSEASONAL STORMS?

- I. Extreme weather events occurring outside the usual seasonal pattern.
- II. Often associated with:
 - A. Thunderstorms
 - B. Lightning
 - C. Hailstorms
 - D. Gusty winds
 - E. Heavy rainfall

CAUSES OF UNSEASONAL STORMS

Western Disturbances

- Extratropical weather systems originating near the Mediterranean region.

Atmospheric Instability

- Sudden temperature and moisture variations.



Climate Change

- Increasing frequency and intensity of extreme weather events.

Moisture Incursion & Heat Conditions

- Interaction between warm air and moisture-laden winds.

IMPACTS OF THE STORMS

Loss of Human Lives

- Deaths caused by lightning, collapsing structures, and falling trees.

Agricultural Damage

- Crop destruction affecting farmer incomes.

Infrastructure Damage

- Power outages, damaged roads, and disrupted communication.

Economic Losses

- Impact on livelihoods and local economy.

LIGHTNING AS A MAJOR HAZARD

- I. Lightning is a major cause of weather-related deaths in India.
- II. Most vulnerable groups include:
 - A. Farmers
 - B. Outdoor workers

C. Rural populations

ROLE OF IMD & EARLY WARNING SYSTEMS

India Meteorological Department provides:

- Weather forecasts
- Thunderstorm warnings
- Lightning alerts
- Disaster advisories

Advanced forecasting systems help reduce casualties through timely alerts.

CLIMATE CHANGE LINKAGES

- I. Rising global temperatures increase atmospheric moisture and instability.
- II. Leads to:
 - A. Erratic rainfall
 - B. More intense storms
 - C. Frequent extreme weather events

DISASTER MANAGEMENT RESPONSE

Relief & Compensation

- Assistance to affected families and farmers.

Early Warning Dissemination

- Mobile alerts and local advisories.

Climate-Resilient Infrastructure



- Disaster-resistant housing and power systems.

Community Awareness

- Public safety measures during thunderstorms and lightning.

CHALLENGES

Forecasting Localised Storms

- Short-duration events difficult to predict accurately.

Weak Rural Infrastructure

- Vulnerability of houses and electricity networks.

Limited Awareness

- Poor understanding of lightning safety practices.

Climate Adaptation Gaps

- Increasing disaster frequency strains preparedness systems.

PRELIMS BOOSTER BOX

- **Western Disturbance:** Extratropical storm system affecting northern India.
- **Lightning:** Electrostatic atmospheric discharge.
- **Thunderstorm:** Storm involving lightning and thunder.
- **IMD:** India Meteorological Department.

- **Extreme Weather Event:** Severe climatic event causing major disruption.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding extreme weather events in India:

1. Western Disturbances influence weather in northern India.
2. Lightning is a major cause of weather-related fatalities.
3. Climate change has no impact on extreme rainfall events.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

“Climate change is increasing the frequency and intensity of extreme weather events in India.”

Discuss with reference to thunderstorms, floods, and heatwaves.

PadhAI MAINS PRACTICE QUESTION

- Examine the causes and impacts of unseasonal storms in northern India.
- How can improved forecasting and disaster preparedness reduce vulnerability to extreme weather events? (150 words)



PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding unseasonal storms in India:

1. Western Disturbances can trigger extreme weather events in northern India.
2. Lightning is a major weather-related hazard in India.
3. Climate change is unrelated to increasing weather variability.

Which of the statements given above is/are correct?

Options:

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

Answer: A

6. MONSOON MARKS EARLY ONSET OVER ANDAMAN & NICOBAR, BAY OF BENGAL, ARABIAN SEA

WHY IN NEWS?

- India Meteorological Department (IMD) reported an early onset of the southwest monsoon over the Andaman and Nicobar Islands, parts of the Bay of Bengal, and the Arabian Sea.

WHAT IS MONSOON ONSET?

- The arrival of moisture-laden southwest winds bringing sustained rainfall.
- The onset over Andaman & Nicobar region generally precedes monsoon arrival over mainland India.

MONSOON ADVANCEMENT PROCESS

Initial Onset

- Begins over Andaman Sea and adjoining Bay of Bengal.

Progression Toward Kerala

- Advances northward and westward toward mainland India.

Nationwide Spread

- Covers most parts of India by July.

FACTORS RESPONSIBLE FOR EARLY ONSET

Favourable Sea Surface Temperatures

- Warm ocean waters increase moisture availability.

Strong Cross-Equatorial Winds

- Moisture-laden winds from southern hemisphere strengthen monsoon flow.



Low Pressure Systems

- Formation of low-pressure areas over Bay of Bengal.

Atmospheric Circulation Patterns

- Supportive wind and pressure conditions.

IMPORTANCE OF EARLY MONSOON ADVANCEMENT

Agricultural Planning

- Helps timely sowing of Kharif crops.

Water Resource Recharge

- Improves reservoir and groundwater conditions.

Heatwave Relief

- Brings reduction in extreme summer temperatures.

Economic Significance

- Supports rural economy and food production.

SOUTHWEST MONSOON SYSTEM

Arabian Sea Branch

- Brings rainfall to western coast and central India.

Bay of Bengal Branch

- Moves toward northeastern and eastern India.

CLIMATE FACTORS AFFECTING MONSOON

El Niño

- May weaken monsoon rainfall.

La Niña

- Often associated with stronger monsoon conditions.

Indian Ocean Dipole (IOD)

- Influences rainfall distribution over India.

Climate Change

- Increasing unpredictability and extreme rainfall events.

CHALLENGES

Erratic Rainfall Distribution

- Early onset may not ensure normal rainfall everywhere.

Extreme Weather Events



- Increased risk of floods and cloudbursts.

Forecasting Complexity

- Monsoon behaviour depends on multiple climatic interactions.

Agricultural Vulnerability

- Rain-fed agriculture remains highly dependent on monsoon performance.

ROLE OF IMD

- Monitors monsoon progression and rainfall trends.
- Provides weather advisories and disaster warnings.
- Uses satellite observations, Doppler radars, and numerical weather models.

RELATED TERMS

ITCZ

- Inter-Tropical Convergence Zone influencing monsoon circulation.

Kharif Crops

- Crops grown during monsoon season.

Cross-Equatorial Flow

- Winds crossing equator contributing to monsoon formation.

PRELIMS BOOSTER BOX

- **Southwest Monsoon:** Main rainy season in India.
- **Arabian Sea Branch:** Monsoon branch affecting western India.
- **Bay of Bengal Branch:** Monsoon branch affecting eastern and northeastern India.
- **ITCZ:** Low-pressure convergence zone near equator.
- **El Niño:** Climatic phenomenon affecting monsoon variability.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding the southwest monsoon:

1. The monsoon first advances over the Andaman Sea region before mainland India.
2. The Bay of Bengal and Arabian Sea branches are components of the southwest monsoon.
3. El Niño has no effect on Indian monsoon rainfall.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"The Indian monsoon is influenced by multiple oceanic and atmospheric factors."

Discuss the progression and variability of the southwest monsoon system.



PadhAI MAINS PRACTICE QUESTION

- Explain the significance of the early onset of the southwest monsoon over the Andaman & Nicobar region.
- Discuss the major climatic factors influencing monsoon progression in India. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding the southwest monsoon:

1. The monsoon usually first advances over the Andaman Sea region.
2. The southwest monsoon has Arabian Sea and Bay of Bengal branches.
3. La Niña always weakens the Indian monsoon.

Which of the statements given above is/are correct?

Options:

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

Answer: A

7. MIN TEMPS RISING FASTER THAN MAX

WHY IN NEWS?

- Recent climate studies show that minimum temperatures (night-time temperatures) are rising faster than maximum daytime temperatures in many parts of India and across the globe.

WHAT DOES IT MEAN?

- **Maximum Temperature:** Highest daytime temperature recorded.
- **Minimum Temperature:** Lowest temperature, usually recorded at night.
- Studies show night-time warming is occurring at a faster pace than daytime warming.

CAUSES OF FASTER RISE IN MINIMUM TEMPERATURES

Greenhouse Gas Effect

- Greenhouse gases trap outgoing heat during night-time.

Urban Heat Island Effect

- Concrete structures retain and slowly release heat at night.

Cloud Cover Changes

- Clouds trap longwave radiation, reducing night-time cooling.



Land Use Changes

- Deforestation and urbanisation alter local climate systems.

IMPACTS OF RISING MINIMUM TEMPERATURES

Human Health Risks

- Reduced night-time cooling increases heat stress and mortality.

Agricultural Impacts

- Affects crop productivity and flowering cycles.

Higher Energy Demand

- Increased use of cooling systems at night.

Ecosystem Disturbance

- Alters species behaviour and ecological balance.

IMPACT ON AGRICULTURE

- I. Crops require cooler night temperatures for proper growth.
- II. Rising night-time temperatures may:
 - A. Reduce yields
 - B. Affect grain quality
 - C. Increase pest activity

CLIMATE CHANGE LINKAGES

- Global warming is increasing average temperatures worldwide.
- Night-time warming is a recognised climate change indicator.
- Extreme heat events are becoming more frequent and prolonged.

URBAN HEAT ISLAND EFFECT

- I. Urban areas become warmer than surrounding rural areas due to:
 - A. Concrete surfaces
 - B. Reduced vegetation
 - C. Vehicular emissions
 - D. Heat-retaining infrastructure

CHALLENGES

Public Health Preparedness

- Heat-related illnesses increasing.

Urban Planning Gaps

- Limited green spaces and poor ventilation.

Agricultural Vulnerability

- Climate-sensitive crops affected.

Climate Adaptation Needs

- Rising temperatures require long-term adaptation strategies.



MITIGATION & ADAPTATION MEASURES

- Increasing urban green cover.
- Heat Action Plans for cities.
- Climate-resilient agriculture practices.
- Energy-efficient infrastructure.
- Reduction of greenhouse gas emissions.

SIGNIFICANCE FOR INDIA

- India highly vulnerable to heat stress due to large population and tropical climate.
- Impacts food security, health systems, and energy demand.
- Highlights urgency of climate adaptation and sustainable urbanisation.

PRELIMS BOOSTER BOX

- **Greenhouse Effect:** Trapping of heat by atmospheric gases.
- **Urban Heat Island:** Urban areas warmer than nearby rural regions.
- **Climate Change:** Long-term alteration in climate patterns.
- **Heat Stress:** Adverse health impact due to high temperatures.
- **Longwave Radiation:** Heat energy emitted from Earth's surface.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding climate change:

1. Greenhouse gases trap heat in the atmosphere.
 2. Urban Heat Island effect can increase night-time temperatures.
 3. Rising minimum temperatures have no impact on agriculture.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Climate change is increasing the frequency and intensity of heat-related risks in India."

Discuss with reference to rising temperatures, urbanisation, and public health.

PadhAI MAINS PRACTICE QUESTION

- Explain why minimum temperatures are rising faster than maximum temperatures.
- Discuss the implications of this trend for agriculture, public health, and urban sustainability in India. (150 words)



PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding rising minimum temperatures:

1. Greenhouse gases contribute to higher night-time warming.
2. Urban Heat Island effect can increase minimum temperatures in cities.
3. Rising minimum temperatures have no effect on crop productivity.

Which of the statements given above is/are correct?

Options:

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

Answer: A



Subject

Environment & Ecology



1. KEEPING INDIA'S CARBON MONEY AT HOME

WHY IN NEWS?

- Debates have intensified in India over how carbon credits and climate finance generated through emission reduction projects should be managed to ensure domestic economic and environmental benefits.

WHAT ARE CARBON CREDITS?

- I. Tradable certificates representing reduction or removal of greenhouse gas emissions.
- II. Typically:
 - A. **1 carbon credit = 1 tonne of CO₂ equivalent reduced or removed.**
- III. Generated through activities such as:
 - A. Renewable energy projects
 - B. Afforestation
 - C. Energy efficiency improvements

WHAT IS CARBON TRADING?

- Mechanism allowing entities to buy and sell emission reduction credits.
- Helps countries and companies meet climate targets cost-effectively.

WHY IS INDIA CONCERNED?

Future Climate Commitments

- Exporting credits may reduce availability for meeting domestic net-zero goals.

Economic Value Leakage

- Financial benefits from carbon reduction may flow abroad.

Need for Domestic Carbon Market

- India seeks to develop its own regulated carbon trading ecosystem.

Energy Transition Financing

- Carbon revenues can support green infrastructure and clean energy projects.

INDIA'S CLIMATE TARGETS

Under its updated climate commitments, India aims to:

- Reduce emissions intensity of GDP.
- Increase non-fossil fuel energy capacity.
- Achieve net-zero emissions by 2070.



INDIA'S CARBON MARKET INITIATIVES

Carbon Credit Trading Scheme (CCTS)

- Framework for developing the domestic carbon market.

PAT Scheme

- Perform, Achieve and Trade mechanism for industrial energy efficiency.

Renewable Energy Expansion

- Large-scale solar and green energy projects.

SIGNIFICANCE OF RETAINING "CARBON MONEY"

Supporting Domestic Climate Goals

- Helps India meet long-term decarbonisation targets.

Green Economic Growth

- Generates investment for sustainable industries.

Energy Security

- Supports transition to renewable energy.

Climate Finance Mobilisation

- Encourages low-carbon technologies and infrastructure.

CHALLENGES

Balancing Global & Domestic Interests

- Need to participate in global carbon markets while safeguarding national priorities.

Measurement & Verification Issues

- Accurate carbon accounting remains complex.

Regulatory Framework Development

- Domestic carbon market mechanisms still evolving.

Equity Concerns

- Developing countries seek fair climate finance arrangements.

INTERNATIONAL FRAMEWORKS

Paris Agreement

- I. Global climate agreement under:
 - A. United Nations Framework Convention on Climate Change (UNFCCC).



Article 6 of Paris Agreement

- Provides framework for international carbon markets and cooperative approaches.

SIGNIFICANCE FOR INDIA

- **Climate Sovereignty:** Greater control over domestic emission reductions.
- **Economic Opportunity:** Carbon markets can create green jobs and investments.
- **Sustainable Development:** Aligns climate action with growth objectives.
- **Global Climate Leadership:** Strengthens India's role in climate governance.

PRELIMS BOOSTER BOX

- **Carbon Credit:** Tradable unit representing emission reduction.
- **Net Zero:** Balancing emissions with removals.
- **Article 6:** Paris Agreement provision on carbon markets.
- **PAT Scheme:** Perform, Achieve and Trade mechanism.
- **UNFCCC:** United Nations Framework Convention on Climate Change.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding carbon markets:

1. Carbon credits represent quantified emission reductions.
 2. Article 6 of the Paris Agreement relates to carbon trading mechanisms.
 3. Carbon markets are unrelated to climate finance.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
"Carbon markets can support climate action but raise concerns regarding equity and national interests."
Discuss with reference to India's climate strategy.

PadhAI MAINS PRACTICE QUESTION

- What are carbon credits?
- Examine the significance and challenges of developing a domestic carbon market in India. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding carbon credits and carbon markets:

1. One carbon credit generally represents one tonne of carbon dioxide equivalent reduced.
2. Article 6 of the Paris Agreement deals with international carbon market mechanisms.
3. Carbon trading has no relation to climate finance or energy transition.



Which of the statements given above is/are correct?

Options:

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

Answer: A

2. INDIA'S 1st GREEN METHANOL PLANT IN KUTCH

WHY IN NEWS?

- India's first green methanol plant was inaugurated in Kutch, marking a significant step toward clean energy transition and green fuel development.

WHAT IS GREEN METHANOL?

- Methanol produced using renewable energy and low-carbon processes.
- Unlike conventional methanol derived from fossil fuels, green methanol has significantly lower carbon emissions.

Production Sources

- Green hydrogen
- Biomass
- Captured carbon dioxide (CO₂)
- Renewable electricity

USES OF GREEN METHANOL

Clean Fuel

- Used in shipping, transport, and power generation.

Industrial Feedstock

- Chemical and petrochemical industries.

Hydrogen Carrier

- Can support hydrogen economy development.

Energy Storage

- Alternative low-carbon energy source.

SIGNIFICANCE OF THE PROJECT

Energy Transition

- Supports shift away from fossil fuels.

Reducing Carbon Emissions

- Helps decarbonise hard-to-abate sectors.

Energy Security

- Reduces dependence on imported fuels.

Green Industrial Growth



- Promotes clean technology and green jobs.

LINK WITH NATIONAL INITIATIVES

National Green Hydrogen Mission

- Promotes green hydrogen and related fuels.

Net Zero Target

- India aims for net-zero emissions by 2070.

Sustainable Development Goals (SDGs)

- Supports clean energy and climate action goals.

ADVANTAGES OF GREEN METHANOL

- Lower greenhouse gas emissions.
- Cleaner combustion compared to fossil fuels.
- Easier storage and transport than hydrogen.
- Potential maritime fuel alternative.

CHALLENGES

High Production Costs

- Renewable energy-based production remains expensive.

Technology Constraints

- Need for advanced electrolysis and carbon capture systems.

Infrastructure Requirements

- Storage, transport, and fuel distribution systems needed.

Renewable Energy Dependence

- Requires reliable clean electricity supply.

GLOBAL CONTEXT

- Countries are exploring green fuels to decarbonise transport and industry.
- Green methanol gaining attention in maritime shipping sector.

SIGNIFICANCE FOR INDIA

- **Clean Energy Transition:** Supports low-carbon economy.
- **Industrial Innovation:** Encourages green manufacturing.
- **Climate Commitments:** Helps meet Paris Agreement targets.
- **Strategic Advantage:** Positions India in emerging green fuel markets.

PRELIMS BOOSTER BOX

- **Green Methanol:** Low-carbon methanol produced using renewable energy.



- **Green Hydrogen:** Hydrogen produced through renewable-powered electrolysis.
- **Net Zero:** Balancing emissions with removals.
- **Carbon Capture:** Technology for capturing CO₂ emissions.
- **Electrolysis:** Splitting water into hydrogen and oxygen using electricity.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding green methanol:
 1. Green methanol can be produced using renewable energy sources.
 2. It is considered a cleaner alternative fuel.
 3. Green methanol is produced only from coal.

Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"India's transition toward green fuels is essential for achieving energy security and climate goals."
Discuss with reference to green hydrogen and green methanol initiatives.

PadhAI MAINS PRACTICE QUESTION

- What is green methanol?
- Examine its significance for India's clean energy transition and the challenges associated with its large-scale adoption. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding green methanol:

1. It can be produced using renewable energy sources.
2. It is considered a low-carbon alternative fuel.
3. Green methanol has no role in reducing greenhouse gas emissions.

Which of the statements given above is/are correct?

Options:

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

Answer: A



3. NICOBAR PROJECT RATIFIED WITHOUT 50% QUORUM

WHY IN NEWS?

- Concerns were raised regarding the approval process of the mega infrastructure project in Great Nicobar Island after reports indicated that mandatory quorum requirements were allegedly not fulfilled during a key tribal council meeting.

WHAT IS THE GREAT NICOBAR PROJECT?

A large-scale infrastructure development initiative involving:

- International container transshipment terminal
- Greenfield airport
- Township development
- Power infrastructure

LOCATION SIGNIFICANCE

Great Nicobar Island is strategically located near:

- Malacca Strait shipping route.

The project aims to strengthen:

- Maritime connectivity
- Trade infrastructure
- Strategic presence in the Indian Ocean Region (IOR).

WHAT IS THE QUORUM ISSUE?

- Reports suggest approval was ratified despite absence of required participation levels in a tribal council meeting.
- Raises concerns regarding compliance with legal safeguards protecting indigenous communities.

TRIBAL & LEGAL CONTEXT

Indigenous Communities

The island is home to vulnerable tribal groups such as:

- Shompen Tribe
- Nicobarese Tribe

Relevant Legal Protections

- Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956
- Forest and environmental clearance procedures.

ENVIRONMENTAL CONCERNS

Biodiversity Loss

- Region contains ecologically sensitive forests and marine ecosystems.

Threat to Endemic Species

- Habitat risks for unique flora and fauna.



Deforestation & Coastal Impact

- Large-scale construction may alter fragile island ecology.

Disaster Vulnerability

- Island lies in seismically active and tsunami-prone region.

STRATEGIC SIGNIFICANCE OF THE PROJECT

Maritime Security

- Enhances India's presence in Indian Ocean Region.

Trade & Connectivity

- Supports transshipment and shipping infrastructure.

Blue Economy Development

- Expands port-led economic growth.

Geostrategic Competition

- Important amid growing Indo-Pacific strategic dynamics.

CHALLENGES

Balancing Development & Ecology

- Infrastructure expansion in fragile ecosystems.

Protection of Indigenous Rights

- Need for meaningful consultation and consent mechanisms.

Disaster Risks

- Vulnerability to earthquakes and tsunamis.

Transparency & Governance Concerns

- Questions regarding procedural compliance.

RELATED CONCEPTS

Blue Economy

- Sustainable use of ocean resources for economic growth.

Environmental Impact Assessment (EIA)

- Assessment of environmental consequences of projects.

Particularly Vulnerable Tribal Groups (PVTGs)

- Most vulnerable among tribal communities.

SIGNIFICANCE FOR INDIA

- Highlights complexities of sustainable island development.
- Reflects strategic importance of Andaman & Nicobar Islands.



- Raises important debates on environmental governance and tribal rights.
- Critical for balancing national security with ecological sustainability.

PRELIMS BOOSTER BOX

- **Great Nicobar Island:** Southernmost island of Andaman & Nicobar group.
- **Malacca Strait:** Key global maritime trade route.
- **PVTG:** Particularly Vulnerable Tribal Group.
- **Blue Economy:** Sustainable ocean-based economic development.
- **EIA:** Environmental Impact Assessment.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding Great Nicobar Island:
 1. It is strategically located near the Malacca Strait.
 2. The island hosts vulnerable indigenous tribal communities.
 3. The region is free from seismic and tsunami risks.

Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
“Development projects in ecologically sensitive regions often involve conflicts between environmental conservation, indigenous rights, and strategic

interests.”

Discuss with reference to island development projects in India.

PadhAI MAINS PRACTICE QUESTION

- Examine the environmental, strategic, and tribal concerns associated with the Great Nicobar development project.
- How can India balance infrastructure development with ecological sustainability? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding the Great Nicobar project:

1. The project includes port and airport infrastructure development.
2. Great Nicobar Island is strategically located near major maritime trade routes.
3. The region has no ecological or tribal sensitivities.

Which of the statements given above is/are correct?

Options:

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

Answer: A



4. A DECENTRALISED SOLUTION FOR WASTE CRISIS

WHY IN NEWS?

- Growing urban waste generation in India has renewed focus on decentralised waste management systems as a sustainable solution to mounting landfill pressure and environmental degradation.

WHAT IS DECENTRALISED WASTE MANAGEMENT?

- Waste management system where waste is processed close to the point of generation rather than transported to distant landfills.

Includes:

- Source segregation
- Composting
- Biomethanation
- Recycling
- Local material recovery facilities

INDIA'S WASTE MANAGEMENT CHALLENGE

Rapid Urbanisation

- Increasing municipal solid waste generation.

Landfill Overload

- Existing dump sites exceeding capacity.

Poor Segregation Practices

- Mixed waste reduces recycling efficiency.

Environmental Pollution

- Leachate, methane emissions, and air pollution from dumpsites.

ADVANTAGES OF DECENTRALISED WASTE MANAGEMENT

Reduced Landfill Burden

- Less waste transported to dumping grounds.

Lower Transportation Costs

- Waste processed locally.

Improved Recycling Efficiency

- Better segregation at source.

Environmental Benefits

- Reduced greenhouse gas emissions and pollution.

Community Participation

- Encourages citizen involvement and behavioural change.



KEY COMPONENTS

Source Segregation

- Separation of wet, dry, and hazardous waste at household level.

Composting

- Conversion of biodegradable waste into manure.

Biomethanation

- Production of biogas from organic waste.

Material Recovery Facilities (MRFs)

- Sorting and recycling of dry waste.

RELEVANT GOVERNMENT INITIATIVES

Swachh Bharat Mission (SBM)

- Focus on sanitation and scientific waste management.

Solid Waste Management Rules, 2016

- Mandate segregation and scientific disposal of waste.

Waste-to-Energy Initiatives

- Promote energy recovery from waste.

CHALLENGES TO DECENTRALISED SYSTEMS

Public Awareness Gaps

- Poor compliance with waste segregation.

Institutional Capacity Issues

- Urban local bodies often lack resources.

Financial Constraints

- Need for infrastructure and maintenance support.

Informal Sector Integration

- Waste pickers often excluded from formal systems.

ENVIRONMENTAL SIGNIFICANCE

- Reduces methane emissions from landfills.
- Minimises groundwater contamination.
- Promotes circular economy and resource recovery.

WHAT IS A CIRCULAR ECONOMY?

- I. Economic system focused on:
 - A. Reuse
 - B. Recycling



- C. Resource efficiency
- D. Waste minimisation

WAY FORWARD

- Strengthening source segregation.
- Promoting community-led waste management.
- Integrating informal waste workers.
- Expanding composting and recycling infrastructure.
- Encouraging Extended Producer Responsibility (EPR).

PRELIMS BOOSTER BOX

- **Solid Waste Management Rules, 2016:** Framework for scientific waste management.
- **Composting:** Decomposition of organic waste into manure.
- **Biomethanation:** Biogas production from organic waste.
- **Circular Economy:** Resource-efficient economic model.
- **EPR:** Extended Producer Responsibility for waste management.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding waste management:
 1. Source segregation improves recycling efficiency.
 2. Composting is used for biodegradable waste management.

3. Landfills have no environmental impact.
Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**
“Scientific waste management is essential for sustainable urbanisation.”
Discuss the role of decentralised waste management systems in addressing India’s urban waste crisis.

PadhAI MAINS PRACTICE QUESTION

- What is decentralised waste management?
- Examine its significance in addressing India’s urban waste crisis and discuss the challenges associated with its implementation. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding decentralised waste management:

1. It involves processing waste near the point of generation.
2. Source segregation is important for efficient recycling.
3. Composting is unrelated to biodegradable waste management.

Which of the statements given above is/are correct?



Options:

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

Answer: A

5. INDIA TO HOST BIG CAT SUMMIT IN JUNE

WHY IN NEWS?

- India announced that it will host the first-ever International Big Cat Alliance (IBCA) Summit in New Delhi in June 2026 to strengthen global cooperation on big cat conservation.

WHAT IS THE INTERNATIONAL BIG CAT ALLIANCE (IBCA)?

- A global initiative launched by India in 2023 during the 50th anniversary of Project Tiger.

Objective

- Conservation of the world's seven major big cat species through international cooperation.

Headquarters

- New Delhi.

BIG CAT SPECIES COVERED UNDER IBCA

1. Tiger
2. Lion
3. Leopard
4. Snow Leopard
5. Cheetah
6. Jaguar
7. Puma

KEY FEATURES OF THE SUMMIT

Global Conservation Cooperation

- Encourages transboundary conservation and knowledge sharing.

Delhi Declaration

- Proposed global declaration on big cat conservation.

Participation of Range Countries

- Countries hosting big cat populations expected to participate.

Focus on Ecosystem Conservation

- Landscape-based conservation approach.

THEME OF THE SUMMIT

- "Save Big Cats, Save Humanity, Save Ecosystem."



INDIA'S ROLE IN BIG CAT CONSERVATION

Project Tiger (1973)

- Landmark programme for tiger conservation.

National Tiger Conservation Authority (NTCA)

- Nodal body for tiger protection.

Cheetah Reintroduction Programme

- African cheetahs introduced in India.

Asiatic Lion Conservation

- Conservation efforts in Gir landscape.

SIGNIFICANCE OF THE SUMMIT

Global Biodiversity Conservation

- Protects endangered species and ecosystems.

Climate & Ecological Benefits

- Big cat habitats support forests and carbon sequestration.

Strengthening India's Leadership

- Enhances India's role in global environmental governance.

Promoting Transboundary Cooperation

- Addresses poaching and habitat fragmentation collectively.

CHALLENGES IN BIG CAT CONSERVATION

Habitat Loss & Fragmentation

- Due to urbanisation and infrastructure expansion.

Poaching & Illegal Wildlife Trade

- Major threat to endangered species.

Human-Wildlife Conflict

- Increasing interaction near forest fringes.

Climate Change

- Alters ecosystems and prey availability.

RELATED CONCEPTS

Keystone Species

- Species playing critical ecological roles in ecosystems.

Wildlife Corridors

- Ecological pathways connecting fragmented habitats.



In-Situ Conservation

- Conservation within natural habitats.

PRELIMS BOOSTER BOX

- **IBCA:** International Big Cat Alliance.
- **Project Tiger:** Launched in 1973.
- **NTCA:** National Tiger Conservation Authority.
- **Keystone Species:** Species crucial for ecosystem balance.
- **Wildlife Corridor:** Habitat connectivity route for animals.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding big cat conservation:

1. India launched the International Big Cat Alliance in 2023.
2. The alliance focuses on conservation of seven major big cat species.
3. Jaguars are naturally found in India.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Wildlife conservation requires international cooperation and ecosystem-based approaches."

Discuss with reference to global initiatives for big cat conservation.

PadhAI MAINS PRACTICE QUESTION

- Examine the significance of the International Big Cat Alliance (IBCA) in strengthening global wildlife conservation efforts.
- Discuss India's role in big cat conservation. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding the International Big Cat Alliance (IBCA):

1. It was launched by India in 2023.
2. It focuses on conservation of seven major big cat species.
3. The headquarters of IBCA is located in Geneva.

Which of the statements given above is/are correct?

Options:

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

Answer: A



6. BOOSTING ENERGY SECURITY WITH DECENTRALISED BIOENERGY

WHY IN NEWS?

- India is increasingly focusing on decentralised bioenergy systems to strengthen energy security, reduce fossil fuel dependence, and promote sustainable rural development.

WHAT IS BIOENERGY?

- Energy produced from organic biological materials (biomass).

Biomass Sources

- Agricultural residue
- Animal waste
- Forestry waste
- Municipal organic waste
- Energy crops

WHAT IS DECENTRALISED BIOENERGY?

- Localised production and consumption of bioenergy near the source of biomass generation.

Examples

- Biogas plants
- Biomass gasifiers
- Bio-CNG units
- Community-level biofuel systems

IMPORTANCE OF DECENTRALISED BIOENERGY

Energy Security

- Reduces dependence on imported fossil fuels.

Rural Development

- Generates local employment and income opportunities.

Waste Management

- Utilises agricultural and organic waste productively.

Climate Benefits

- Lower greenhouse gas emissions compared to fossil fuels.

TYPES OF BIOENERGY SYSTEMS

Biogas

- Produced through anaerobic digestion of organic waste.

Bio-CNG

- Purified biogas used as transport fuel.

Biomass Gasification

- Conversion of biomass into combustible gas.



Biofuels

- Ethanol and biodiesel used in transportation sector.

GOVERNMENT INITIATIVES

SATAT Scheme

- Sustainable Alternative Towards Affordable Transportation initiative for Bio-CNG.

National Bioenergy Programme

- Promotes biomass and waste-to-energy projects.

Ethanol Blending Programme

- Increasing ethanol mixing in petrol.

Gobar-Dhan Scheme

- Converts cattle and organic waste into energy and compost.

ADVANTAGES OF DECENTRALISED BIOENERGY

Reduced Transmission Losses

- Local energy generation improves efficiency.

Cleaner Cooking & Energy Access

- Reduces dependence on traditional biomass burning.

Circular Economy Promotion

- Converts waste into useful energy resources.

Support for Net Zero Goals

- Contributes to low-carbon development.

CHALLENGES

Feedstock Availability & Collection

- Biomass supply chain management difficult.

High Initial Costs

- Infrastructure and technology investment required.

Technology & Maintenance Issues

- Need for skilled manpower and operational support.

Awareness & Adoption Barriers

- Limited awareness in rural and urban areas.

ENVIRONMENTAL SIGNIFICANCE

- Reduces stubble burning and air pollution.
- Lowers methane emissions from organic waste.



- Promotes sustainable waste management.

- **Anaerobic Digestion:** Oxygen-free decomposition process.

LINK WITH INDIA'S CLIMATE GOALS

- Supports renewable energy expansion.
- Helps reduce carbon emissions intensity.
- Aligns with India's net-zero target by 2070.

RELATED CONCEPTS

Circular Economy

- Reuse and recycling of resources for sustainability.

Anaerobic Digestion

- Breakdown of organic matter without oxygen to produce biogas.

Bio-CNG

- Compressed purified biogas used as fuel.

PRELIMS BOOSTER BOX

- **Bioenergy:** Energy derived from biomass.
- **Biogas:** Methane-rich fuel from organic waste.
- **SATAT:** Scheme promoting compressed biogas production.
- **Gobar-Dhan:** Waste-to-wealth initiative.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding bioenergy:

1. Biogas can be produced from animal and agricultural waste.
2. Decentralised bioenergy systems can support rural energy access.
3. Bioenergy has no role in climate mitigation.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Bioenergy can contribute significantly to India's energy security and sustainable development goals."

Discuss with reference to decentralised renewable energy systems.

PadhAI MAINS PRACTICE QUESTION

- What is decentralised bioenergy?
- Examine its significance for India's energy security, rural development, and climate goals. (150 words)



PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding decentralised bioenergy:

1. It involves local production and use of biomass-based energy.
2. Bio-CNG can be produced from organic waste.
3. Decentralised bioenergy increases dependence on imported fossil fuels.

Which of the statements given above is/are correct?

Options:

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

Answer: A

7. INDIA'S EV AMBITION NEEDS A GRID STRATEGY TO MATCH

WHY IN NEWS?

- As India accelerates electric vehicle (EV) adoption, experts have highlighted the need for a robust electricity grid strategy to support rising power demand and charging infrastructure expansion.

WHAT ARE ELECTRIC VEHICLES (EVs)?

- Vehicles powered fully or partially by electricity instead of conventional fossil fuels.

Types

- Battery Electric Vehicles (BEVs)
- Hybrid Electric Vehicles (HEVs)
- Plug-in Hybrid Electric Vehicles (PHEVs)

INDIA'S EV PUSH

Key Government Initiatives

FAME Scheme

- Faster Adoption and Manufacturing of Hybrid and Electric Vehicles.

PM E-Drive Initiatives

- Support for EV infrastructure and adoption.

PLI Schemes

- Incentives for battery and EV manufacturing.

WHY GRID STRATEGY IS IMPORTANT

Rising Electricity Demand

- Large-scale EV charging increases power consumption.



Peak Load Management

- Simultaneous charging may strain grid during peak hours.

Renewable Energy Integration

- EV transition should align with clean energy generation.

Charging Infrastructure Expansion

- Reliable electricity supply essential for charging stations.

CHALLENGES FOR INDIA'S POWER GRID

Distribution Infrastructure Constraints

- Local distribution networks may face overloads.

Coal Dependency

- EV benefits reduced if electricity generated mainly from fossil fuels.

Renewable Intermittency

- Solar and wind energy variability complicates supply management.

Urban-Rural Infrastructure Gap

- Uneven charging and grid infrastructure development.

SMART GRID SOLUTIONS

Smart Charging

- Charging EVs during off-peak hours.

Vehicle-to-Grid (V2G) Technology

- EV batteries can feed electricity back into the grid.

Energy Storage Systems

- Battery storage stabilises renewable energy supply.

Time-of-Day Tariffs

- Differential electricity pricing to manage demand.

ROLE OF RENEWABLE ENERGY

- I. EV transition more sustainable when powered by:
 - A. Solar energy
 - B. Wind energy
 - C. Hydropower
- II. Supports low-carbon mobility goals.

SIGNIFICANCE OF EV TRANSITION

Energy Security

- Reduces oil import dependence.

Climate Mitigation

- Lower greenhouse gas emissions.



Cleaner Urban Air

- Reduction in vehicular pollution.

Industrial Growth

- Expands battery and EV manufacturing ecosystem.

WAY FORWARD

- Strengthening transmission and distribution networks.
- Expanding renewable energy capacity.
- Developing nationwide charging infrastructure.
- Promoting battery recycling and storage systems.
- Coordinated planning between transport and power sectors.

RELATED CONCEPTS

Smart Grid

- Digitally managed electricity network improving efficiency and reliability.

Vehicle-to-Grid (V2G)

- Two-way electricity exchange between EVs and grid.

Battery Energy Storage System (BESS)

- Technology for storing electricity for later use.

PRELIMS BOOSTER BOX

- **FAME Scheme:** EV promotion scheme in India.
- **Smart Grid:** Intelligent electricity management system.
- **V2G:** Vehicle-to-grid technology.
- **BESS:** Battery Energy Storage System.
- **PLI Scheme:** Production Linked Incentive scheme.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding electric vehicles:

1. EV adoption can increase electricity demand significantly.
 2. Smart charging can help reduce grid stress.
 3. EV transition automatically eliminates dependence on fossil fuels in electricity generation.
- Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Electric mobility transition requires simultaneous reforms in the power sector."

Discuss the challenges and opportunities associated with India's EV expansion.



PadhAI MAINS PRACTICE

QUESTION

- Examine the importance of grid modernisation for India's electric vehicle transition.
- Discuss the major challenges and possible solutions for integrating EVs with the power sector. (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding electric vehicle (EV) transition:

1. Large-scale EV adoption can increase electricity demand.
2. Smart charging can help manage peak electricity loads.
3. Vehicle-to-Grid (V2G) technology allows EV batteries to interact with the electricity grid.

Which of the statements given above is/are correct?

Options:

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

Answer: D



Subject

History, Art & Culture



1. WHAT HAPPENED TO KOMAGATA MARU PASSENGERS IN 1914?



An image shows Punjabi migrants aboard the Komagata Maru in Vancouver in 1914.

WHY IN NEWS?

- The Komagata Maru Incident is frequently recalled in discussions on colonial discrimination, migration rights, and India's freedom struggle.

WHAT WAS THE KOMAGATA MARU?

- I. A Japanese steamship carrying 376 passengers, mostly Punjabis from British India.
- II. Chartered by:
 - A. Gurdit Singh
- III. The passengers sought to migrate to Canada for better opportunities.

WHY WERE PASSENGERS DENIED ENTRY?

Canadian Immigration Policies

Canada enforced discriminatory regulations such as:

Continuous Journey Regulation

- Migrants had to arrive directly from their country of origin without intermediate stops.

Financial Requirements

- Required migrants to possess large sums of money.

These rules specifically targeted Asian immigrants, including Indians.

WHAT HAPPENED IN CANADA?

Arrival at Vancouver

- The ship reached Vancouver in May 1914.

Denial of Entry

- Most passengers were not allowed to disembark.

Two-Month Standoff

- Passengers faced food shortages and harsh conditions.

Forced Return

- The ship was compelled to return to India.



WHAT HAPPENED AFTER RETURN TO INDIA?

Budge Budge Incident

- Upon arrival near Kolkata in September 1914, British authorities attempted to control and detain passengers.

Violence & Casualties

- Clashes broke out between passengers and colonial police.
- Several passengers were killed and many arrested.

SIGNIFICANCE OF THE INCIDENT

Symbol of Racial Discrimination

- Exposed discriminatory immigration policies in colonial societies.

Boost to Indian Nationalism

- Strengthened anti-colonial sentiment among Indians.

Connection with Ghadar Movement

- Influenced revolutionary nationalist activities abroad.

Diaspora Political Awakening

- Mobilised overseas Indians politically.

LINK WITH GHADAR MOVEMENT

Ghadar Party used the incident to mobilise Indians against British rule.

Objective of Ghadar Movement

- Armed struggle for Indian independence.

BROADER HISTORICAL CONTEXT

- I. Occurred during:
 - A. British colonial rule in India
 - B. Rising global anti-Asian racism
 - C. Growth of Indian nationalist movements abroad

LEGACY OF KOMAGATA MARU INCIDENT

Apologies & Recognition

- Canada later officially apologised for the incident.

Historical Memory

- Remembered as a struggle against racism and colonial injustice.

Diaspora Identity

- Significant event in Indian diaspora history.



PRELIMS BOOSTER BOX

- **Komagata Maru:** Japanese ship carrying Indian migrants in 1914.
- **Gurdit Singh:** Organiser of the voyage.
- **Continuous Journey Regulation:** Canadian discriminatory immigration law.
- **Budge Budge:** Site of clash after ship's return to India.
- **Ghadar Party:** Revolutionary anti-colonial organisation.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding the Komagata Maru incident:
 1. The passengers were denied entry into Canada due to discriminatory immigration laws.
 2. The incident became associated with anti-colonial nationalist movements.
 3. The ship originated from Britain.Which of the statements given above is/are correct?
Answer: 1 and 2 only.
- **Mains PYQ:**
"The Indian diaspora played an important role in India's freedom struggle."
Discuss with reference to the Komagata Maru incident and the Ghadar Movement.

PadhAI MAINS PRACTICE

QUESTION

- Discuss the significance of the Komagata Maru incident in the context of colonial discrimination, Indian nationalism, and the role of the Indian diaspora in the freedom struggle. (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding the Komagata Maru incident:

1. The ship carried Indian migrants seeking entry into Canada.
2. The incident highlighted racial discrimination in immigration policies.
3. The passengers were welcomed and settled peacefully in Canada.

Which of the statements given above is/are correct?

Options:

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

Answer: A



2. ARTIST BRINGS SWANG FOLK ART TO GLOBAL STAGE

WHY IN NEWS?

- A folk artist from Haryana has gained international recognition for promoting and reviving the traditional Swang folk theatre form on global platforms.

WHAT IS SWANG?

- I. A traditional folk theatre form combining:
 - A. Music
 - B. Dance
 - C. Acting
 - D. Dialogue
 - E. Storytelling
- II. Popular mainly in:
 - A. Haryana
 - B. Rajasthan
 - C. Western Uttar Pradesh
 - D. Punjab regions

FEATURES OF SWANG

Musical Storytelling

- Performances involve songs and dramatic narration.

Social & Religious Themes

- Stories based on mythology, folklore, and social issues.

Minimal Stage Setup

- Simple costumes and limited props.

Interactive Performance Style

- Strong audience engagement and humour.

HISTORICAL BACKGROUND

- Swang evolved as a rural entertainment and community theatre tradition.
- Influenced by Bhakti and folk traditions.
- Played an important role in preserving oral cultural heritage.

CULTURAL SIGNIFICANCE

Preservation of Folk Traditions

- Reflects local language, customs, and traditions.

Community Participation

- Performed during festivals and social gatherings.

Social Awareness

- Used to spread moral and social messages.

Regional Identity

- Represents cultural heritage of north India.



CHALLENGES FACED BY SWANG

Declining Popularity

- Competition from modern entertainment platforms.

Lack of Financial Support

- Folk artists often face economic hardships.

Generational Decline

- Fewer young performers entering traditional arts.

Limited Documentation

- Oral traditions vulnerable to disappearance.

GOVERNMENT & INSTITUTIONAL SUPPORT

Sangeet Natak Akademi

- Promotes performing arts and folk traditions.

Cultural Festivals & Workshops

- Platforms for showcasing folk performances.

Intangible Cultural Heritage Preservation

- Efforts to document and revive traditional art forms.

IMPORTANCE OF GLOBAL RECOGNITION

- Enhances cultural diplomacy and soft power.
- Encourages preservation of indigenous traditions.
- Creates livelihood opportunities for folk artists.
- Increases awareness about India's diverse cultural heritage.

RELATED CONCEPTS

Intangible Cultural Heritage

- Non-physical cultural traditions transmitted across generations.

Folk Theatre

- Traditional theatre rooted in local culture and oral traditions.

Cultural Diplomacy

- Promotion of culture for international engagement and goodwill.

PRELIMS BOOSTER BOX

- **Swang:** Folk theatre form of north India.
- **Sangeet Natak Akademi:** National academy for performing arts.



- **Intangible Cultural Heritage:** Living cultural traditions and practices.
- **Folk Theatre:** Community-based traditional performance art.
- **Cultural Diplomacy:** Use of culture in international relations.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding Swang:

1. It is a traditional folk theatre form of northern India.
2. Swang combines music, acting, and storytelling.
3. It originated as a classical Sanskrit theatre tradition.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Preservation of folk arts is essential for protecting India's cultural diversity."

Discuss with reference to traditional performing arts in India.

PadhAI MAINS PRACTICE QUESTION

- What is Swang folk theatre?
- Discuss its cultural significance and the challenges involved in preserving traditional folk art forms in India. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Swang:

1. It is a folk theatre tradition associated with northern India.
2. Swang performances combine music and storytelling.
3. Swang requires elaborate modern stage infrastructure for performance.

Which of the statements given above is/are correct?

Options:

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

Answer: A

3. HOW THE CHARKHA CAME TO EMBODY GANDHI AND TAGORE'S DEEPEST DISAGREEMENTS

WHY IN NEWS?

- The ideological debate between Mahatma Gandhi and Rabindranath Tagore over the symbolic and practical role of the charkha (spinning wheel) continues to attract scholarly attention in discussions on nationalism, modernity, and development.



WHAT WAS THE CHARKHA?

- I. A traditional spinning wheel used to spin cotton into yarn.
- II. Revived during the freedom movement as a symbol of:
 - A. Swadeshi
 - B. Self-reliance
 - C. Economic resistance to British goods

GANDHI'S VIEW ON THE CHARKHA

Symbol of Swadeshi

- Encouraged use of Indian-made goods instead of British textiles.

Economic Self-Reliance

- Provided livelihood opportunities to rural masses.

Mass Participation in Freedom Struggle

- Every individual could contribute through spinning.

Moral & Spiritual Discipline

- Gandhi viewed spinning as an ethical and meditative activity.

TAGORE'S CRITIQUE OF THE CHARKHA

Concern About Intellectual Narrowness

- Tagore feared excessive focus on spinning could limit creativity and broader progress.

Modernisation Perspective

- Favoured scientific and educational advancement over symbolic economic activities alone.

Human Freedom & Individuality

- Believed nationalism should not suppress intellectual freedom.

Global Humanism

- Advocated universalism rather than inward-looking nationalism.

CORE DIFFERENCES BETWEEN GANDHI & TAGORE

Issue	Gandhi	Tagore
Economic Vision	Village self-reliance	Scientific modernisation
Nationalism	Mass mobilisation through Swadeshi	Universal humanism



Charkha	Central symbol of freedom	Over-symbolised and restrictive
Development Model	Rural-centric	Education and creativity-oriented

SIGNIFICANCE OF THE DEBATE

Debate on Development Models

- Rural self-sufficiency vs industrial modernisation.

Nature of Nationalism

- Cultural nationalism vs universal humanism.

Role of Symbols in Politics

- Importance of mass symbols in mobilisation.

Freedom & Individuality

- Balancing collective causes with intellectual autonomy.

CHARKHA IN THE FREEDOM MOVEMENT

- I. Became emblem of:
 - A. Swadeshi Movement
 - B. Khadi movement
 - C. Anti-colonial resistance

- II. Featured prominently in nationalist campaigns.

RELATED CONCEPTS

Swadeshi Movement

- Promotion of indigenous goods and boycott of foreign products.

Khadi

- Hand-spun and handwoven cloth promoted by Gandhi.

Constructive Programme

- Gandhi's programme for social and economic reform.

LEGACY OF THE GANDHI-TAGORE DEBATE

- I. Demonstrates diversity of thought within Indian nationalism.
- II. Continues to influence debates on:
 - A. Sustainable development
 - B. Rural economy
 - C. National identity
 - D. Cultural modernity

PRELIMS BOOSTER BOX

- **Charkha:** Spinning wheel symbolising self-reliance.
- **Khadi:** Hand-spun cloth promoted during freedom struggle.
- **Swadeshi:** Use of indigenous goods.



- **Rabindranath Tagore:** Nobel laureate and philosopher.
- **Constructive Programme:** Gandhi's socio-economic reform agenda.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding the charkha during India's freedom movement:

1. Gandhi promoted the charkha as a symbol of self-reliance.
2. The charkha was associated with the Swadeshi movement.
3. Rabindranath Tagore fully agreed with Gandhi's economic vision centred on spinning.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Differences between Gandhi and Tagore reflected competing visions of nationalism and development in colonial India."

Discuss.

PadhAI MAINS PRACTICE QUESTION

- Examine the ideological differences between Mahatma Gandhi and Rabindranath Tagore regarding the role of the charkha in India's freedom movement.
- What broader debates did this disagreement represent? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Gandhi and Tagore's debate on the charkha:

1. Gandhi viewed the charkha as a symbol of self-reliance and mass participation.
2. Tagore criticised excessive emphasis on the charkha as limiting broader intellectual and scientific progress.
3. Both leaders had identical views on nationalism and development.

Which of the statements given above is/are correct?

Options:

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

Answer: A

4. THE ENDURING DEMOCRATIC MESSAGE OF A ROYAL CHARTER

WHY IN NEWS?

- The legacy of the Magna Carta continues to be discussed in the context of constitutionalism, rule of law, and democratic governance worldwide.



WHAT WAS THE MAGNA CARTA?

- I. A royal charter signed by:
 - A. King John in 1215.
- II. Signed at:
 - A. Runnymede, England.

Purpose

- To resolve conflict between the English king and rebellious barons over taxation and arbitrary rule.

KEY PRINCIPLES OF MAGNA CARTA

Rule of Law

- Even the king is subject to law.

Protection from Arbitrary Power

- Restrictions on unchecked royal authority.

Due Process of Law

- No punishment without lawful judgment.

Rights & Liberties

- Recognition of certain legal protections and freedoms.

IMPORTANT CLAUSE

One famous principle stated that:

- No free person could be imprisoned or punished except through lawful judgment.

This later influenced modern legal doctrines such as:

- Habeas Corpus
- Due Process
- Natural Justice

DEMOCRATIC SIGNIFICANCE

Foundation of Constitutionalism

- Government powers must be limited by law.

Evolution of Parliamentary Democracy

- Strengthened accountability of rulers.

Influence on Human Rights Traditions

- Inspired later rights-based documents.

Symbol Against Tyranny

- Became emblem of resistance to arbitrary governance.

GLOBAL INFLUENCE OF MAGNA CARTA

It influenced:

English Bill of Rights (1689)



- Strengthened parliamentary supremacy.

United States Constitution

- Inspired constitutional protections and liberties.

Universal Human Rights Traditions

- Influenced democratic legal systems globally.

RELEVANCE TO INDIA

Constitutionalism

- Indian Constitution based on rule of law and limited government.

Fundamental Rights

- Protection against arbitrary state action.

Judicial Review

- Courts ensure constitutional accountability.

Democratic Governance

- Emphasis on equality before law.

RELATED CONCEPTS

Rule of Law

- Law applies equally to all individuals and authorities.

Constitutionalism

- Government functioning within constitutional limits.

Habeas Corpus

- Legal safeguard against unlawful detention.

Due Process

- Fair legal procedure before deprivation of rights.

LIMITATIONS OF MAGNA CARTA

Initially Limited Scope

- Originally protected mainly feudal elites.

Not a Modern Democratic Charter Initially

- Democratic significance evolved gradually over time.

Context-Specific Origins

- Rooted in medieval political conflict.

ENDURING LEGACY

- Symbol of liberty and accountable governance.
- Continues to inspire constitutional democracies.



- Represents evolution from monarchy toward rule-based governance.

PRELIMS BOOSTER BOX

- **Magna Carta:** Royal charter signed in 1215.
- **Rule of Law:** Equality before law and legal supremacy.
- **Constitutionalism:** Limitation of governmental power.
- **Habeas Corpus:** Protection against illegal detention.
- **Due Process:** Fair legal procedures.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding Magna Carta:

1. It was signed in England in 1215.
2. It established the principle that rulers are subject to law.
3. It created universal adult franchise in medieval England.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"The idea of constitutionalism emerged historically as a limitation on arbitrary political power."

Discuss with reference to the historical significance of Magna Carta.

PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of Magna Carta in the evolution of constitutionalism, rule of law, and democratic governance.
- How do its principles continue to influence modern democracies? (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Magna Carta:

1. It was signed during the reign of King John of England.
2. It contributed to the development of the principle of rule of law.
3. It immediately established full democratic governance in medieval England.

Which of the statements given above is/are correct?

Options:

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

Answer: A



5. NETHERLANDS RETURNS 11th-CENTURY CHOLA COPPER PLATES TO INDIA

WHY IN NEWS?

- The Netherlands has returned a set of **11th-century Chola-period copper plates** to India, as part of ongoing international efforts to repatriate stolen and illegally exported cultural artefacts.

WHAT ARE CHOLA COPPER PLATES?

- I. Copper plates were used as **official records and royal grants**.
- II. They documented:
 - A. Land grants
 - B. Tax exemptions
 - C. Temple endowments
 - D. Administrative orders
 - E. Genealogies of rulers

Features

- I. Written mainly in:
 - A. Tamil
 - B. Sanskrit (in some cases)
- II. Often sealed with the royal emblem.

HISTORICAL SIGNIFICANCE

Source of Ancient Indian History

- Provide direct evidence about administration, economy, and society.

Insights into Chola Governance

- Reveal details of local self-government, taxation, and land management.

Religious and Cultural Information

- Record donations to temples and educational institutions.

Epigraphic Importance

- Important sources for historians and archaeologists.

ABOUT THE CHOLA DYNASTY

Period

- Approximately 9th–13th century CE.

Important Rulers

- Rajaraja Chola I
- Rajendra Chola I

Achievements

- Strong naval power
- Expansion into Southeast Asia
- Temple architecture
- Efficient administration
- Promotion of trade and culture

WHY REPATRIATION OF ARTEFACTS MATTERS

Cultural Justice



- Restores heritage to its country of origin.

Preservation of History

- Allows artefacts to be studied in their historical context.

Prevents Illicit Antiquities Trade

- Discourages smuggling and illegal trafficking.

Strengthens International Cooperation

- Encourages collaboration between museums, governments, and law-enforcement agencies.

INDIA'S EFFORTS TO RECOVER ANTIQUITIES

Legal Framework

- Antiquities and Art Treasures Act, 1972

International Framework

- UNESCO Convention of 1970 on preventing illicit trafficking of cultural property.

Recent Trend

- I. Several artefacts have been repatriated from:
 - A. United States
 - B. Australia
 - C. United Kingdom
 - D. Netherlands

PRELIMS BOOSTER BOX

Topic	Key Point
Chola Copper Plates	Records of royal grants and administration
Chola Dynasty	9th–13th century CE
Rajaraja Chola I	Builder of Brihadeeswarar Temple
Rajendra Chola I	Led overseas expeditions
Antiquities and Art Treasures Act, 1972	Protects India's antiquities
UNESCO 1970 Convention	Prevents illicit trade in cultural property



PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding Chola copper plates:

1. They were used to record royal grants and administrative orders.
2. They are important sources of epigraphic evidence.
3. They were primarily used for military training records.

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

PadhAI MAINS PRACTICE QUESTION

- "The repatriation of cultural artefacts is not merely about returning objects but restoring historical memory."
- Discuss with reference to the return of Chola-period copper plates to India. (150 words)

6. NALANDA A CIVILISATIONAL SYMBOL, SAYS P.K. MISHRA

WHY IN NEWS?

- P. K. Mishra described Nalanda University as a civilisational symbol reflecting India's ancient intellectual traditions, global knowledge exchange, and cultural heritage.

WHAT WAS NALANDA UNIVERSITY?

- An ancient centre of learning located in present-day Bihar.
- Flourished between the 5th and 12th centuries CE.

Founded During

- Gupta period, traditionally associated with Kumaragupta I.

FEATURES OF NALANDA

Residential University

- Hosted thousands of students and teachers.

International Centre of Learning

- I. Attracted scholars from:
 - A. China
 - B. Korea
 - C. Tibet
 - D. Southeast Asia



Wide Curriculum

Subjects included:

- Buddhism
- Philosophy
- Logic
- Medicine
- Mathematics
- Astronomy

Extensive Library

- Famous multi-storeyed library complex.

IMPORTANT TRAVELLERS ASSOCIATED WITH NALANDA

Xuanzang

- Studied and taught at Nalanda.
- Provided detailed accounts of the university.

Yijing

- Documented academic and monastic life at Nalanda.

DECLINE OF NALANDA

- Declined after repeated invasions and political instability.
- The university suffered destruction in the 12th century.

MODERN REVIVAL OF NALANDA

Nalanda University Revival Project

- Contemporary international university established near the ancient site.

Objective

- Revive spirit of Asian knowledge exchange and interdisciplinary learning.

UNESCO RECOGNITION

The archaeological remains of Nalanda Mahavihara are recognised as:

- UNESCO World Heritage Site.

WHY NALANDA IS CALLED A “CIVILISATIONAL SYMBOL”

Ancient Knowledge Tradition

- Represents India’s scholarly and philosophical heritage.

Global Intellectual Exchange

- Symbol of transnational academic interaction.

Pluralism & Openness

- Encouraged debate, diversity, and learning.

Soft Power & Cultural Diplomacy

- Strengthens India’s civilisational outreach globally.



SIGNIFICANCE FOR MODERN INDIA

Educational Heritage

- Inspiration for higher education reforms.

Cultural Diplomacy

- Enhances India's historical global connections.

Asian Cooperation

- Revives shared Buddhist and intellectual heritage.

Knowledge Economy Vision

- Symbolises importance of research and innovation.

RELATED CONCEPTS

Mahavihara

- Great Buddhist monastic university.

Buddhist Learning Centres

- Ancient universities such as:
 - A. Takshashila
 - B. Vikramashila
 - C. Vallabhi

Soft Power

- Influence through culture, values, and ideas.

PRELIMS BOOSTER BOX

- **Nalanda University:** Ancient Buddhist learning centre in Bihar.
- **Xuanzang:** Chinese traveller associated with Nalanda.
- **Yijing:** Chinese monk who documented Nalanda.
- **Mahavihara:** Buddhist monastic university.
- **UNESCO World Heritage Site:** International heritage recognition.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding Nalanda University:

1. It flourished during the Gupta period.
2. Xuanzang visited and studied at Nalanda.
3. Nalanda was exclusively a military training institution.

Which of the statements given above is/are correct?

Answer: 1 and 2 only.

- **Mains PYQ:**

"Ancient Indian centres of learning reflected India's tradition of intellectual openness and cultural exchange."

Discuss with reference to Nalanda University.



PadhAI MAINS PRACTICE

QUESTION

- Discuss the historical significance of Nalanda University as a centre of learning and cultural exchange.
- Why is it considered a civilisational symbol for India? (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding Nalanda University.

1. It was an ancient centre of higher learning in present-day Bihar.
2. It attracted scholars from various Asian countries.
3. Xuanzang provided accounts of Nalanda University.

Which of the statements given above is/are correct?

Options:

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

Answer: D



Subject

Science & Tech



1. MUON ANOMALY FADES WITH NEW CALCULATIONS

WHY IN NEWS?

- Recent high-precision theoretical calculations have reduced the long-standing discrepancy in the muon's magnetic moment, suggesting that the previously reported "muon anomaly" may not indicate new physics beyond the Standard Model.

WHAT IS A MUON?

- I. A muon is a subatomic particle similar to an electron but:
 - A. About 200 times heavier
 - B. Unstable (decays into lighter particles)
- II. Belongs to the family of leptons in particle physics.

WHAT IS THE MUON ANOMALY?

- Refers to a mismatch in the value of the muon's **magnetic moment (g-factor)**.
- The muon behaves like a tiny magnet when placed in a magnetic field.

Key Issue

- Experiments at Fermilab suggested deviation from theoretical predictions.

- This raised hopes of discovering physics beyond the Standard Model.

WHAT HAS CHANGED NOW?

New Calculations

- Improved theoretical models using lattice QCD (quantum chromodynamics on a grid).
- More accurate estimation of hadronic contributions.

Result

- The gap between theory and experiment has reduced significantly.
- The anomaly is no longer statistically significant enough to confirm new physics.

WHY IS THE MUON IMPORTANT IN PHYSICS?

Sensitive Probe of New Physics

- Even small deviations can indicate unknown particles or forces.

Testing the Standard Model

- Helps validate or challenge current understanding of particle physics.

Precision Physics Tool

- Used in high-energy experiments globally.



WHAT IS THE STANDARD MODEL?

- I. The theoretical framework describing fundamental particles and forces (except gravity).
- II. Includes:
 - A. Quarks
 - B. Leptons
 - C. Gauge bosons

WHAT IS LATTICE QCD?

- A computational method used to study strong nuclear force interactions.
- Breaks spacetime into a discrete grid to perform calculations.

SIGNIFICANCE OF THE NEW RESULT

Reduces Evidence for New Physics

- Weakens earlier claims of unknown particles.

Improves Theoretical Accuracy

- Shows progress in computational physics.

Refines Particle Physics Models

- Strengthens confidence in Standard Model predictions.

GLOBAL CONTEXT

- I. Major research conducted at:
 - A. Fermilab (USA)
 - B. Theoretical physics collaborations worldwide
- II. Ongoing experiments continue to test muon properties.

RELATED CONCEPTS

Muon g-2 Experiment

- Measures muon's magnetic moment with high precision.

Quantum Chromodynamics (QCD)

- Theory of strong nuclear force.

Standard Model

- Core framework of particle physics.

PRELIMS BOOSTER BOX

- **Muon:** Heavy electron-like particle.
- **Magnetic Moment:** Measure of particle's magnetic strength.
- **Lattice QCD:** Computational method in particle physics.
- **Standard Model:** Theory of fundamental particles.
- **g-2 Experiment:** Precision test of muon properties.



PadhAI PYQ BOOSTER

SECTION

- **Prelims PYQ:**

Consider the following statements regarding muons:

1. Muons are heavier than electrons.
2. Muons are stable particles found inside atomic nuclei.
3. Muons belong to the lepton family.

Which of the statements given above is/are correct?

Answer: 1 and 3 only.

- **Mains PYQ:**

“Advancements in particle physics continue to test the limits of the Standard Model.”

Discuss with reference to recent developments in muon research.

1. Muons are part of the lepton family of particles.
2. The muon anomaly relates to its magnetic moment.
3. Recent calculations have strengthened the evidence for physics beyond the Standard Model.

Which of the statements given above is/are correct?

Options:

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

Answer: A

2. DUAL-USE SATELLITES AND SPACE WARFARE

WHY IN NEWS?

- Growing militarisation of outer space and rising geopolitical tensions have increased focus on **dual-use satellites**—space systems that serve both civilian and military purposes—raising concerns about future space warfare and strategic stability.

WHAT ARE DUAL-USE SATELLITES?

- Satellites designed for **both civilian and military applications**.

PadhAI MAINS PRACTICE

QUESTION

- What is the muon anomaly?
- Explain how recent theoretical developments have affected its significance in particle physics. (150 words)

PadhAI-GENERATED UPSC

MCQ

Consider the following statements regarding muons:



Civilian uses

- Weather forecasting
- GPS navigation
- Disaster management
- Internet and communication services

Military uses

- Surveillance and reconnaissance
- Missile guidance
- Signals intelligence (SIGINT)
- Secure military communications

WHY DUAL-USE SATELLITES MATTER IN MODERN WARFARE

Real-Time Battlefield Intelligence

- High-resolution imaging helps military planning.

Precision Strike Capability

- Improves accuracy of missiles and drones.

Network-Centric Warfare

- Enables coordinated military operations across domains.

Strategic Surveillance

- Monitors troop movement and infrastructure.

WHAT IS SPACE WARFARE?

- Conflict involving the use of space-based systems or targeting of space assets.

Includes

- Satellite jamming
- Anti-satellite (ASAT) weapons
- Cyber attacks on space systems
- Kinetic destruction of satellites

INDIA'S SPACE SECURITY CONTEXT

Indian Space Research Organisation plays a key role in dual-use space capabilities.

Key developments

- **Mission Shakti (2019):** India tested an anti-satellite weapon.
- Expansion of surveillance satellites.
- Development of secure communication networks.

GLOBAL EXAMPLES

United States

- GPS system used for both civilian and military purposes.

China

- Rapid expansion of dual-use satellite constellations.
- Strong ASAT capabilities.



Russia

- Electronic warfare and satellite jamming systems.

RISKS AND CONCERNS

Militarisation of Space

- Increasing weaponisation of orbital assets.

Space Debris

- ASAT tests create long-lasting orbital debris.

Escalation Risks

- Attacks on satellites can trigger broader conflicts.

Dual-Use Ambiguity

- Difficult to distinguish civilian vs military intent.

LEGAL & GOVERNANCE FRAMEWORK

Outer Space Treaty (1967)

- Prohibits placement of nuclear weapons in space.
- Encourages peaceful use of outer space.

Limitations

- Does not clearly ban conventional weapons or dual-use technologies.
- Weak enforcement mechanisms.

STRATEGIC IMPLICATIONS FOR INDIA

National Security

- Need for resilient space assets.

Technological Sovereignty

- Indigenous satellite capability development.

Space Situational Awareness (SSA)

- Tracking space objects and threats.

Deterrence Capability

- ASAT capability as strategic deterrence.

WAY FORWARD

- Development of space defence doctrine.
- Strengthening international space laws.
- Promoting responsible behaviour in orbit.
- Investment in satellite redundancy and cyber protection.
- Enhanced Space Situational Awareness systems.



RELATED CONCEPTS

Anti-Satellite (ASAT) Weapons

- Systems designed to destroy or disable satellites.

Space Situational Awareness (SSA)

- Monitoring objects and debris in space.

Militarisation vs Weaponisation

- Militarisation: use of space for military support
- Weaponisation: deployment of weapons in space

PRELIMS BOOSTER BOX

- **Dual-Use Satellites:** Satellites with civilian and military functions.
- **ASAT:** Anti-satellite weapon system.
- **Outer Space Treaty (1967):** Core international space law framework.
- **SSA:** Space Situational Awareness.
- **Mission Shakti:** India's ASAT test in 2019.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding outer space activities:
 1. The Outer Space Treaty prohibits weapons of mass destruction in space.

2. It explicitly bans all military use of outer space.
 3. Satellites can have both civilian and military applications.
- Which of the statements given above is/are correct?

Answer: 1 and 3 only.

- **Mains PYQ:**
"Outer space is becoming a new domain of strategic competition among major powers."
Discuss the implications of dual-use space technologies on global security.

PadhAI MAINS PRACTICE QUESTION

- What are dual-use satellites?
- Discuss their role in modern warfare and the challenges they pose for space security and international law. (150 words)

PadhAI-GENERATED UPSC MCQ

Consider the following statements regarding dual-use satellites:

1. They can serve both civilian and military purposes.
2. They play a role in surveillance and communication systems.
3. International law fully prohibits their development and use.

Which of the statements given above is/are correct?



Options:

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

Answer: A

3. EYES IN SPACE: INDIAN STARTUP LAUNCHES A FIRST-OF-ITS-KIND SATELLITE VIA SPACEX ROCKET

WHY IN NEWS?

- An Indian space startup recently launched a next-generation satellite aboard a SpaceX rocket, marking a milestone in private space innovation and strengthening India's emerging commercial space ecosystem.

ABOUT THE LAUNCH

- Indian startup deployed a "first-of-its-kind" satellite with enhanced imaging/data capabilities.
- Launch carried out via reusable launch vehicle system operated by SpaceX.
- Demonstrates global collaboration in commercial space missions.

WHAT MAKES THIS SATELLITE SPECIAL?

While details vary by mission, such satellites typically include:

- High-resolution Earth imaging

- AI-based data analytics
- Real-time monitoring capabilities
- Miniaturised payload technology

INDIA'S EMERGING PRIVATE SPACE SECTOR

Indian Space Research Organisation continues to act as a facilitator while private players expand rapidly.

Key developments

- Opening of space sector to private participation (IN-SPACE framework)
- Rise of startups in satellite manufacturing and launch services
- Growth in Earth observation and communication satellite markets

WHAT IS A RIDE-SHARE LAUNCH?

- A launch where multiple satellites from different clients are carried on a single rocket.

Advantages

- Lower cost
- Faster access to orbit
- Efficient use of launch capacity

WHY EARTH OBSERVATION SATELLITES MATTER

Agriculture Monitoring



- Crop health and yield estimation

Disaster Management

- Flood, cyclone, wildfire tracking

Urban Planning

- Infrastructure mapping and growth analysis

Climate Studies

- Monitoring environmental change

STRATEGIC IMPORTANCE FOR INDIA

Space Economy Growth

- Boosts India's share in global commercial space market

Technological Self-Reliance

- Encourages indigenous innovation

Data Sovereignty

- Reduces dependence on foreign satellite data

Dual-Use Potential

- Supports both civilian and strategic applications

POLICY & INSTITUTIONAL SUPPORT

- Liberalisation of space sector (2020 onwards)
- IN-SPACe (Indian National Space Promotion and Authorisation Centre)
- Encouragement of private launch services and satellite manufacturing

GLOBAL CONTEXT

- Growing competition in commercial satellite services
- Expansion of mega-constellations (e.g., Starlink)
- Increased role of private companies in space exploration

CHALLENGES

Regulatory Complexity

- Licensing and coordination among agencies

Space Debris Risk

- Increasing congestion in low Earth orbit

High Capital Requirements

- Space startups require heavy investment

Cybersecurity Threats

- Satellite data vulnerability



RELATED CONCEPTS

Earth Observation Satellites

- Satellites used for monitoring Earth's surface and atmosphere

Rideshare Missions

- Shared rocket launches for multiple payloads

NewSpace Economy

- Private-sector-driven space industry expansion

PRELIMS BOOSTER BOX

- **SpaceX:** Private US aerospace company known for reusable rockets
- **Rideshare launch:** Multiple satellites launched on a single rocket
- **Earth Observation Satellite:** Satellite for imaging and monitoring Earth
- **IN-SPACE:** Regulatory body for private space sector in India
- **NewSpace:** Commercialisation of space activities

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**
Consider the following statements regarding Earth observation satellites:
 1. They are used in disaster management.

2. They only serve military purposes.
 3. They help in climate monitoring.
- Which of the statements given above is/are correct?

Answer: 1 and 3 only.

- **Mains PYQ:**
"The rise of private space companies is transforming the global space economy."
Discuss with reference to India's emerging space startup ecosystem.

PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of private sector participation in India's space programme.
- How do satellite startups contribute to India's technological and strategic goals? (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding rideshare satellite launches:

1. They reduce launch costs by sharing rocket capacity.
2. They are used only by government space agencies.
3. They support commercial satellite deployment.

Which of the statements given above is/are correct?

Options:

A. 1 and 3 only



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

Answer: A

4. METAMATERIAL LEARNS TO CHANGE SHAPE

Learning multistable shape changes

We also train a metamaterial that has four stable shapes.



WHY IN NEWS?

- Researchers have developed advanced **metamaterials** capable of changing shape in a programmable way, opening possibilities for next-generation robotics, aerospace systems, and adaptive structures.

WHAT ARE METAMATERIALS?

- Artificial materials designed to exhibit properties not found in nature.
- Their behaviour depends on structure rather than composition.

Key Feature

- Engineered micro-structures give them unusual properties (e.g.,

negative refractive index, programmable stiffness).

WHAT DOES “SHAPE-CHANGING” MEAN?

These metamaterials can:

- Fold, bend, expand, or contract on command
- Switch between rigid and flexible states
- Reconfigure into different shapes repeatedly

HOW DO THEY WORK?

Shape change is triggered by external inputs such as:

Electrical Signals

- Activate embedded micro-actuators

Heat (Thermal Response)

- Expansion or contraction of smart polymers

Light (Photonic Activation)

- Light-sensitive molecular rearrangement

Magnetic Fields

- Magnetic alignment of particles within the structure



WHY ARE THEY IMPORTANT?

Soft Robotics

- Robots that mimic biological movement

Aerospace Engineering

- Aircraft wings that adjust shape for efficiency

Medical Devices

- Minimally invasive stents and implants that adapt inside the body

Defense Applications

- Adaptive camouflage and responsive armor

KEY ADVANTAGES

- High adaptability
- Lightweight structures
- Programmable behaviour
- Energy-efficient mechanical systems

LIMITATIONS

- High production cost
- Complex manufacturing techniques
- Durability concerns over repeated cycles
- Scaling up for industrial use remains challenging

RELATED CONCEPTS

Smart Materials

- Materials that respond to environmental changes

Programmable Matter

- Matter whose physical properties can be digitally controlled

4D Printing

- 3D-printed objects that change shape over time

GLOBAL CONTEXT

- Rapid research in USA, Europe, and East Asia
- Integration with AI for adaptive design systems
- Growing use in robotics and biomedical engineering

SIGNIFICANCE FOR INDIA

- I. Potential applications in:
 - A. Defence technology
 - B. Space systems
 - C. Advanced manufacturing
- II. Supports India's push toward deep-tech innovation and materials science research

PRELIMS BOOSTER BOX

- **Metamaterials:** Engineered materials with unusual properties



- **Smart materials:** Respond to external stimuli
- **4D printing:** 3D printing + time-based shape transformation
- **Soft robotics:** Flexible robots inspired by biological systems
- **Programmable matter:** Materials controlled via external signals

aerospace, and biomedical engineering. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding shape-changing metamaterials:

1. They can respond to external stimuli such as heat or electricity.
2. They are purely natural materials found in the environment.
3. They have applications in robotics and aerospace engineering.

Which of the statements given above is/are correct?

Options:

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

Answer: A

5. A RADIATION 'GLITCH' LIMITS QUANTUM COMPUTING

WHY IN NEWS?

- Recent research has highlighted that **background radiation from the environment** can disrupt quantum computers by causing errors (or "glitches") in qubits, posing a major challenge to building stable, large-scale quantum systems.

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding metamaterials:

1. They are naturally occurring materials.
2. Their properties depend on structure rather than composition.
3. They can be engineered to control electromagnetic waves.

Which of the statements given above is/are correct?

Answer: 2 and 3 only.

- **Mains PYQ:**

"Advances in material science are transforming engineering and technology applications."

Discuss with reference to smart materials and metamaterials.

PadhAI MAINS PRACTICE QUESTION

- What are metamaterials?
- Discuss their significance in emerging technologies such as robotics,



WHAT IS QUANTUM COMPUTING?

- A computing paradigm based on principles of quantum mechanics.
- Instead of classical bits (0 or 1), it uses **qubits**, which can exist in multiple states simultaneously.

WHAT ARE QUBITS?

- I. Fundamental units of quantum information.
- II. Can exist in:
 - A. 0
 - B. 1
 - C. Superposition of both

Key properties

- **Superposition:** Multiple states at once
- **Entanglement:** Linked qubits affect each other instantly
- **Interference:** Enhances correct outcomes, suppresses wrong ones

WHAT IS THE "RADIATION GLITCH"?

- I. High-energy particles (cosmic rays, alpha particles) can:
 - A. Flip qubit states
 - B. Disrupt quantum coherence
 - C. Cause computation errors

Sources of radiation

- Cosmic rays from space
- Natural radioactive decay in materials

- Environmental electromagnetic noise

WHY IS THIS A BIG PROBLEM?

Fragility of Qubits

- Qubits lose information quickly (decoherence).

Error Accumulation

- Even rare radiation events can corrupt calculations.

Scaling Challenge

- More qubits → higher probability of random disruption.

HOW SCIENTISTS TRY TO SOLVE THIS

Quantum Error Correction

- Uses multiple physical qubits to protect one logical qubit.

Shielding Systems

- Underground labs or radiation shielding materials.

Cryogenic Environments

- Extremely low temperatures reduce noise.

Improved Hardware Design



- More radiation-resistant qubit architectures.

GLOBAL CONTEXT

- I. Leading research by:
 - A. IBM
 - B. Google Quantum AI
 - C. University labs worldwide
- II. Quantum supremacy experiments still limited by error rates.

SIGNIFICANCE

Limits Practical Quantum Advantage

- Reliable large-scale quantum computing is still distant.

Hardware Over Software Challenge

- Problem is physical, not just computational.

Push for Engineering Innovation

- Drives development of fault-tolerant quantum systems.

RELATED CONCEPTS

Quantum Decoherence

- Loss of quantum state due to environment interaction

Quantum Error Correction

- Technique to protect quantum information

Fault-Tolerant Quantum Computing

- Systems designed to function despite errors

IMPORTANCE FOR INDIA

- I. Relevant for emerging quantum initiatives like:
 - A. National Quantum Mission
- II. Applications in:
 - A. Cryptography
 - B. Drug discovery
 - C. Advanced simulations

PRELIMS BOOSTER BOX

- **Qubit:** Quantum version of a bit
- **Superposition:** Multiple states simultaneously
- **Decoherence:** Loss of quantum information
- **Quantum error correction:** Method to fix qubit errors
- **Cosmic rays:** High-energy particles from space

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ:**

Consider the following statements regarding quantum computing:

 1. Qubits can exist in multiple states simultaneously.



2. Quantum computers are immune to environmental disturbances.
3. Entanglement is a key feature of quantum systems.

Which of the statements given above is/are correct?

Answer: 1 and 3 only.

- **Mains PYQ:**

“Quantum computing represents a paradigm shift in computation but faces significant engineering challenges.”

Discuss.

PadhAI MAINS PRACTICE QUESTION

- Explain how environmental radiation affects quantum computing.
- Discuss the challenges in building scalable and fault-tolerant quantum computers. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding quantum computing:

1. Qubits are sensitive to environmental disturbances such as radiation.
2. Decoherence is a major challenge in quantum systems.
3. Quantum computers do not require error correction mechanisms.

Which of the statements given above is/are correct?

Options:

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

Answer: A

6. 12 SEMICONDUCTOR PLANTS APPROVED: WHERE INDIA'S CHIP MANUFACTURING MISSION STANDS

WHY IN NEWS?

- India has approved **around 12 semiconductor plants** under its national chip mission, marking a major push under the expanded **India Semiconductor Mission 2.0** to reduce dependence on imports and build a domestic chip ecosystem.

WHERE INDIA STANDS NOW

FROM ZERO TO MULTIPLE PLANTS

Earlier position:

- India had **no commercial semiconductor fabrication plants**

Now:

- Multiple approved projects are under construction or planning stage
- Several are expected to begin production between **2025–2027**



TYPES OF SEMICONDUCTOR FACILITIES APPROVED

India's 12 projects are spread across:

Fabrication (Fab) Plants

- Convert silicon wafers into chips
- Most complex and capital-intensive segment

Assembly, Testing, Packaging (ATMP/OSAT)

- Assemble finished chips and test them
- Faster to build and already progressing strongly

Design & R&D Units

- Chip design, IP creation, and fabless development

MAJOR APPROVED PROJECTS

Gujarat Semiconductor Hub

- Large-scale fab project supported by global partners
- Expected to produce chips for automotive, AI, and electronics

Assam Tata OSAT Facility

Tata Electronics

- Major assembly and testing plant
- Focus on high-volume chip packaging

Uttar Pradesh JV Project

- Joint venture for display driver chips

- Targeted for electronics manufacturing ecosystem

Micron Packaging Facility

- Advanced chip packaging and testing unit

POLICY PUSH BEHIND THE GROWTH

Government support includes:

- Capital subsidies (up to 50–90% in some cases)
- Production-linked incentives
- State-level land and tax incentives
- Technology partnerships with global firms

STRATEGIC IMPORTANCE FOR INDIA

REDUCING IMPORT DEPENDENCE

- India imports most semiconductors used in electronics

ELECTRONICS MANUFACTURING GROWTH

- Supports smartphones, EVs, defence, and telecom sectors

NATIONAL SECURITY

- Chips are critical for defence systems, satellites, and AI



GLOBAL SUPPLY CHAIN POSITIONING

- India aims to become an alternative to East Asia supply chains

CHALLENGES AHEAD

HIGH COST & LONG GESTATION

- Fab plants require billions of dollars and years to build

TECHNOLOGY GAP

- Advanced chip nodes still dominated by Taiwan, South Korea, USA

WATER & POWER INTENSITY

- Semiconductor fabs need stable utilities

SKILLED WORKFORCE SHORTAGE

- Need for chip design and fabrication engineers

WHERE INDIA'S CHIP MISSION IS HEADING

- I. Focus shifting to:
 - A. Mature nodes (28nm–110nm) first
 - B. Packaging and testing ecosystems
 - C. Chip design and IP creation
- II. Long-term goal:
 - A. Full semiconductor value chain within India

- B. Integration into global supply networks

PRELIMS BOOSTER BOX

- **Semiconductor:** Material used to make electronic chips
- **Fab:** Facility where chips are manufactured
- **ATMP/OSAT:** Assembly, testing, and packaging units
- **India Semiconductor Mission:** Government programme for chip ecosystem
- **Wafer:** Thin silicon slice used to make chips

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ style:**

Consider the following statements regarding semiconductor manufacturing:

 1. Fabrication plants are more capital-intensive than assembly units.
 2. India currently has a fully developed semiconductor ecosystem.
 3. Semiconductors are essential for electronics and defence systems.

Answer: 1 and 3 only



PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of India's semiconductor mission.
- What progress has been made and what challenges remain in building a self-reliant chip manufacturing ecosystem? (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding India's semiconductor sector:

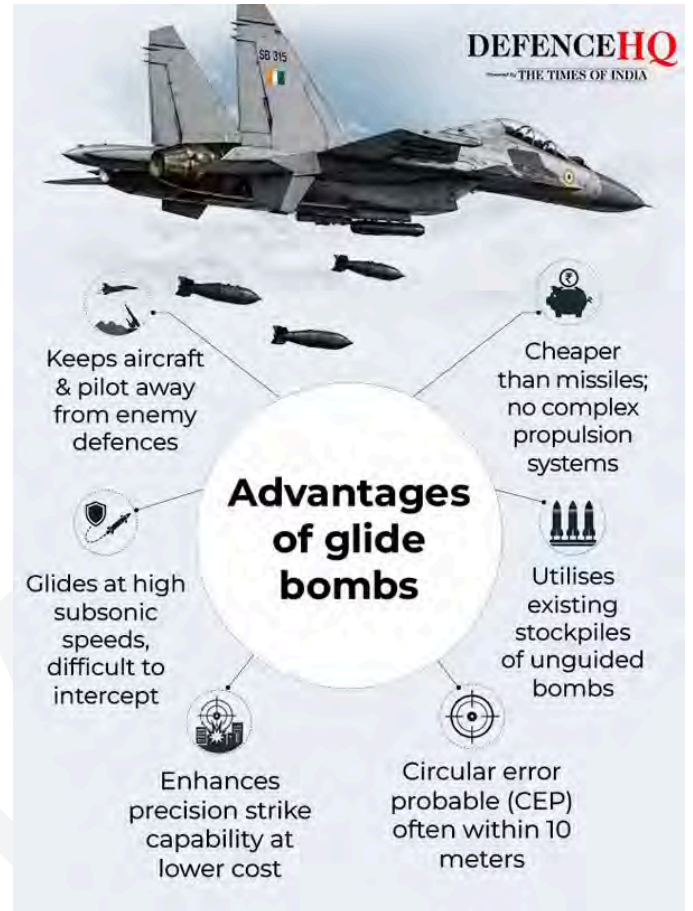
1. India is focusing initially on assembly and packaging before advanced fabrication.
2. Semiconductors have no role in strategic sectors like defence.
3. The semiconductor mission involves both public and private sector participation.

Which of the statements given above is/are correct?

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

Answer: A

7. DRDO-IAF TEST TARA GLIDE WEAPON



WHY IN NEWS?

- The Defence Research and Development Organisation and the Indian Air Force successfully conducted the maiden flight-trial of **Tactical Advanced Range Augmentation (TARA)**, a new indigenous glide weapon system off the coast of Odisha.



WHAT IS TARA?

TARA = Tactical Advanced Range Augmentation

It is a:

- Modular **range-extension and guidance kit**
- Attached to conventional air-launched bombs
- Converts them into **stand-off precision weapons**

HOW IT WORKS

- I. A standard bomb is fitted with:
 - A. Guidance systems
 - B. Aerodynamic surfaces (wings/control fins)
- II. After release from aircraft:
 - A. It **glides longer distances**
 - B. Adjusts trajectory using guidance control
 - C. Hits target with higher accuracy

WHY GLIDE WEAPONS MATTER

Stand-off capability

- Aircraft can strike targets without entering enemy air defence zones

Cost-effective modernisation

- Uses existing stockpiles of bombs instead of new missiles

Higher precision

- Reduces collateral damage compared to unguided bombs

Force multiplier

- Improves effectiveness of existing fighter aircraft fleets

STRATEGIC SIGNIFICANCE FOR INDIA

- Strengthens indigenous defence technology base
- Enhances **precision strike capability of the Indian Air Force**
- Reduces dependence on imported guided munitions
- Aligns with **Atmanirbhar Bharat** goals in defence production

RELATED INDIAN DEVELOPMENTS

India is also developing or operating similar systems like:

- Smart Anti-Airfield Weapons
- Precision-guided munitions
- Stand-off missile systems (e.g., cruise and air-launched missiles)

KEY TERMINOLOGY (PRELIMS FOCUS)

- **Glide weapon:** Bomb that travels extended distance using lift rather than engine power



- **Precision-guided munition (PGM):** Weapon that uses guidance systems for accurate targeting
- **Stand-off weapon:** Allows attack from outside enemy defence range
- **DRDO:** India's premier defence R&D organisation

- Discuss the significance of systems like TARA in enhancing India's air power and defence self-reliance. (150 words)

PRELIMS BOOSTER BOX

- **TARA:** Indigenous glide weapon kit developed by DRDO
- **Glide weapon:** Converts bombs into long-range guided systems
- **Stand-off strike:** Attack without entering enemy air defence range
- **RCI Hyderabad:** Key DRDO lab involved
- **IAF:** User and test partner of the system

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**
Consider the following statements:
 1. Glide weapons can extend the range of conventional bombs.
 2. They always require rocket propulsion.
 3. They can improve precision of air strikes.

Answer: 1 and 3 only

PadhAI MAINS PRACTICE QUESTION

- Explain the concept of glide weapons.

PadhAI-GENERATED MCQ

Consider the following statements regarding TARA:

1. It is an indigenous glide weapon system developed by DRDO and IAF.
2. It converts unguided bombs into precision-guided weapons.
3. It is powered by jet engines during flight.

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

8. INDIA'S FIRST ORBITAL DATA SATELLITE

WHY IN NEWS?

- An Indian private space company recently launched the country's **first orbital data satellite**, marking a shift from traditional Earth-observation satellites to platforms focused on **real-time data generation and analytics from space**. The launch took place via a rideshare mission aboard a SpaceX rocket.



WHAT IS AN ORBITAL DATA SATELLITE?

- A next-generation satellite that goes beyond imaging.
- It collects raw Earth or space data and converts it into **actionable insights onboard or in near real time.**

Traditional satellites

- Capture images → send data to Earth → processed on ground

Orbital data satellites

- Capture + process + transmit insights faster

KEY FEATURES

Onboard Data Processing

- Uses AI/ML systems in space to filter and analyse data

Low Latency Outputs

- Faster delivery of insights to users

Edge Computing in Space

- Reduces dependence on ground stations

High-value Applications

- Not just imagery, but predictive analytics

APPLICATIONS

Disaster Management

- Real-time flood, cyclone, wildfire monitoring

Agriculture

- Crop stress and yield prediction

Urban Planning

- Dynamic infrastructure monitoring

Defence & Security

- Rapid situational awareness

Climate Monitoring

- Near real-time environmental data

WHY IT IS SIGNIFICANT FOR INDIA

Shift from “data receiver” to “data processor in space”

- Reduces delay in decision-making

Boost to Space Startups

- Strengthens India’s NewSpace ecosystem

Strategic Advantage

- Faster intelligence for security applications



Commercial Potential

- Data-as-a-service model for global clients

GLOBAL CONTEXT

- Similar trends seen in:
 - US private space companies
 - European Earth observation startups
- Space industry moving toward:
 - AI satellites
 - Autonomous satellite networks
 - Edge computing in orbit

CHALLENGES

Radiation and hardware durability

- Electronics must survive harsh space environment

Power constraints

- Limited energy for onboard processing

Cybersecurity risks

- Data interception or spoofing threats

High R&D costs

- Advanced AI-on-satellite systems are expensive

RELATED CONCEPTS

Earth Observation Satellites

- Traditional imaging satellites

Edge Computing

- Processing data close to the source

AI Satellites

- Satellites using artificial intelligence for onboard decisions

PRELIMS BOOSTER BOX

- **Orbital Data Satellite:** Satellite that processes data in orbit before sending it to Earth
- **Edge Computing:** Processing data near its source
- **Rideshare launch:** Multiple satellites launched on one rocket
- **SpaceX:** Private launch service provider
- **ISRO:** India's national space agency

PadhAI PYQ BOOSTER SECTION

- **Prelims PYQ style:**
Consider the following statements regarding next-generation satellites:
 1. They can use onboard processing systems.
 2. They always require ground-based data processing only.
 3. They can support real-time decision-making.**Answer:** 1 and 3 only



PadhAI MAINS PRACTICE QUESTION

- What is an orbital data satellite?
- Discuss its significance in transforming Earth observation and strengthening India's space-based data economy. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding orbital data satellites:

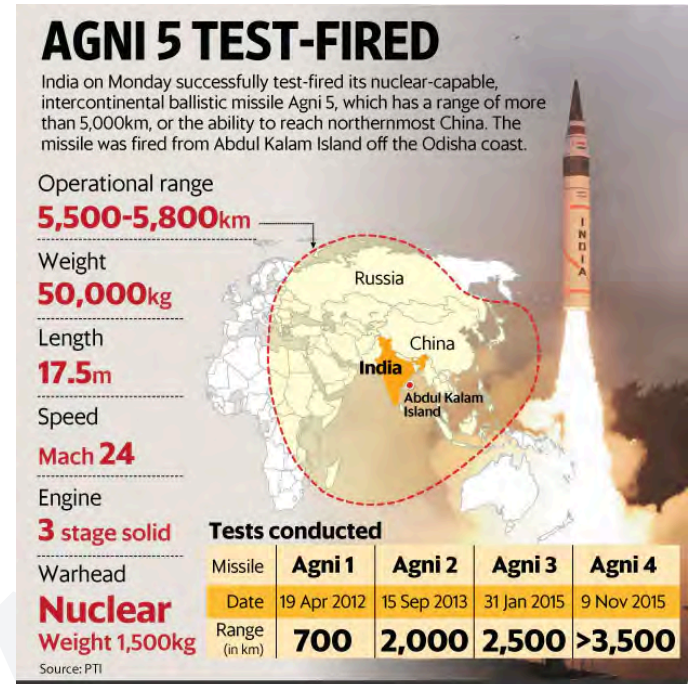
1. They can process data onboard the satellite.
2. They reduce dependency on ground-based data centres.
3. They eliminate the need for satellite communication systems.

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

9. INDIA TESTS AGNI MISSILE WITH MULTIPLE WARHEADS



WHY IN NEWS?

- Defence Research and Development Organisation successfully tested an upgraded version of the **Agni ballistic missile** equipped with **Multiple Independently Targetable Re-entry Vehicle (MIRV)** technology, significantly enhancing India's strategic deterrence capability.

WHAT IS THE AGNI MISSILE?

- A series of **long-range ballistic missiles** developed by India.
- Part of India's **nuclear-capable missile arsenal**.

Types include



- Agni-I to Agni-V (various ranges from short to intercontinental capability)

WHAT IS MIRV TECHNOLOGY?

MIRV = Multiple Independently Targetable Re-entry Vehicles

How it works

- One missile carries multiple warheads
- Each warhead can be guided to a different target
- All re-enter Earth's atmosphere independently

KEY FEATURES OF MIRV SYSTEM

Multiple Target Engagement

- One missile → several targets

Increased Penetration Capability

- Can overwhelm enemy missile defence systems

Strategic Efficiency

- Reduces number of missiles needed for multiple strikes

STRATEGIC SIGNIFICANCE FOR INDIA

Enhanced Nuclear Deterrence

- Strengthens second-strike capability

Force Multiplier

- Improves effectiveness of missile arsenal

Technological Advancement

- Places India among select nations with MIRV capability

Credible Minimum Deterrence

- Strengthens India's nuclear doctrine framework

INDIA'S NUCLEAR DOCTRINE CONTEXT

- I. Based on:
 - A. No First Use (NFU) policy
 - B. Credible minimum deterrence
- II. MIRV strengthens survivability and retaliation capability

GLOBAL CONTEXT

Countries with MIRV capability include:

- United States
- Russia
- China
- France
- United Kingdom

India's development places it among advanced strategic missile powers.

CHALLENGES

High technological complexity



- Requires precise guidance and re-entry systems

Miniaturisation of warheads

- Multiple compact warheads must be integrated

Missile defence escalation risks

- May trigger regional arms race concerns

RELATED CONCEPTS

Ballistic Missile

- Missile that follows a high-arc trajectory outside atmosphere

Re-entry Vehicle (RV)

- Warhead section that re-enters Earth's atmosphere

Anti-Ballistic Missile Systems

- Systems designed to intercept incoming missiles

PRELIMS BOOSTER BOX

- **Agni Missile:** India's long-range ballistic missile series
- **MIRV:** Multiple warheads on a single missile
- **DRDO:** Defence R&D organisation of India
- **Ballistic missile:** Rocket-propelled weapon following ballistic trajectory

- **Credible minimum deterrence:** India's nuclear policy principle

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**

Consider the following statements regarding MIRV technology:

1. It allows a single missile to carry multiple warheads.
2. Each warhead can be targeted independently.
3. It reduces the effectiveness of missile defence systems.

Answer: 1, 2 and 3

PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of MIRV-enabled Agni missiles for India's strategic deterrence.
- How does it alter the regional security dynamics? (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding MIRV technology:

1. It allows multiple warheads on a single missile.
2. It is used only for civilian space missions.
3. It enhances penetration capability against missile defences.



Which of the statements given above is/are correct?

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

Answer: A

10.3 OLD THERMAL POWER SITES CHOSEN FOR NEW NUCLEAR POWER PROJECTS

WHY IN NEWS?

- India has identified three retired or old **thermal power plant sites** for developing new **nuclear power projects**, marking a strategic shift toward faster, land-ready nuclear expansion and low-carbon energy transition.

WHY OLD THERMAL SITES ARE BEING USED

Ready Infrastructure

- I. Existing access to:
 - A. Transmission lines
 - B. Water sources
 - C. Transport connectivity

Faster Project Execution

- Avoids long land acquisition and rehabilitation issues

Just Transition Strategy

- Repurposes coal-dependent regions for clean energy

Reduced Environmental Disruption

- Uses already industrialised land

WHAT ARE NUCLEAR POWER PLANTS?

- Facilities that generate electricity through **nuclear fission** (splitting of atoms).

Key fuel

- Uranium (main)
- Thorium (future potential for India)

INDIA'S NUCLEAR ENERGY CONTEXT

Key operator

Nuclear Power Corporation of India Limited

Current focus

- Expand nuclear capacity from ~8–10 GW to significantly higher levels by 2047
- Increase share of clean baseload power



WHY INDIA IS EXPANDING NUCLEAR POWER

Net-Zero Goals

- Supports decarbonisation targets

Energy Security

- Reduces dependence on fossil fuel imports

Stable Baseload Power

- Unlike solar/wind, nuclear provides continuous power

Industrial Demand Growth

- Needed for EVs, green hydrogen, and AI infrastructure

BENEFITS OF SHIFTING FROM COAL TO NUCLEAR SITES

Lower Carbon Emissions

- Replaces high-emission coal plants

Efficient Land Use

- Avoids greenfield land conflicts

Economic Transition

- Helps coal-dependent regions diversify energy economy

CHALLENGES

High Capital Cost

- Nuclear plants are expensive to build

Safety & Public Concerns

- Nuclear risk perception remains high

Waste Management

- Long-term radioactive waste storage issues

Regulatory Complexity

- Multi-agency approvals required

GLOBAL CONTEXT

- I. Many countries are:
 - A. Extending nuclear lifespan
 - B. Replacing coal plants with nuclear or SMRs (Small Modular Reactors)
- II. Nuclear seen as key “transition fuel” for net-zero goals

RELATED CONCEPTS

Baseload Power

- Continuous electricity supply regardless of weather

Nuclear Fission

- Splitting of heavy atoms to release energy



SMRs (Small Modular Reactors)

- Compact nuclear reactors with flexible deployment

- How does it align with India's energy transition goals? (150 words)

PRELIMS BOOSTER BOX

- **Nuclear power:** Electricity generated from nuclear fission
- **Thermal site repurposing:** Using old coal plant land for nuclear projects
- **NPCIL:** India's nuclear operator
- **Baseload power:** Continuous energy supply
- **Decarbonisation:** Reduction of carbon emissions

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**

Consider the following statements regarding nuclear energy:

1. It provides continuous baseload power.
2. It emits large amounts of carbon dioxide during operation.
3. It requires careful radioactive waste management.

Answer: 1 and 3 only

PadhAI-GENERATED MCQ

Consider the following statements regarding nuclear power plants:

1. They provide continuous electricity supply.
2. They rely on nuclear fission for energy generation.
3. They produce no waste at all.

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

PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of repurposing old thermal power plant sites for nuclear energy projects in India.



Subject

Society & Social Issue



1. SEGREGATION IMPACTS HEALTH ACCESS IN INDIA

WHY IN NEWS?

- Recent research and public health analyses highlight how **social segregation—based on caste, class, residence, and informal settlements—continues to restrict equitable access to healthcare services in India**, affecting health outcomes and deepening inequality.

WHAT IS HEALTHCARE SEGREGATION?

- Unequal access to healthcare services due to:
 - Geographic isolation (slums, rural pockets)
 - Social exclusion (caste, migrant status)
 - Economic inequality
 - Informal settlements without official recognition

HOW SEGREGATION IMPACTS HEALTH ACCESS

Physical Barriers

- Slums and informal settlements often located far from hospitals.
- Poor transport infrastructure delays emergency care.

Economic Barriers

- High out-of-pocket expenditure discourages treatment.

Social Discrimination

- Bias in treatment based on caste, class, or identity.

Administrative Exclusion

- Lack of documents prevents access to welfare schemes like Ayushman Bharat.

WHO IS MOST AFFECTED?

- Urban slum dwellers
- Rural poor populations
- Migrant workers
- Scheduled Castes and Scheduled Tribes
- Informal sector workers

STRUCTURAL CAUSES

Urban Planning Inequality

- Segregated cities with unequal service distribution

Weak Primary Healthcare System

- Overburdened public health centres

Privatisation of Healthcare

- Private healthcare concentrated in urban affluent zones



Data Gaps

- Informal settlements often missing from official records

IMPACT ON HEALTH OUTCOMES

- Higher maternal and infant mortality in marginalised areas
- Delayed diagnosis of diseases like tuberculosis
- Poor chronic disease management (diabetes, hypertension)
- Increased vulnerability during pandemics

BROADER PUBLIC HEALTH IMPLICATIONS

Inequity in Universal Health Coverage (UHC)

- Access remains uneven despite policy goals

Weak Disease Surveillance

- Outbreaks spread faster in underserved areas

Increased System Burden

- Late-stage treatment increases healthcare costs

GOVERNMENT INITIATIVES

Ayushman Bharat

- Aims to reduce financial barriers to healthcare

National Health Mission (NHM)

- Strengthens primary healthcare infrastructure

Health and Wellness Centres

- Focus on decentralised care delivery

CHALLENGES IN IMPLEMENTATION

- Unequal infrastructure across states
- Limited urban primary healthcare coverage
- Social exclusion not fully addressed in health policy
- Data invisibility of informal populations

WAY FORWARD

Strengthen Primary Healthcare

- Expand urban and rural health centres

Inclusive Urban Planning

- Integrate slums into formal service networks

Reduce Out-of-Pocket Spending



- Improve insurance coverage and public funding

Address Social Determinants of Health

- Focus on housing, sanitation, education

Improve Data Systems

- Include informal settlements in health databases

RELATED CONCEPTS

Social Determinants of Health

- Conditions in which people live, work, and grow

Universal Health Coverage (UHC)

- Access to essential healthcare without financial hardship

Health Equity

- Fair opportunity for everyone to achieve good health

PRELIMS BOOSTER BOX

- **Healthcare segregation:** Unequal access to health services due to social and spatial inequality
- **Ayushman Bharat:** Health insurance scheme for vulnerable populations
- **UHC:** Universal Health Coverage goal

- **Social determinants of health:** Non-medical factors affecting health outcomes
- **Primary healthcare:** First level of contact with health system

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**

Consider the following statements regarding health inequality:

1. Social factors can influence health outcomes.
2. Healthcare access is uniform across all population groups in India.
3. Urban slums often face barriers to healthcare access.

Answer: 1 and 3 only

PadhAI MAINS PRACTICE QUESTION

- Discuss how social and spatial segregation affects healthcare access in India.
- Suggest measures to ensure equitable health outcomes. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding healthcare access in India:

1. Social segregation can impact access to healthcare services.



2. Informal settlements are always fully covered under public health databases.
3. Primary healthcare plays a key role in reducing health inequality.

Which of the statements given above is/are correct?

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

Answer: A

2. SC INCLUDES ACID SURVIVORS IN RPWD ACT

WHY IN NEWS?

- The Supreme Court of India has directed that **acid attack survivors be treated as persons with disability** under the framework of the Rights of Persons with Disabilities Act, 2016, strengthening their legal entitlement to reservation, rehabilitation, and social protection.

WHO ARE ACID ATTACK SURVIVORS?

- I. Individuals who suffer physical and psychological injuries due to acid violence.
- II. Often face:
 - A. Severe disfigurement
 - B. Vision impairment

- C. Mobility issues
- D. Psychological trauma

KEY LEGAL DEVELOPMENT

Inclusion under Disability Law

- I. Recognised under **“Benchmark Disability” category framework** in practice.
- II. Ensures access to reservation benefits in:
 - A. Education
 - B. Government jobs

WHAT IS RPWD ACT, 2016?

- A comprehensive law protecting rights of persons with disabilities.

Key features

- Defines **21 types of disabilities** (expanded categories).
- Provides 4% reservation in government jobs.
- Ensures 5% reservation in higher education.
- Mandates accessibility in infrastructure and services.

SIGNIFICANCE OF THE SUPREME COURT RULING

Legal Recognition of Acid Violence Survivors

- Treats acid attack as a disability with long-term consequences.



Access to Rights and Benefits

- Education and employment reservations
- Rehabilitation support
- Disability certificates

Restorative Justice Approach

- Focus on dignity and reintegration into society

Strengthens Constitutional Rights

- Aligns with Article 14 (Equality) and Article 21 (Right to Life with dignity)

SOCIAL IMPACT

- Reduces stigma faced by survivors
- Improves economic independence
- Encourages rehabilitation-focused governance
- Strengthens victim-centric justice system

GOVERNMENT SUPPORT MECHANISMS

Compensation Schemes

- Financial aid for medical treatment and rehabilitation

Medical Treatment Support

- Free or subsidised reconstructive surgeries

Legal Aid

- Assistance for prosecution under criminal law

CHALLENGES REMAINING

Implementation Gaps

- Delay in issuing disability certificates

Social Stigma

- Continued discrimination in employment and society

Healthcare Accessibility

- Limited specialised reconstructive care in many regions

Underreporting of Cases

- Many survivors do not come forward

BROADER SIGNIFICANCE

Expanding Definition of Disability

- Recognises trauma-based impairments

Gender Justice Dimension

- Majority victims are women

Strengthening Human Rights Framework



- Reinforces dignity-based approach to law

RELATED CONCEPTS

Acid Violence

- Use of corrosive substances as a form of assault

Disability Rights

- Legal protections ensuring equality and accessibility

Reasonable Accommodation

- Adjustments enabling participation of persons with disabilities

PRELIMS BOOSTER BOX

- **RPwD Act, 2016:** Law governing disability rights in India
- **Benchmark disability:** At least 40% disability certification
- **Article 21:** Right to life and dignity
- **Acid attack survivors:** Now included for legal protections
- **Reservation:** 4% jobs, 5% higher education

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**
Consider the following statements regarding RPwD Act, 2016:

1. It provides reservation in government jobs for persons with disabilities.
2. It covers only physical disabilities.
3. It promotes accessibility and inclusion.

Answer: 1 and 3 only

PadhAI MAINS PRACTICE QUESTION

- Discuss the significance of the Supreme Court's decision to include acid attack survivors under the Rights of Persons with Disabilities Act, 2016.
- How does it strengthen inclusive justice in India? (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding acid attack survivors in India:

1. They are now included under the Rights of Persons with Disabilities framework.
2. They are entitled to reservation in education and employment.
3. Acid attack is not recognised as a criminal offence 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



4. FIXING INDIA'S HEALTH SYSTEM DEFICITS

WHY IN NEWS?

- Recent public policy discussions in India highlight persistent gaps in healthcare access, financing, workforce availability, and infrastructure—despite improvements under national health programmes.

WHAT ARE HEALTH SYSTEM DEFICITS?

They refer to gaps in the ability of the health system to deliver:

- Accessible care
- Affordable treatment
- Quality services
- Equitable health outcomes

MAJOR DEFICITS IN INDIA'S HEALTH SYSTEM

Low Public Health Spending

- Public expenditure remains low compared to global standards.
- Leads to reliance on private healthcare.

High Out-of-Pocket Expenditure (OOPE)

- Large share of health costs paid directly by households.

- Can push families into poverty.

Infrastructure Gaps

- Shortage of:
 - Hospitals in rural areas
 - Intensive care units
 - Diagnostic facilities

Human Resource Shortage

- Lack of doctors, nurses, and specialists in rural and remote areas.

Urban-Rural Divide

- Urban areas have better access than rural and tribal regions.

Unequal Quality of Care

- Wide variation between public and private healthcare services.

SYSTEMIC CHALLENGES

Fragmented Health Governance

- Multiple schemes with limited integration

Overburdened Public System

- Primary health centres face high patient loads

Rise of Non-Communicable Diseases (NCDs)

- Diabetes, cancer, cardiovascular diseases increasing burden



KEY GOVERNMENT INITIATIVES

Ayushman Bharat Pradhan Mantri Jan Arogya Yojana

- Provides insurance coverage for secondary and tertiary care

Ayushman Bharat Health and Wellness Centres

- Focus on **primary healthcare strengthening**

National Health Mission (NHM)

- Improves rural and urban health systems

Digital Health Mission

- Creates electronic health records and digital infrastructure

WAY FORWARD

Increase Public Health Spending

- Move toward higher GDP allocation for health

Strengthen Primary Healthcare

- Expand health and wellness centres

Reduce Out-of-Pocket Costs

- Expand insurance coverage and public provisioning

Health Workforce Expansion

- Increase medical education capacity and rural postings

Integrate Digital Health Systems

- Improve efficiency and data-driven decision-making

Focus on Preventive Healthcare

- Promote nutrition, sanitation, and early screening

BROADER SIGNIFICANCE

Inclusive Development

- Health is central to human capital formation

Economic Productivity

- Healthy population improves workforce efficiency

Social Equity

- Reduces inequality in access to essential services

Pandemic Preparedness

- Strong systems improve resilience to health crises

PRELIMS BOOSTER BOX

- **OOPE:** Out-of-pocket expenditure on healthcare



- **Ayushman Bharat:** Government health insurance scheme
- **NHM:** National Health Mission
- **Primary healthcare:** First level of medical contact
- **Health systems:** Infrastructure, workforce, financing, and governance

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**
Consider the following statements regarding India's healthcare system:
 1. Public health spending in India is relatively low.
 2. Out-of-pocket expenditure is a major burden on households.
 3. India has uniform healthcare access across all regions.

Answer: 1 and 2 only

PadhAI MAINS PRACTICE QUESTION

- Discuss the major structural deficits in India's health system.
- Suggest reforms to achieve universal, affordable, and quality healthcare. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding India's health system:

1. Primary healthcare is a key focus of recent health reforms.

2. Out-of-pocket expenditure is negligible in India.
3. Health infrastructure is unevenly distributed across regions.

Which of the statements given above is/are correct?

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

Answer: A

5. MGNREGS WORKDAYS DECLINED IN 2025-26: STUDY

WHY IN NEWS?

- A recent study by research groups including LibTech India highlights a **significant decline in employment generation under the rural job guarantee programme in India during FY 2025-26**, raising concerns about weakening rural safety nets and reduced demand for public employment.

KEY FINDINGS OF THE STUDY

FALL IN WORKDAYS

- Significant decline in **total person-days generated** nationally.
- Average workdays per household reduced from ~50+ days to **low-40s range** in 2025-26.



DROP IN COVERAGE

- Fewer rural households received employment.
- Decline in active participation across multiple states.

SHARP FALL IN 100-DAY EMPLOYMENT

- Households completing the guaranteed 100 days dropped significantly.

WIDESPREAD DECLINE

- Majority of states showed reduced employment generation.
- Only a few states showed marginal improvement.

WHAT IS MGNREGS?

Mahatma Gandhi National Rural Employment Guarantee Scheme

- Provides **100 days of wage employment** to rural households on demand.
- Acts as a **legal right to work** in rural India.
- A key anti-poverty and rural livelihood support programme.

WHY ARE WORKDAYS DECLINING? (POSSIBLE FACTORS)

LOWER DEMAND FOR WORK

- Improved non-farm employment in some regions.

ADMINISTRATIVE CHANGES

- Increased use of digital systems and stricter verification processes.

BUDGET AND IMPLEMENTATION ISSUES

- Delays in fund release or wage payments in some states.

MIGRATION PATTERNS

- Seasonal migration affecting participation levels.

POLICY TRANSITION EFFECTS

- Adjustments linked to recent changes in rural employment frameworks.

IMPACT OF DECLINE

RURAL INCOME LOSS

- Fewer guaranteed workdays → lower household earnings

WEAKER SOCIAL SAFETY NET

- Reduced cushioning during agricultural distress or unemployment

INEQUALITY CONCERNS

- Vulnerable groups more affected (SC/ST, landless labourers)

LOCAL ECONOMY SLOWDOWN



- MGNREGS wages often support rural consumption demand

SIGNIFICANCE FOR POLICY

QUESTION ON DEMAND-DRIVEN NATURE

- Whether guaranteed employment is being fully honoured

NEED FOR BETTER IMPLEMENTATION

- Timely payment, easier access, and grievance redressal

ROLE OF RURAL JOBS IN ECONOMIC STABILITY

- Important counter-cyclical employment tool

WAY FORWARD

- Strengthen **demand-based employment assurance**
- Ensure timely wage payments and funding flow
- Improve transparency in work allocation systems
- Expand complementary rural livelihoods (agro-processing, skill-based work)
- Better monitoring of state-level implementation

- **MGNREGS:** Rural employment guarantee scheme
- **Person-days:** Total days of work generated for all workers
- **100-day guarantee:** Legal entitlement under the scheme
- **Demand-driven scheme:** Work provided when demanded by households

PadhAI MAINS PRACTICE QUESTION

- *“Declining workdays under MGNREGS highlight both economic transitions and implementation challenges.”*
- Discuss the reasons for the decline and suggest measures to strengthen rural employment security in India. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements about MGNREGS:

1. It guarantees up to 100 days of wage employment to rural households.
2. It is a demand-driven programme.
3. Decline in workdays necessarily implies elimination of the scheme.

Which of the statements is/are correct?

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

Answer: A

PRELIMS BOOSTER BOX



6. CENTRE ENACTS LABOUR CODES, UNIONS PROTEST

WHY IN NEWS?

- The Government of India has operationalised the long-pending **four Labour Codes**, triggering protests from trade unions over concerns about workers' rights, job security, and weakening of collective bargaining in India.

THE FOUR LABOUR CODES

CODE ON WAGES

- Standardises minimum wages across sectors and regions
- Universal applicability of wage provisions

INDUSTRIAL RELATIONS CODE

- Governs trade unions, strikes, and layoffs
- Raises threshold for prior government approval for layoffs in some cases

OCCUPATIONAL SAFETY, HEALTH AND WORKING CONDITIONS CODE

- Covers workplace safety standards
- Applies to factories, mines, and construction sectors

SOCIAL SECURITY CODE

- Expands social security coverage

- Includes gig and platform workers under formal definition

WHY UNIONS ARE PROTESTING

WEAKENING OF JOB SECURITY

- Easier hiring and firing rules in certain sectors

RESTRICTIONS ON STRIKES

- Stricter rules for legal strikes and industrial action

FEAR OF CONTRACTUALISATION

- Greater reliance on short-term contracts

WEAK ENFORCEMENT CONCERNS

- Concerns over dilution of inspection mechanisms

GOVERNMENT'S ARGUMENTS

SIMPLIFICATION

- Reduces complexity from 29 laws to 4 codes

FORMALISATION

- Brings informal and gig workers into legal framework



EASE OF DOING BUSINESS

- Improves investment climate

EXPANDED SOCIAL SECURITY

- Broader coverage of workers

IMPACT ON WORKERS

POSITIVE

- Wider definition of workers under social security
- Minimum wage standardisation
- Inclusion of gig workers

NEGATIVE

- Concerns over weaker collective bargaining
- Potential job insecurity in some sectors

IMPACT ON INDUSTRY

- Easier compliance
- Greater flexibility in workforce management
- Potential for increased industrial productivity

KEY CONCERNS IN DEBATE

BALANCE BETWEEN FLEXIBILITY AND SECURITY

- Debate over labour market liberalisation

FEDERAL ISSUES

- Labour is a concurrent subject → state-level implementation variations

INFORMAL WORKFORCE COVERAGE

- Effectiveness of social security expansion remains uncertain

RELATED CONCEPTS

Gig Economy

- Short-term, platform-based work system

Collective Bargaining

- Negotiation between workers and employers

Social Security Net

- Pension, insurance, and welfare protections

PRELIMS BOOSTER BOX

- **Labour Codes:** Four consolidated labour laws in India
- **Industrial Relations Code:** Regulates strikes and layoffs
- **Social Security Code:** Covers gig workers and welfare
- **Contractualisation:** Use of temporary workers instead of permanent staff
- **Concurrent List:** Labour is shared Centre-State subject



PadhAI PYQ BOOSTER SECTION

- **Prelims style:**

Consider the following statements regarding Labour Codes in India:

1. They consolidate multiple existing labour laws.
2. They apply only to formal sector workers.
3. They include provisions for gig workers.

Answer: 1 and 3 only

PadhAI MAINS PRACTICE QUESTION

- Discuss the objectives of India's new Labour Codes.
- Why have trade unions opposed their implementation? (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding Labour Codes:

1. They aim to simplify India's labour law framework.
2. They exclude informal workers from their ambit.
3. They include provisions related to social security.

Which of the statements given above is/are correct?

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

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

Answer: A

7. YOUTH GOALS AND ASPIRATIONS MISALIGNED

WHY IN NEWS?

- Recent social and economic studies in India highlight a growing mismatch between **youth aspirations and available opportunities**, particularly in employment, education, and skill development pathways.

WHAT DOES “ASPIRATION–OPPORTUNITY MISMATCH” MEAN?

It refers to a gap between:

- What youth want (career, income, lifestyle expectations)
- vs**
- What the economy can currently offer (job types, wages, skill demand)

KEY DIMENSIONS OF THE MISMATCH

EDUCATION–EMPLOYMENT GAP

- Rising higher education enrolment
- But limited job creation in high-skill sectors



SKILL MISMATCH

- Degree-oriented education vs skill-based industry needs
- Lack of vocational and technical training

URBAN BIAS IN ASPIRATIONS

- Preference for urban, formal jobs
- Rural economies dominated by agriculture and informal work

INFORMAL JOB DOMINANCE

- Majority jobs are low-security, low-wage
- Gig and contract work increasing

CAUSES OF MISALIGNMENT

Rapid Social Mobility Expectations

- Exposure to global lifestyles via internet and media

Education System Limitations

- Focus on degrees rather than employability skills

Structural Unemployment

- Economy not generating enough quality jobs

Digital Influence

- Social media increases expectations of high-income careers

IMPACT OF THE MISMATCH

Youth Unemployment and Underemployment

- Qualified youth working in low-skill jobs

Psychological Stress

- Frustration, anxiety, and dissatisfaction

Migration Pressure

- Rural to urban migration in search of jobs

Social Inequality

- Unequal access to quality jobs

GOVERNMENT RESPONSE

Skill India Mission

- Focus on vocational training and employability

National Education Policy 2020

- Emphasises multidisciplinary and skill-based education

Startup India Initiative

- Promotes entrepreneurship among youth



WAY FORWARD

ALIGN EDUCATION WITH MARKET NEEDS

- Strengthen vocational and technical education

BOOST QUALITY JOB CREATION

- Focus on manufacturing and services expansion

PROMOTE ENTREPRENEURSHIP

- Support startups and self-employment

CAREER GUIDANCE SYSTEMS

- Improve counselling at school and college level

SKILL-INDUSTRY LINKAGES

- Industry-driven training programmes

BROADER SIGNIFICANCE

DEMOGRAPHIC DIVIDEND UTILISATION

- India's youth population can become an asset

SOCIAL STABILITY

- Reduces frustration-driven unrest

ECONOMIC PRODUCTIVITY

- Better job matching improves output

PRELIMS BOOSTER BOX

- **Aspirational gap:** Difference between expectations and reality of jobs
- **Skill mismatch:** Gap between education and job requirements
- **NEP 2020:** Focus on skill-based education
- **Gig economy:** Flexible but insecure jobs
- **Demographic dividend:** Economic benefit from young population

PadhAI PYQ BOOSTER SECTION

- **Prelims style:**

Consider the following statements regarding youth employment in India:

1. Skill mismatch contributes to unemployment.
2. Education always guarantees suitable employment.
3. Informal sector employs a large share of workers.

Answer: 1 and 3 only

PadhAI MAINS PRACTICE QUESTION

- Discuss the causes of mismatch between youth aspirations and job opportunities in India.
- Suggest measures to bridge this gap. (150 words)



PadhAI-GENERATED MCQ

Consider the following statements:

1. Skill development programmes aim to improve employability.
2. Youth aspirations are always aligned with labour market realities.
3. Informalisation of jobs contributes to aspiration mismatch.

Which of the statements given above is/are correct?

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

Answer: A

8. WHY DID NTA'S 'ZERO ERROR' POLICY FAIL?

WHY IN NEWS?

- Recent controversies around exam irregularities have raised questions on the functioning of the National Testing Agency and its ambitious **"zero error" examination policy**, designed to ensure flawless conduct of national-level entrance exams.

WHAT WAS THE "ZERO ERROR" POLICY?

It aimed to ensure:

- Error-free question papers
- Secure and leak-proof exam conduct
- Accurate evaluation and results
- Uniform standards across centres

WHY DID IT FAIL?

SCALE OF EXAMINATION SYSTEM

- Millions of candidates appear across thousands of centres
- Difficult to ensure uniform control and monitoring

DIGITAL AND LOGISTICAL VULNERABILITIES

- I. Dependence on technology introduced risks of:
 - A. Server failures
 - B. Software glitches
 - C. Cybersecurity breaches

QUESTION PAPER SECURITY ISSUES

- Multi-layered distribution system still vulnerable to leaks
- Human handling remains a weak link

CENTRE-LEVEL IRREGULARITIES

- Variations in supervision quality
- Reports of mismanagement at exam centres

OVER-CENTRALISATION OF RESPONSIBILITY

- Centralised system without adequate decentral accountability



HIGH-STAKES PRESSURE SYSTEM

- Competitive exams increase incentive for malpractice
- Fraud networks evolve faster than enforcement systems

STRUCTURAL CHALLENGES

Infrastructure Inequality

- Rural and urban centres have uneven exam facilities

Staffing and Training Gaps

- Temporary invigilators and contractors often used

Weak Real-Time Monitoring

- Limited live surveillance across all centres

IMPACT OF FAILURES

LOSS OF TRUST

- Students question fairness of national exams

MENTAL STRESS

- Anxiety among aspirants due to uncertainty

LEGAL AND ADMINISTRATIVE CHALLENGES

- Court cases and exam cancellations

WAY FORWARD

STRONGER DIGITAL SECURITY

- End-to-end encryption and blockchain-based tracking

INDEPENDENT AUDITS

- Regular third-party evaluation of exam systems

DECENTRALISED ADMINISTRATION

- Stronger role for regional authorities

REAL-TIME MONITORING

- AI-based surveillance in exam centres

TRANSPARENCY MEASURES

- Public disclosure of exam processes and safeguards

BROADER SIGNIFICANCE

- Competitive exams are critical for social mobility in India
- Integrity of testing systems directly affects **trust in public institutions**
- Highlights need for **institutional resilience in digital governance**

PRELIMS BOOSTER BOX

- **NTA:** National Testing Agency, conducts major entrance exams
- **Zero error policy:** Aim for completely error-free examination process



- **High-stakes exams:** Competitive exams with large-scale participation
- **Cybersecurity in exams:** Protection against leaks and hacking
- **Invigilation:** Supervision during exams

PadhAI MAINS PRACTICE

QUESTION

- *“The failure of the zero error policy reflects deeper structural challenges in India’s examination system.”*
- Discuss the causes and suggest reforms to improve the credibility of national testing systems. (150 words)

PadhAI-GENERATED MCQ

Consider the following statements regarding India’s examination system:

1. Large-scale examinations are difficult to manage without technological support.
2. Zero error systems eliminate all possibilities of malpractice.
3. Exam security depends on both technology and human supervision.

Which of the statements given above is/are correct?

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

Answer: A



Subject

Species in News



1. Tigress, Cubs Die at Kanha Tiger Reserve: Alarming Spike in Wildlife Mortality



Taxonomy & Identity

- I. **Common Name:** Bengal Tiger
- II. **Scientific Name:** *Panthera tigris tigris*
- III. **Family/Order:** Felidae | Carnivora
- IV. **Key Identification Features:**
 - A. Large striped apex predator
 - B. Solitary and territorial carnivore
 - C. Indicator of healthy forest ecosystems

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Endangered
- **Wildlife Protection Act, 1972:** Schedule I
- **CITES:** Appendix I

Geographic Range

- I. **Global Distribution:**
 - A. India, Nepal, Bhutan, Bangladesh (South Asia stronghold)
- II. **India-specific Range:**
 - A. Core tiger landscapes across Central, Western, and Northeastern India
 - B. Key habitat in this case:
 1. Kanha Tiger Reserve (Maikal hills, Central India landscape)

Eco-Behavioral Traits

- I. **Habitat Type:** Tropical moist deciduous forests, grasslands, mixed forests
- II. **Activity Pattern:** Nocturnal and crepuscular
- III. **Diet:** Carnivorous (deer, wild boar, gaur calves, etc.)
- IV. **Special Traits:**
 - A. Apex predator maintaining trophic balance
 - B. Highly dependent on prey density and intact habitat corridors
 - C. Cubs remain dependent for up to ~18–24 months

Threat Matrix

- I. **Immediate Cause (as per reports):**
 - A. Suspected **Canine Distemper Virus (CDV)** outbreak
- II. **Major Threats:**



- A. Infectious diseases transmitted via domestic/stray dogs
- B. Habitat stress and fragmentation
- C. Declining prey base in some pockets
- D. Inbreeding stress in isolated populations
- E. Human-wildlife interface pressures

Prelims Booster

- Incident involves **multiple deaths of a tigress and her cubs in a short span**, highlighting disease vulnerability in wild carnivores
- Kanha Tiger Reserve is part of the **Central Indian tiger landscape (one of India's strongest tiger strongholds)**
- CDV is a **viral disease affecting carnivores**, often spreading from domestic dogs
- Such outbreaks are increasingly linked to **human-wildlife interface and vaccination gaps in stray populations**
- Highlights need for **One Health approach (wildlife + livestock + human health integration)**

2.Can Vantara solve Colombia's hippo problem?



First, what Colombia is dealing with

- I. Hippos in **Colombia** are an **invasive population of *Hippopotamus amphibius***.
- II. Origin: Escaped/abandoned animals from a private estate (Pablo Escobar era).
- III. Current situation:
 - A. Rapid population growth
 - B. Spread across Magdalena River basin
 - C. No natural predators
 - D. Increasing human-wildlife conflict + ecosystem disruption



This is not a “rescue problem” – it is an **invasive species management crisis**.

What Vantara actually is (relevant capacity)

- I. **Vantara** is a large-scale wildlife rescue/rehabilitation facility in India.
- II. Strengths (in principle):
 - A. Large captive care infrastructure
 - B. Veterinary expertise and long-term animal housing capacity
 - C. Experience in wildlife rehabilitation logistics

Why relocation to Vantara is NOT a real solution

Scale problem

- I. Colombia’s hippos are already a **growing wild population**, not a few captive animals.
- II. Removal requires handling:
 - A. Hundreds now
 - B. Potentially thousands in future

No single facility can absorb or sustainably manage that inflow.

Legal + diplomatic barriers

- I. International transfer of large wildlife populations involves:
 - A. **CITES permits**
 - B. Bilateral wildlife agreements
 - C. Disease risk certification

- II. Moving invasive megafauna across continents is **politically and legally complex**.

Ecological principle: “invasive population ≠ zoo intake case”

- I. Best practice globally (IUCN guidance):
 - A. Control in native invaded ecosystem
 - B. Sterilization
 - C. Containment
 - D. Selective culling (controversial but used)

Exporting animals is **not standard invasive species management**.

Cost & logistics reality

- I. Hippos are:
 - A. Large-bodied
 - B. Dangerous
 - C. Water-dependent
- II. Capture + transport + long-term care costs would be **extremely high per animal**

What *actually* works for Colombia

Most realistic strategy mix:

- Sterilization (birth control programs)
- Controlled culling (controversial but used in some invasive cases)
- Habitat containment (fencing/river management in hotspots)



- Translocation within country (limited cases)
- Long-term population modeling

3. Tiger Spotted in Arunachal Sanctuary After 20 Years: A Quiet Ecological Comeback



Taxonomy & Identity

- I. **Common Name:** Bengal Tiger
- II. **Scientific Name:** *Panthera tigris tigris*
- III. **Family/Order:** Felidae | Carnivora
- IV. **Key Identification Features:**
 - A. Orange coat with black stripes (unique to each individual)
 - B. Apex predator of Indian forest ecosystems
 - C. Solitary and territorial carnivore

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Endangered
- **Wildlife Protection Act, 1972:** Schedule I
- **CITES:** Appendix I

Geographic Context

- The tiger was recorded in **Daying Ering Memorial Wildlife Sanctuary** after nearly two decades of absence
- Earlier confirmed evidence in the area dates back to **around 2005**, with no reliable records for many years thereafter
- The sanctuary lies in the **riverine floodplain ecosystem of the Siang (Brahmaputra) basin**, characterized by grasslands, marshes, and shifting river channels

Eco-Behavioral Traits

- I. **Habitat Type:** Tropical forests, grasslands, riverine floodplains



- II. **Activity Pattern:** Crepuscular and nocturnal
- III. **Diet:** Deer species, wild boar, and other ungulates
- IV. **Special Traits:**
 - A. Requires **large, connected territories**
 - B. Highly sensitive to habitat fragmentation and human disturbance
 - C. Presence indicates **restoration of prey base and habitat connectivity**

- Such reappearances may indicate **habitat recovery or tiger dispersal from nearby protected areas**
- Tigers are considered a **flagship species for forest ecosystem health**

Threat Matrix

- I. **Major Threats:**
 - A. Historical poaching pressure in fragmented landscapes
 - B. Habitat loss due to human settlement expansion
 - C. Riverine ecosystem disturbance (floodplain modification)
 - D. Decline and recovery fluctuations in prey populations
 - E. Human–wildlife interface pressure in Northeast India

Prelims Booster

- Daying Ering Memorial Wildlife Sanctuary is a **Brahmaputra river island ecosystem**, important for grassland biodiversity
- The sighting was confirmed through **camera trap evidence**, indicating scientific monitoring expansion
- Northeast India acts as a **critical tiger corridor linking India–Bhutan–Myanmar landscapes**

4. Dragonflies & Damselflies Vanishing in Western Ghats: Early Warning Signal of Ecosystem Stress



Taxonomy & Identity

Dragonflies & Damselflies

- I. **Common Name:** Odonates (Dragonflies & Damselflies)
- II. **Scientific Name:** Order *Odonata*



III. **Key Groups:**

- A. Dragonflies → Suborder *Anisoptera*
- B. Damselflies → Suborder *Zygoptera*

IV. **Key Identification Features:**

- A. Dragonflies: Stout body, wings held open at rest
- B. Damselflies: Slender body, wings folded over body

III. **Diet:** Carnivorous (mosquitoes, flies, small insects)

IV. **Special Traits:**

- A. Strong **indicator species of freshwater ecosystem health**
- B. Sensitive to pollution, habitat fragmentation, and water quality changes
- C. Important role in **natural pest control (including mosquitoes)**

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Most species Not Evaluated / Data Deficient
- **Wildlife Protection Act, 1972:** Not specifically listed
- **CITES:** Not listed

Geographic Range

I. **Global Distribution:**

- A. Found worldwide except polar regions

II. **India-specific Range:**

- A. High diversity in:
 1. Western Ghats
 2. Eastern Himalayas
 3. Wetlands across peninsular India
- B. Depend on **freshwater ecosystems for breeding**

Eco-Behavioral Traits

- I. **Habitat Type:** Rivers, streams, ponds, lakes, marshes
- II. **Activity Pattern:** Diurnal

Threat Matrix

I. **Major Threats:**

- A. Freshwater pollution (industrial + agricultural runoff)
- B. Habitat destruction (wetland drainage, river modification)
- C. Climate change altering monsoon and water cycles
- D. Urbanization and land-use change
- E. Loss of microhabitats (streams, shaded ponds, forest pools)

Prelims Booster

- Recent surveys show **~35% decline in recorded odonate diversity in Western Ghats**
- Only about **65% of historically recorded species were observed again**, indicating possible habitat stress
- Odonates are among the **best bioindicators of freshwater ecosystem health**
- They depend on **clean, oxygen-rich water for larval development**



- Western Ghats is a **global biodiversity hotspot** with high endemic odonate species

5.China May Skip Big Cat Conservation Alliance: What It Means for Global Felid Protection



Taxonomy & Identity (Context Species: Big Cats)

“Big cats” typically include members of genus **Panthera** and related large felids:

- I. **Tiger:** *Panthera tigris*
- II. **Lion:** *Panthera leo*
- III. **Leopard:** *Panthera pardus*
- IV. **Snow Leopard:** *Panthera uncia*
- V. **Jaguar:** *Panthera onca*
- VI. **Family/Order:** Felidae | Carnivora
- VII. **Key Identification Features:**
 - A. Apex predators in their ecosystems
 - B. Require large, connected habitats
 - C. High conservation value as **umbrella and flagship species**

Conservation Framework (Context of News)

- I. **Big Cat Conservation Alliance (BCCA):**
 - A. A proposed multi-country platform aimed at **coordinated conservation of large felids**
 - B. Focus areas: habitat protection, anti-poaching, transboundary corridors, and data sharing
- II. **Issue Highlighted in News:**
 - A. **China may not join/participate**, potentially limiting global coordination

Geographic Context

- I. Big cats are distributed across:
 - A. South Asia (tiger, leopard)
 - B. Africa (lion, leopard)
 - C. Central Asia (snow leopard)
 - D. Americas (jaguar)
- II. India remains a **global stronghold for tiger conservation**



- A. Important landscapes include Central India, Western Ghats, and Northeast India

Ecological Significance

- I. **Habitat Type:** Forests, grasslands, mountains, savannas
- II. **Activity Pattern:** Mostly nocturnal/crepuscular
- III. **Diet:** Carnivorous apex predators
- IV. **Special Traits:**
 - A. Regulate prey populations → maintain trophic balance
 - B. Indicator of **ecosystem integrity and habitat connectivity**
 - C. Require large territories → sensitive to fragmentation

Conservation Concerns

- I. **Major Threats to Big Cats (Global):**
 - A. Habitat loss and fragmentation
 - B. Poaching and illegal wildlife trade
 - C. Human–wildlife conflict
 - D. Declining prey base
 - E. Infrastructure expansion disrupting corridors
- II. **Governance Challenge Highlighted:**
 - A. Lack of unified participation weakens:
 1. Transboundary conservation
 2. Genetic diversity management
 3. Coordinated anti-poaching networks

Prelims Booster

- Big cats are classified as **flagship species (conservation symbols)**
- India is home to **5 big cat species (tiger, leopard, snow leopard, lion, clouded leopard)**
- Conservation success depends heavily on **corridor connectivity**
- Global efforts often align with **CITES Appendix I protections for most big cats**
- Snow leopard is often called the **“ghost of the mountains”** due to its elusive nature



6.4 Cheetah Cubs Killed in Leopard Attack: Reintroduction Challenges in Grassland Landscapes



- I. **Common Name:** Cheetah
- II. **Scientific Name:** *Acinonyx jubatus*
- III. **Family/Order:** Felidae | Carnivora
- IV. **Key Identification Features:**
 - A. Fastest land mammal
 - B. Slender build, tear marks on face
 - C. Built for speed, not confrontation

Leopard (Threat Species in Context)

- I. **Common Name:** Leopard
- II. **Scientific Name:** *Panthera pardus*
- III. **Family/Order:** Felidae | Carnivora
- IV. **Key Identification Features:**
 - A. Strong, adaptable apex predator
 - B. Excellent climber; often drags prey into trees
 - C. Highly opportunistic hunter

IUCN & Legal Status (“Holy Trinity”)

Cheetah

- **IUCN Red List:** Vulnerable
- **Wildlife Protection Act, 1972:** Schedule I
- **CITES:** Appendix I

Leopard

- **IUCN Red List:** Vulnerable
- **Wildlife Protection Act, 1972:** Schedule I
- **CITES:** Appendix I

Taxonomy & Identity

Cheetah



Geographic Context

- Incident linked to **Kuno National Park** landscape
- Part of India's **Project Cheetah reintroduction programme (African cheetahs in India)**
- Habitat type: dry deciduous forests + grassland mosaic

Eco-Behavioral Traits

Cheetah

- I. **Habitat Type:** Open grasslands and semi-arid landscapes
- II. **Activity Pattern:** Diurnal
- III. **Diet:** Medium-sized ungulates
- IV. **Special Traits:**
 - A. Low aggression → avoids confrontation
 - B. Vulnerable to larger carnivores (leopard, tiger, lion)
 - C. Cubs especially vulnerable due to low defensive ability

Leopard

- I. **Habitat Type:** Highly adaptable (forests, scrub, peri-urban zones)
- II. **Activity Pattern:** Nocturnal
- III. **Diet:** Opportunistic carnivore
- IV. **Special Traits:**
 - A. Strong interspecies competition ability
 - B. Predation on smaller carnivores possible in overlap zones

Threat Matrix (Reintroduction Context)

- I. **Major Challenges:**
 - A. Interspecies predation (leopards, hyenas, jackals)
 - B. Habitat overlap between cheetahs and stronger predators
 - C. Limited safe rearing zones for cubs
 - D. Human-managed translocation stress
 - E. Fragmented grassland patches

Prelims Booster

- Cheetah reintroduction in India is under **Project Cheetah (2022 onward)**
- Kuno National Park is a core relocation site
- Leopards are **native, highly adaptable competitors** in Indian ecosystems
- Cheetah cub mortality is a known risk in **multi-predator landscapes**
- India's grassland ecosystems are still **ecologically fragmented compared to forest systems**



7. Manipur Barn Swallows Losing Migration Habit: A Case of Rapid Behavioral Evolution



- **Wildlife Protection Act, 1972:** Schedule IV
- **CITES:** Not Listed

Geographic Range

- I. **Global Distribution:**
 - A. One of the most widely distributed migratory birds across Eurasia, Africa, and the Americas
- II. **India-specific Range:**
 - A. Traditionally a **winter migrant across India**
 - B. Recent observations from **Loktak Lake region show partial resident behavior**
 - C. Northeastern wetlands acting as emerging stable habitats

Eco-Behavioral Traits

- I. **Habitat Type:** Open fields, wetlands, human settlements
- II. **Activity Pattern:** Diurnal
- III. **Diet:** Flying insects (aerial insectivore)
- IV. **Special Traits:**
 - A. Highly migratory species (long-distance seasonal movement)
 - B. Nests on man-made structures (bridges, buildings)
 - C. Strong association with wetland ecosystems for insect abundance

Taxonomy & Identity

- I. **Common Name:** Barn Swallow
- II. **Scientific Name:** *Hirundo rustica*
- III. **Family/Order:** Hirundinidae | Passeriformes
- IV. **Key Identification Features:**
 - A. Slender bird with long forked tail
 - B. Blue-black upper body with reddish throat/forehead
 - C. Agile aerial insectivore

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Least Concern

Threat Matrix

- I. **Major Pressures:**



- A. Climate change altering migration cues
- B. Habitat changes in breeding and wintering grounds
- C. Urbanization affecting insect prey availability
- D. Wetland degradation reducing feeding habitats
- E. Behavioral shift risk due to warming climates

Prelims Booster (Exam-Oriented Facts)

- Barn swallow is one of the **most widely distributed migratory birds globally**
- Recent observations indicate **partial loss of migration behavior in parts of Northeast India**
- Loktak Lake region is emerging as a **stable overwintering/possible breeding zone**
- Such behavioral shifts indicate **climate-driven ecological adaptation**
- Migratory birds are key **indicators of seasonal ecosystem health and insect population cycles**

8. Tagged Amur Falcons to Cross India Again: A High-Speed

Migratory Corridor Returns



Taxonomy & Identity

- I. **Common Name:** Amur Falcon
- II. **Scientific Name:** *Falco amurensis*
- III. **Family/Order:** Falconidae | Falconiformes
- IV. **Key Identification Features:**
 - A. Small migratory raptor
 - B. Males: slate-grey body; Females: brownish with streaking
 - C. Extremely long-distance flyer for its size



IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Least Concern
- **Wildlife Protection Act, 1972:** Schedule IV
- **CITES:** Appendix II

Geographic Range

- I. **Global Distribution:**
 - A. Breeds in **East Asia (Mongolia, Russia, Northern China)**
 - B. Winters in **Southern Africa**
- II. **India-specific Range:**
 - A. Major migratory corridor through **Northeast India**
 - B. Key stopover sites:
 1. Doyang Reservoir
 2. Pangti Village
 - C. Flight path: East Asia → India → Arabian Sea → Africa

Eco-Behavioral Traits

- I. **Habitat Type:** Open landscapes, wetlands (during stopovers)
- II. **Activity Pattern:** Diurnal
- III. **Diet:** Insects (locusts, termites), small birds
- IV. **Special Traits:**
 - A. One of the **longest transcontinental migrations (~30,000 km round trip)**
 - B. Performs **non-stop oceanic flight over Arabian Sea**
 - C. Forms large communal roosts during migration stopovers

Threat Matrix

- I. **Major Threats:**
 - A. Historical hunting during migration (now reduced due to conservation)
 - B. Habitat disturbance at stopover sites
 - C. Climate change affecting insect availability and timing
 - D. Collision risks during migration routes

Prelims Booster

- Tagged birds help track **exact migratory flyways across continents**
- Northeast India, especially **Pangti Village**, is a major conservation success story
- Amur falcon migration is a key example of **transboundary biodiversity conservation**
- Uses **India as a crucial refueling corridor, not breeding ground**
- Conservation success linked to **community-led protection initiatives in Nagaland**



9. Velvet Worm (*Velia carli*): A “Living Fossil” from India’s Western Ghats



Taxonomy & Identity

- I. **Common Name:** Velvet Worm
- II. **Scientific Name:** *Velia carli*
- III. **Phylum:** Onychophora
- IV. **Key Identification Features:**
 - A. Soft-bodied, caterpillar-like appearance
 - B. Slime-producing glands used to trap prey
 - C. Considered a “**living fossil**” due to ancient evolutionary lineage

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Not Evaluated / Data Deficient (for many Onychophorans)
- **Wildlife Protection Act, 1972:** Not listed
- **CITES:** Not listed

Geographic Range

- I. **Global Distribution:**
 - A. Disjunct populations in tropical regions (South America, Africa, Southeast Asia, Australasia)
- II. **India-specific Range:**
 - A. Restricted to **Western Ghats**
 - B. Found in moist, shaded forest microhabitats
 - C. Highly localized and rarely observed

Eco-Behavioral Traits

- I. **Habitat Type:** Humid leaf litter, decaying logs, forest floor microhabitats
- II. **Activity Pattern:** Nocturnal and cryptic
- III. **Diet:** Small invertebrates (worms, insects)
- IV. **Special Traits:**
 - A. Uses **adhesive slime jets** to immobilize prey
 - B. Possesses traits linking arthropods and annelids (evolutionarily significant group)
 - C. Extremely sensitive to microclimatic changes (humidity-dependent survival)



Threat Matrix

- I. **Major Threats:**
 - A. Habitat loss due to deforestation
 - B. Microhabitat drying from climate change
 - C. Fragmentation of evergreen forests
 - D. Limited distribution → high extinction vulnerability
 - E. Lack of scientific data and awareness

Prelims Booster

- Velvet worms represent an **ancient evolutionary lineage (Onychophora)**
- Considered a **“missing link” between arthropods and annelids**
- India’s populations are mainly restricted to **Western Ghats biodiversity hotspots**
- Extremely rare and under-researched → important for **taxonomic discovery**
- Depend on **high humidity microhabitats** → **climate sensitive species**

10. Crab: A Keystone Coastal Crustacean Across India’s Marine and

Freshwater Systems



Taxonomy & Identity

- I. **Common Name:** Crab
- II. **Scientific Classification:** Infraorder *Brachyura*
- III. **Phylum:** Arthropoda | Order: Decapoda
- IV. **Key Identification Features:**
 - A. Broad cephalothorax with reduced abdomen tucked underneath
 - B. Five pairs of legs (first pair modified into claws/chelae)
 - C. Sideways walking (lateral locomotion)

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Varies by species (Least Concern to Threatened)
- **Wildlife Protection Act, 1972:** Not uniformly listed (species-specific protections exist for some rare crabs)



- **CITES:** Not generally listed

Geographic Range

- I. **Global Distribution:**
 - A. Found in oceans worldwide, including coastal, estuarine, and freshwater ecosystems
- II. **India-specific Range:**
 - A. Coastal regions:
 1. Arabian Sea and Bay of Bengal coastlines
 - B. Estuaries & mangroves:
 1. Sundarbans Mangrove Forest
 2. Bhitarkanika Mangroves
 - C. Some species also in inland freshwater rivers and wetlands

Eco-Behavioral Traits

- I. **Habitat Type:** Marine, estuarine, mangrove, freshwater (species-dependent)
- II. **Activity Pattern:** Mostly nocturnal or crepuscular
- III. **Diet:** Omnivorous (detritus, algae, small invertebrates, carrion)
- IV. **Special Traits:**
 - A. Important **detritus recyclers in coastal ecosystems**
 - B. Many species play a key role in **mangrove nutrient cycling**
 - C. Burrowing behavior helps **aerate soil and stabilize sediments**

Threat Matrix

- I. **Major Threats:**
 - A. Mangrove destruction and coastal development
 - B. Overfishing and bycatch in commercial fisheries
 - C. Pollution (plastics, heavy metals, oil spills)
 - D. Climate change and sea-level rise affecting coastal habitats
 - E. Habitat fragmentation in estuarine zones

Prelims Booster (Exam-Oriented Facts)

- Crabs are key **indicator species of coastal ecosystem health**
- Mangrove ecosystems like **Sundarbans Mangrove Forest** depend heavily on crab-driven nutrient cycling
- Many species show **complex larval stages in marine plankton**
- Crabs act as **both prey and scavengers** → **important food web link**
- Burrowing crabs contribute to **sediment oxygenation and shoreline stability**



11. Gynandromorphy: When One Organism Is Both Male and Female



- **Wildlife Protection Act, 1972:** Not Applicable
- **CITES:** Not Applicable

Occurrence in Nature

- I. Observed across multiple animal groups:
 - A. Insects (butterflies, bees, dragonflies)
 - B. Crustaceans (crabs, lobsters)
 - C. Birds (rare cases)
- II. Rare but documented globally, including biodiversity-rich regions like India

Biological Mechanism

- I. **Cause:** Error in early embryonic cell division (mitosis)
- II. Leads to two main forms:
 - A. **Bilateral gynandromorph:** One side male, one side female
 - B. **Mosaic gynandromorph:** Mixed distribution of male and female traits
- III. **Genetic Basis:**
 - A. Differences in sex chromosomes in different cell lines

Taxonomy & Identity

- I. **Common Term:** Gynandromorphy (or gynandromorph)
- II. **Type:** Developmental genetic phenomenon (not a species)
- III. **Key Concept:**
 - A. An organism showing **both male and female characteristics in different body parts**
 - B. Occurs due to abnormal early cell division or chromosomal distribution

Biological Status (No regulatory classification)

- **IUCN Red List:** Not Applicable

Significance in Ecology & Biology

- I. Not a disease or disorder in ecological terms
- II. Indicates:
 - A. Developmental plasticity
 - B. Chromosomal irregularities during early development



- III. Usually **rare and non-heritable in most cases**

Prelims Booster

- Gynandromorphs are **not intersex in the hormonal sense** → they are genetically mosaic
- Commonly reported in **butterflies and bees due to sexual dimorphism**
- One of the most visually striking examples: **half-male, half-female butterflies**
- Helps scientists study **sex determination and developmental biology**
- Not related to environmental adaptation but to **cell division errors**

12.Euthalia jubin-gargi: A Newly Described Butterfly Highlighting Northeast India's Hidden Biodiversity



Taxonomy & Identity

- I. **Common Name:** Jungle Queen (group – *Euthalia* butterflies)
- II. **Scientific Name:** *Euthalia jubin-gargi*
- III. **Family/Order:** Nymphalidae | Lepidoptera
- IV. **Key Identification Features:**
 - A. Medium-to-large sized forest butterfly
 - B. Distinct wing patterns with earthy brown and iridescent markings



- C. Strong association with dense forest canopy habitats

IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Not Evaluated (newly described species)
- **Wildlife Protection Act, 1972:** Not specifically listed
- **CITES:** Not Listed

Geographic Range

- I. **Known Distribution:**
 - A. Restricted to **Northeast India (biodiversity-rich forest zones)**
- II. **Habitat Context:**
 - A. Moist tropical and subtropical forests
 - B. Likely recorded from forested landscapes of Arunachal Pradesh and adjoining regions
 - C. Part of Indo-Burma biodiversity hotspot

Eco-Behavioral Traits

- I. **Habitat Type:** Dense evergreen and semi-evergreen forests
- II. **Activity Pattern:** Diurnal
- III. **Diet:**
 - A. Adults: nectar-feeding
 - B. Larvae (caterpillars): host plant-dependent (forest vegetation)
- IV. **Special Traits:**

- A. Forest-dependent species → highly sensitive to habitat disturbance
- B. Indicator of **undisturbed primary forest ecosystems**
- C. Likely low dispersal ability compared to open-area butterflies

Threat Matrix

- I. **Major Threats:**
 - A. Deforestation and habitat fragmentation
 - B. Shifting cultivation and land-use change
 - C. Climate change affecting forest microclimates
 - D. Limited range → high extinction vulnerability
 - E. Lack of baseline ecological data

Prelims Booster

- Belongs to genus ***Euthalia***, commonly called “**barons and counts**” group of butterflies
- Newly described species highlights **continuing discovery in Indian Lepidoptera diversity**
- Northeast India is part of the **Indo-Burma Biodiversity Hotspot**
- Butterflies are important **pollinators and ecosystem indicators**
- New species discoveries indicate **underexplored insect biodiversity in India**



13. Darwin's Bark Spider (*Caerostris darwini*): The World's Strongest Natural Silk Architect



Taxonomy & Identity

- I. **Common Name:** Darwin's Bark Spider
- II. **Scientific Name:** *Caerostris darwini*
- III. **Family/Order:** Araneidae | Araneae
- IV. **Key Identification Features:**
 - A. Orb-weaving spider with extremely large web spans
 - B. Produces exceptionally strong silk
 - C. Builds webs across rivers and large gaps

IUCN & Legal Status ("Holy Trinity")

- **IUCN Red List:** Not Evaluated
- **Wildlife Protection Act, 1972:** Not Listed
- **CITES:** Not Listed

Geographic Range

- I. **Global Distribution:**
 - A. Endemic to Madagascar
- II. **Habitat Type:**
 - A. Forested river systems and riparian zones
 - B. Builds webs across water bodies and forest gaps

Eco-Behavioral Traits

- I. **Habitat Type:** Riverine forests, forest canopies, and water-crossing zones
- II. **Activity Pattern:** Nocturnal web construction and hunting
- III. **Diet:** Flying insects (midges, moths, flies)
- IV. **Special Traits:**
 - A. Produces **strongest known biological silk (higher toughness than Kevlar in some studies)**
 - B. Builds webs spanning **up to 25–30 meters across rivers**
 - C. Uses rivers as "natural highways" for prey capture
 - D. Exhibits extreme web architecture specialization



Threat Matrix

- I. **Major Threats:**
 - A. Deforestation in Madagascar
 - B. River pollution and habitat alteration
 - C. Climate change affecting humidity and insect prey abundance
 - D. Habitat fragmentation

Prelims Booster

- Discovered in **Madagascar (2010)** and named after Charles Darwin
- Known for producing **record-breaking silk toughness** among all known spiders
- Webs can span **entire river widths**, making it unique in orb-weaving spiders
- Silk is studied for **biomaterials and bioengineering applications**
- Example of extreme **evolutionary adaptation in niche habitats**

14.Cetaceans: Ocean Giants Facing a Rapidly Changing Marine World



Taxonomy & Identity

- I. **Common Name:** Cetaceans
- II. **Scientific Classification:** Infraorder *Cetacea*
- III. **Order:** Artiodactyla (modern classification places cetaceans within even-toed ungulates)
- IV. **Key Groups:**
 - A. **Mysticeti (Baleen whales):** Blue whale, humpback whale
 - B. **Odontoceti (Toothed whales):** Dolphins, porpoises, sperm whales
- V. **Key Identification Features:**
 - A. Fully aquatic mammals
 - B. Forelimbs modified into flippers
 - C. Tail flukes used for propulsion
 - D. Blowhole(s) for respiration



IUCN & Legal Status (“Holy Trinity”)

- **IUCN Red List:** Varies by species (from Least Concern to Endangered/Critically Endangered)
- **Wildlife Protection Act, 1972:** Not applicable (India-specific marine cetaceans protected under broader wildlife and marine laws)
- **CITES:** Most large cetaceans listed under Appendix I or II depending on species

Geographic Range

- Global Distribution:**
 - Oceans worldwide (Atlantic, Pacific, Indian, Southern Oceans)
 - Some species in freshwater systems (e.g., river dolphins)
- India-specific Range:**
 - Indian Ocean, Arabian Sea, Bay of Bengal
 - Key sightings along:
 - Western coast (Arabian Sea)
 - Andaman & Nicobar waters
 - Riverine species:
 - Ganges River Dolphin (*Platanista gangetica*)

Eco-Behavioral Traits

- Habitat Type:** Marine pelagic zones, coastal waters, and rivers (few species)

- Activity Pattern:** Diurnal and nocturnal (species-dependent)
- Diet:**
 - Baleen whales → krill, plankton, small fish
 - Toothed whales → fish, squid, marine mammals
- Special Traits:**
 - Use **echolocation (odontocetes)** for navigation and hunting
 - Baleen whales use **filter-feeding mechanism**
 - Long-distance migratory routes across oceans
 - High intelligence and complex social behavior

Threat Matrix

- Major Threats:**
 - Ship strikes and marine traffic collisions
 - Underwater noise pollution (affects communication)
 - Bycatch in fishing nets
 - Climate change affecting prey availability (krill decline)
 - Chemical pollution (plastics, heavy metals)
 - Habitat degradation in coastal and river systems

Prelims Booster

- Cetaceans evolved from **land-dwelling mammals (~50 million years ago)**
- Closest terrestrial relatives: **hippopotamuses**





- Blue whale is the **largest animal ever known on Earth**
- Dolphins are **toothed cetaceans using echolocation**
- Ganges river dolphin is India's **National Aquatic Animal**
- Play key role in **marine nutrient cycling (whale pump effect)**

PadhAI.ai



Subject

Person in News



1. Prasoon Joshi



Identification: Why in News?

Noted lyricist, writer, and communications expert **Prasoon Joshi** has been appointed as the **Chairman of Prasar Bharati**, India's public service broadcaster, marking a significant leadership change in the country's media governance framework.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Appointed **Chairman of Prasar Bharati** (2026)
 - B. Oversees **Doordarshan and All India Radio**
- II. **Professional Background:**
 - A. Renowned **lyricist, poet, advertising professional, and communication strategist**
- III. **Previous Key Position:**

- A. Former Chairperson of the Central Board of Film Certification (CBFC)
- IV. **Industry Experience:**
 - A. Associated with global advertising firm McCann Worldgroup India
 - B. Known for shaping impactful **brand storytelling and public messaging**
- V. **Cultural Contribution:**
 - A. Wrote acclaimed film lyrics promoting **social themes and emotional narratives**
- VI. **Governance Role:**
 - A. Expected to bring **creative and digital transformation to public broadcasting**
- VII. **Policy Context:**
 - A. Appointment reflects government focus on **modernising public media institutions**
- VIII. **Recognition:**
 - A. Recipient of multiple national awards for **writing and lyrics**

Landmark Achievements

- National Award-winning lyricist
- Led CBFC during a sensitive period of **film regulation and censorship debates**
- Now heading India's **national public broadcaster (Prasar Bharati)**
- Known for bridging **creative arts and institutional communication**



2.Meena Muthiah



Identification: Why in News?

Renowned educationist and philanthropist **Dr. Meena Muthiah**, widely known as the **Kumara Rani of Chettinad**, passed away at the age of 91–92 in Ooty. She was celebrated for her lifelong contribution to **education, institution-building, and cultural preservation**, especially through Chettinad Vidyashram.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Correspondent and senior principal of Chettinad Vidyashram

- B. Founder of multiple educational institutions under the Chettinad group
- II. **Philanthropic Background:**
 - A. Belonged to the prominent Chettinad philanthropic family known for **banking, education, and public welfare initiatives**
- III. **Education Contributions:**
 - A. Transformed Chettinad Vidyashram into one of Chennai's leading schools
 - B. Promoted holistic education combining academics, arts, and culture
- IV. **Higher Education Initiatives:**
 - A. Associated with establishment of arts and science colleges and vocational institutions
- V. **Healthcare & Social Work:**
 - A. Supported initiatives like **mother and child healthcare centres** and rural welfare projects
- VI. **Cultural Contributions:**
 - A. Promoted **Tanjore art, music, dance, and traditional crafts** in education
- VII. **Leadership Style:**
 - A. Known for blending **discipline with compassion in institutional management**
- VIII. **Recognition:**
 - A. Received awards for contributions to education and preservation of traditional arts

Landmark Achievements

- Built Chettinad Vidyashram into a **flagship educational institution in Tamil Nadu**



- Expanded education access through **schools, colleges, and social initiatives**
- Played a major role in **reviving traditional arts within modern education systems**
- Remembered as a **key figure in Tamil Nadu's private education ecosystem**

3.Rohit Jain



Identification: Why in News?

The **Government of India** has appointed **Rohit Jain** as the **Deputy Governor of the Reserve Bank of India (RBI)**, strengthening the top leadership of India's central banking

system amid ongoing regulatory and financial sector reforms.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Appointed **Deputy Governor of the Reserve Bank of India** (effective May 2026)
 - B. One of the senior-most officials assisting the RBI Governor in policy and regulation
- II. **Career Background:**
 - A. Career central banker with the **Reserve Bank of India**
 - B. Previously served as **Executive Director (ED), RBI**
- III. **Professional Expertise:**
 - A. Worked extensively in **banking supervision, financial regulation, and risk management**
- IV. **Appointment Process:**
 - A. Selected by the **Appointments Committee of the Cabinet (ACC)**
 - B. Appointed under provisions of the **Reserve Bank of India Act, 1934**
- V. **Tenure:**
 - A. Appointed for a **three-year term (from May 2026)**
- VI. **Succession Context:**
 - A. Succeeds outgoing Deputy Governor **T. Rabi Sankar** after completion of tenure
- VII. **RBI Structure Context:**
 - A. RBI can have up to **four Deputy Governors** assisting the Governor in monetary and regulatory functions



- VIII. **Policy Significance:**
- Expected to focus on **banking stability, supervision, and financial system resilience**

Landmark Achievements

- Long-standing service in RBI's **supervisory and regulatory architecture**
- Elevation to Deputy Governor reflects **internal institutional continuity and expertise-based leadership**
- Associated with strengthening **banking regulation and financial stability mechanisms**

4. Raghav Gaiha

Identification: Why in News?

Renowned development economist **Raghav Gaiha** has been awarded the **Malcolm Adiseshiah Award**, recognizing his outstanding contributions to **development studies, poverty research, and rural welfare economics** in India and globally.

Core Facts (8–10 Points)

- Institutional Role:**
 - Visiting scholar at the **University of Pennsylvania**
 - Former Professor of Public Policy at the University of Delhi
- Field of Expertise:**
 - Development economics
 - Poverty and inequality studies
 - Rural livelihoods and food security

- Award Context:**
 - Received the **Malcolm Adiseshiah Award 2026** for distinguished contributions to development studies
- Research Focus:**
 - Chronic poverty
 - Rural distress and agricultural economics
 - Social protection and welfare programs
- Policy Relevance:**
 - His work informs **evidence-based policymaking in developing economies like India**
- Global Academic Engagement:**
 - Published and collaborated with international scholars on development issues
- Interdisciplinary Approach:**
 - Combines **economics, policy analysis, and social development studies**
- Institutional Link of Award:**
 - Award is given by the **Malcolm & Elizabeth Adiseshiah Trust** for excellence in development research

Landmark Achievements

- Recognized globally as a **leading voice in development economics**
- Influenced academic understanding of **chronic poverty and rural deprivation**
- Contributed to **policy frameworks on welfare and social protection**
- Recipient of multiple academic distinctions, including the Malcolm Adiseshiah Award (2026)



5. Shashi Shekhar Vempati



Identification: Why in News?

Former **Prasar Bharati CEO Shashi Shekhar Vempati** has been appointed as the **Chairperson of the Central Board of Film Certification (CBFC)**, succeeding **Prasoon Joshi**, who moved to head Prasar Bharati.

This marks a key leadership reshuffle in India's public broadcasting and film certification ecosystem.

Core Facts (8–10 Points)

I. Institutional Role:

- A. Appointed **Chairperson of CBFC (2026)** under the Ministry of Information and Broadcasting
- B. CBFC regulates film certification under the Cinematograph Act, 1952

II. Previous Role:

- A. Former **CEO of Prasar Bharati (2017–2022)**, India's public service broadcaster

III. Media & Governance Background:

- A. Extensive experience in **broadcasting, digital media, and public communication systems**

IV. Institutional Transition Context:

- A. He succeeds **Prasoon Joshi**, who was appointed Chairman of Prasar Bharati

V. Public Broadcasting Experience:

- A. Led modernization of **Doordarshan and All India Radio** during his tenure at Prasar Bharati

VI. Policy & Tech Orientation:

- A. Known for integrating **technology-driven reforms in public media institutions**

VII. Governance Exposure:

- A. Has worked in advisory and board roles related to **media, education, and digital governance bodies**

VIII. Recognition:

- A. Recipient of **Padma Shri (2026)** for contributions to media and public policy



Landmark Achievements

- Transformed Prasar Bharati's **digital and institutional outreach**
- Strengthened **public broadcasting infrastructure and policy frameworks**
- Now tasked with leading CBFC, a key body for **film regulation and certification in India**
- Represents shift from **broadcast governance to cultural regulation leadership**

6. Ted Turner



Identification: Why in News?

Media mogul **Ted Turner**, founder of **Cable News Network (CNN)**, has been reported dead at the age of 87. He was widely known as a **pioneer of 24-hour global news broadcasting** and a major figure in modern media history.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Founder of CNN (1980), world's first 24-hour news channel
- II. **Media Innovation:**
 - A. Revolutionized global journalism by introducing **continuous news broadcasting model**
- III. **Business Empire:**
 - A. Built Turner Broadcasting System (TBS), a major American media conglomerate
- IV. **Global Impact:**
 - A. CNN became a key global news source, especially during **wars and international crises (e.g., Gulf War coverage)**
- V. **Philanthropy:**
 - A. Large-scale donor to environmental and global initiatives, including the United Nations Foundation
- VI. **UN Connection:**
 - A. Donated \$1 billion to support UN causes, leading to creation of the **UN Foundation**
- VII. **Sports Ownership:**
 - A. Owned major sports franchises including the Atlanta Braves (MLB) and Atlanta Hawks (NBA)
- VIII. **Media Legacy:**
 - A. Pioneer of **global news television and media globalization**

Landmark Achievements

- Founded **CNN (1980)**, transforming global news consumption
- Created the **first 24-hour news cycle model**



- Major philanthropist supporting **UN humanitarian initiatives**
- Influenced global media architecture and satellite news networks

7. Lt Gen N. S. Raja Subramani & Vice Admiral Krishna Swaminathan



Identification: Why in News?

The Government of India has appointed **Lt Gen N. S. Raja Subramani** as the **new Chief of Defence Staff (CDS)** and **Vice Admiral Krishna Swaminathan** as the **next Chief of Naval Staff (CNS)**, marking a major leadership transition in India's defence establishment amid ongoing military reforms and theatre command restructuring.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Lt Gen N. S. Raja Subramani appointed as **Chief of Defence Staff (CDS)**
 - B. Vice Admiral Krishna Swaminathan appointed as **Chief of Naval Staff (CNS)**
- II. **CDS Function:**
 - A. CDS acts as the **principal military advisor to the Government of India** and head of the Department of Military Affairs
- III. **Navy Chief Role:**
 - A. CNS leads the **Indian Navy**, responsible for maritime security and naval operations
- IV. **Succession Context:**
 - A. CDS replaces outgoing General **Anil Chauhan** after completion of tenure
 - B. Navy Chief replaces Admiral **Dinesh K. Tripathi**
- V. **Career Background – CDS:**
 - A. Former **Vice Chief of Army Staff**
 - B. Served as **Military Adviser at the National Security Council Secretariat (NSCS)**
 - C. Extensive operational experience in both **northern and western borders**
- VI. **Career Background – Navy Chief:**
 - A. Served as **Flag Officer Commanding-in-Chief, Western Naval Command**
 - B. Specialist in **communication and electronic warfare**
 - C. Commanded major warships including destroyers and aircraft carrier assignments
- VII. **Strategic Importance:**
 - A. Appointments come during push for **jointness and theatre**



command reforms in Indian Armed Forces

VIII. **Operational Significance:**

- A. CDS role critical for **tri-service integration (Army, Navy, Air Force)**
- B. Navy leadership crucial amid rising **Indo-Pacific maritime security challenges**

Landmark Achievements

I. **CDS (Lt Gen Subramani):**

- A. Commanded key operational formations including strike corps and counter-insurgency operations
- B. Key role in defence modernization and integration planning

II. **Navy Chief (Swaminathan):**

- A. Commanded frontline warships and carrier battle groups
- B. Strengthened naval training, safety systems, and operational readiness

8. Peter Magyar



Péter Magyar has been in the news after being **sworn in as the Prime Minister of Hungary**, marking a historic political transition that ended the **16-year-long rule of Viktor Orbán** and brought a new pro-reform government to power.

Core Facts (8–10 Points)

I. **Institutional Role:**

- A. Current **Prime Minister of Hungary** (sworn in May 2026)
- B. Head of government in a parliamentary system

II. **Political Background:**

- A. Leader of the **TISZA Party**, a centrist-conservative reformist political movement
- B. Formerly associated with establishment politics before emerging as an opposition leader

III. **Electoral Victory:**

- A. Led a **landslide electoral win**, securing a strong parliamentary majority and ending Orbán's long dominance

IV. **Reform Agenda:**

- A. Promises to restore **rule of law, democratic institutions, and media independence**
- B. Focus on **anti-corruption and institutional transparency**

V. **EU Relations:**

- A. Prioritizes rebuilding ties with the European Union and unlocking frozen EU funds

VI. **Governance Shift:**

- A. Marks a shift from **illiberal governance model to**

Identification: Why in News?



pro-European democratic framework

- VII. **Policy Priorities:**
 - A. Economic revival, institutional reforms, and public sector transparency
 - B. Investigation into alleged corruption under previous administration
- VIII. **Strategic Significance:**
 - A. Considered a key **turning point in Central European politics**

Landmark Achievements

- Ended **16 years of continuous rule** by Viktor Orbán’s political system
- Led a **major electoral transition in Hungary’s political landscape**
- Initiated early steps toward **institutional reforms and EU reintegration**
- Symbol of **democratic shift in Central Europe**

9.Navtej Sarna



Identification: Why in News?

Former diplomat and author **Navtej Sarna** has been in the news for his continued contribution to **historical storytelling and literary reinterpretation of Indian history**, blending archival depth with narrative writing. He is often highlighted in discussions on **history, diplomacy, and cultural storytelling**.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Former **Indian Foreign Service (IFS) officer**
 - B. Served as **India’s Ambassador to the United States and Israel**
- II. **Diplomatic Career:**
 - A. Long-standing career in **India’s Ministry of External Affairs (MEA)**
 - B. Worked on bilateral and multilateral diplomacy
- III. **Literary Identity:**
 - A. Renowned **author, historian, and columnist**
 - B. Known for transforming historical events into **narrative-driven storytelling**
- IV. **Key Theme (News Context):**
 - A. Focus on **“history into storytelling”**, making archival history accessible to general readers
- V. **Cultural Diplomacy:**
 - A. Represents India’s use of **soft power through literature and culture**
- VI. **Writing Style:**



- A. Combines **historical research, fiction, and diplomatic insights**
- VII. **Public Communication:**
 - A. Regular contributor to leading newspapers and journals on history and society
- VIII. **Recognition:**
 - A. Widely respected in both **diplomatic and literary circles**

Landmark Achievements

- Served as **India's Ambassador to the United States (2016–2018)**
- Represented India in key diplomatic engagements in West Asia and North America
- Successfully bridged **diplomacy and literature as parallel careers**
- Known for **humanising historical narratives through storytelling**

10.P. Kumaran



Identification: Why in News?

Senior Indian diplomat **P. Kumaran** has been in the news after being appointed and formally assuming charge as the **High Commissioner of India to the United**

Kingdom (London), marking a key diplomatic posting in India–UK relations.

Core Facts (8–10 Points)

- I. **Institutional Role:**
 - A. Current **High Commissioner of India to the United Kingdom (London)**
 - B. Represents India in one of its most important bilateral diplomatic missions
- II. **Service Background:**
 - A. Senior officer of the **Indian Foreign Service (IFS), 1992 batch**
- III. **Current Posting Context:**
 - A. Assumed charge in London in **May 2026** after appointment by the Government of India
- IV. **Career Profile:**
 - A. Extensive experience in **economic diplomacy, consular affairs, and bilateral relations**
 - B. Held senior positions in the **Ministry of External Affairs (MEA)**
- V. **Previous Key Assignments:**
 - A. Served in multiple Indian missions abroad including Europe, West Asia, and North America (as per MEA profile)
- VI. **Diplomatic Significance:**
 - A. UK posting is among India's **most strategically important diplomatic assignments**
- VII. **Bilateral Context:**
 - A. India–UK relations include cooperation in **trade, education, technology,**



**defence, and diaspora
engagement**

VIII. **Role in Multilateral Diplomacy:**

- A. Engages with UK institutions and global forums based in London

Landmark Achievements

- Appointment as **High Commissioner to the UK**, one of India's top diplomatic postings
- Represents India in managing **post-Brexit economic and strategic engagement with the UK**
- Part of India's broader strategy to strengthen ties with key Western partners

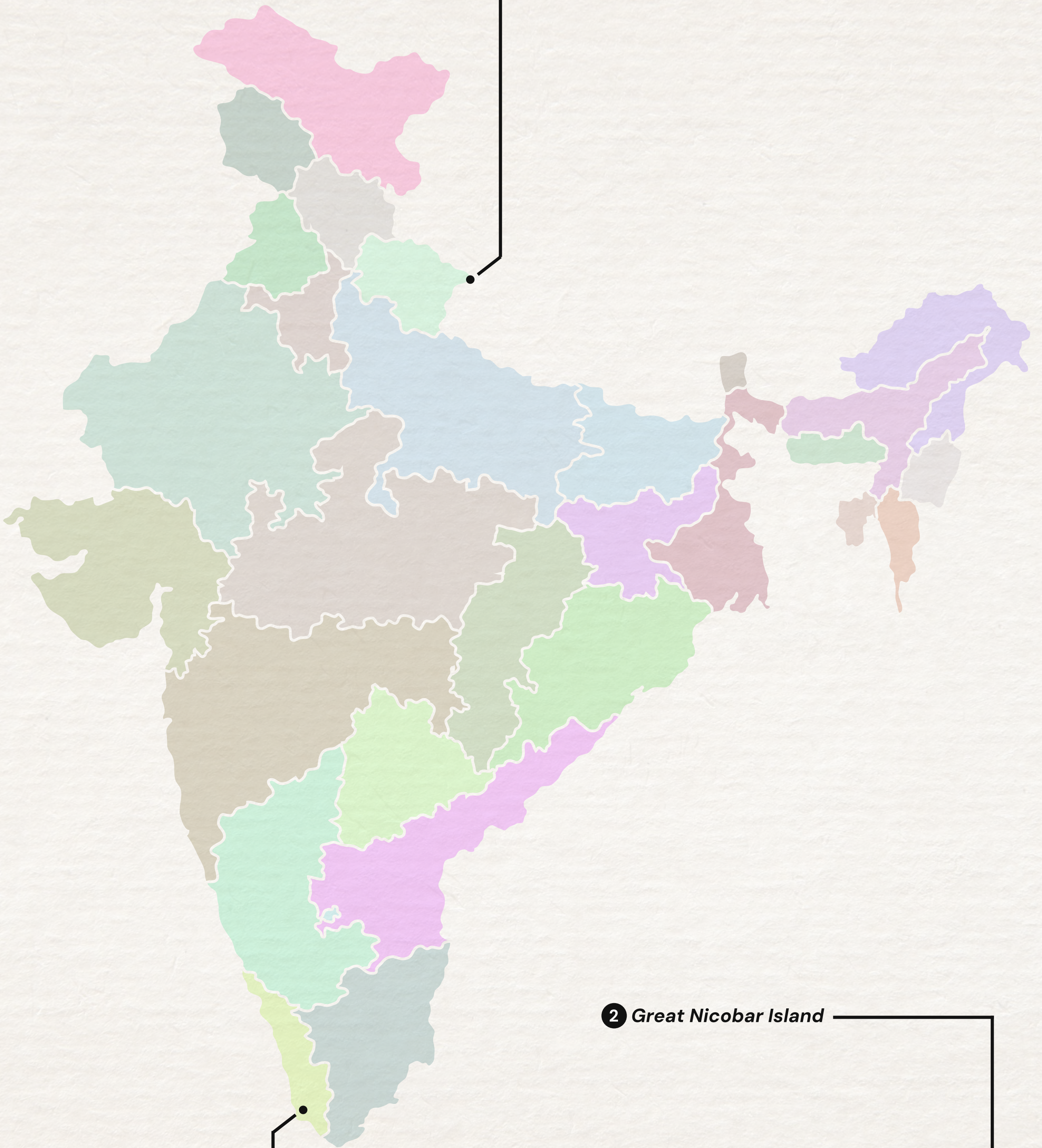


Subject

Places in News



1 *Lipulekh Pass*



2 *Great Nicobar Island*

3 *Kerala*

