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POLITY AND GOVERNANCE

STUDENT'S
NOTES

1. INTERNET SHUTDOWNS IN INDIA

Context: Mobile internet was suspended in parts of Central Delhi during a protest, renewing concerns over the legality and proportionality of internet shutdowns.

Legal Framework for Internet Shutdowns

- **Governing Law:** Regulated by the **Telecommunications (Temporary Suspension of Services) Rules, 2024** under the **Telecommunications Act, 2023**, replacing the **2017 Rules**.
- **Grounds:** Internet can be suspended **only during a public emergency or for public safety** under **Section 20(2)(b)**; **protests alone are insufficient**.
- **Key Principles:** Orders must satisfy **legality, necessity, proportionality, be reasoned, published, and limited in area and duration**; authorities must consider **less restrictive alternatives**.
- **Competent Authority:** Issued by the **Union/State Home Secretary**; a **Joint Secretary-level officer** may issue it in urgent cases, subject to **confirmation within 24 hours**.
- **Safeguards:** Orders must disclose **date, time, duration, and affected area** to ensure transparency and accountability.
- **Judicial Review:** Can be challenged before the **High Court (Article 226)** or **Supreme Court (Article 32)**, which examine legality, necessity, proportionality, and scope.



Judicial Position on Internet Shutdowns

- **Right to Internet:** In *Anuradha Bhasin v. Union of India*, the Supreme Court linked internet access with **Article 19(1)(a)** (free speech) and **Article 19(1)(g)** (trade/profession).
- **Tests for Validity:** Shutdowns must have a **legal basis**, pursue a **legitimate aim**, satisfy **necessity and proportionality**, adopt the **least restrictive measure**, be **reasoned, published**, limited in **scope and duration**, and undergo review.
- **No Indefinite Shutdowns:** Indefinite internet suspension is unconstitutional; orders must be reviewed by a **Review Committee within 5 working days**.
- **Least Restrictive Option:** Complete telecom suspension is an **exceptional measure**, permissible only when no less restrictive alternative exists.
- **Calcutta HC (2022):** In *Ashlesh Biradar v. State of West Bengal*, the High Court stayed a shutdown order for lacking legal authority, adequate reasons, and consideration of alternatives.

Concerns Over Internet Shutdowns

- **Procedural Bypass:** Some States continue using the **Indian Telegraph Act, 1885** and **2017 Rules**, bypassing safeguards under the **2024 Rules**.

- **Rights Curtailed:** Restrict **free speech (Article 19(1)(a))** and affect **Article 21** rights linked to internet access.
- **Weak Oversight:** Limited independent scrutiny increases the risk of arbitrary shutdowns.
- **Poor Transparency:** Despite *Anuradha Bhasin*, many shutdown orders and review records are not publicly disclosed.
- **Economic & Social Costs:** Disrupt businesses, education, banking, healthcare, communication, and digital services; India lost about **USD 255.2 million** due to shutdowns in **2023**.
- **Digital Governance Impact:** Frequent shutdowns undermine India's AI, digital governance, and innovation ambitions.
- **Duration Issues:** Although **2024 Rules** cap shutdowns at **15 days**, weak review and publication practices remain a concern.

Measures Needed

- **Enhance Transparency:** Publish shutdown orders, reasons, duration, and review decisions while safeguarding **free speech, access to information, and digital rights**.
- **Ensure Legal Compliance:** Strictly enforce the **Telecommunications Act, 2023** and **2024 Rules**; permit shutdowns only for **public emergency** or **public safety**, with recorded reasons and review.
- **Follow Necessity & Proportionality:** Use shutdowns only as a **last resort**; keep them **time-bound, area-specific, and least restrictive**.
- **Prefer Targeted Measures:** Replace blanket shutdowns with **content moderation, fact-checking, misinformation monitoring, cybersecurity tools**, and better police training in digital risk management.
- **Strengthen Oversight:** Create independent review mechanisms or parliamentary oversight to prevent arbitrary shutdowns.
- **Promote Digital Literacy:** Strengthen digital literacy and align policies with **UN-recommended** human rights and open internet standards.

Conclusion: Balancing national security with **digital liberties** requires **transparent, proportionate, and accountable internet governance**. A **rights-based regulatory framework** and smart enforcement can strengthen both public order and India's digital future.

Test Your Knowledge	
Prelims Corner Q1. With reference to internet shutdowns in India, consider the following statements: 1. The Telecommunications (Temporary Suspension of Services) Rules, 2024 derive their legal authority from the Telecommunications Act, 2023. 2. Public protests, by themselves, constitute an independent ground for suspending internet services. 3. An order suspending telecommunication services must be limited in scope and duration. 4. The competent authority is required to consider whether less restrictive alternatives are available. Which of the statements given above are correct? (a) 1, 3 and 4 only (b) 1 and 2 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner "Internet shutdowns represent a constitutional tension between the State's obligation to maintain public order and citizens' right to digital liberty." Examine in the light of Article 19, Article 21 and the Supreme Court's jurisprudence on internet access. (10 Marks, 150 Words)

2. DEATH SENTENCE AND FAIR TRIAL

Context: The Supreme Court, in *Abdul Hameed v. State of Rajasthan*, set aside Dr. Abdul Hameed's death sentence in the 1996 Samleti Bus Bomb Blast case, holding that denial of effective legal aid violated his right to a fair trial. It ordered a de novo *fresh) trial to be completed within one year.

Important Observations of SC

- **Fair Process Matters:** Criminal justice must ensure **fair, just, and reasonable procedure**, not merely secure convictions.
- **Fair Trial is Paramount:** A fair trial is a **non-negotiable constitutional guarantee** and cannot be compromised for convenience.

- **Co-accused's Confession:** A co-accused's confession is **not substantive evidence**; it can only support conclusions based on **independent admissible evidence**.
- **Due Process Over Retribution:** Justice lies in **procedural fairness**, not speedy punishment; it is **better that many guilty escape than one innocent is punished**.
- **Fresh Trial Directed:** Instead of acquittal, the Court ordered a **fresh trial within one year** with **effective legal representation**.
- **Due Process is Inviolable:** Even in **terrorism cases**, constitutional safeguards cannot be bypassed.
- **Duty of Trial Courts:** Trial judges must ensure the accused has **competent legal representation** before recording evidence or imposing sentence.

Institutions Promoting Accessible Justice

- **Fast-Track Courts (FTCs):** Speedy disposal of **heinous crimes** and cases involving **women, children, senior citizens, persons with disabilities**, and long-pending civil disputes; **865 functional** (June 2025).
- **Fast-Track Special Courts (FTSCs):** Set up in **2019** for **rape and Protection of Children from Sexual Offences (POCSO)** cases; **725 functional**, including **392 exclusive POCSO courts** (June 2025).
- **Gram Nyayalayas:** Grassroots courts under the **Gram Nyayalayas Act, 2008** providing **speedy, affordable rural justice**; **488 functional** (March 2025).
- **Nari Adalats:** Operate under **Mission Shakti (Sambal)** to resolve **domestic and gender-related disputes** through Gram Panchayat-level mediation.
- **Exclusive Special Courts (SC/ST Act):** Established under the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989** for the **speedy trial** of offences against **SCs and STs**.

RIGHT TO FREE LEGAL AID

CONSTITUTIONAL PROVISIONS & STATUTORY FRAMEWORK

CONSTITUTIONAL PROVISIONS

- ARTICLE 21:** Includes the right to a fair trial and free legal aid as part of a just, fair, and reasonable procedure.
- ARTICLE 22(1):** Guarantees the right of an arrested person to consult and be defended by a lawyer of their choice.
- ARTICLE 39A (DPSP):** Added by the 42nd Constitutional Amendment Act, 1976; directs the State to provide free legal aid, ensuring equal access to justice under Article 14.

STATUTORY FRAMEWORK

- **BHARATIYA NAGARIK SURAKSHA SANHITA (BNSS), 2023:** Section 341 (earlier Section 304, CrPC) mandates State-funded legal counsel for accused persons unable to afford a lawyer.
- **LEGAL SERVICES AUTHORITIES ACT, 1987:** Created the National Legal Services Authority (NALSA), State Legal Services Authorities (SLSAs), and District Legal Services Authorities (DLSAs) to provide free legal aid.
- **ELIGIBILITY:** Scheduled Castes (SCs)/Scheduled Tribes (STs), women, children, trafficking/beggar victims, persons with disabilities or mental illness, disaster or caste violence victims, industrial workers, persons in custody, and low-income individuals.
- **IMPACT:** Over **44.22 lakh** people received free legal aid during 2022-23 to 2024-25.
- **LOK ADALATS:** Statutory forums for speedy, amicable settlement of pre-litigation and pending disputes; settled over **23.5 crore** cases during 2022-23 to 2024-25.

FREE LEGAL AID ENSURES EQUAL ACCESS TO JUSTICE AND STRENGTHENS OUR DEMOCRACY.

LANDMARK JUDGMENTS

- HUSSAINARA KHATOON v. HOME SECRETARY, STATE OF BIHAR:**
Free legal aid is an essential part of Article 21.
- KHATRI v. STATE OF BIHAR:**
Legal aid must be provided from the first production before a magistrate, not just during trial.

KEY LEGAL AID INITIATIVES

- LEGAL AID DEFENSE COUNSEL SYSTEM (LADCS):**
National Legal Services Authority initiative providing free criminal defence to eligible persons under the Legal Services Authorities Act, 1987.
- DESIGNING INNOVATIVE SOLUTIONS FOR HOLISTIC ACCESS TO JUSTICE (DISHA):**
Department of Justice scheme (2021-26) promoting justice through Tele-Law, Nyaya Bandhu (Pro Bono Legal Services), legal literacy, and awareness; benefited **2.10+ crore people** (February 2025).

FREE LEGAL AID IS THE FOUNDATION OF EQUAL JUSTICE AND A FAIR SOCIETY.

3. FAST-TRACK COURTS (FTCS) IN INDIA

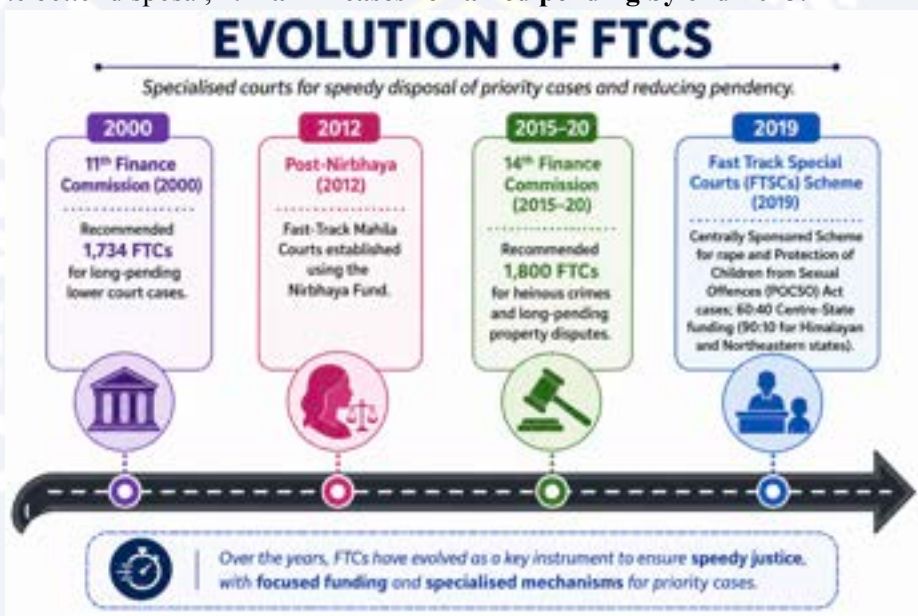
Context: The Prime Minister announced FTCs for swift punishment of public examination paper leak accused. The Delhi High Court established a Special FTC to exclusively hear cases under the Public Examinations (Prevention of Unfair Means) Act, 2024, transferring all pending cases for speedy disposal.

About Fast-Track Courts (FTCs)

- FTCs are **not backed by a single central law**. They were recommended by the **Fourteenth Finance Commission (2015–20)** to ensure speedy disposal of cases.
- **Coverage:** Meant for heinous crimes, long-pending property disputes, and cases involving women, children, senior citizens, persons with disabilities and terminally ill persons.

Performance

- **January 2026:** 862 FTCs in 21 States/Union Territories (UTs) and 774 FTSCs (including 398 exclusive POC SO courts) in 29 States/UTs.
- FTSC disposal rate: **~96%**.
- **2024:** 88,902 cases filed; 85,595 disposed.
- FTSCs dispose of about 9.5 cases/month, compared to 3.3 in regular trial courts.
- Despite better disposal, **2.4 lakh+ cases remained pending by end-2023**.



Constitutional & Legal Framework

- **Article 247:** Empowers Parliament to establish additional courts for Union laws.
- **Articles 14 & 21:** Ensure objective classification and the right to a speedy, fair trial.
- **Criminal Law (Amendment) Act, 2018:** Provides the basis for FTSCs and prescribes a 2-month timeline for rape investigation and trial.
- **POCSO Act, 2012:** Sections 28 & 35 mandate Special Courts and trial completion within 1 year.
- **Public Examinations (Prevention of Unfair Means) Act, 2024:** Enables prosecution of organised exam fraud and paper-leak syndicates.
- **Judicial Position:** In *P. Rama Chandra Rao v. State of Karnataka* (2002), the Supreme Court ruled that courts cannot prescribe rigid time limits for completing criminal trials.

Limitations of Fast-Track Courts (FTCs) in Tackling Paper Leaks

- **Reactive, Not Preventive:** FTCs ensure speedy justice only after paper leaks occur; they cannot prevent leaks or reverse exam cancellations, career disruption, and loss of public trust.
- **Investigation Delays:** FTCs start only after chargesheet filing. Multi-state probes by State Police, Cyber Cells, Central Bureau of Investigation (CBI), Enforcement Directorate (ED), etc., often delay trials.
- **Default Bail Risk:** Delayed investigations may result in default bail. Example: In NEET-UG 2024, an accused got bail after the CBI missed the statutory 90-day chargesheet deadline.
- **Masterminds Escape:** Pressure for quick disposal may convict lower-level intermediaries, while masterminds evade prosecution due to incomplete financial and digital evidence.

- **Inter-State Coordination Issues:** Though the Delhi High Court created a Special FTC, education is in the Concurrent List (Entry 25) and syndicates operate across states.
- **No Nationwide Mechanism:** Without a nationwide FTC network and central nodal investigation mechanism, local courts cannot effectively dismantle organised inter-state paper leak networks.
- **Digital Forensics Gap:** Encrypted apps, the dark web, **Internet Protocol (IP)** tracking, and crypto transactions require advanced cyber-forensic capacity, often unavailable.

Dr. K. Radhakrishnan Committee (2024): Key Recommendations

- **Shift to multi-shift Computer-Based Tests (CBTs)** for high-stakes examinations.
- **Minimise/eliminate outsourcing of question paper** printing and transportation; ensure secure end-to-end handling by authorised agencies.
- **Introduce DIGI-EXAM**, a DigiYatra-based biometric identity verification system from application to admission.

Way Forward

- **Reform National Testing Agency (NTA):** Make NTA a statutory autonomous body with independent funding, functional autonomy, and accountability, on the lines of the Union Public Service Commission (UPSC).
- **Secure Exam Centres:** Conduct high-stakes exams only at high-security centres under direct State supervision to minimise paper leak risks.
- **Time-Bound Investigation:** Adopt a Supreme Court-monitored Standard Operating Procedure (SOP) for Indian Computer Emergency Response Team (CERT-In) and other cyber agencies to file chargesheets within 90 days.
- **Technology-Driven Security:** Use Quantum Key Distribution (QKD) for secure question paper transmission and blockchain-based audit trails for tamper-proof examination records.
- **Fix Accountability:** Introduce a Command-Failure Liability Clause under the Public Examinations (Prevention of Unfair Means) Act, 2024 to hold supervisory officials accountable for security lapses.

Conclusion: FTCs improve disposal rates but cannot solve judicial delays without strengthening infrastructure, judicial capacity and investigation quality.

Test Your Knowledge	
Prelims Corner With reference to Fast-Track Courts (FTCs) in India, consider the following statements: 1. The Fourteenth Finance Commission recommended Fast-Track Courts as a mechanism for speedy disposal of cases. 2. Article 247 empowers Parliament to establish additional courts for better administration of laws made by Parliament. 3. The Supreme Court has held that constitutional courts may prescribe rigid time limits for completion of every criminal trial to ensure the right to speedy justice. Which of the statements given above is/are correct? (a) Only one (b) Only two (c) All three (d) None Answer: (b)	Mains Corner Despite higher disposal rates, Fast-Track Courts continue to face challenges arising from investigative delays, inter-State organised crime, digital-forensics gaps and inadequate judicial capacity. Critically examine the effectiveness of FTCs in ensuring speedy and fair justice in India. (15 Marks, 250 Words)

4. PUBLIC EXAMINATIONS AMENDMENT BILL, 2026

Context: Union Government terminated 47 National Testing Agency (NTA) officials and introduced major examination reforms in July 2026.

Public Examinations (Prevention of Unfair Means) Amendment Bill, 2026

- **Tougher Punishments:** Paper leaks and **Optical Mark Recognition (OMR)** tampering: Minimum imprisonment increased from 3 to 5 years, maximum remains 10 years. | **Organised examination fraud:** Minimum imprisonment increased from 5 to 7 years.

- **Higher Financial Penalties:** General offences: Maximum fine increased fivefold from ₹10 lakh to ₹50 lakh. || Organised crime: Minimum fine increased from ₹1 crore to ₹10 crore.
- **Stricter Liability for Service Providers** || Complicit private vendors face a maximum penalty increased from ₹1 crore to ₹5 crore. || Debarment from conducting public examinations doubled from 4 to 8 years.
- **Faster Investigation & Trial**
 - Investigations by police, central agencies, or proposed **Special Task Forces (STFs)** must finish within **60 days**.
 - States and **Union Territories (UTs)** must designate exclusive **Fast-Track Courts** for day-to-day hearings.
 - Pending cases, including recent **NEET** cases, will transfer to these **Fast-Track Courts**.
 - Trials must conclude within **3 months** of filing the chargesheet.
 - Appeals must be filed within **30 days** and preferably decided within **3 months**.

HIGH-POWERED TASK FORCE

- Chaired by **Nandan Nilekani**, co-founder of **Infosys** and former **Unique Identification Authority of India** Chairman (2009–14).
- **Mandate:** Recommend technology-driven, leak-proof, secure, transparent, and tamper-resistant examination reforms with stronger institutional safeguards

Measures to Reform India's Testing Ecosystem

- **Adopt Advanced Digital Security**

- **Secure Digital Delivery:** Replace physical transport with encrypted **National Knowledge Network** transmission, dual-key

decryption, and centre-level printing before exams.

- **Dynamic Question Generation:** Use **Item Response Theory**-based adaptive questions instead of fixed sets to prevent answer-key leaks.
- **Secure Computer-Based Tests:** Operate **Computer-Based Test** servers on air-gapped intranets to prevent cyberattacks.
- **Data Privacy:** Ensure examination platforms comply with **Digital Personal Data Protection Act, 2023** for biometric and personal data security.
- **Strengthen Governance & Oversight**
 - **Public Testing Infrastructure:** Upgrade public institutions as testing centres and make the **National Testing Agency** autonomous with accountability.
 - **Independent Audit:** Establish **National Examination Audit Commission** for inspections, **Closed-Circuit Television** audits, and whistle-blower investigations.
 - **Cybersecurity Standards:** Mandate **Standardisation Testing and Quality Certification** under **Ministry of Electronics and Information Technology** with **ISO 27001** compliance.
- **Reduce Procedural Risks**
 - **Flexible Examinations:** Conduct multiple annual exams with best-score retention to reduce pressure and logistical risks.
 - **Biometric Authentication:** Use Aadhaar-linked iris and facial verification during exams to eliminate proxy candidates.



- **Long-Term Systemic Reforms**

- **Assessment Reform:** Strengthen **Performance Assessment, Review, and Analysis of Knowledge for Holistic Development** and increase Class 12 weightage in admissions.
- **Coaching Regulation:** Establish a statutory regulator to enforce 2024 Coaching Centre Guidelines, curb false claims, and penalise solver-linked institutes.

Conclusion: A secure, transparent, technology-driven examination system will strengthen equality, meritocracy, public trust, and India's demographic dividend.


Test Your Knowledge


 Prelims Corner	Mains Corner 
Consider the following pairs: 1. Dual-key decryption – Reduce the possibility of unauthorised access to question papers 2. Dynamic question generation using Item Response Theory – Reduce vulnerability associated with fixed question sets 3. Air-gapped Computer-Based Test servers – Isolate examination systems from external networks 4. Blockchain-based examination records – Ensure that data entered into the system is inherently authentic How many of the above pairs are correctly matched? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c)	The integrity of public examinations is not merely an administrative concern but a question of equality, meritocracy and public trust." In this context, critically examine the adequacy of India's emerging legal, technological and institutional framework to prevent examination malpractice. (15 Marks, 250 Words)

5. RIGHT TO PROTEST AND EXCESSIVE POLICING

Context: Violent clashes during the youth-led 'Chalo Sansad' march (July 2026) reignited debate over protest rights and State policing powers.

Legal Provisions Governing Protests

- **Section 163, Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023:** Empowers Executive Magistrates to issue prohibitory orders preventing public disturbances.
- **Delhi Police Act, 1978** and similar State laws regulate protest routes, timings, and conditions.
- Under the **Bharatiya Nyaya Sanhita (BNS), 2023**, five or more persons form an unlawful assembly if they: Use criminal force, resist lawful authority, commit an offence, compel others through threats.
- A **peaceful assembly becomes** unlawful only if its conduct changes during the protest.

Benchmarks for Police Action and Crowd Control

- **United Nations (UN) Basic Principles on the Use of Force and Firearms (1990):** Force must be lawful, necessary, and proportionate.
- **National Human Rights Commission (NHRC)** Manual states police must protect citizens' rights, rule of law, and avoid excessive force.
- **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** and Police Code require warnings, advice, and persuasion before minimum necessary force.
- **BNSS, 2023** and **D.K. Basu (1997):** Arresting officers must display visible name tags. No similar rule exists for crowd-control personnel, creating accountability gaps when identities remain concealed.

Relevant Supreme Court Judgements

- **Amit Sahni (2020):** Dissent is protected, but protests cannot indefinitely block public spaces or traffic.
- **Mazdoor Kisan Shakti Sangathan (2018):** Police may regulate demonstrations but cannot extinguish assembly rights.

- **Anita Thakur (2016):** Excessive force violates **Fundamental Rights**; victims deserve compensation.
- **Ramlila Maidan Incident (2012):** Peaceful protest is a constitutional right; force must remain the last resort.
- **Himat Lal K. Shah (1973):** State may regulate assemblies but cannot arbitrarily destroy protest rights.
- **Ram Manohar Lohia (1965):** Restrict protests only when public order, not merely law and order, is threatened.

Key Concerns over Excessive Policing

- **Colonial Legacy:** **Police Act, 1861** prioritised executive control; most States still lack reforms under the **Model Police Act, 2006**.
- **Staff Shortage & Stress:** India had **155 police personnel/lakh** (January 2024), below the **United Nations (UN)** norm of **222**, with nearly **21% vacancies**. **83.8%** personnel reported high stress (**SPIR 2025**), increasing burnout, poor judgement, and coercive policing.
- **Weak Civilian Oversight:** Poor implementation of **Prakash Singh (2006)** reforms weakens **Police Complaints Authorities (PCAs)** and **State Security Commissions (SSCs)**. Weak oversight and under-reporting of misconduct foster institutional impunity.
- **Training Deficiencies:** Inadequate human rights, de-escalation, forensic, and community policing training increases excessive force risks. India signed **United Nations Convention Against Torture (UNCAT)** (1997) but neither ratified it nor enacted an anti-torture law.
- **Disproportionate Force:** Tear gas, lathi charges, preventive detention, and mass arrests often violate the **Doctrine of Proportionality**. Such practices also violate UN principles requiring lawful, necessary, and minimum force.
- **Excessive Digital Restrictions:** Blanket internet shutdowns and communication blackouts may disproportionately restrict **Articles 19(1)(a)** and **19(1)(g)**. **Anuradha Bhasin (2020):** Restrictions must satisfy legality, necessity, proportionality, publication, and periodic review.



Way Forward

- **Police Training:** Train police in **Bharatiya Nagarik Suraksha Sanhita (BNSS)** and **Bharatiya Nyaya Sanhita (BNS)** with negotiation and non-lethal crowd-control methods.
- **Police Accountability:** Implement **Prakash Singh Reforms (2006)** by establishing independent, empowered **Police Complaints Authorities**.
- **Institutional Separation:** Separate investigation from law-and-order duties as recommended by **Second Administrative Reforms Commission** and **Malimath Committee**.
- **Evidence-Based Policing:** Strengthen forensic investigations and reduce reliance on coerced confessions.
- **Police Modernisation:** Upgrade police capacity through **Modernization of Police Forces**, filling vacancies and expanding body cameras and **Closed-Circuit Television**.
- **SMART Policing:** Adopt **Strict & Sensitive, Modern & Mobile, Alert & Accountable, Reliable & Responsive, Tech-savvy & Trained** policing.

Conclusion: A mature democracy requires **balancing constitutional freedoms with public order imperatives**. **Strengthening trust-based** policing, institutional accountability, and rights-oriented governance can transform protests into constructive channels of democratic participation.

STUDENT'S
NOTES

Test Your Knowledge

Prelims Corner	Mains Corner
Assertion (A): The use of force by police during a protest must satisfy the principle of proportionality. Reason (R): The State has an obligation to maintain public order, but the measures adopted for this purpose must not impose a restriction greater than what is necessary to achieve the legitimate objective. Which one of the following is correct? (a) Both A and R are correct, and R is the correct explanation of A. (b) Both A and R are correct, but R is not the correct explanation of A. (c) A is correct, but R is incorrect. (d) A is incorrect, but R is correct. Answer: (a)	In a constitutional democracy, the State must manage protests, not criminalise dissent." Critically examine how India can balance the right to peaceful protest, public order and police powers, with particular reference to the principles of proportionality, minimum force and institutional police accountability. (15 Marks, 250 Words)

6. PREVENTION OF INSULTS TO NATIONAL HONOUR (AMENDMENT) BILL, 2026

Context: Parliament passed the Prevention of Insults to National Honour (Amendment) Bill, 2026, extending legal protection to Vande Mataram by penalising obstruction or disrespect during its singing.

Key Provisions

- Amends 1971 Act:** The Bill amends the Prevention of Insults to National Honour Act, 1971 to include Vande Mataram within its scope.
- Section 3:** Prohibits intentionally preventing the singing of the **National Anthem (Jana Gana Mana)** or disrupting an assembly during its singing.

PREVENTION OF INSULTS TO NATIONAL HONOUR ACT		
ORIGINAL ACT, 1971 VS AMENDMENT BILL, 2026		
FEATURE / PROVISION	PREVENTION OF INSULTS TO NATIONAL HONOUR ACT, 1971 (ORIGINAL)	AMENDMENT BILL, 2026
 Section 3: Scope	 Protects only the National Anthem (Jana Gana Mana) .	 Extends protection to both National Anthem and National Song (Vande Mataram) .
 Prohibited conduct	 Penalises intentionally preventing the National Anthem's singing or disturbing an assembly engaged in such singing.	 Extends the same prohibition to Vande Mataram .
 Punishment	 Imprisonment up to 3 years , fine, or both.	 Unchanged: imprisonment up to 3 years , fine, or both.
 Repeat convictions	 Under Section 3A (2003), repeat conviction under Sections 2 or 3 attracts minimum 1-year imprisonment .	 Retained and extended: repeat offenders disrupting Vande Mataram also face a minimum 1-year imprisonment .

- Penalty:** Imprisonment up to **3 years**, fine, or both; repeat offenders face a **minimum 1-year imprisonment**.
- Government's Rationale:** The Bill refers to the **24 January 1950 Constituent Assembly proceedings**, where **Dr Rajendra Prasad** accorded **Vande Mataram** status equal to **Jana Gana Mana** for its historic role in the freedom struggle. It aims to **bridge the legal gap** by extending statutory protection to the **National Song**, which currently lacks protection comparable to the **National Anthem**.

Key Provisions of the Prevention of Insults to National Honour Act, 1971

- Section 2 – National Flag & Constitution:** Prohibits **burning, defacing, desecrating or disrespecting** the **National Flag and Constitution**; punishable with **up to 3 years' imprisonment, fine, or both**.

- **Exception:** Criticism aimed at securing their **lawful amendment or alteration** is not an offence.
- **Section 3 – National Anthem:** Prohibits intentionally preventing the National Anthem's singing or disturbing an assembly during its singing; punishable with **up to 3 years' imprisonment, fine, or both.**
- **Section 3A – Repeat Offences (2003):** Prescribes **minimum 1-year imprisonment** for **second and subsequent convictions** under Sections 2 or 3.

Key Facts About Vande Mataram

- **Composition:** Vande Mataram ("Mother, I Bow to Thee") was composed by **Bankim Chandra Chattopadhyay** in **Sanskritised Bengali**, first published in *Bangadarshan* on **7 November 1875** and later included in *Anandamath* (1882).
- **Musical Adaptation:** **Rabindranath Tagore** set it to music; it became a symbol of **nationalism, unity and sacrifice** during the freedom struggle.
- **National Song:** Its **first two stanzas** were adopted as the **National Song** by the **Congress Working Committee** in 1937. On **24 January 1950**, **Dr Rajendra Prasad** affirmed its equal honour alongside **Jana Gana Mana**, the National Anthem.
- **Constitutional Status:** The **Constitution does not explicitly recognise a National Song**. However, **Article 51A(a)** makes it a **Fundamental Duty** to respect the **Constitution, its ideals and institutions, National Flag and National Anthem**.



Historical Significance of Vande Matram

- **Nationalist Symbol:** Became a rallying cry of the **Swadeshi Movement** and anti-colonial struggle, inspiring devotion to the motherland and resistance to British rule.
- **British Suppression:** The British frequently **banned its public singing** and arrested those who chanted it because of its mobilising power.
- **Congress Adoption:** **Rabindranath Tagore** first sang it at the **1896 Calcutta Session of the Indian National Congress**; it later became regular at Congress sessions.
- **Partition of Bengal (1905):** Became a political slogan on **7 August 1905** and the anthem of the **Swadeshi and Anti-Partition Movement**.
 - Nearly **40,000 people** gathered at **Calcutta Town Hall** in **1905** and sang it in protest.
- **Nationalist Organisations & Press:** **Bande Mataram Sampradaya** (1905) promoted patriotic awareness, while the *Bande Mataram* English daily (1906), led by **Bipin Chandra Pal** and **Sri Aurobindo**, became an influential nationalist publication.
- **Hyderabad-Karnataka Movement (1938):** Students defied colonial restrictions by singing it, leading to **arrests and expulsions**.
- **Global Influence:** **Madam Bhikaji Cama** displayed the Indian tricolour bearing "**Vande Mataram**" at **Stuttgart** (1907); **Madan Lal Dhingra** reportedly uttered it before his execution in **1909**; nationalist publications carrying the name were also circulated from **Geneva**.

Conclusion: India can honour its national symbols while upholding **constitutional patriotism, democratic freedoms and pluralism**, ensuring that national pride strengthens **unity in diversity** without diluting fundamental rights.

7. CAUVERY WATER DISPUTE

Context: CWMA upheld the CWRC order directing Karnataka to release 3,500 cusecs (4.5 tmc ft) to Tamil Nadu. The order came despite a 60% reservoir inflow shortfall caused by deficient monsoon rainfall.

- Karnataka opposed the release, citing inadequate rainfall and no commencement of irrigation.
- Tamil Nadu sought 9.8 tmc ft, considering the ordered quantity inadequate.
- Tamil Nadu also urged the Prime Minister to withhold approvals for Karnataka's Mekedatu Balancing Reservoir Project.

Cauvery Water Management Authority (CWMA)

- The Central Government constituted **CWMA and CWRC in 2018** under the Cauvery Water Management Scheme, 2018.
- **Legal Status:** CWMA is a **statutory, quasi-judicial** body under the Inter-State River Water Disputes Act, 1956.
- **Mandate:** Implements the modified Cauvery Water Disputes Tribunal (CWDT) Award, upheld by the Supreme Court in 2018.

Cauvery Water Dispute

- **Historical Origin:** Dispute traces back to 1892 and 1924 agreements between Mysore and Madras Presidency.
- **Competing Needs:** Karnataka seeks water for Bengaluru's drinking water and irrigation; Tamil Nadu seeks assured flows for Cauvery delta agriculture, especially Kuruvai.
- **Legal Framework:** Dispute falls under Article 262 and the Inter-State River Water Disputes Act, 1956. Cauvery Water Disputes Tribunal (CWDT) was constituted in 1990 to resolve the dispute.

Mekedatu Project

- **Proposed** 48 TMC balancing reservoir at Mekedatu, Ramanagara, Karnataka, about 100 km south of Bengaluru.
- **Objectives:** Provide Bengaluru drinking water, recharge groundwater and generate hydropower.
- **Karnataka's Stand:** Claims no additional irrigation is planned and existing CWDT 2007 and Supreme Court 2018 allocations remain unchanged.
- **Tamil Nadu's Concern:** Fears upstream storage could control distress-year flows, reducing downstream releases to Cauvery delta agriculture.
- **Legal Objection:** Cites the CWDT Award, requiring mutual agreement and regulatory consultation for upstream projects affecting scheduled deliveries.

8. CRIMINALITY OF CRUDE LANGUAGE DIRECTED AT PUBLIC FIGURES

Context: Recent case: Noida Police registered a **Zero FIR** over remarks allegedly made against the Prime Minister during a Jantar Mantar protest.

- **BNS provisions:** The FIR invokes **Sections 352, 353(1) and 356(1), Bharatiya Nyaya Sanhita (BNS)**, concerning insult, public mischief and defamation.

Legal Aspects of the Present Case

- **Judicial determination:** Courts will decide whether the remarks satisfy the higher thresholds under **Sections 352, 353(1), 356(1)** or merely constitute alleged obscenity.
- **Telangana HC ruling:** In **2025**, the High Court held that harsh social-media criticism without a **real public-order threat** cannot attract Sections 352 or 353.
- **Section 352:** Requires intent or knowledge that the insult would likely provoke an **actual breach of public peace**.
- **Section 353(1):** Targets **incitement**, including provoking offences against the State or promoting community enmity, exceeding ordinary political criticism.

- **Section 356(1):** Covers **defamation**, while retaining exceptions for **good-faith comments on public figures' conduct**.
- **Obscenity provision:** **Section 296 BNS (Section 294 IPC)** penalises obscene acts or words in public places causing annoyance, with imprisonment up to **3 months**.

Judicial Doctrine on Obscenity

- **Ranjit D. Udeshi (1965):** SC upheld restrictions on *Lady Chatterley's Lover* and adopted the **Hicklin test**, focusing on vulnerable readers.
- **Doordarshan v. Anand Patwardhan (2006):** Obscenity must be assessed from the **work as a whole**, rather than isolated scenes.
- **Aveek Sarkar (2014):** SC rejected Hicklin and adopted the **community standards test**, assessing sexual content through contemporary societal standards.
- **College Romance (2024):** SC clarified that **vulgarity and profanity alone do not constitute obscenity**.
- **Mani v. State (July 2026):** SC distinguished **abuse, profanity, vulgarity and obscenity**, holding that obscenity requires expression of a **strong, often inappropriate sexual desire**.



9. TRIBUNALS REFORMS BILL, 2026

Context: Lok Sabha Approval: Lok Sabha passed the **Tribunals Reforms Bill, 2026** by voice vote amid opposition protests, without debate. The Bill replaces the **Tribunals Reforms Act, 2021**, creating a **National Tribunals Commission (NTC)** for appointments and service conditions.

Major Provisions

- **2021 Act Repealed:** The Bill repeals the **Tribunals Reforms Act, 2021**, aligning appointments and service conditions with Supreme Court directions.
- **Judicial Safeguards:** The *Madras Bar Association v. Union of India* rulings, 2010–2025, curbed executive overreach and protected judicial independence.
- **Key Functions:** The **National Tribunals Commission (NTC)** handles appointments, performance reviews, member complaints and the **National Tribunals Data Grid**.
- **Composition:** The NTC comprises a Chairperson, **two Judicial Members and two Technical Members**. The **Chairperson** must have served as a **Supreme Court Judge or High Court Chief Justice**.
- **Judicial Members:** Two Judicial Members must be **High Court Chief Justices or Judges**.
- **Technical Members:** Technical Members require at least **25 years of relevant experience**.
- **Age and Tenure:** Chairpersons retire at **70** and members at **67**, with a **five-year term**, whichever comes earlier.
- **Appointment Process:** The **Central Government** appoints members, consulting the **Chief Justice of India (CJI)** for judicial appointments.
- **Secretariat:** A **Central Government Secretary** will head the Commission's Secretariat.

Selection and Reappointment

- **Vacancy Recommendations:** The NTC selection committee recommends **one candidate and one waiting-list candidate** for each vacancy.
- **Three-Month Deadline:** The Central Government must finalize appointments within **three months** of receiving recommendations.

- **Performance-Based Reappointment:** Members may be reappointed based on **previous performance**, consulting the concerned Tribunal Chairperson.

STUDENT'S
NOTES

Removal and Service Conditions

- **Removal Grounds:** Members may be removed for **insolvency, moral-turpitude conviction, incapacity, abuse of position or conflict of interest**.
- **Additional Grounds:** Tribunal members may also face removal for **incompetence, inefficiency or undertaking paid assignments**.
- **Service Rules:** The **Central Government** will prescribe rules covering qualifications, selection, salaries, allowances, resignation, removal and other service conditions.

Major Challenges Facing Tribunals

- **Executive Control:** Under the **Tribunals Reforms Act, 2021**, government influences appointments, salaries, service conditions and removals despite being a major litigant.
- **Judicial Dominance:** In *Rojer Mathew v. South Indian Bank (2019)*, the Supreme Court emphasised **judicial dominance in tribunal selection**.
- **Vacancies and Pendency:** Persistent vacancies among judicial, technical and presiding members cause backlogs, weakening tribunals' **speedy-justice mandate**.
- **Financial Impact:** The **Income Tax Appellate Tribunal (ITAT)** had ₹6.7 trillion locked in disputes in 2024, affecting revenue and investor confidence.
- **Short Tenures:** Brief tenures restrict adjudicatory experience, while **reappointment prospects** can encourage executive dependence and compromise impartiality.
- **Administrative Dependence:** Reliance on **parent ministries** for finances, infrastructure and staff weakens tribunals' functional autonomy.
- **Layered Litigation:** *L. Chandra Kumar v. Union of India (1997)* affirmed **High Court judicial review**, potentially adding another litigation layer.
- **Infrastructure Gaps:** Many tribunals lack adequate **infrastructure, digital facilities and staff**, alongside uniform procedures and service conditions.

Suggested Reforms

- **Independent Administration:** Transfer administrative and financial control from litigating ministries to an **independent nodal authority** with dedicated budgets.
- **Faster Appeals:** Establish **dedicated Tribunal Appellate Benches** within High Courts for quicker disposal of tribunal appeals.
- **UK-Style Model:** Consider a **two-tier tribunal system** with **First-tier and Upper Tribunals**, supported by specialised chambers to reduce fragmentation.
- **Judicial Impact Assessment:** Require **Judicial Impact Assessments (JIA)** before expanding tribunal jurisdiction to determine infrastructure, judicial and resource requirements.
- **Cross-Training:** Use the **National Judicial Academy** to train technical members in law and judicial members in specialised domains.
- **Pre-Litigation Mediation:** Mandate **pre-institution mediation** for suitable disputes to curb frivolous litigation and reduce pendency.



- **Independent Audits:** Conduct annual independent audits covering **disposal rates, adjournments, pendency and judicial quality**, with public performance data.

STUDENT'S
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Conclusion: Institutional autonomy, financial independence and modern case management can help tribunals deliver **credible, specialised and expedited justice** while strengthening public confidence.

Test Your Knowledge

Prelims Corner	Mains Corner
Q1. With reference to tribunals in India, consider the following statements: 1. The Supreme Court has held that the power of judicial review vested in High Courts under Articles 226 and 227 forms part of the basic structure of the Constitution. 2. Decisions of tribunals are completely immune from scrutiny by constitutional courts. 3. The Supreme Court has emphasised the need for judicial dominance in the selection of members of tribunals. 4. Administrative dependence of tribunals on ministries that are themselves parties to disputes can raise concerns regarding institutional independence. Which of the statements given above are correct? (a) Only two (b) Only three (c) All four (d) Only one Answer: (b) Explanation: Statements 1, 3 and 4 are correct.	The proposed National Tribunals Commission (NTC) seeks to address concerns relating to appointments, service conditions and administrative functioning of tribunals. Critically examine whether the proposed institutional architecture adequately safeguards judicial independence from executive influence. (15 Marks, 250 Words)

10. PM CARES FUND UNDER TRANSPARENCY SCRUTINY

Context: No audited financial statements of the **PM CARES Fund** have been publicly released after **FY 2022-23**, raising accountability concerns.

Key Facts About PM CARES Fund

- **Prime Minister's Citizen Assistance and Relief in Emergency Situations (PM CARES) Fund** is a **Public Charitable Trust** established in March 2020.
- **Relief Objectives:** It funds responses to **public-health emergencies, natural/man-made calamities, healthcare infrastructure, pharmaceuticals, research and related assistance.**
- **Chairperson:** The **Prime Minister of India** serves as the **ex-officio Chairperson.**
- **Trustees:** Union Ministers of **Defence, Home Affairs and Finance** serve as ex-officio Trustees.
- **Additional Trustees:** The Prime Minister may nominate other Trustees serving **pro bono**, meaning without remuneration.
- **Voluntary Funding:** The Fund relies entirely on **voluntary individual and organisational contributions**, receiving no budgetary support.

MEASURES TO STRENGTHEN ACCOUNTABILITY

01		CLARIFY LEGAL STATUS: Government or Parliament should clearly define PM CARES' RTI status, establishing transparent legal obligations without prolonged litigation.
02		INDEPENDENT OVERSIGHT: Even without mandatory CAG auditing, adopt stronger public-audit standards, utilisation certificates and periodic independent scrutiny.
03		TIMELY DISCLOSURE: Publish audited accounts, receipts, expenditure, project-wise utilisation and balances annually within fixed timelines.
04		PARLIAMENTARY OVERSIGHT: Consider PM CARES questions case-by-case under Lok Sabha rules, with admissibility determined by the Speaker.
05		ALLOCATION TRANSPARENCY: Disclose major donor categories, project allocations, beneficiary criteria, implementing agencies and measurable outcomes, while protecting legitimate privacy.
06		OUTCOME-BASED ACCOUNTABILITY: Move beyond aggregate financial reporting towards outcome-based public accountability through proactive disclosures.
Transparency builds trust. Accountability delivers impact. Let openness be the foundation of public confidence.		

- **CSR Contributions:** Eligible **Corporate Social Responsibility (CSR)** contributions from companies and **Public Sector Undertakings (PSUs)** are accepted.
- **Income-Tax Deduction:** Donations receive **100% deduction under Section 133 of the Income-tax Act, 2025**, replacing Section 80G of the 1961 Act.
- **CSR Recognition:** Company contributions qualify as **CSR expenditure under the Companies Act, 2013**.
- **FCRA Exemption:** The Fund is exempt from the **Foreign Contribution (Regulation) Act, 2010 (FCRA)**, allowing overseas donations through a separate foreign-contribution account.
- **FY 2022-23 Accounts:** Audited accounts recorded **₹6,723 crore receipts, ₹439 crore payments and ₹6,284 crore closing balance** as of 31 March 2023.

Concerns Surrounding PM CARES Fund

- **Unclear RTI Status:** Despite Prime Ministerial leadership and Prime Minister's Office (PMO) support, the government denies **public-authority status under the Right to Information (RTI) Act, 2005**.
- **Judicial Consideration:** The Fund's **RTI status remains under judicial consideration**, leaving its transparency obligations legally uncertain.
- **Limited Parliamentary Scrutiny:** In 2026, the PMO deemed PM CARES questions inadmissible under **Lok Sabha rules**, though final admissibility rests with the **Speaker**.
- **Audit Gap:** PM CARES uses an **independent chartered accountant**, rather than the **Comptroller and Auditor General of India (CAG)**.
- **Need for Public Audit:** Critics seek stronger **public audit and disclosure mechanisms**, citing the Fund's public purpose and official associations.
- **PSU Contributions:** Though receiving no budgetary allocation, PM CARES accepts **Public Sector Undertaking (PSU) Corporate Social Responsibility (CSR)** contributions, raising accountability concerns.
- **Institutional Overlap:** Questions persist over PM CARES alongside **Prime Minister's National Relief Fund (PMNRF)** and **National Disaster Response Fund (NDRF)**.
- **Distinct Funds:** The Supreme Court held in 2020 that **PM CARES and NDRF are distinct**, serving different objectives and purposes.

Conclusion: PM CARES enables rapid emergency resource mobilisation, but **timely disclosure and independent oversight** can strengthen public trust while preserving operational flexibility.

11. MINES AND MINERALS (DEVELOPMENT AND REGULATION) AMENDMENT BILL, 2026

Context: Parliament passed the **Mines and Minerals (Development and Regulation) Amendment Bill, 2026**, creating uniform mineral taxation.

- It restricts **State taxes and levies** on mineral rights and mineral-bearing lands.
- The Bill addresses taxation uncertainty but raises concerns over **mineral security, fiscal federalism and Centre-State relations**.
- Concerns assume importance after the **Supreme Court's 2024 judgment** upholding State taxation powers over mineral rights.

Key Provisions

- **Union control:** Amends Section 2 of the **MMDR Act, 1957** to bring mineral-bearing lands under Union regulatory control.
- **State levy cap:** New **Section 9D** restricts State taxes, cess and levies on mineral rights and mineral-bearing lands.
- Restrictions apply regardless of **mineral quantity, value or royalty**, except conditions prescribed by the Centre.
- **Retrospective relief:** Unpaid or unrecovered pre-amendment levies become invalid; already-paid amounts remain non-refundable.
- **Central rule-making:** Amends Section 13, empowering the Centre to prescribe parameters for future State levies.

Significance

- **Tax certainty:** Reduces high, multiple and unpredictable levies, creating a stable mining fiscal framework.
- **Uniformity:** Harmonises taxation across States while reducing disparities and compliance costs.
- **Investment:** Lower uncertainty and mining costs can boost **investment and domestic mineral production**.

Existing Legal Framework

- **MMDR Act, 1957:** Principal Central legislation governing India's mine and mineral development.
- **Union List, Entry 54:** Parliament can regulate mines and mineral development when declared necessary in public interest.
- **State List, Entry 23:** States regulate mines and mineral development, subject to Union legislation.
- **State List, Entry 50:** States can tax mineral rights, subject to Parliamentary limitations.
- **State List, Entry 49:** Covers taxes on land, including **mineral-bearing land**.

**Division of Powers**

Centre: Regulates major minerals and determines royalty rates.

States: Grant mining leases and collect royalty from leaseholders.

Minor minerals: Primarily remain under State government regulation.

**Legal Context**

Supreme Court, 2024: Held that royalty under the MMDR framework is not a tax. Royalty is a contractual payment for enjoying mineral rights, rather than a tax. The Bill seeks taxation certainty while redefining State levy powers over mineral rights and mineral-bearing lands. federalism and sustainable mining.

**Overall Assessment**

The Bill promotes tax predictability, investment and mineral security, but challenges fiscal federalism and State taxation powers. Effective implementation requires balancing economic efficiency, constitutional

Concerns Regarding the MMDR Amendment Bill, 2026

- **Federalism:** Restricts State taxation of **mineral rights and mineral-bearing lands**, affecting State List Entries **49 and 50**.
- **Entry 50:** Parliament can limit mineral-right taxation, but restricting **land taxation under Entry 49** raises constitutional questions.
- **2024 Supreme Court ruling:** A **9-judge Constitution Bench (8:1)** upheld State power to tax mineral rights and mineral-bearing lands.
- **Retrospective dues:** The Court permitted States to recover past tax dues retrospectively from **1 April 2005**.
- **Separation of powers:** Invalidating unpaid past levies may alter the legal consequences of the **2024 Supreme Court judgment**.
- **Article 14:** Cancelling unpaid levies without refunding paid amounts could create unequal treatment between companies.
- **Excessive delegation:** Central Government would prescribe restrictions on State taxation, leaving key principles to the executive.
- **State revenues:** Reduced taxation could weaken the **fiscal autonomy and revenue base** of mineral-rich States.

Measures to Strengthen Mineral and Mining Regulation

- **Centre-State coordination:** Establish a permanent mechanism for coordinating **taxation, leases, auctions, production and mineral development**.

- **Better District Mineral Foundation (DMF) outcomes:** Ensure **transparent, outcome-based DMF spending** on health, education, livelihoods and local infrastructure.
- **Deep-sea mineral exploration:** Leverage the **Deep Ocean Mission** to explore polymetallic nodules and sulphides containing **nickel, cobalt, copper and manganese**.
- **Indigenous deep-sea technology:** Develop domestic deep-sea mining capabilities alongside **strict environmental safeguards**.
- **National Critical Mineral Mission (NCMM):** Expand domestic exploration, overseas asset acquisition, recycling, and **beneficiation, processing and refining** capacities.
- **Secure the value chain:** Use NCMM to build an integrated **critical-mineral value chain**, from exploration to processing and recycling.
- **Sustainable mine closure:** Mandate **progressive mine closure, land reclamation and ecological restoration** throughout the mining lifecycle.
- **Curb illegal mining:** Deploy **satellite monitoring, drones, GPS-based mineral tracking and e-permits** to detect illegal extraction and transportation.

Conclusion: A balanced mineral governance framework must reconcile **tax certainty with cooperative federalism**, ensuring that investment and mineral security advance alongside **ecological stewardship and equitable resource governance**.

Test Your Knowledge	
Prelims Corner Assertion (A): Parliament's power to regulate mineral development does not necessarily imply an unrestricted power to eliminate every aspect of State fiscal authority over mineral-bearing resources. Reason (R): The Constitution separately distributes legislative fields relating to mineral development, taxation of mineral rights and taxation of land between the Union and the States. Which one of the following is correct? (a) Both A and R are correct, and R is the correct explanation of A. (b) Both A and R are correct, but R is not the correct explanation of A. (c) A is correct, but R is incorrect. (d) A is incorrect, but R is correct. Answer: (a)	Mains Corner "Mineral security is no longer merely about increasing domestic extraction; it requires control over the entire critical-mineral value chain." Discuss the measures India should adopt to strengthen its critical-mineral security while ensuring environmental sustainability. (10 Marks, 150 Words)

12. SUPREME COURT ON ELECTORAL BLACK MONEY

Context: Supreme Cour ruled that removing **black money's influence** from elections is an **Election Commission of India (ECI)** responsibility.

Threat of Black Money For Electoral Democracy

- **Voter Autonomy:** Illicit inducements distort **free and informed choice**, undermining **Article 326—Universal Adult Suffrage**; *PUCL v. Union of India (2013)* reinforced voters' right to genuine choice through **NOTA**.
- **Electoral Equality:** Unaccounted wealth creates an **uneven level playing field**, disadvantaging resource-poor candidates and promoting **plutocracy**; *Kanwar Lal Gupta v. Amar Nath Chawla (1974)* recognised financial distortion, while *Indira Nehru Gandhi v. Raj Narain (1975)* affirmed **free and fair elections as Basic Structure**.
- **Policy Capture:** Black-money funding enables **quid pro quo**, regulatory favouritism and financier-driven policies; *ADR v. Union of India (2024)* struck down Electoral Bonds, highlighting **Article 19(1)(a), transparency and voters' Right to Information**.
- **Criminal-Political Nexus:** Cash-based elections can depend on **criminal syndicates and strongmen**, deepening the crime-politics nexus; the **Vohra Committee (1993)** flagged this nexus, while *Public Interest Foundation v. Union of India (2018)* stressed the need for **decriminalisation and electoral transparency**.

- **Forms of Black Money:** Unaccounted/untaxed funds entering elections outside auditable channels through cash-for-votes, liquor/gifts, expenditure under-reporting, hawala and shell/letterhead parties.

Legal and Institutional Safeguards

- **Party Disclosure:** *Common Cause v. Union of India* (1996) requires political parties to maintain and submit election-related financial statements.
- **Candidate Disclosure:** *Union of India v. Association for Democratic Reforms* (2002) recognised voters' right to know candidates' criminal records, assets, liabilities and qualifications.
- **Bribery:** Section 123(1), Representation of the People Act (RPA), 1951 classifies bribery as an electoral corrupt practice.
- **Expenditure Limits:** Conduct of Election Rules, 1961 prescribe the framework for candidate election-expenditure ceilings under the RPA.
- **Election Monitoring:** Election Commission of India (ECI) deploys Expenditure Observers, Static Surveillance Teams (SSTs), Flying Squads and Video Surveillance Teams.
- **Financial Investigation:** Income Tax Act, 2025 and Prevention of Money Laundering Act (PMLA), 2002 enable investigation of unaccounted money and crime proceeds.
- **Citizen Oversight:** cVIGIL enables citizens to report Model Code of Conduct (MCC) violations and voter inducements in real time.

Key Supreme Court Directives

Seizure Reporting: Report seized cash/assets within 24 hours, establishing a prima facie electoral-offence link.

Time-Bound Investigation: Complete election-related FIR investigations within one year; justify delays to ECI.

Quarterly Reporting: Investigating Officers must submit quarterly case-status reports to the ECI.

Income Tax Coordination: Static Surveillance Teams detecting cash above ₹10 lakh must inform Income Tax authorities.

Speedy Trials: High Courts to ensure fast disposal of election-related black-money cases through designated courts.

Case Withdrawal: Criminal-case withdrawal against candidates during an election cycle requires concerned High Court approval.

Compliance: ECI and State Governments must submit compliance reports by 18 November 2026.

Measures to Curb Black Money in Elections

- **Cap Party Spending:** Introduce rational, enforceable party-expenditure ceilings linked to seats contested; empower the Election Commission of India (ECI) to deregister non-serious/shell parties.
- **Digitise Political Funding:** Phase out cash donations, mandate traceable digital channels, and enable independent financial audits, including by the Comptroller and Auditor General of India (CAG).
- **Financial Intelligence for ECI:** Establish an autonomous Election Commission of India (ECI) financial-enforcement wing, integrating real-time Financial Intelligence Unit-India (FIU-IND) and Central Board of Direct Taxes (CBDT) data using big-data analytics.
- **State Funding:** Implement the *Indrajit Gupta Committee* (1998) recommendation of gradual state funding in kind through logistics, digital infrastructure and airtime.
- **Fast-Track Justice:** Create specialised courts for electoral-finance offences, enforce the Supreme Court's one-year investigation timeline, and strengthen disqualification for serious electoral/organised-crime convictions.

Key Committees on Electoral Reform

- **Dinesh Goswami Committee (1990):** Recommended state support in kind, including fuel and voter slips, to reduce money power.
- **Vohra Committee (1993):** Documented the entrenched crime-politics-bureaucracy nexus involved in election-related financial and logistical operations.
- **Law Commission 170th Report (1999):** Proposed comprehensive electoral-law reform promoting internal party democracy and financial transparency.
- **Law Commission 255th Report (2015):** Examined the cash-laundering chain in elections and recommended stringent political-party financial audits.

Conclusion: Curbing electoral black money requires **institutional vigilance, financial transparency and swift enforcement**, enabling cleaner campaigns, informed voter choice and a stronger foundation for **democratic integrity**

STUDENT'S
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Test Your Knowledge

Prelims Corner

With reference to electoral reforms in India, consider the following statements:

1. Bribery of voters is treated as a corrupt practice under the Representation of the People Act, 1951.
2. The Election Commission of India can monitor election expenditure through mechanisms such as Expenditure Observers, Flying Squads and Static Surveillance Teams.
3. The constitutional right to vote under Article 326 by itself prohibits all forms of private expenditure by candidates and political parties during elections.
4. The Supreme Court has recognised voters' right to obtain information about candidates' criminal antecedents, assets and liabilities.

Which of the statements given above are correct?

(a) Only two
(b) Only three
(c) All four
(d) Only one

Answer: (b)
Explanation: Statements 1, 2 and 4 are correct

Mains Corner

"The influence of black money in elections is not merely a financial irregularity but a threat to the autonomy of the voter and the integrity of democracy." Examine.

(10 Marks, 150 Words)

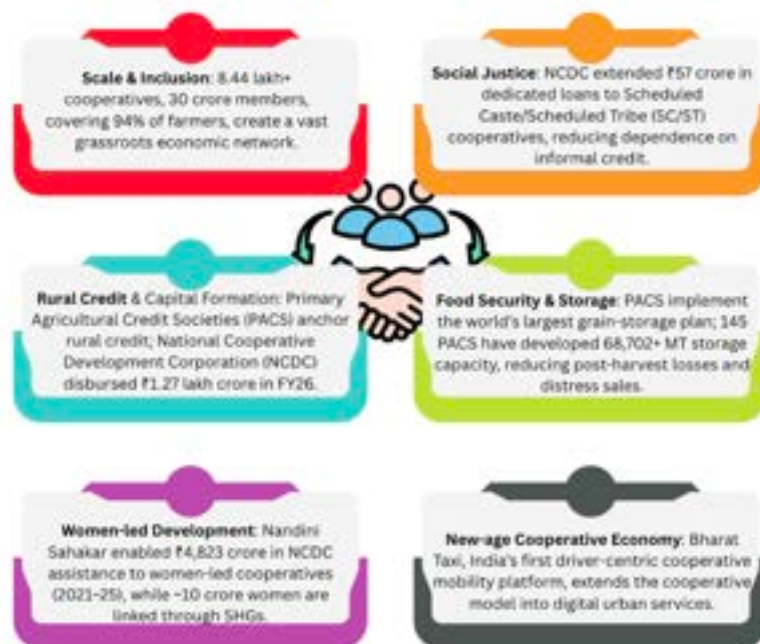
13. NATIONAL COOPERATIVE DEVELOPMENT CORPORATION (AMENDMENT) BILL, 2026

Context: Parliament passed the **Bill**: It amends the **National Cooperative Development Corporation (NCDC) Act, 1962**, expanding NCDC's financing and operational mandate.

Key Provisions

- **Direct Financial Assistance:** NCDC can directly provide **loans and grants to any cooperative society or cooperative-development entity**, subject to conditions.
- **State Funding Retained:** NCDC can continue funding **State Governments** for financing cooperative societies, alongside direct financing.
- **Expanded "Foodstuffs":** Definition now covers **processed food and other Central Government-notified food items**, widening eligible cooperatives.
- **Industrial Cooperatives:** Removes the requirement that eligible **industrial, cottage and village cooperatives** operate in rural areas.
- **Investment Powers:** With **Central Government approval**, NCDC can invest in share capital of cooperatives or cooperative-development entities.
- **Information Sharing:** NCDC can collect/share **credit and other information** with the **Central Government, Reserve Bank of India (RBI), banks and notified financial institutions**.

Significance of Cooperatives for India



Concerns

- **Centralisation Risk:** Expanded direct financing could increase **Union Government influence** over State-level cooperatives.
- **Implementation Challenges:** Direct funding without State coordination may create **overlapping jurisdictions, monitoring gaps and auditing challenges**.
- **Federalism:** Cooperative societies operating within one State fall under **State List, Entry 32**; direct NCDC funding may bypass State Governments.

Measures to Strengthen Cooperatives

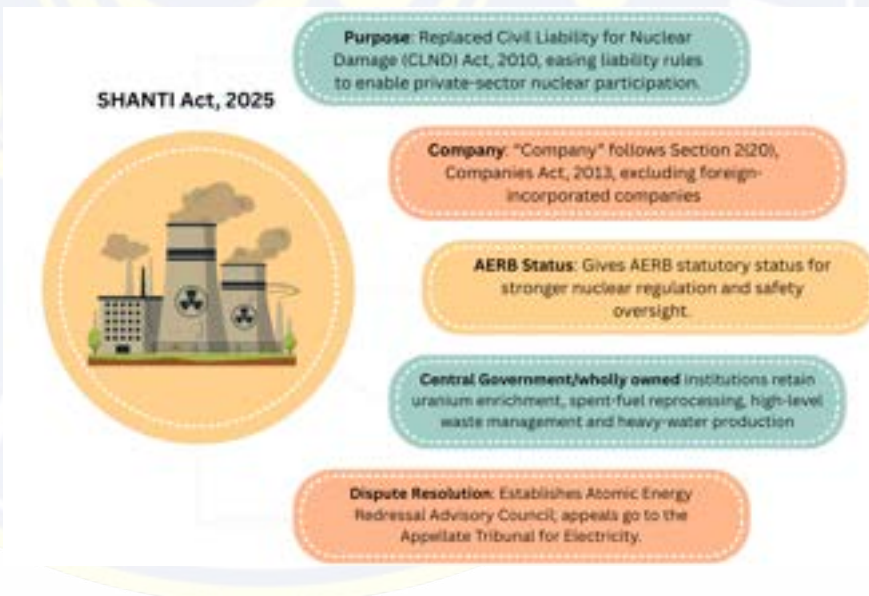
- **Regulatory harmonisation:** Expand **Model Bye-laws** across States to standardise governance and enable PACS to diversify into multiple businesses.
- **Autonomy & professional governance:** Reduce **political interference and elite capture**, echoing the **Vaidyanathan Committee (2004)**.
- **UCB governance:** Implement **Malegam Committee** approach by separating cooperative ownership from banking operations through a professional **Board of Management (BoM)** alongside the elected **Board of Directors (BoD)**.
- **Digital inclusion:** Provide targeted digital-literacy and capacity-building programmes for rural members.
- **Branding & diversification:** Build quality-certified umbrella brands and expand into **renewable energy, eco-tourism, hydroponics and digital services**.

Conclusion: **Sahkar-se-Samriddhi** can transform cooperatives from traditional rural institutions into **autonomous, technology-enabled and diversified economic enterprises**, advancing inclusive growth, grassroots participation and decentralised development.

14. SHANTI ACT, 2025 & NUCLEAR LIABILITY

Context: Supreme Court Review: Examining whether SHANTI Act liability caps can restrict constitutional courts from awarding fair nuclear-disaster compensation.

- **AERB Appointments:** Court examining whether **Section 17(4)** creates a conflict of interest in **Atomic Energy Regulatory Board (AERB)** appointments.
- **Court Notice:** Three-judge Bench led by the **Chief Justice of India (CJI)** sought responses from the Union Government and AERB.

**CLND Act, 2010: Earlier Framework**

- **No-Fault Liability:** Victims only needed to prove **damage, not negligence**.
- **Liability Cap:** Large-reactor operator liability was **₹1,500 crore**; overall incident liability was **300 million Special Drawing Rights (SDR)**.
- **Supplier Recourse:** Operators could recover costs from suppliers for **defective equipment, patent or latent defects**.

SHANTI Act: Operator Liability

- **Tiered Cap:** Liability depends on **thermal capacity and installation risk**: >3,600 megawatt (MW): ₹3,000 crore; >1,500–3,600 MW: ₹1,500 crore; >750–1,500 MW: ₹750 crore; >150–750 MW: ₹300 crore; ≤150 MW, most fuel-cycle facilities & nuclear-material transport: ₹100 crore
- **Government Liability:** After the operator's limit, the **Central Government** covers remaining compensation.
- **Overall Cap:** Total incident liability capped at ₹ **equivalent of 300 million SDR**, unless Government notifies a higher amount.
- **Beyond Cap:** Government may take additional measures, including seeking funds under the **Convention on Supplementary Compensation (CSC)**.

Nuclear Liability Concerns under SHANTI Act, 2025

- **Low Liability Ceiling:** **300 million Special Drawing Rights (SDR)** (~₹3,900–4,000 crore) is inadequate for catastrophic nuclear accidents.
 - **Chernobyl:** Estimated losses reached **USD 235–700 billion**; Fukushima costs reached **USD 400–445 billion**.
 - **Long-Term Damage:** Nuclear disasters cause **multi-generational environmental, health, livelihood, displacement and land-use impacts**.
- **Restrictive Time Limits:** Claims expire after **10 years for property damage** and **20 years for personal injury**.
 - **Scientific Concern:** **Radiation cancers, genetic damage and congenital anomalies** may emerge decades after exposure.
- **Weaker Safety Incentives:** Liability caps may shield operators from full accident costs, weakening incentives for **advanced safety and maintenance**.
 - **Accountability–Safety Link:** Excessive supplier protection may weaken the feedback between **economic accountability and safety standards**.
- **Constitutional & Legal Concerns:**
 - **Absolute Liability:** *M.C. Mehta (1987)* linked **Article 21** with absolute liability for hazardous enterprises; statutory caps may undermine this principle.
 - **Polluter Pays:** *Indian Council for Enviro-Legal Action (1996)* recognised the **Polluter Pays Principle**, requiring polluters to bear environmental costs.
 - **Taxpayer Burden:** Shifting residual nuclear liability to Government may transfer **private-activity costs to taxpayers**.
 - **Article 14:** Reactor-based liability tiers may be arbitrary, as even smaller reactors can cause **severe radiation hazards**.
 - **Article 19(1)(a):** **Section 39** limiting **Right to Information (RTI) Act, 2005** access may undermine transparency and claims.
- **AERB Independence:** Government-controlled appointments may create conflict when the same executive promotes nuclear energy and regulates it.
 - **Required Autonomy:** Nuclear regulators need **institutional, financial and technical independence** from political or commercial interference.

Measures to Strengthen Nuclear Liability

- **Independent Regulator:** **Comptroller and Auditor General (CAG)** reported **85% shortfall** in hazardous-site inspections and absence of a National Nuclear Safety Policy.
 - **NSRA Framework:** Modernise the **Nuclear Safety Regulatory Authority (NSRA)** framework using **Raja Ramanna Committee (1997)** and **NSRA Bill, 2011** recommendations.
 - **Raja Ramanna Committee:** Recommended amending the **Atomic Energy Act, 1962** to strengthen India's nuclear regulatory system.
 - **NSRA Bill, 2011:** Proposed an independent NSRA after the **Mayapuri radiation accident (2010)** and **Fukushima disaster (2011)**.
 - **Bill Lapsed:** The NSRA Bill lapsed, leaving India without a truly autonomous nuclear regulator.
 - **Resolve DAE Conflict:** Independent regulation would separate the **Department of Atomic Energy (DAE)**'s promotional and regulatory roles.
- **Use CSC Mechanism:** India ratified the **Convention on Supplementary Compensation (CSC)** in 2016; mechanisms should access its supplementary compensation pool.

- **Reduce Exchequer Burden:** International compensation can support victims when nuclear damage exceeds domestic limits, reducing reliance on the **Indian exchequer**.
- **Strengthen INIP:** Expand the **India Nuclear Insurance Pool (INIP)**, managed by **General Insurance Corporation of India**.
 - **Risk Sharing:** Add **international reinsurance and Sovereign Catastrophe Bonds (Cat-Bonds)** to cover losses beyond statutory limits.
- **Contractual Supplier Liability:** **Nuclear Power Corporation of India Limited (NPCIL)** and private operators should mandate contractual supplier recourse.
 - **Procurement Policy:** Contracts should explicitly cover supplier liability for **latent design defects**, bypassing statutory gaps while remaining **CSC-compliant**.

Test Your Knowledge	
Prelims Corner With reference to nuclear safety regulation in India, consider the following: 1. Atomic Energy Regulatory Board (AERB) 2. Department of Atomic Energy (DAE) 3. Nuclear Safety Regulatory Authority (NSRA) 4. India Nuclear Insurance Pool (INIP) Which of the above are primarily associated with nuclear safety regulation or management of nuclear liability risks, rather than the operation of nuclear power plants? (a) Only one (b) Only two (c) Only three (d) All four Answer: (d)	Mains Corner The SHANTI Act, 2025 seeks to balance nuclear-sector expansion with liability protection, but its liability ceilings and limitation periods raise concerns regarding victims' rights, the Polluter Pays Principle and inter-generational environmental justice. Critically examine. (15 Marks, 250 Words)

15. POINTERS FOR PRELIMS

15.1. RIGHT TO PROTEST IN INDIA

- Highlighted after clashes during the "Sansad Chalo" march.
- Constitutional Basis: **Article 19(1)(a):** Freedom of speech and expression. || **Article 19(1)(b):** Right to peaceful, unarmed assembly. || **Article 19(1)(c):** Right to form associations or unions.
- **Police Permission:** **Section 163, Bharatiya Nagarik Suraksha Sanhita (BNSS)** (earlier **Section 144, CrPC**) empowers regulation of assemblies and requires prior permission in notified cases.
- **Reasonable Restrictions:** **Articles 19(2) & 19(3)** permit restrictions for public order, sovereignty, security, decency or morality.

15.2. SUPREME COURT (NUMBER OF JUDGES) AMENDMENT BILL

- **Context:** The Union Government introduced the Bill in the Lok Sabha.
- **Objective:** Replaces the **Presidential Ordinance** that increased the sanctioned strength of Supreme Court judges.

- **Key Provision:** Increases Supreme Court strength from **34 to 38 judges**, including the **Chief Justice of India (CJI)**.

15.3. SUPREME COURT CLARIFIES SCOPE OF SPECIAL INTENSIVE REVISION (SIR)

- The Supreme Court held that **Special Intensive Revision (SIR)** is only for **electoral purposes** and cannot determine citizenship or deny welfare benefits.
- The ruling came while hearing a petition alleging the **West Bengal Government** used SIR data to remove beneficiaries from welfare schemes and **Backward Caste** certifications.
- Referring to its **2025 Bihar SIR** judgment, the Court reiterated that **SIR findings cannot extend beyond elections**; citizenship issues identified by the **Election Commission of India (ECI)** must be decided under the **Citizenship Act, 1955**.
- **Special Intensive Revision:** Comprehensive exercise by the **ECI**

under the **Chief Election Commissioner** to update and cleanse electoral rolls.

- **Legal Basis:** **Article 324** of the Constitution and **Section 21(3)** of the **Representation of the People Act, 1950** empower the ECI to conduct special revisions.

15.4. TV RATINGS POLICY, 2026

- **Ministry of Information and Broadcasting (MIB)** introduced **TV Ratings Policy, 2026**, replacing **2014 guidelines**; MIB becomes the **sole authority** for registering, regulating & monitoring rating agencies.
- **Regulatory Clarity:** Removes overlap with **Telecom Regulatory Authority of India (TRAI)**; mandates **Digital Personal Data Protection (DPDP) Act, 2023** compliance.
- **Lower Entry Barrier:** Agency **net worth: ₹20 crore → ₹5 crore** to boost competition.
- **Platform Neutrality:** Measures **Cable, Direct-to-Home (DTH), Connected TVs & Over-the-Top (OTT)** audiences.
- **Better Representation:** Metered homes **50,000 → ≥80,000**; establishments surveyed every **3 years**.
- **Data Integrity:** Excludes **landing-page viewership** to curb artificial rating inflation.
- **Governance:** Restricts **cross-holdings & consultancy**; requires **≥33% independent directors**.
- **Compliance:** **Annual independent audits + graded penalties** for stronger enforcement.

15.5. REGISTRATION OF BIRTHS AND DEATHS (AMENDMENT) BILL, 2026

Context: Lok Sabha passage: The Bill was passed by **voice vote without debate**, strengthening the **Registration of Births and Deaths Act, 1969**.

Main Provisions

- **Delayed registration:** Registration delayed beyond **2 years** will require an order from a **Judicial Magistrate First Class (JMFC)**.
- **1–2 years delay:** Registration within **1–2 years of delay** requires approval from the **District Magistrate (DM), Sub-Divisional Magistrate (SDM)** or authorised Executive Magistrate.

- **Legal harmonisation:** Replaces **Code of Criminal Procedure (CrPC), 1973** references **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** and updates “Executive Magistrate” definition.
- **Timely reporting:** Tighter procedures for delayed registration aim to improve **timely reporting and reliability of civil registration records**.

15.6. DOMESTIC CRUELTY PROTECTION FOR LIVE-IN RELATIONSHIPS

Context: Supreme Court held that domestic cruelty provisions cover marriage-like live-in relationships, extending legal protection to women.

Key Takeaways

- **Wider Protection:** Women in marriage-like live-in relationships can seek protection against domestic cruelty under BNS.
- **Changing Social Norms:** Court recognised live-in relationships as an **accepted social reality**, especially in urban India.
- **Marriage-like Relationship:** Protection requires a genuine relationship involving **shared domestic life and demonstrable intention to marry**.
- **Constitutional Values:** Judgment advances **equality, dignity and women’s protection**, focusing on relationship substance rather than formal status.

15.7. MONEY BILL ROUTE TO INCREASE SUPREME COURT JUDGES’ STRENGTH

Context: Parliament passed the **Supreme Court (Number of Judges) Amendment Bill, 2026**, increasing the sanctioned strength of the **Supreme Court from 34 to 38 judges**, including the **Chief Justice of India (CJI)**. The Bill was introduced and passed as a **Money Bill**, with the government citing the **expenditure involved** and its link with the **Consolidated Fund of India (CFI)**.

15.8. INDIA FORMALLY NAMES 27 PLACES IN ARUNACHAL PRADESH

- **Context:** India has formally identified **27 locations in Arunachal Pradesh** on the official **Survey of India map**, countering China’s attempts to rename places in the State.
- **Strategic Locations:** The list includes **Long Ju**, an India-China border

flashpoint in 1959, and Thag La, where fighting began during the 1962 India-China War.

15.9. SUPREME COURT DIRECTS MEASURES TO CURB 'DIGITAL ARREST' SCAMS

- **Supreme Court Directions:** The Supreme Court directed the Centre, States/UTs, Reserve Bank of India (RBI), telecom authorities and investigating agencies to adopt coordinated measures against digital-arrest scams and ensure time-bound recovery of victims' funds.
- **Banking Safeguards:** RBI must issue an **Standard Operating Procedure (SOP) within four weeks** for temporary debit holds on **mule accounts** linked to cyber fraud or money laundering and share it with High Courts' Registrars General.

15.10. SUPREME COURT ON POLICE REMAND UNDER BNSS

- **Police Custody Window:** In *State of Andhra Pradesh v. Suda Suresh Veera Venkata Naga Raju*, the Supreme Court held that **Section 187(2), Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** permits police custody in parts during the first **40/60 days**, subject to a cumulative **15-day limit**—unlike the **Code of Criminal Procedure (CrPC), 1973**, which restricted it to the first 15 days.
- **Purpose & Limits:** The extended window enables custody when **new facts or investigative leads** emerge; courts cannot impose an absolute 15-day cut-off within the statutory window. Total detention remains **90 days** for serious offences and **60 days** for others, after which **default bail** becomes available if bail is furnished.

15.11. PARLIAMENT PASSES BILL TO RENAME KERALA AS KERALAM

Context: Parliament passed the **Kerala (Alteration of Name) Bill, 2026**, paving the way to rename Kerala as “**Keralam**.”

Key Developments

- **State approval:** The change follows a **unanimous Kerala Legislative**

Assembly resolution and subsequent Parliamentary approval.

- **Linguistic identity:** “Keralam” reflects the State’s **Malayalam name** and the historical demand for a unified Malayalam-speaking State.
- **Aikya Kerala Movement:** The renaming connects with the **Aikya Kerala Movement of the 1920s**, which advocated Malayalam linguistic unity.
- **Constitutional amendments:** The Bill amends the **First and Fourth Schedules** and makes consequential changes to **Articles 31A and 290A**.

15.12. CBDC-BASED DBT FOR FOOD SUBSIDIES

- **New initiative:** Government launched **Central Bank Digital Currency (CBDC)-based Direct Benefit Transfer (DBT)** for food subsidies under **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)**.
- **First Union Territories:** **Chandigarh and Dadra & Nagar Haveli** became the first Union Territories to provide PMGKAY food subsidies through programmable **Digital Rupee (e₹)** tokens.
- **Direct transfer:** Eligible beneficiaries receive subsidies directly in **CBDC wallets**, replacing conventional bank-account transfers.

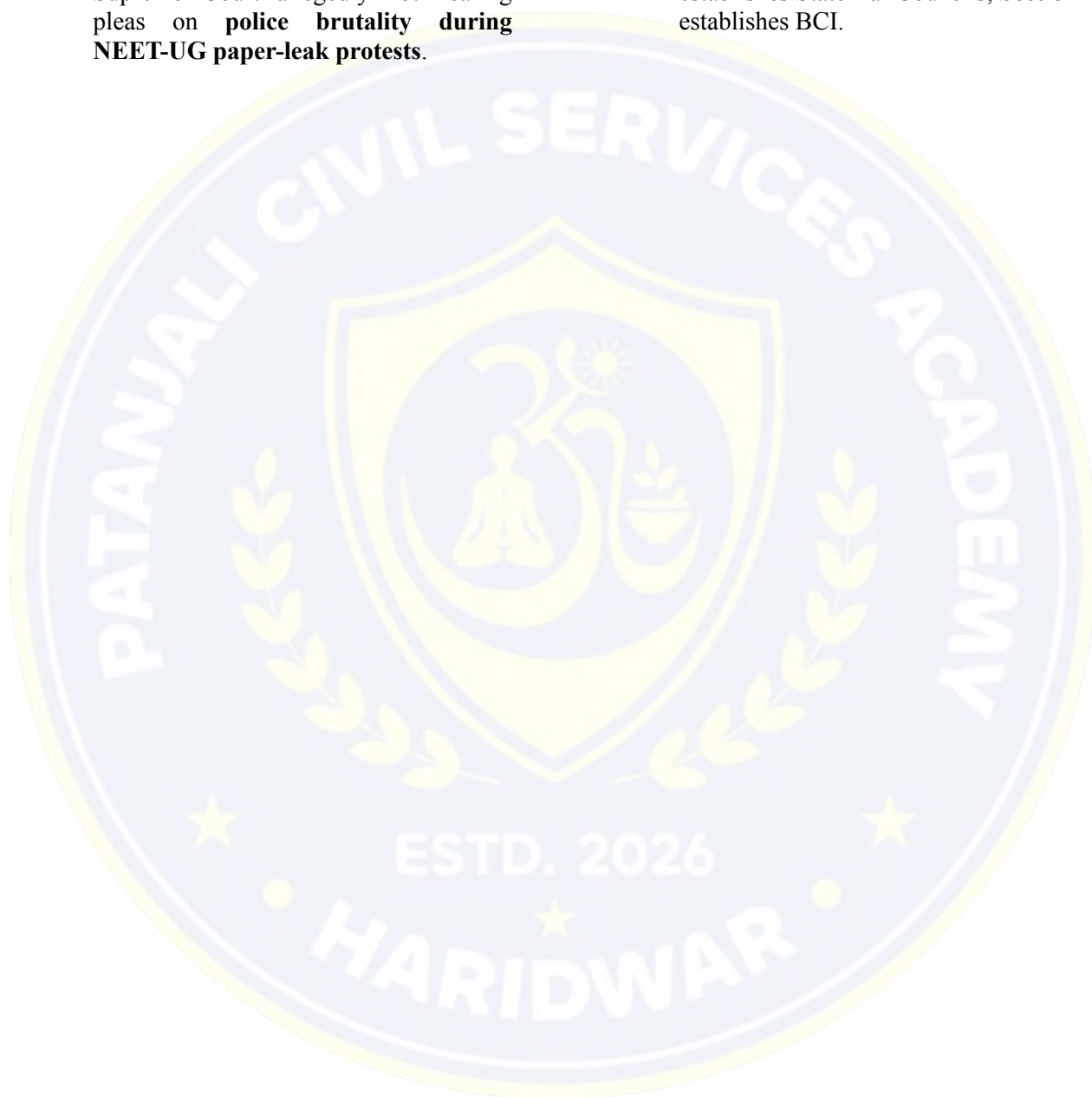
15.13. GOVERNMENT EXPANDS E-VISA ENTRY NETWORK

- **11 New Entry Points:** Government added **9 land ports and 2 airports** for foreign nationals holding valid e-Visas.
- **Land Ports:** New land entries include **Agartala, Darranga, Gede, Ghojadanga, Haridaspur, Jaigaon, Dawki, Moreh and Attari (Road)**.
- **New Airports:** **Bhopal and Tirupati airports** were added to the e-Visa entry network.
- **Expanded Network:** Authorised e-Visa entry points now total **88: 37 airports, 38 seaports and 13 land ports**.

15.14. NALSAR CONTROVERSY & BAR COUNCIL OF INDIA POWERS

Context: Bar Council of India (BCI) briefly directed suspension of **NALSAR's 2026 batch enrolment**, raising questions over its statutory powers.

- The controversy concerns **BCI powers, State Bar Council enrolment, and safeguards under the Advocates Act, 1961.**
- **Background:** NALSAR students protested inviting the **Chief Justice of India (CJI)** as convocation chief guest.
- Protest followed concerns over the Supreme Court allegedly not hearing pleas on **police brutality during NEET-UG paper-leak protests.**
- **BCI:** Statutory body under the **Advocates Act, 1961**, regulating **legal education, professional standards and State Bar Councils.**
- **Section 49:** BCI can frame rules for its functions, including **conditions governing advocates' right to practise.**
- **State Bar Councils:** **Section 3** establishes State Bar Councils; **Section 4** establishes BCI.



INTERNATIONAL RELATIONS

STUDENT'S
NOTES 

1. WTO PLURILATERAL AGREEMENTS

Context: The **European Union (EU)**, **Canada**, the **United Kingdom (UK)**, **Cambodia**, and **The Gambia** alleged that India is hindering **World Trade Organisation (WTO)** reforms by opposing plurilateral agreements on **e-commerce** and **investment**.

What are Plurilateral Agreements?

- **Meaning:** Trade agreements negotiated **voluntarily by a group of WTO members**, not the entire membership.
- **Coverage:** Bind **only signatory countries**, unlike multilateral WTO agreements that apply to **all 166 members**.
- **Approval:** Under **Article X.9** of the **Marrakesh Agreement**, adding a formal plurilateral agreement to **Annex 4** requires **consensus of all WTO members**.
- **Benefit Sharing:** Benefits may be **limited to signatories** or extended to **all WTO members** on a **Most-Favoured-Nation (MFN)** basis.

Significance

- **Bypasses Gridlock:** Enables willing members to advance reforms despite consensus deadlock.
- **Higher Standards:** Facilitates stronger rules in emerging trade areas.
- **Sector-Specific Progress:** Keeps negotiations insulated from broader WTO disputes.
- **Testing Ground:** Allows new trade rules to be refined before wider adoption.
- **Strengthens WTO:** Keeps evolving trade rules within the multilateral system, reducing reliance on regional trade blocs.

India's Concerns

- **Violates Consensus:** Undermines the WTO's consensus-based decision-making and **Article X.9**.
- **Lacks Mandate:** JSIs lack an explicit ministerial mandate, raising legal concerns.
- **Weakens S&DT:** May dilute **Special and Differential Treatment (S&DT)** protections for developing countries.
- **Creates Two-Tier WTO:** Exclusive agreements could disadvantage non-participating members.
- **Revives Rejected Issues:** Reintroduces negotiating subjects previously removed from the WTO agenda.

2. US-SAUDI ARABIA NUCLEAR DEAL

Context: The United States (US) and Saudi Arabia **signed a 30-year civilian nuclear cooperation agreement**, raising concerns over possible nuclear weapons proliferation.

Key Features

- Grants US companies access to Saudi Arabia's civilian nuclear programme.
- Accompanied by a **bilateral safeguards agreement** (text not public).
- Reportedly allows **domestic uranium enrichment** for civilian use, subject to safeguards.

Key Concerns

- **Regional Proliferation:** May trigger a nuclear arms race in **West Asia**.
- **Iran Factor:** Could intensify Saudi-Iran nuclear competition.
- **Weak Safeguards:** More permissive than the **US-United Arab Emirates (UAE) nuclear deal (2009)**, which prohibits domestic uranium enrichment.
- **Geopolitical Risks:** Signed amid rising **US-Iran** tensions and regional instability.
- **Conflict of Interest:** Reports question possible influence of the **Trump Organisation's** business interests in Saudi Arabia.

Strategic Significance

- **For the US:** Expands opportunities for American nuclear companies such as Westinghouse.
- **For Saudi Arabia:** Supports energy diversification, reducing dependence on oil for electricity and increasing crude exports.
- Both countries describe the agreement as peaceful and non-proliferation compliant.

Abraham Accords

- The **Abraham Accords**, US-brokered in 2020, normalised diplomatic relations between Israel and participating Arab countries.
- Named after **Abraham**, the shared patriarch of **Judaism, Christianity and Islam**, symbolising common heritage and coexistence.
- **Signatories:** UAE, Bahrain and Morocco signed in 2020, followed by **Sudan in 2021**.
- **Geopolitical Shift:** The Accords expanded diplomatic, economic, trade, tourism, technology and security cooperation, reflecting greater focus on strategic interests.
- **Palestine Question:** Some Arab states increasingly prioritised **strategic interests** despite the unresolved Palestinian issue.
- **Saudi-US Nuclear Deadlock:** Saudi Arabia seeks a **verifiable pathway to an independent Palestinian State**, based on **1967 borders**, with East Jerusalem as capital.
- **India's Interests:** The Accords deepened India's engagement with **Israel and Gulf states**, contributing to the **I2U2 Group** comprising India, Israel, UAE and US.
- **I2U2 Cooperation:** I2U2 promotes collaboration in **energy, food security, water, health, transport, space and emerging technologies**.



Implications of US-Saudi Nuclear Agreement for India

- **Economic Opportunities:** Saudi civilian nuclear expansion could create opportunities for **Indian engineering and infrastructure firms** in non-sensitive nuclear projects.
- **IMEC Impact:** IMEC requires regional stability and improved Saudi-Israel relations; delayed Abraham Accords expansion could hinder project progress.
- **Energy Security:** Intensified **Saudi-Iran rivalry** could threaten Strait of Hormuz oil flows and raise India's import bill; West Asia supplies nearly **40% crude imports**.
- **Strategic Balancing:** The agreement tests India's **multi-alignment policy** amid partnerships with Saudi Arabia, Iran, Israel and the US.

PARAMETER	INDIA-US CIVIL NUCLEAR DEAL (2008)	US-SAUDI ARABIA NUCLEAR AGREEMENT (2026)
Status under NPT	India is not a signatory to the Nuclear Non-Proliferation Treaty (NPT), considering its discriminatory nature. It received a 2008 NSG waiver, becoming the only non-NPT state permitted to engage in global civil nuclear commerce.	Saudi Arabia is an NPT signatory as a Non-Nuclear Weapon State (NNWS) and has the right to pursue peaceful nuclear energy under IAEA safeguards.
Uranium Enrichment & Reprocessing (ENR)	Granted blanket consent for Enrichment and Reprocessing (ENR). India separated its civilian and military nuclear facilities and can reprocess spent fuel under IAEA safeguards.	The agreement does not prohibit domestic uranium enrichment. It proposes a two-year feasibility study for a US-operated enrichment facility in Saudi Arabia, marking a departure from the US-UAE 'Gold Standard' model.
IAEA Safeguards & Verification	India signed an India-specific IAEA Safeguards Agreement and an India-specific Additional Protocol, covering only its declared civilian facilities while military facilities remain outside international inspection.	Saudi Arabia is covered by an IAEA Comprehensive Safeguards Agreement (CSA), but the agreement does not require adoption of the IAEA Additional Protocol, limiting the scope of intrusive inspections.
Geopolitical Objective	Driven by the US objective of integrating India into the global non-proliferation framework while strengthening the India-US strategic partnership in the Indo-Pacific amid China's rise.	Driven by Saudi Vision 2030; energy diversification, and the US effort to prevent Riyadh from relying on China or Russia for nuclear technology. President Donald Trump has additionally linked the agreement to Saudi Arabia joining the Abraham Accords.

Conclusion: The deal strengthens US-Saudi strategic ties but raises concerns over nuclear proliferation. Its impact will depend on **safeguards, US Congressional approval and regional responses.**

STUDENT'S
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Test Your Knowledge

Prelims Corner	Mains Corner
Q2. Which one of the following best explains the strategic significance of the I2U2 grouping in the context of India's engagement with West Asia? (a) It is a military alliance created to provide collective defence against Iran. (b) It is a four-country grouping comprising India, Israel, the UAE and the US, focused on cooperation in sectors such as food security, energy, water, transport and emerging technologies. (c) It is an extension of the Abraham Accords whose membership is restricted to Arab countries that have normalised relations with Israel. (d) It is a nuclear-security arrangement designed to bring civilian nuclear programmes of India, Israel, the UAE and the US under a common safeguards regime. Answer: (b)	"Civilian nuclear cooperation can simultaneously serve energy security and create proliferation risks." Examine this dilemma in the context of the US-Saudi Arabia nuclear cooperation agreement. (10 Marks, 150 Words)

3. INDIA'S TRADE BALANCING ACT: US, CHINA & STRATEGIC AUTONOMY

Context: India is recalibrating FDI, anti-dumping and e-commerce policies to attract investment, strengthen manufacturing and exports, while safeguarding strategic autonomy.

Need for India's Recalibrating Trade & Investment Policy

- **China Plus One constraint:** Press Note 3 restricted Chinese equity, but trade deficit exceeded **USD 112 billion** in FY2025–26.
- **Supply-chain dependence:** Reducing Chinese dependence requires **Chinese capital and intermediate goods** for manufacturing.
- **Production Linked Incentive competitiveness:** Anti-dumping duties on Chinese APIs, electronics and specialty chemicals raised input costs, weakening GVC competitiveness.
- **Investment bottlenecks:** Press Note 3 screening delayed investments and discouraged funds with minor, passive Chinese **Limited Partner (LP)** participation.
- **US trade pressure:** E-commerce FDI liberalisation and forced-labour import bans help retain US market access and negotiate lower tariffs.

CONCERNS REGARDING INDIA'S TRADE STRATEGY

 1	ASSEMBLY OVER MANUFACTURING: Cheap imports and Chinese joint ventures risk embedding adversarial supply chains and creating a "screwdriver technology" trap.
 2	WEAKENING DGTR: Unreasonable Finance Ministry rejections of DGTR recommendations undermine credibility and expose domestic producers to subsidised dumping.
 3	GEOECONOMIC CROSSFIRE: US export dependence and Chinese input dependence expose India to disruptions from US-China sanctions or tariffs.
 4	ATMANIRBHAR BHARAT CONCERNS: Bypassing WTO-compliant anti-dumping measures may hurt domestic investment, capacity utilisation and employment, weakening Atmanirbhar Bharat.

A balanced, rules-based trade strategy is vital to safeguard India's economy, build resilience and achieve Atmanirbhar Bharat.

Balancing Trade Openness & Strategic Interests

- **Targeted FDI liberalisation:** March 2026 reforms permit **10% beneficial ownership** from land-bordering countries via automatic route, subject to safeguards.
- **Domestic value addition:** Economic Survey 2023–24 favours local manufacturing by Chinese firms for Western exports over importing intermediates.
- **Selective trade protection:** Rejecting duties on essential inputs while retaining them on finished goods protects MSMEs and export manufacturing.
- **Calibrated anti-dumping:** China accounted for nearly **72% of anti-dumping rejections (2000–December 2025)**, preserving affordable industrial inputs.

- **Digital trade balancing:** Export-only inventory-based e-commerce FDI accommodates **US Big Tech** while protecting domestic retail from predatory pricing.
- **Strategic autonomy:** India balances openness with **domestic value addition, diversified supply chains, transparent governance and resilient institutions**.

Shared Climate Vulnerabilities of India and China

- **Himalayan Glacial Risks:** Rapid **HKH glacial retreat** raises **GLOF risks** and threatens transboundary rivers like the **Yarlung Tsangpo (Brahmaputra) and Sutlej**.
- **Urban Flooding:** Unplanned urbanisation has reduced **wetlands and floodplains**, causing drainage failures and waterlogging, as seen in **Mumbai and Guangxi**.
- **Extreme Weather:** Inland cities face **heatwaves and flash floods**, while coastal megacities face **storm surges, extreme rainfall and sea-level rise**.
- **Economic-Health Fallout:** Climate shocks disrupt **supply chains**, reduce **farm output**, damage infrastructure and intensify **public health risks**.

Way Forward

- **Public Interest Test:** Amend the **Customs Tariff Act, 1975** to require transparent reasons for rejecting **DGTR** recommendations.
- **Value-addition incentives:** Shift **PLI** towards verified **Domestic Value Addition (DVA)** growth rather than output volume; mandate time-bound technology transfer.
- **Stronger origin rules:** Use **blockchain-enabled CAROTAR, 2020** origin audits to prevent tariff circumvention through third-country hubs without genuine Indian value addition.
- **Diversified partnerships:** Use **US-India TRUST** and deepen semiconductor partnerships with **Japan and South Korea** to reduce US-China dependence.

Conclusion: Strategic economic engagement: India must balance **Strategic Autonomy, national security and GVC integration** through higher DVA, institutional resilience and technological self-reliance.

4. ROME DECLARATION FOR AN UNARMED AND DISARMING PEACE

Context: The **Rome Declaration for an Unarmed and Disarming Peace** (July 2026), signed by Nobel laureates, AI experts, and religious leaders, warns against AI making moral decisions, especially in nuclear command systems.

About Rome Declaration:

- A **moral and strategic appeal** seeking an international treaty banning autonomous AI from accessing or deciding nuclear weapon launches.
- Affirms that war and peace decisions must remain under human judgment and accountability.
- A **non-binding normative framework**; **no global consensus** yet on regulating autonomous AI in warfare.



Need for the Declaration

- **Shrinking Decision Time:** Traditional nuclear deterrence relied on human judgment (e.g., **Cuban Missile Crisis, 1962; Soviet false alarm, 1983**). AI compresses response time from hours to seconds, limiting human intervention.
- **AI Failure Risks:** **Deep neural networks** are vulnerable to hallucinations and data poisoning, risking false missile alerts and catastrophic retaliation during crises.
- **Weakening Arms Control:** Decline of treaties like **Open Skies** and **New START** encourages military automation, increasing strategic instability and AI-driven arms competition.
- **Escalation in Conflict Zones:** AI-based surveillance in hotspots (e.g., **Iran's nuclear programme**) may misinterpret cyberattacks or local strikes, triggering disproportionate escalation before human communication.



Concerns Over AI-Led Ethical Decisions

- **Loss of Human Judgment:** Ethics requires empathy, responsibility, and moral reasoning. Excessive AI reliance weakens human judgment, accountability, and ethical decision-making.
- **Value Alignment Problem:** AI optimises outcomes using utilitarian logic, often overlooking deontological values like fairness, rights, and duty central to human justice.
- **Bias at Scale:** AI trained on biased historical data may reinforce caste, race, or gender discrimination under the guise of objectivity.
- **Accountability Gap:** **Black-box AI** makes decision-making difficult to explain, complicating legal and moral accountability when harm occurs.
- **Lack of Context:** Unlike humans, AI lacks emotional intelligence, compassion, equity, and situational judgment needed for exceptional circumstances.

Global AI Ethics Initiatives

- **Global Partnership on Artificial Intelligence (GPAI):** Multi-stakeholder initiative for responsible, inclusive, human-centric AI; India is a founding member and hosted the **GPAI Summit (2023)**.
- **Bletchley Park Declaration (2023):** Signed by 28 countries, including India, to promote international cooperation on frontier AI safety.
- **United Nations Educational, Scientific and Cultural Organization (UNESCO) Recommendation on the Ethics of AI (2021):** First global framework promoting human rights, dignity, transparency, accountability, and sustainability.

- **European Union (EU) AI Act (2024):** First comprehensive AI law; adopts a risk-based approach, banning unacceptable-risk AI and regulating high-risk systems.

Way Forward

- **Explainable AI:** Ensure AI systems are transparent, explainable, and independently auditable by regulators.
- **Human-in-the-Loop (HITL):** Mandate human oversight in decisions affecting life, liberty, or dignity (judiciary, healthcare, defence); AI should assist, not replace, human judgment.
- **Ethical Impact Assessment (EIA):** Mandate EIAs before AI deployment to detect bias and ensure ethical compliance.
- **Global Treaty on Lethal Autonomous Weapons Systems (LAWS):** Conclude a binding **United Nations (UN)** convention banning autonomous kill decisions by machines.
- **Human Rights by Design:** Embed compassion, fairness, and fundamental rights into AI systems, not just mathematical optimization.

Conclusion: As AI reshapes global security, preserving meaningful human control, algorithmic accountability, and strategic restraint is essential. A human-centric security architecture can ensure technology remains an instrument of peace rather than a trigger for irreversible conflict.

Test Your Knowledge	
Prelims Corner With reference to international initiatives on Artificial Intelligence (AI) governance, consider the following statements: 1. The UNESCO Recommendation on the Ethics of AI is a legally binding international treaty applicable to all UN member states. 2. The European Union AI Act adopts a risk-based regulatory approach to AI systems. 3. The Bletchley Park Declaration seeks international cooperation on the safety of frontier AI. 4. The Global Partnership on Artificial Intelligence (GPAI) promotes a human-centric and responsible approach to AI. Which of the statements given above are correct? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Explanation: Statements 2, 3 and 4 are correct.	Mains Corner The integration of Artificial Intelligence into nuclear command-and-control systems could compress decision-making time and amplify the consequences of technological errors. Critically examine the implications for strategic stability and nuclear deterrence. (15 Marks, 250 Words)

5. THE MAKKAH JOINT DEFENCE AGREEMENT

Context: Saudi Arabia, Türkiye and Pakistan signed the **Makkah Joint Defence Agreement (MJDA)** at Al-Safa Palace, Makkah.

- **Core Provision:** An armed attack on any one member will be treated as an attack on all three, establishing a collective-defence framework.
- **Strategic Character:** The pact is being described as a “triple alliance” or “Sunni security triangle”, aimed at strengthening defence and security cooperation.
- **Regional Significance:** Signed amid continuing



West Asian tensions, it reflects growing efforts by regional powers to develop **collective security mechanisms beyond the traditional US security umbrella**.

Geopolitical Drivers

- **Strategic Autonomy:** Saudi Arabia seeks to reduce dependence on the **US security umbrella** and strengthen indigenous and regional defence capabilities.
- **Saudi Interests:** **Houthi attacks, Red Sea insecurity and risks around the Strait of Hormuz and Bab-el-Mandeb** threaten energy infrastructure, trade and **Vision 2030** objectives.
- **Iran Factor:** Iranian **missile, drone and proxy threats** have heightened Saudi security concerns and the need for stronger regional deterrence.
- **Türkiye's Interests:** Seeks greater strategic leverage amid concerns over **Israel's expanding military presence in Gaza and Syria**.
- **Pakistan's Interests:** Gains greater **strategic relevance in West Asia** while deepening defence, economic and energy ties with Saudi Arabia.

Potential Implications of the Makkah Joint Defence Agreement for India

- **India–Saudi Balancing:** Pakistan and Türkiye have often backed positions adverse to India on **Kashmir** at the **UN and OIC**, potentially giving Islamabad greater diplomatic leverage.
 - However, Saudi–India ties remain independently anchored in the **Strategic Partnership Council**, covering energy, trade, investment, defence and technology.
 - India is also a major **crude-oil importer, trading partner and market for Saudi exports**, limiting the likelihood of an outright strategic shift.
- **Western Indian Ocean Presence:** Greater trilateral defence cooperation could extend their strategic footprint into the **western Indian Ocean**, challenging India's role as a **net security provider**.
- **Emerging Pakistan–Türkiye–China Network:** Stronger Saudi security ties with **Pakistan and Türkiye**, both close to China, could consolidate partnerships along India's **western flank**.
 - Türkiye's expanding Gulf defence presence may challenge India's emerging **defence-export ambitions**, including **BrahMos and Akash systems**.
- **Higher Conflict Threshold:** The **"attack on one is an attack on all"** provision creates uncertainty over possible Saudi or Turkish political/military support in an **India–Pakistan conflict**, potentially providing Islamabad strategic cover.
- **Pakistan's Military Modernisation:** **Saudi financing + Turkish technology + Pakistani expertise** could accelerate Pakistan's acquisition of **fighters, drones and air-defence systems**, affecting India's conventional advantage.
- **Nuclear Dimension:** Pakistan's nuclear capability could create perceptions of **extended deterrence** for Saudi Arabia, although no formal Pakistani nuclear guarantee has been publicly confirmed.
- **Counter-Terrorism Challenge:** Deeper Saudi–Pakistan security ties may expand Islamabad's diplomatic space, complicating India's efforts to build global consensus against **cross-border terrorism**.

Strategic Contributions and Expected Gains

- **Saudi Arabia:** Provides **financial strength, energy resources, strategic Gulf location and defence spending capacity**. Gains **collective deterrence**, access to Pakistani military capabilities and Turkish defence technology, and greater security for **Vision 2030**.
- **Türkiye:** Contributes **NATO-standard military capabilities, advanced drones, aerospace technology and defence-industrial expertise**. Gains access to **Saudi capital and defence markets**, increased exports and stronger influence in West Asia.
- **Pakistan:** Brings **nuclear and conventional military capabilities, large military manpower and longstanding Saudi defence ties**. Gains greater **strategic relevance, economic-energy cooperation and diplomatic leverage** in West Asia.
- **Combined Strength:** **Saudi financial power + Türkiye's defence technology + Pakistan's military capabilities** can enhance **collective deterrence, defence cooperation and strategic autonomy**.

History of Pan-Islamic/Pan-Arab Defence Pacts

- **Treaty of Joint Defense and Economic Cooperation (1950):** Established a **Pan-Arab collective-security framework** with mutual defence provisions; limited by political divisions and weak military coordination.
- **Baghdad Pact/CENTO (1955–1979):** Formed by **Iraq, Türkiye, Pakistan, Iran and the UK** to contain Soviet influence in the Middle East. After Iraq's 1958 withdrawal, it became **CENTO** and dissolved in **1979** following the Iranian Revolution.
- **Peninsula Shield Force (1984):** Established by the **GCC** as a joint military force to protect the Arabian Peninsula; notably deployed in **Bahrain in 2011**.
- **Islamic Military Counter Terrorism Coalition (IMCTC) (2015):** **Saudi-led coalition of 40+ countries** focused on counter-terrorism through **military, financial, ideological and media cooperation**; often viewed through the lens of Saudi-Iranian rivalry.

Way Forward

- **De-risk Regional Minilaterals:** Maintain strategic patience on **IMEC and I2U2** while consolidating digital, financial and diplomatic frameworks with **Saudi Arabia and UAE** and preserving supply-chain alternatives amid West Asian disruptions.
- **Diversify Connectivity:** Protect India's **Chabahar** interests and **INSTC** while developing the **Chennai–Vladivostok Eastern Maritime Corridor** and other complementary routes.
- **Broaden Gulf Partnerships:** Deepen **defence, maritime-security and technology cooperation** with **UAE, Oman and Qatar**, while strengthening ties with **Greece, Cyprus, Armenia and Israel**.
- **Preserve Defence Autonomy:** Expand the **India–UAE Strategic Defence Partnership** without entering a mutual-defence commitment, avoiding automatic involvement in regional conflicts.
- **Accelerate Indigenous Defence:** Under **Atmanirbhar Bharat**, strengthen capabilities in **AI, drones, counter-drone systems, electronic warfare, hypersonic weapons and advanced air defence**.
- **Secure the Indian Ocean:** Use India's **IORA chairmanship** to promote maritime transparency, inclusive security cooperation and an **open, non-bloc-based regional order**.
- **Advance Defence Forces Vision 2047:** Pursue “**autonomy through capability and power**” by building military, economic and technological strength while treating **West Asia as a strategic hub for energy, trade and diaspora interests**.

Conclusion: The pact underscores a **multipolar West Asian security order**. India must respond through **strategic balancing, diversified partnerships, resilient connectivity and capability-driven maritime security**, preserving its strategic autonomy.

Test Your Knowledge	
 Prelims Corner With reference to collective-security arrangements in West Asia and the wider Islamic world, consider the following statements: 1. The Peninsula Shield Force was established by the Gulf Cooperation Council (GCC) as a joint military force for the security of member states. 2. The Islamic Military Counter Terrorism Coalition is exclusively a military alliance based on a mutual-defence commitment. 3. The Baghdad Pact originally included Iraq, Türkiye, Pakistan, Iran and the United Kingdom. 4. The Baghdad Pact subsequently became known as CENTO following Iraq's withdrawal. Which of the statements given above are correct? (a) 1 and 3 only (b) 1, 3 and 4 only (c) 2 and 4 only (d) 1, 2 and 4 only Answer: (b)	 Mains Corner The Makkah Joint Defence Agreement represents an attempt by Saudi Arabia, Türkiye and Pakistan to develop greater strategic autonomy from traditional external security providers. Analyse the geopolitical drivers behind this emerging security arrangement and its implications for West Asian stability. (15 Marks, 250 Words)

6. POINTERS FOR PRELIMS

6.1. EU ELECTRIFICATION ACTION PLAN

- The **European Commission** released the **Electrification Action Plan** and reviewed the **European Union Emissions Trading System (EU ETS)** to support the EU's climate goals.
- Electrification Action Plan: **Target** → **46% electrification by 2040**. || **Objectives:** Cut the EU's fossil fuel import bill by **€260 billion/year**. || **Measures:** Promote **4 million annual heat pump installations by 2030**, **400 GW** of energy storage by **2040**, and **fair taxation** of clean electricity.
- EU ETS Review: Extends **free allowances** for **Carbon Border Adjustment Mechanism (CBAM)** sectors till **2038**. || Reforms the **Market Stability Reserve** to stabilise carbon prices. || Mandates at least **50% of ETS revenues** be reinvested in decarbonisation projects.

6.2. 16TH BRICS HEALTH MINISTERS' MEETING

- Held in **Chandigarh** during **India's BRICS Chairship 2026** under the theme "**Building for Resilience, Innovation, Cooperation and Sustainability**."
- Members unanimously adopted the **BRICS Health Ministerial Declaration** to strengthen **Universal Health Coverage (UHC)** and enhance **global pandemic preparedness**.

6.3. EAST ASIA SUMMIT (EAS)

- **Context:** External Affairs Minister addressed the **16th East Asia Summit Foreign Ministers' Meeting** in Manila, Philippines, emphasising safe and unimpeded international waterways.
- **EAS:** Launched in **2005**; first summit held in **Kuala Lumpur, Malaysia**.
- **Nature:** Leaders-led forum for strategic, political, and economic cooperation promoting peace, stability, and prosperity. Heads of State/Government meet annually.
- **Membership:** Initially had **16 members: 10 ASEAN countries + Australia, China, India, Japan, New**

Zealand, and Republic of Korea. || **The United States and Russian Federation** joined at the **6th EAS (2011), Bali, Indonesia**.

- **Key Declarations:** **2005:** Kuala Lumpur Declaration; **2010:** Ha Noi Declaration (5th Anniversary); **2011:** Declaration on Principles for Mutually Beneficial Relations; **2015:** Kuala Lumpur Declaration (10th Anniversary); **2020:** Ha Noi Declaration (15th Anniversary).

6.4. THIRD BRICS MINISTERIAL MEETING ON DISASTER RISK REDUCTION

- Hosted by **National Disaster Management Authority (NDMA)** under India's **BRICS Chairship 2026** theme;
- Adopted **BRICS Joint Statement** advancing **Disaster Risk Reduction Work Plan (2025–2028)**.

6.5. PICKAXE MOUNTAIN

- **Context: Strategic Significance:** Iran's **Pickaxe Mountain** has drawn global attention after US threats of military strikes, amid reports of deep underground nuclear facilities.
- **Location:** Located about **220 km south of Tehran near Natanz**, Pickaxe Mountain is part of the **Karkas Range (Reshteh Kuh-e Karkas)**, extending over **100 km between Kashan and Ardestan**.
- **Tectonic Origin:** The range belongs to the **Urumieh-Dokhtar magmatic belt**, formed by **Neo-Tethyan Ocean subduction** beneath the Iranian plate before the **Arabia–Eurasia collision** over the past **66 million years**.
- **Strategic Location:** Its defensive significance is reinforced by Iran's control near maritime chokepoints, particularly the **Strait of Hormuz**.

6.6. INDIA'S SEAFARER WORKFORCE

- **Context:** The **BIMCO-ICS (the Baltic and International Maritime Council and the International Chamber of Shipping)** **Seafarer Workforce Report 2026** ranks India as the **second-largest**

seafarer supplier, with nearly 3.12 lakh professionals.

- India's share rose from 5.2% (2015) to 12.16% (2026), behind Philippines; officers comprise 13.41% and ratings 11.29% globally.
- **National Target:** Mission 20% seeks 20% global maritime workforce share, supporting Maritime India Vision 2030 and Maritime Amrit Kaal Vision 2047.

Government Measures

- **Legal Protection: Merchant Shipping Act, 2025** replaces older statutes, strengthens recruitment-agency oversight and protects abandoned seafarers.
- **Conflict Protocols: Directorate General of Shipping (DGS)** mandates 24x7 contact mechanisms, ISPS compliance and restricts Indian crews in identified conflict zones.
- **Digital Compliance: e-Samudra Portal and Centralised Biometric Attendance System (CAS)** digitise certification verification and standardise maritime-training compliance.

6.7. INDIAN PHARMACOPOEIA COMMISSION (IPC)

Context: The Indian Pharmacopoeia Commission (IPC) has been recognised by the World Health Organization South-East Asia Regulatory Network (WHO-SEARN) as a Regional Centre of Excellence in Pharmacovigilance and Technical Centre in Quality of Medicines. Recognition was conferred at the 10th SEARN Anniversary Meeting in Kathmandu, Nepal.

About SEARN

- **South-East Asia Regulatory Network (SEARN)** is a World Health Organization (WHO) South-East Asia Regional Office (SEARO) platform to strengthen regulatory systems across Member States.
- **Established:** 2016.
- **Functions:** Promotes knowledge sharing, regulatory convergence, capacity building and reliance mechanisms among National Regulatory Authorities.

6.8. BRICS CONDEMNS EU CARBON TAX

Context: BRICS Environment Ministers: At the 12th meeting in New Delhi, BRICS opposed

the European Union's (EU) Carbon Border Adjustment Mechanism (CBAM).

- **Adaptation Finance:** Members urged developed countries to increase adaptation finance ahead of the United Nations Climate Change Conference (COP31).

BRICS & CBAM

- **BRICS Position:** Members called CBAM “unilateral, punitive, discriminatory and protectionist”, potentially weakening developing countries' climate resilience.
- **CBAM Scope:** Since 1 January 2026, importers of iron, steel, aluminium, cement, fertilisers, hydrogen and electricity must pay for embedded carbon emissions.
- **Carbon Leakage:** EU justifies CBAM as preventing carbon-intensive production from shifting to countries with weaker climate policies.
- **Fit for 55:** CBAM forms part of the EU's Fit for 55 package, targeting at least 55% emission reduction by 2030 from 1990 level

7. PLACES IN NEWS



ECONOMY

1. WTO AGREEMENT ON FISHERIES SUBSIDIES

Context: India deposited its Instrument of Acceptance for the WTO Agreement on Fisheries Subsidies, becoming the 123rd WTO member to join.

Significance of India's Acceptance

- **Promotes Sustainable Fisheries:** Supports Blue Economy, SDG-14, responsible fishing, marine biodiversity and sustainable fish stocks.
- **Protects Small Fishers:** Curbs harmful subsidies for large fleets, ensuring a fairer regime for traditional and artisanal fishers.
- **Strengthens Seafood Exports:** Boosts India's credibility, market access and importer confidence.
- **Limited Export Impact:** Minimal impact, as India's seafood exports are largely aquaculture-based.



India's Fisheries Management Framework

- **High Seas Fisheries Guidelines (2025):** Regulates Indian-flagged vessels in international waters; promotes responsible fishing.
- **Sustainable Harnessing of Fisheries in the EEZ Rules, 2025:** Regulates fishing in India's Exclusive Economic Zone (EEZ) and promotes sustainable harvesting.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** Supports infrastructure, capacity building, sustainable fisheries, value chains and fishers' welfare.
- **Theme:** Conserves marine resources while protecting traditional and small-scale fishers.

Benefits for India

- **Social:** Protects livelihoods, supports coastal communities and ensures equitable resource use.
- **Strategic:** Strengthens the rules-based trading system and India's leadership in sustainable ocean governance.
- **Economic:** Better market access, export credibility and prawn export competitiveness.
- **Environmental:** Conserves fish stocks, reduces ecosystem pressure and improves marine governance.

Challenges

- **Curb Illegal, Unreported and Unregulated (IUU) Fishing:** Strengthen monitoring.
- **Improve Exclusive Economic Zone (EEZ) Surveillance:** Enhance monitoring and enforcement.
- **Balance Conservation & Livelihoods:** Protect resources without hurting fishers' incomes.
- **Support Small Fishers:** Ensure adequate implementation support.
- **Complete WTO Talks:** Conclude pending fisheries subsidy negotiations.

Way Forward

- **Infrastructure upgradation:** Build modern harbours, landing centres, cold chains, and processing units to reduce wastage and improve market access.
- **Scientific aquaculture:** Promote quality seed, better feed, disease control, and diversified inland and coastal farming to raise productivity. static.investindia.gov.in
- **Sustainable regulation:** Enforce mesh-size rules, seasonal bans, and conservation devices to protect fish stocks and marine ecosystems. dof.gov.in
- **Institutional support:** Expand credit, insurance, cooperatives, and extension services so small fishers can manage risk and earn better incomes. documents1.worldbank.org
- **Quality and traceability:** Strengthen hygiene, certification, and supply-chain traceability to boost exports and meet global standards.

Conclusion: India's acceptance of the WTO Fisheries Subsidies Agreement reflects a balanced approach to **Blue Economy, marine sustainability and inclusive livelihoods**. It can foster ocean resilience and secure long-term prosperity for coastal communities.

2. COTTON INDUSTRY OF INDIA

Context: India ranks first in the world in terms of acreage under cultivation and second in both cotton production and consumption.

Challenges in India's Cotton Sector

- **Low Productivity:** Largest cotton acreage, but low yields; 2025–26 output (290.91 lakh bales) remains below demand (328 lakh bales).
- **Extra-Long Staple (ELS) Cotton Deficit:** Low domestic ELS production raises imports and weakens textile competitiveness.
- **Climate Risks:** Nearly 62% rain-fed; vulnerable to erratic monsoons, droughts, heavy rainfall and rising temperatures.
- **Pest & Diseases:** Pink bollworm, whitefly, cotton leaf curl virus and boll rot reduce yields and raise costs.
- **Quality Issues:** Poor harvesting, storage, transport and ginning lower quality and export competitiveness.
- **Value Chain Gaps:** Weak ginning, storage, quality testing, processing and value addition limit high-value textiles.



Way Forward for India's Cotton Sector

- **Raise Productivity:** Expand high-density planting, quality seeds, climate-resilient varieties and better agronomy.
- **Build Climate Resilience:** Improve water management and promote drought- and heat-tolerant cotton, especially in rain-fed areas.
- **Strengthen Pest & Soil Management:** Promote integrated pest management, crop rotation, soil testing and balanced nutrients.

- **Improve Cotton Quality:** Reduce contamination through better harvesting, storage, ginning and quality testing.
- **Boost Extra-Long Staple (ELS) Cotton & Traceability:** Expand ELS (≥ 32.5 mm) cotton and scale up **Kasturi Cotton Bharat** for certification, branding and traceability.

Government Schemes for Cotton Sector

- **Cotton Development Programme** under the **National Food Security Mission (NFSM):** Supports demonstrations, quality seeds, improved agronomy and plant protection.
- **Minimum Support Price (MSP) & Cotton Corporation of India (CCI) Procurement:** Prevents distress sales through assured price support.
- **Mission for Cotton Productivity:** ₹5,659.22 crore, five-year mission to improve yields, technology adoption and quality.
- **Kasturi Cotton Bharat:** Promotes branding, certification and traceability of Indian cotton.
- **High Density Planting System (HDPS) & Cluster Technology Projects:** Promote optimal spacing, better agronomy and higher yields.

Conclusion: Strengthening **farm-to-fabric value chains**, **Atmanirbhar textiles** and **innovation-driven agriculture** can enhance global competitiveness while ensuring sustainable farmer prosperity.

Test Your Knowledge

Prelims Corner

With reference to cotton cultivation in India, consider the following statements:

1. A large proportion of India's cotton cultivation is rain-fed, making the crop particularly vulnerable to variability in monsoon rainfall and temperature.
2. Extra-Long Staple (ELS) cotton is characterised by staple length of at least 32.5 mm and is important for producing finer-quality textiles.
3. High Density Planting System (HDPS) seeks to improve productivity primarily by increasing plant population per unit area along with appropriate agronomic management.
4. Kasturi Cotton Bharat is primarily a programme for providing Minimum Support Price (MSP) to cotton farmers.

5. Which of the statements given above are correct?

(a) 1 and 2 only
(b) 1, 2 and 3 only
(c) 2, 3 and 4 only
(d) 1, 3 and 4 only

Answer: (b)

Mains Corner

"India's cotton paradox lies in having one of the world's largest cotton cultivation areas but relatively low productivity." Examine the structural and climatic factors responsible for this paradox.

(10 Marks, 150 Words)

3. NATIONAL INVESTMENT POLICY FOR UREA-2026 (NIPU-2026)

Context: The **Cabinet Committee on Economic Affairs (CCEA)** approved the **National Investment Policy for Urea-2026 (NIPU-2026)** to boost domestic urea production, reduce imports, and strengthen fertilizer security under **Atmanirbhar Bharat**.

Key Features

- **Capacity Expansion:** Establish **8–9** gas-based urea plants (**12.7 lakh metric tonnes (MT)** each), adding **10 million MT/year**.
- **Subsidy Reform:** Separates fixed and variable costs for greater transparency.
- **Assured Returns: Return on Equity (RoE)** fixed at **12–16%**.
- **Forex Protection:** Fixed costs converted to **Indian Rupees (INR)** after four years to reduce exchange-rate risk.
- **Project Scope:** Covers only new gas-based plants, unlike **National Investment Policy-2012 (NIP-2012)**, which covered revival, expansion, and greenfield/brownfield projects.
- **Better Viability:** Saves **₹250+ crore/plant** over **NIP-2012**.
- **Equal Incentives:** Uniform benefits for private, public, and cooperative sectors.

Other Fertiliser Initiatives

- **Neem-Coated Urea:** Improves nitrogen-use efficiency and prevents diversion.
- **Urea Gold:** Sulphur-coated urea to address sulphur deficiency.
- **Liquid Nano Urea:** **Indian Farmers Fertiliser Cooperative Limited (IFFCO)** nano fertiliser reducing bulk urea use.

- **PM PRANAM:** PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth (PM PRANAM) promotes balanced fertiliser use and alternatives.
- **One Nation One Fertilizer:** Markets subsidised fertilisers under the "Bharat" brand.

4. THE UNEMPLOYMENT CHALLENGE FOR INDIA'S GEN Z

Context: A widening gap between higher education and employment highlights India's challenge of converting its demographic dividend into productive jobs.

Key Drivers

- **Recruitment Delays:** Over 30 lakh sanctioned government posts remain vacant.
- **Small-Scale Manufacturing:** Firms with <100 workers dominate, limiting manufacturing's employment share to 14%.
- **Automation:** Artificial Intelligence (AI) could affect 24% of jobs by 2030.
- **Skill Gap:** 96% of the working-age population lacks formal vocational training.
- **Care Burden:** Childcare gaps and mobility restrictions keep many young women out of paid work.

Major Impacts

- **Social Unrest:** 1.25 crore applicants competed for 35,281 railway jobs in 2022, triggering protests.
- **Lost Demographic Dividend:** Poor youth employment risks wasting India's demographic advantage before 2041.
- **Brain Drain:** 1.33 million Indians went abroad for education and jobs in 2024.
- **Mental Health:** 15,783 unemployed persons died by suicide in 2022 (National Crime Records Bureau).
- **Rising Debt:** Household liabilities reached 40% of Gross Domestic Product (GDP) as families borrowed to sustain consumption.
- **Lower Productivity:** 34% of young men leave higher education for casual work, reducing long-term productivity and innovation.

Way Forward

- **Strengthen Labour Protection:** Enforce minimum wages, regulated working hours, and paid leave.
- **Promote Labour-Intensive Sectors:** Expand sectors like textiles to generate large-scale employment.



- **Formalise Employment:** Improve wages, social security, and access to formal jobs.
- **Bridge Skill Gaps:** Expand industry-linked skilling to enable transition to high-skilled and permanent jobs.

Conclusion: Harnessing India's demographic potential demands **employment-centric growth**, **future-ready skilling**, and **labour market dynamism**. Aligning education with industry needs can transform the youth bulge into a lasting engine of innovation and prosperity.

Test Your Knowledge	
Prelims Corner Which one of the following best explains the "demographic dividend"? (a) A permanent increase in national income caused solely by a decline in fertility. (b) Economic growth resulting automatically from an increase in the working-age population. (c) The potential for accelerated economic growth arising from a favourable age structure, provided adequate employment, skills, health and productivity opportunities exist. (d) A rise in government revenue resulting exclusively from an increase in the number of educated young people. Answer: (c)	Mains Corner "Artificial Intelligence is likely to transform India's labour market rather than simply eliminate jobs." Examine the policy measures required to ensure that technological change leads to productive employment, reskilling and inclusive growth. (10 Marks, 150 Words)

5. ORANGE ECONOMY

Context: The Ministry of Information and Broadcasting (MIB) launched the **pilot phase of the Gems of India Challenge** to identify and promote grassroots digital creators.

About Gems of India Challenge

- Citizens create **short videos** showcasing their district's unique stories and cultural heritage on MyWAVES.
- **Pilot Areas:** Andaman & Nicobar Islands, Arunachal Pradesh, Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Goa, and Ladakh.
- **Awards:** ₹50,000 (district, up to 20 creators), ₹2 lakh (state), and ₹5 lakh (national).
- **Platform:** Hosted on MyWAVES, a feature of WAVES OTT.
- **WAVES OTT:** Prasar Bharati's OTT platform, launched at the **55th International Film Festival of India (IFFI)**, Goa (20 November 2024).
- **MyWAVES:** Enables citizens to create, upload, and share content promoting India's **Orange Economy** (creative and cultural industries).



Benefits of India's Creative Economy

- **Employment:** Supports ~8% of India's employment across film, music, design, gaming, and digital media.
- **Economic Growth:** Valued at **USD 36.2 billion (2019)**, with **USD 121 billion** in exports.
- **Tourism & Culture:** Festivals and cultural events boost tourism (worth **USD 28.9 billion**) and strengthen India's global cultural influence.

- **Urban Development:** Creative hubs like **Jaipur** and **Mumbai** drive investment and raise property values by **up to 30%**.
- **Skill Development:** Institutions like **National Institute of Design (NID)** and **Society for the Promotion of Indian Classical Music and Culture Amongst Youth (SPIC MACAY)** promote creative skills and cultural awareness.
- **Digital Expansion:** Animation market projected to reach **USD 24.48 billion by 2032**; gaming industry **USD 9.2 billion by 2029**.

Challenges

- **Market Concentration:** Dominance of a few firms limits competition and opportunities for smaller creators.
- **Digitalisation:** Raises concerns over fair competition, platform dominance, and accessibility.
- **Artificial Intelligence (AI):** Improves productivity but creates risks of copyright violations, poor-quality content, privacy issues, and platform monopolies.
- **Innovation Gap:** Strong creative talent but weak commercialisation and scaling of innovations.
- **Limited Grassroots Support:** Investment in grassroots innovation remains low compared to sectors such as climate technology.

Government's Interventions

- **USD 1 Billion Creative Economy Fund: Public-Private Partnership (PPP)-based fund** to promote investment, startups, and innovation.
- **Indian Institute of Creative Technology (IICT):** ₹400 crore allocated to establish India's first dedicated creative-skills institute in **Mumbai**.
- **Startup India:** Supports creative startups through funding, incubation, and global market access.
- **Atal Innovation Mission (AIM):** **Atal Incubation Centres (AICs)** and **Atal Tinkering Labs (ATLs)** promote innovation in art-tech and edutainment.
- **National Innovation Foundation (NIF):** Identifies and scales grassroots innovations, traditional knowledge, and local crafts.
- **UNESCO Creative Cities Network (UCCN):** **Jaipur, Varanasi, and Srinagar** leverage cultural heritage to boost tourism and local economies.
- **Zonal Cultural Centres (ZCCs):** Seven centres promote traditional arts through festivals, workshops, and exhibitions.
- **National Creators Award (2024):** Recognises digital creators and encourages youth participation in animation, gaming, and other creative fields.

Way Forward

- **Revamp Innovation Strategy:** Integrate creativity into the national innovation ecosystem to support the **USD 5 trillion economy** vision.
- **Build Inclusive Ecosystems:** Link traditional arts and grassroots creativity with modern innovation through institutional and financial support.
- **Bridge Innovation Gap:** Increase funding for grassroots innovations and commercialisation.
- **Strengthen Intellectual Property (IP):** Protect indigenous and community innovations through stronger IP laws.
- **Promote Local Innovation:** Launch **"One District, One Innovation"** to showcase regional strengths.
- **Leverage Institutions:** Strengthen **Grassroots Innovation Augmentation Network (GIAN)** to identify and scale rural and semi-urban innovations.

Conclusion: Unlocking India's creative potential requires **cultural entrepreneurship, digital inclusivity, and innovation-led storytelling**. By empowering grassroots creators and safeguarding creative ecosystems, India can emerge as a global hub of culture-driven economic transformation.

Test Your Knowledge

Prelims Corner

Consider the following pairs:

1. MyWAVES – Citizen-created digital content showcasing local stories and cultural heritage
2. WAVES OTT – OTT platform of Prasar Bharati
3. National Innovation Foundation – Identification and scaling of grassroots innovations
4. UNESCO Creative Cities Network – Exclusive financing mechanism for creative startups

Which of the pairs given above are correctly matched?

(a) 1, 2 and 3 only
(b) 1 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

Answer: (a)

Mains Corner

“The creative economy can transform India's cultural diversity from a heritage asset into an engine of inclusive economic growth.”
Examine the potential of the Orange Economy for employment generation, entrepreneurship and cultural diplomacy.

(10 Marks, 150 Words)

6. POLYMER CURRENCY NOTES

Context: The Reserve Bank of India (RBI) revived plans to introduce polymer (plastic) currency notes.

- Its subsidiary, **Bharatiya Reserve Bank Note Mudran Private Limited (BRBNMPL)**, invited global bids for Biaxially Oriented Polypropylene (BOPP) substrate; pilot likely for ₹10 and ₹20 notes.
- Under **Section 25 of the Reserve Bank of India (RBI) Act, 1934**, the government approved **1 billion polymer ₹10 and ₹20 notes** each for field trials; they will circulate alongside existing paper notes.

About Polymer Currency Notes

- Banknotes made from **Biaxially Oriented Polypropylene (BOPP)** instead of 100% cotton-pulp paper.
- **Features:** Durable, water- and tear-resistant; harder to counterfeit due to transparent windows and embedded security features.
- **Prevalence:** Used in 60+ countries; Australia introduced the first full polymer series (1988).
- **Life Span:** Last 2.5–4× longer than paper notes.

Associated Concerns

- **Higher Cost:** Manufacturing costs 30–60% more; low-denomination notes cost 20–24% of face value to produce.
- **Import Dependence:** Polypropylene imports expose costs to crude oil prices; India imports nearly one-fifth of its requirement.
- **Infrastructure Upgrade:** Automated Teller Machines (ATMs), sorting, vending, and processing machines need recalibration.
- **Environmental Issues:** Plastic waste and specialised recycling concerns.
- **Digital Payments:** Proposal comes despite **Unified Payments Interface (UPI)** handling 24,000+ crore annual transactions and ~85% of retail digital payments.

POLYMER CURRENCY NOTES

Durable Today, Sustainable Tomorrow

1 NEED FOR POLYMER CURRENCY NOTES

- India spends nearly **₹5,000 crore** annually replacing damaged notes.
- 20–24 billion** soiled notes destroyed yearly under the Clean Note Policy.
- ₹10 and ₹20** notes wear out fastest due to frequent use.
- Longer life lowers replacement frequency, lifecycle costs, and counterfeiting.
- A The Energy and Resources Institute (TERI) study found polymer notes have a lower lifecycle carbon footprint despite higher initial emissions, as fewer notes are produced and transported.

Better for the economy.
better for the planet.

2 TIMELINE

- 2009** Reserve Bank of India (RBI) proposed 100 crore ₹10 polymer notes.
- 2012** Pilot approved in **Kochi, Mysuru, Jaipur, Bhubaneswar, and Shimla**; later shelved due to technical issues and post-2016 demonetisation.
- 2026** Bharatiya Reserve Bank Note Mudran Private Limited (BRBNMPL) revived the proposal by inviting global bids for polymer substrate.

THE TAKEAWAY → POLYMER NOTES: DURABLE, COST-EFFECTIVE, SECURE, SUSTAINABLE →

A SMART INVESTMENT FOR INDIA'S FUTURE.

7. FOREIGN DIRECT INVESTMENT (FDI) IN E-COMMERCE

Context: The Government amended the FDI policy to allow **100% FDI** in **inventory-based e-commerce** entities **exclusively for exports** of goods manufactured or produced in India.

- Since **2016**, **100% FDI** under the **automatic route** has been allowed only in the **marketplace model**, while **FDI in inventory-based e-commerce** was prohibited for domestic retail.
- FDI remains **prohibited** in **Business-to-Consumer (B2C)** inventory-based e-commerce for domestic retail.
- **Inventory-Based vs Marketplace Model**
 - **Inventory-Based:** E-commerce platform **owns inventory** and sells directly to customers.
 - **Marketplace:** Platform acts as an **intermediary**, connecting buyers and sellers without owning goods.

Potential Benefits and Significance

- **Support Micro, Small and Medium Enterprises (MSMEs):** Improves access to global markets by leveraging large e-commerce firms' logistics, warehousing and customer networks.
- **Promote Manufacturing:** Encourages domestic production, exports and employment, supporting the target of raising manufacturing's share in **Gross Domestic Product (GDP)** to **25% by 2035**.
- **Boost E-commerce Exports:** Enables global platforms to procure, store and export Indian goods efficiently, supporting the **USD 200 billion** e-commerce export target by **2030**.
- Represents a **calibrated liberalisation** of the **Foreign Direct Investment (FDI)** policy.
- Balances **export promotion** with protection of **domestic retail**.
- Supports **Make in India**, the **Foreign Trade Policy**, **Districts as Export Hubs**, and India's goal of becoming a global manufacturing and export hub.

Associated Concerns

- **Risk of Misuse:** Difficult to monitor separate inventories for export and domestic sales, raising the possibility of diversion.
- **Impact on Retail:** Concerns that future relaxation may increase competition for traditional retailers.
- **Need for Monitoring:** Requires strong oversight to ensure export-only inventories are not sold in the domestic market.

Test Your Knowledge


Prelims Corner


Mains Corner

With reference to India's Foreign Direct Investment (FDI) policy in e-commerce, which one of the following correctly distinguishes the marketplace model from the inventory-based model?

(a) In the marketplace model, the e-commerce entity owns the goods sold, whereas in the inventory model it merely facilitates transactions.

(b) In the marketplace model, the platform primarily acts as an intermediary connecting buyers and sellers, whereas in the inventory model the platform owns and sells the inventory.

(c) Both models require the e-commerce platform to own the inventory, but differ only in the source of foreign investment.

(d) The inventory model is permitted for domestic retail with 100% FDI under the automatic route, whereas the marketplace model is restricted to exports.

Answer: (b)

"The transition from paper to polymer currency is a technological and economic decision, not merely a currency-design reform." Examine the potential benefits and challenges of introducing polymer banknotes in India.

(10 Marks, 150 Words)

8. MODERNISING INDIA'S PUBLIC DISTRIBUTION SYSTEM (PDS)

Context: A Parliamentary panel identified **2.91 crore suspect/ineligible beneficiaries**, including **2.20 crore silent** and **34.12 lakh deceased** beneficiaries.

Key PDS Modernisation Initiatives

- **ePoS Automation (2014):** Automates Fair Price Shop (FPS) transactions using biometrics; covers **99.6% FPSs**, with **97%+ transactions Aadhaar-authenticated**.
- **SMART-PDS (2023):** Creates **unified digital PDS infrastructure**, integrating procurement, allocation, logistics, ration cards and biometric distribution.

- **Anna Chakra (2024):** Uses demand, stock and logistics data to optimise **foodgrain routes**, reducing transport costs, transit time and diversion risks.
- **One Nation One Ration Card (ONORC) (2019):** Enables nationwide **ration portability**, allowing beneficiaries to access foodgrain entitlements from any FPS.
- **SARTHAK-PDS (2026):** Integrates technology-driven reforms to automate **grievance redressal** and secure end-to-end supply-chain logistics.

Major Challenges

- **Digital Connectivity Gaps:** Poor networks in remote areas disrupt **biometric authentication and real-time ePoS synchronisation**.
- **Biometric Exclusion:** Worn fingerprints among elderly and manual workers can cause authentication failures and deny entitlements.
- **FPS Financial Stress:** Inter-state portability changes local grain demand and commissions, weakening FPS viability and encouraging malpractices.
- **Outdated Beneficiary Lists:** **NFSA coverage remains based on Census 2011**, excluding newly vulnerable populations.
- **Regional Digital Gaps:** Uneven Aadhaar seeding and infrastructure create PDS delivery disparities, with authentication rates ranging from **98% Bihar to 73% Meghalaya**.

Standing Committee Recommendations

- **Time-Bound Verification:** Conduct field verification of flagged beneficiaries while protecting eligible vulnerable households from wrongful exclusion.
- **Offline Solutions:** Enable **offline synchronisation, alternative authentication and dedicated connectivity** for remote and no-network FPSs.
- **Improve FPS Viability:** Raise dealer margins, integrate **ePoS with electronic weighing scales** and allow supplementary citizen services.
- **Review DBT:** Periodically compare **cash transfers and physical distribution** for adequacy, convenience and exclusion before wider expansion.
- **Database Integration:** Link **PDS databases with FCI, CWC and UIDAI** for coordinated beneficiary verification and supply-chain monitoring.

Conclusion: A future-ready food security architecture must balance digital efficiency with inclusion, ensuring transparent targeting, last-mile access and accountable delivery so no vulnerable household is left behind.

Test Your Knowledge	
Prelims Corner With reference to the modernisation of India's Public Distribution System (PDS), consider the following statements: 1. One Nation One Ration Card (ONORC) enables beneficiaries to access their entitled foodgrains from a Fair Price Shop (FPS) outside their home State. 2. Anna Chakra primarily focuses on identifying ineligible beneficiaries through biometric authentication. 3. SMART-PDS seeks to integrate different stages of the foodgrain supply chain with digital infrastructure. 4. ePoS devices can facilitate biometric authentication and automate transactions at Fair Price Shops. Which of the statements given above are correct? (a) 1, 3 and 4 only (b) 1 and 2 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner India's PDS modernisation has significantly improved transparency, portability and supply-chain efficiency, yet outdated beneficiary databases and authentication failures continue to create exclusion risks. Critically examine. (15 Marks, 250 Words)

9. PRADHAN MANTRI SURYA SAROVAR YOJANA (PM-SSY)

Context: Union Cabinet approved **PM-SSY** to strengthen India's **renewable energy capacity and energy security**.

- **Central Sector Scheme** promoting **Floating Solar Photovoltaic (FSPV)** projects with **Energy Storage Systems (ESS)**.

- **Floating Solar:** Solar panels are installed on **buoyant platforms over water bodies.**

Key Features

- **Outlay & Target:** ₹5,070 crore allocation for 5,000 MW FSPV capacity during FY 2026-27 to FY 2030-31.
- **Potential:** NISE estimates India's floating solar potential at **102.18 GWp**, against only **~700 MW** installed.
- **Storage Mandate:** Projects require **2-hour co-located Energy Storage Systems**, totalling **10,000 MWh** across the scheme.
- **Central Financial Assistance (CFA):** Developers receive **₹1 crore/MW** after commissioning eligible projects.
- **Project De-risking:** Up to **₹50 lakh/project** CFA supports feasibility, bathymetry, hydrography and environmental studies.



Significance

- **Capacity Addition:** Raise floating solar capacity from **~700 MW to 5,700 MW**.
- **Climate Goals:** Reduce around **10 million tonnes of CO₂ annually**.
- **Employment:** Create **16,000–17,000 full-time equivalent jobs** across the value chain.
- **Aatmanirbhar Bharat:** Boost domestic manufacturing of **floatation systems, PV cells, modules and storage systems**.
- **Grid Stability:** **2-hour Battery Energy Storage Systems (BESS)** support grid balancing and peak-demand management.

Issues With FSPV

- **Water quality:** Long-term FSPV impacts on water temperature, dissolved oxygen and nutrient cycles remain insufficiently established.
- **Aquatic biodiversity:** Extensive panel coverage can alter light penetration and habitat conditions, potentially affecting phytoplankton, fish and aquatic ecosystems.
- **High costs:** FSPV costs remain higher than ground-mounted solar due to specialised floaters, anchoring, mooring and waterproof electrical infrastructure.
- **Maintenance challenges:** Underwater cables, mooring systems and floating structures make inspection, cleaning and repairs technically demanding and cost-intensive.
- **Competing water uses:** Reservoirs simultaneously support irrigation, drinking water, fisheries and hydropower, creating potential conflicts over surface utilisation.
- **Extreme-weather risks:** Strong winds, waves and fluctuating reservoir levels can damage platforms and anchoring systems, particularly in exposed water bodies.

Way Forward

- **Scientific site selection:** Conduct seasonal hydrological, ecological and bathymetric assessments before project approval, as recommended in World Bank's FSPV guidelines.
- **Limit panel coverage:** Establish waterbody-specific carrying capacities based on biodiversity, water quality, evaporation, hydrology and competing uses.
- **Adopt global best practices:** Replicate Singapore's **Tengeh Reservoir** approach using panel spacing, aeration systems and recyclable HDPE floating structures.

- **Promote hydro-solar hybrids:** Prioritise hydropower reservoirs to share transmission infrastructure and combine FSPV with existing generation and storage capacity.
- **Strengthen environmental safeguards:** Mandate lifecycle monitoring of water quality, aquatic biodiversity and structural integrity, with periodic environmental performance audits.
- **Build domestic capabilities:** Develop Indian standards for floaters, mooring, corrosion resistance, recycling and end-of-life management under **Aatmanirbhar Bharat**.

Conclusion: PM-SSY can transform India's water bodies into **clean-energy assets**, combining **renewable expansion, storage resilience and resource efficiency** while ensuring ecological safeguards and long-term energy sustainability.

10. SAMUDRA MANTHAN SCHEME (NATIONAL OFFSHORE EXPLORATION SCHEME)

Context: Cabinet approval: Union Cabinet approved **Samudra Manthan** to unlock India's offshore energy potential, fulfilling the **Independence Day 2025 vision**.

Key Features

- **Scheme:** Central Sector Scheme of the Ministry of Petroleum and Natural Gas, with ₹84,084 crore outlay up to FY 2030–31.
- **Focus:** Targets deepwater, ultra-deepwater and frontier offshore hydrocarbon exploration through risk-sharing and technological support.
- **Exploration challenge:** Offshore projects are **risky, capital-intensive and technologically complex**, with 5–10-year gestation; deepwater wells cost \$125–150 million.
- **Shared infrastructure:** Provides **common offshore production/evacuation infrastructure** and integrated **Oil and Gas Manufacturing and Services Zones**.
- **Technology ecosystem:** Promotes **digital programme management, capacity building, technology adoption, stakeholder engagement and international cooperation**.
- **Production urgency:** Existing oil and gas fields face 6–7% annual natural production decline, increasing the need for new discoveries.
- **Core activities:** Supports **seismic data acquisition, processing and interpretation**, alongside accelerated deepwater, ultra-deepwater and scientific drilling.



Targets & Significance

- **Reserve addition:** Successful exploration could add **600+ MMTOE** to India's reserves.
- **Production growth:** Aims to raise annual domestic oil and gas output from **62 MMTOE to 80 MMTOE**.
- **Resource expansion:** Seeks to increase the resource base from **1.6 billion to 2.2 billion tonnes of oil equivalent**.
- **Import reduction:** Could reduce crude oil imports by nearly **₹1 lakh crore annually**, strengthening **energy security and Atmanirbhar Bharat**.
- **Economic gains:** Expected to generate employment, boost **indigenous manufacturing** and create a globally competitive **offshore technology and services ecosystem**.

Test Your Knowledge	
Prelims Corner Consider the following statements about offshore hydrocarbon exploration in India: 1. Deepwater exploration generally involves higher capital and technological risks than conventional onshore exploration. 2. A decline in production from existing mature fields increases the importance of discovering and developing new hydrocarbon resources. 3. Shared offshore production and evacuation infrastructure can potentially reduce duplication of investment and improve project viability. 4. Offshore exploration has a shorter gestation period than most onshore hydrocarbon projects because seismic data can be acquired remotely. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner India's dependence on imported hydrocarbons remains a major vulnerability despite growing investments in renewable energy. Critically examine how deepwater and ultra-deepwater exploration under the Samudra Manthan Scheme can contribute to India's energy security and Atmanirbhar Bharat. (15 Marks, 250 Words)

11. REVIVAL OF INDIA'S PRIVATE CAPITAL

Context: India is witnessing a strong revival in private sector capital expenditure (Capex), a key missing element in the post-pandemic growth story. Reserve Bank of India (RBI) data show industrial credit grew 19.2% year-on-year (YoY) in June 2026, up from 6.3% a year earlier, indicating a shift from public investment-led recovery to a broader private investment cycle.

Key Drivers of Private Capex Revival

- **Higher Capacity Utilisation:** Manufacturing capacity utilisation reached **75.6% in Q3 FY26**, triggering fresh production-line investments.
- **Investment Surge:** Listed firms may spend **₹12.6 lakh crore in 2026**; combined Capex may reach **₹32 lakh crore in FY26**.
- **Public Capex Crowding-In:** **Gati Shakti and National Infrastructure Pipeline** reduced logistics costs and project risks, encouraging private investment.
- **Greenfield Shift:** Corporate borrowing increasingly funds **greenfield projects** across infrastructure, engineering, construction, textiles, petroleum and chemicals.
- **Expansion-Focused Capex:** **Capex-to-Depreciation ratio** rose to **1.9–2.0x**, signalling capacity expansion over asset replacement.
- **Large Investors Rising:** Firms investing **over ₹1,000 crore annually** increased to **168**, from **91 in 2012**.
- **Healthier Balance Sheets:** Reduced debt, stronger cash flows and cheaper capital have eased the twin balance-sheet problem.
- **Stronger Orders and Credit:** Order books grew **10.3% year-on-year (YoY)**; bank credit growth reached nearly **14% in H2 FY26**.
- **Production-Linked Incentive (PLI):** PLI schemes across **14 strategic sectors** are catalysing investments in electronics, automobiles and specialty chemicals.
- **New-Age Industries:** Investment is accelerating in **data centres, renewable energy, electric vehicles and green hydrogen**, alongside traditional sectors.
- **Real Estate Boost:** Rising urban housing launches are driving allied sectors such as **cement and engineering**.

INDIA'S CAPEX CYCLE: THEN & NOW			
ASPECT	PREVIOUS CAPEX CYCLE (2003-20)	CURRENT CAPEX CYCLE (2023 ONWARDS)	KEY SHIFT
 CORPORATE FINANCIAL HEALTH	Twin Balance Sheet Problem emerged with highly leveraged corporates and stressed bank balance sheets.	Strong balance sheets, lower leverage and healthier cash flows.	 From stress to strength
 SOURCE OF FUNDING	Predominantly debt-funded expansion.	Internal cash generation supplemented by prudent borrowing.	 From debt dependence to balanced funding
 INVESTMENT FOCUS	Infrastructure, real estate and traditional industries.	Manufacturing, digital infrastructure, renewable energy and advanced technologies.	 From traditional to future-ready sectors
 BANKING SECTOR	Aggressive lending followed by rising NPAs (historic peak of 11.18% (March 2018)).	Healthier banks with improved asset quality and stronger credit growth (gross non-performing assets (GNPA) ratio declining to a multi-decadal low of 2.1% in FY26).	 From high NPAs to strong asset quality
 NATURE OF INVESTMENT	Asset replacement, overcapacity and speculative expansion.	Capacity expansion driven by rising demand and long-term growth prospects.	 From speculative to demand-driven investments
 TECHNOLOGY ORIENTATION	Limited focus on sunrise sectors.	Investments in AI, data centres, semiconductors, EVs, defence and green energy.	 From limited tech to cutting-edge innovation
★ BOTTOM LINE: India's current capex cycle is stronger, wiser and future-focused—built on financial prudence, sectoral transformation and sustainable growth.			



Challenges to Sustaining Private Capex

- **Geopolitical & Trade Risks:** Conflicts and **trade protectionism** may disrupt supply chains, raise logistics costs and weaken export-driven **greenfield investments**.
- **Imported Inflation:** High **crude prices** raise input and logistics costs, causing cost overruns and margin pressure, especially in fixed-price **Engineering, Procurement and Construction (EPC)** projects.
- **Tighter Monetary Conditions:** **Hawkish monetary policy** and an **82.6% credit-deposit gap (June 2026)** could raise borrowing costs and deter long-gestation projects.
- **Execution Bottlenecks:** Delays in **land acquisition, environmental clearances and approvals** can prolong working-capital cycles and postpone investments.
- **Weak Demand:** Sluggish rural consumption and climate risks may reduce **capacity utilisation**, creating excess capacity and delaying fresh investments.
- **Capital Flow Volatility:** **Foreign Portfolio Investor (FPI)** outflows can tighten liquidity, raise capital costs and weaken investment sentiment; ₹2.54 lakh crore exited Indian equities by July 2026.

- **Rural Demand Gap:** Persistently weaker rural deposit and credit growth could constrain industrial output, despite strong urban consumption.

Way Forward

- **Faster Project Clearances:** Strengthen **Project Monitoring Group (PMG)** under **DPIIT** to fast-track projects above ₹500 crore, using e-Suvidha for clearances.
- **Targeted Credit Support:** Extend **Emergency Credit Line Guarantee Scheme (ECLGS)**-type support to mid-sized manufacturers and strengthen **Credit Guarantee Scheme for Startups (CGSS)**.
- **Expand PLI Coverage:** Extend **Production-Linked Incentive (PLI)** to defence, space-tech and precision engineering, ensuring predictable and timely payouts.
- **Lower Investment Costs:** Restore **accelerated depreciation** for new plant and machinery to reduce capital costs and encourage capacity expansion.
- **Improve Logistics:** Implement **National Logistics Policy 2022** to lower logistics costs from 13–14% to 8% of GDP by 2030.
- **Innovative Financing:** Expand **Infrastructure Investment Trusts (InvITs)** and **Real Estate Investment Trusts (REITs)** to mobilise long-term capital and enable fresh greenfield investments.

Conclusion: A sustained private Capex cycle needs **policy certainty, institutional reforms and strong domestic demand** to drive productivity, employment and **Viksit Bharat 2047**.

Test Your Knowledge	
Prelims Corner Which one of the following would be the strongest indication of a broad-based private investment cycle in India? (a) Higher government capital expenditure accompanied by a decline in private-sector borrowing. (b) Rising capacity utilisation, increasing greenfield project financing and a sustained Capex-to-Depreciation ratio above one. (c) Increased foreign portfolio investment flows without a corresponding rise in domestic fixed investment. (d) Higher household consumption accompanied by declining industrial credit and corporate capital expenditure. Answer: (b)	Mains Corner A sustained private investment cycle requires more than cheaper credit; it depends upon demand conditions, regulatory certainty and the ease of project execution." Critically examine the structural constraints that could derail India's private Capex revival. (15 Marks, 250 Words)

12. RUPEE UNDERVALUATION

Context: RBI Governor Sanjay Malhotra called the rupee undervalued in nominal and Real Effective Exchange Rate (REER) terms, despite a 5.8% depreciation against the US dollar in 2026.

- The RBI views the weakness as largely driven by global financial headwinds, rather than weaker domestic macroeconomic fundamentals.

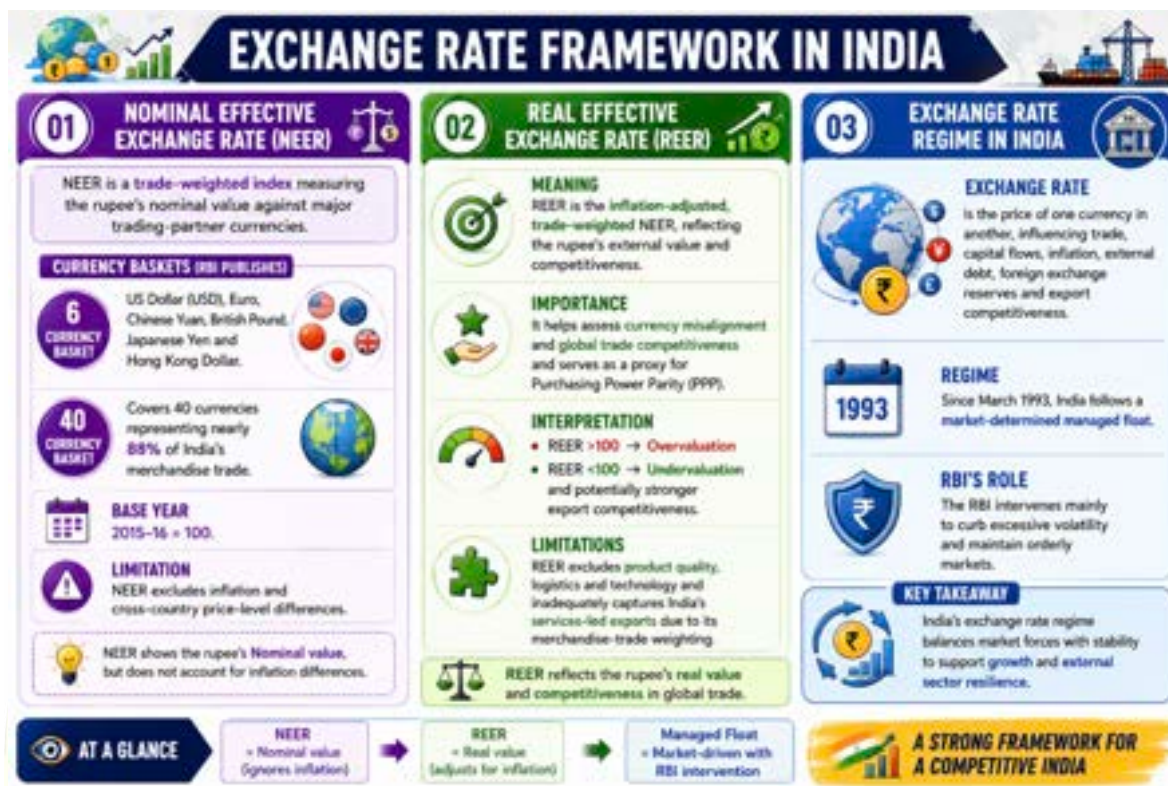
Reasons Behind RBI's consideration for Rupee Devaluation

- **Shift from Overvaluation:** Rupee depreciation moved the **average rate from ₹84.4/\$ (November 2024) to ₹95.5/\$ (May 2026)**.
- **NEER** fell from **91.68 to 77.19**, while **REER** dropped from **108.03 to 89.08**, recovering to **91.26 (June 2026)**, signalling undervaluation.
- **Strong Fundamentals:** **GDP growth above 6%, moderating inflation, stable external sector and reserves covering 11+ months of imports** support the rupee's underlying strength.
- **Global Headwinds:** **Crude prices, stronger US dollar, geopolitical tensions and Foreign Portfolio Investor (FPI) outflows** have increased dollar demand and weakened the rupee.
- **REER-Based Assessment:** REER below its **equilibrium value** suggests depreciation has exceeded what India's macroeconomic fundamentals justify.

Potential Benefits of an Undervalued Rupee

- **Export Competitiveness:** Makes Indian goods cheaper globally and improves **domestic manufacturing competitiveness**.

- **Make in India:** Encourages domestic production and supports **Make in India**.
- **Trade Balance:** Could reduce the **trade deficit** if export growth exceeds import growth.
- **Caveat:** Sustained export growth also requires better **productivity, logistics and manufacturing efficiency**.



Key Risks

- **Imported Inflation:** Raises costs of **crude oil, fertilisers, electronics and other imports**.
- **Higher Input Costs:** Increases expenses for industries dependent on **imported raw materials**.
- **ECB Burden:** Raises repayment costs of **External Commercial Borrowings (ECBs)**.
- **Current Account Pressure:** Elevated oil prices may widen the **Current Account Deficit (CAD)**.

Conclusion: Macroeconomic resilience, export diversification, deeper financial markets and energy security, alongside a market-determined exchange rate, can strengthen the rupee's long-term competitiveness and resilience.

13. VIZHINJAM TRANSSHIPMENT & CUSTOMS PORT

- **Context:** Central Board of Indirect Taxes and Customs (CBIC) designated Vizhinjam Transshipment Seaport as a customs port, enabling full Export-Import (EXIM) operations.
- **Strategic Importance:** India's first deep-water transshipment hub and semi-automated container port.
- **Location & Model:** Located near Thiruvananthapuram, Kerala, developed through



Public-Private Partnership (PPP) under the **Design-Build-Finance-Operate-Transfer (DBFOT)** model.

- **Natural Advantage:** 18–20 m natural depth, just 1 km offshore, allows **Ultra Large Container Vessels (ULCVs)** to dock without continuous dredging.
- **Lower Maintenance:** Curvilinear coastline reduces **siltation**, lowering dredging and maintenance requirements.
- **Capacity:** Currently handles **1 million containers annually**, with planned expansion to **6.2–6.4 million Twenty-foot Equivalent Units (TEUs)**.

Significance for India's Maritime Sector

- **Lower Logistics Costs:** Vizhinjam can save \$200–220 million annually by reducing dependence on foreign transshipment hubs.
- **Faster Transit:** Avoids detours through **Colombo, Singapore and Dubai**, improving transit times and supply-chain reliability.
- **Multimodal Connectivity:** EXIM operations integrate **ports, waterways and multimodal networks**, strengthening Kerala's logistics ecosystem.
- **Global Trade Capture:** Located just **10 nautical miles from the East-West shipping corridor**, attracting international shipping traffic.
- **Port-Led Development:** Supports **Sagarmala and Maritime India Vision 2030**, enhancing India's regional transshipment and logistics leadership.

14. INDIA'S CARE ECOSYSTEM

Context: NITI Aayog released a roadmap for an **organized, professional care ecosystem** to promote inclusive growth and **Viksit Bharat@2047**.

Need for a Comprehensive Care Ecosystem

- **Market Potential:** India's care-services market could grow from **\$29.62 billion (2023) to \$72.31 billion by 2030**.
- **Demographic Pressure:** The elderly population is projected to rise from **10% to 21% by 2050**, alongside nearly **300 million children**, increasing care needs.
- **Social Transition:** **Nuclear families** and the needs of **26.8 million persons with disabilities** are increasing demand for professional care.
- **Global Opportunity:** The **World Health Organization (WHO)** projects an **11-million healthcare-worker shortage by 2030**, giving India an opportunity to become a '**Global Care Workforce Capital**'.
- **Global Commitments:** A stronger care ecosystem aligns with the **2022 G20 Bali Care Economy Dialogue** and the **2023 G20 New Delhi Leaders' Declaration** on affordable care infrastructure.
- **Women's Empowerment:** Formal care services can expand education and employment opportunities for **79% of women aged 15–29** constrained by unpaid care, compared with only **3% of men**.



Major Challenges

- **Policy Gap:** Maternity-centric laws, such as the **Maternity Benefit Act, 1961**, and absence of a **paternity-leave law** reinforce women as default caregivers, affecting hiring and widening wage gaps.
- **Skill Gaps:** Fragmentation has resulted in **no standard curriculum, uniform skill accreditation or unified national qualifications framework**.
- **Regulatory Vacuum:** Absence of a **central regulator** and adequate care-workforce data weakens planning, coordination, implementation and quality assurance.
- **Low Public Spending:** India spends **less than 1% of GDP on care**, limiting institutional infrastructure and concentrating costly private services in urban areas.
- **Informalisation:** Care work remains largely informal, lacking **social security, standard minimum wages and occupational protections**.
- **Gender Inequality:** Women bear most unpaid care work, restricting economic independence and careers; they constitute **56.6% of the care workforce**.

Way Forward

- **National Care Policy:** Implement NITI Aayog's roadmap through a unified framework covering childcare, eldercare, disability and long-term care.
- **Professionalise Care Work:** Establish National Occupational Standards, modular training and **Recognition of Prior Learning (RPL)** for care workers.
- **Universal Social Protection:** Extend minimum wages, insurance, pensions and portable benefits to formal and informal care workers.
- **Care Infrastructure:** Scale **Anganwadi-cum-crèche centres**, community eldercare hubs and disability-care facilities through Union-State convergence.
- **Gender-Responsive Care:** Introduce statutory **parental leave**, workplace crèches and gender-responsive budgeting to redistribute unpaid care responsibilities.

Conclusion: A coordinated care ecosystem can unlock India's **demographic dividend**, create **quality employment**, strengthen **care infrastructure**, and build a resilient **social security architecture** aligned with **Viksit Bharat@2047**.


Test Your Knowledge


 Prelims Corner	 Mains Corner
Consider the following statements: Assertion (A): Expansion of India's formal care ecosystem can contribute to economic growth beyond the direct employment generated within care services. Reason (R): Availability of affordable and reliable care services can reduce unpaid care responsibilities and enable more people, particularly women, to participate in education and paid employment. Which one of the following is correct? (a) Both A and R are correct, and R is the correct explanation of A. (b) Both A and R are correct, but R is not the correct explanation of A. (c) A is correct, but R is incorrect. (d) A is incorrect, but R is correct. Answer: (a)	"The disproportionate burden of unpaid care work on women represents both a gender-justice challenge and an economic opportunity lost." Discuss the measures required to redistribute care responsibilities and improve women's labour-force participation. (15 Marks, 250 Words)

15. INDIAN STATISTICAL INSTITUTE BILL, 2026

Context: The **Indian Statistical Institute (ISI) Bill, 2026** was introduced in the **Lok Sabha** to replace the **ISI Act, 1959**.

About Indian Statistical Institute (ISI)

- **Foundation:** Statistician **P.C. Mahalanobis** founded ISI in **1931**.
- **Legal Evolution:** Initially registered under the **Societies Registration Act, 1860**, and later under the **West Bengal Societies Registration Act, 1961**.
- **National Importance:** Recognised as an **Institution of National Importance** under the **ISI Act, 1959**.
- **Nodal Ministry:** Ministry of Statistics and Programme Implementation (MoSPI).

- **Headquarters: Kolkata.**

Key Provisions & Structural Changes

- **Statutory Status:** Converts ISI from a registered society into a **statutory corporate body** under parliamentary law.
- **Board of Governors:** Replaces the existing **33-member Council** as the executive and policymaking body, accountable to the Central Government.
 - **Composition: 11 members**—a **Visitor-nominated Chairperson**, 4 statistical experts nominated by the Chairperson and 4 internal representatives; the Registrar serves as Board Secretary.
 - **Visitor:** The **President of India** will serve as Visitor, with powers to **inspect, order inquiries and review institutional functioning**.
- **Director Appointment:** Director to be selected from a panel recommended by a government-constituted **Search-cum-Selection Committee**, replacing the existing Council-based process.
- **Academic Council:** A formal Council, headed by the Director and comprising senior faculty, will regulate **courses, eligibility and examinations**.
- **Expanded Academic Mandate:** Covers **data science, computer science, cryptology and other quantitative sciences**, with powers to establish **domestic and overseas campuses**.
- **Financial Self-Sufficiency:** Encourages revenue generation through **consultancy, sponsored research and patent commercialisation**.

Key Concerns & Criticisms

- **Limited Consultation:** Introduction without structured prior consultation with the **ISI Society, faculty and students** raises concerns over participatory reform.
- **Centralisation:** The changes are viewed as part of a wider trend towards **greater central administrative control over premier institutions**.
- **Headquarters Ambiguity:** Absence of explicit recognition of **Kolkata as headquarters** raises concerns about possible relocation and academic disruption.
- **Institutional Autonomy:** Greater government nomination and executive-led Director selection may **centralise governance, weaken academic autonomy and constrain independent research**.
- **Student Support:** Greater focus on revenue generation may threaten **tuition-free education and sustained student stipends**.

Way Forward

- **Safeguard Autonomy:** Retain strong faculty representation and peer-based appointments to preserve **academic freedom, research independence and institutional autonomy**.
- **Consultative Governance:** Institutionalise structured consultation with the **ISI Society, faculty, students and alumni** before major statutory changes.
- **Transparent Appointments:** Ensure the **Search-cum-Selection Committee** follows merit-based, transparent criteria with minimal executive discretion.
- **Protect Student Support:** Guarantee **tuition-free education, stipends and fellowships**, while using consultancy revenues primarily for academic and research expansion.
- **Strengthen Global Excellence:** Leverage expanded mandates in **data science, AI and quantitative sciences** through international collaborations and interdisciplinary research.

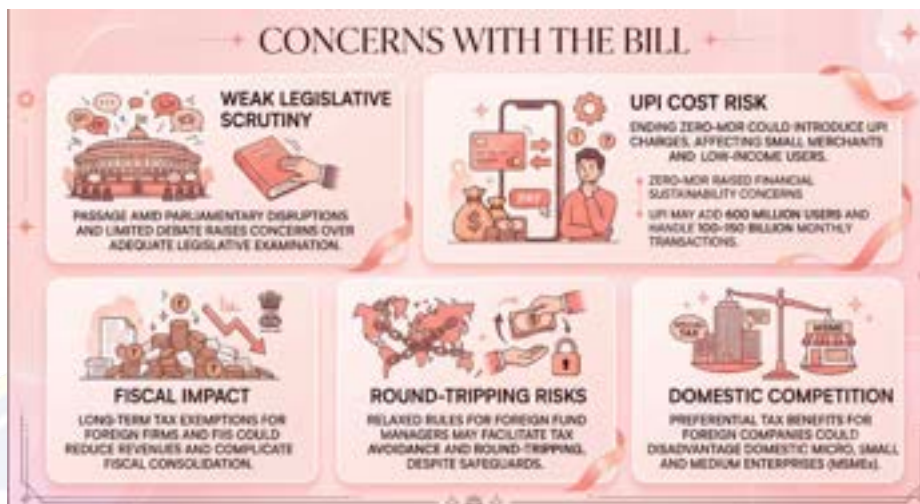
16. TAXATION AND OTHER LAWS (AMENDMENT) BILL, 2026

Context: Lok Sabha passed the Bill, replacing the **Income-tax (Amendment) Ordinance, 2026** and amending the **Income-tax Act, 2025, Finance Act, 2026** and **Payment and Settlement Systems Act, 2007**.

Key Provisions

- **Electronics Manufacturing:** Extends the existing **5-year tax holiday by 10 years, up to 2040-41**, for eligible foreign companies supplying capital goods or using Indian factories for contract manufacturing.
 - Covers **mobile phones, laptops, servers and wearables**.

- **REITs & InvITs:** Restores tax-free dividend income for unit holders of Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs), while raising Special Purpose Vehicle (SPV) surcharge from 10% to 25%.



- **UPI & Digital Payments:** Enables the Central Government to permit charges, including Merchant Discount Rate (MDR), on UPI and notified digital payments.
 - Creates a sustainable revenue model for banks, Payment Service Providers (PSPs) and payment firms.
 - Earlier, such charges were prohibited under Section 269SU of the Income-tax Act, 1961.
- **Foreign Fund Managers:** Simplifies relocation of foreign fund managers to India without taxing their foreign funds, while retaining safeguards against tax avoidance and round-tripping.
- **Data Centre Ecosystem:** Removes multiple government approvals for foreign cloud firms using Indian data centres and permits data centres to operate on a lease basis, increasing flexibility.
- **Government Securities:** Exempts Foreign Institutional Investors (FIIs) and the Bank for International Settlements (BIS) from income tax on interest and capital gains from government securities.
- **Diamond & Electronics Sectors:** Provides tax exemptions to eligible foreign diamond firms and electronics manufacturers, including income from rough diamond sales and electronic-component storage in customs-bonded warehouses.

Significance

- **Boosts FDI:** Encourages foreign capital and global investment flows.
- **Supports Manufacturing:** Strengthens Make in India through electronics production incentives.
- **Builds Digital Infrastructure:** Promotes India as a data-centre and cloud hub.
- **Attracts Fund Managers:** Makes India more competitive for global investment management.
- **Deepens Capital Markets:** Encourages investment through REITs and InvITs.
- **Improves Business Climate:** Reduces regulatory hurdles and provides greater tax certainty.

Way Forward

- **Make Incentives Outcome-Based:** Link tax breaks to jobs, exports and technology transfer, with periodic reviews and sunset clauses.
- **Protect Data:** Align incentives for foreign cloud firms and data centres with the Digital Personal Data Protection (DPDP) Act, 2023 to ensure data security and cybersecurity.
- **Strengthen Domestic Capacity:** Combine tax incentives with Production Linked Incentive (PLI) support and MSME R&D to build resilient electronics supply chains.
- **Tighten Tax Oversight:** Strengthen SEBI and Central Board of Direct Taxes (CBDT) monitoring through AI-based surveillance and strict General Anti-Avoidance Rules (GAAR) enforcement.

Conclusion: A balanced tax framework can enhance investment certainty, foster domestic value addition, and deepen digital and capital markets, while ensuring fiscal prudence, fair competition and regulatory accountability.

Test Your Knowledge	
Prelims Corner Which one of the following best captures the rationale behind enabling charges on UPI and notified digital payments under the proposed tax framework? (a) To replace UPI with privately operated payment networks and reduce the role of banks in digital payments. (b) To create a revenue mechanism for banks, Payment Service Providers and payment firms while supporting the financial sustainability of the digital-payment ecosystem. (c) To impose a uniform transaction tax on every UPI transaction irrespective of its nature, value or user. (d) To restrict UPI transactions to domestic merchants and prevent their use for cross-border digital payments. Answer: (b)	Mains Corner Tax policy is increasingly being used as an instrument of industrial policy and global economic integration. Analyse how the 2026 tax amendments seek to advance India's objectives of FDI attraction, domestic value addition, electronics manufacturing and financial-market deepening. Suggest measures to ensure that these incentives remain outcome-oriented. (15 marks, 250 words)

17. SHIP RECYCLING IN INDIA

Context: India became the **world's leading ship-recycling nation in 2025**, reaching **35.4% global share** and recycling **2.99 million gross tons (GT)**. Growth reflects **regulatory reforms**, **Hong Kong Convention compliance**, **yard modernisation**, and **stronger safety and environmental standards**.

India's Global Leadership

- **Global Rank:** India's share rose from **30.1% (2024)** to **35.4% (2025)**, making it the global leader.
- **Recycling Growth:** Volume increased from **1.86 million GT** to **2.99 million GT**, nearly **60% growth** in one year.
- **Maritime India Vision (MIV) 2030:** India achieved its ship-recycling leadership target **five years ahead of schedule**.
- **Capacity Expansion:** Planned Alang expansion aims to nearly double capacity to **9 million Light Displacement Tons (LDT)**.
- .

Other Yards & Modernisation

- **Other Facilities:** Ship recycling is also undertaken at **Amar Iron Udyog, Kolkata**, and **Steel Industrials Kerala Limited (SILK), Kerala**.
- **Modernised Infrastructure:** Yards now use **engineered plots**, **impermeable surfaces**, **drainage**, **mechanised handling** and **segregated hazardous-waste storage**.
- **Environmental Compliance:** **Authorised waste disposal linkages** and **structured safety systems** have improved environmental and operational standards.

Regulatory & Compliance Framework for Ship Recycling

- **Legal Framework:** The **Ship Recycling Act, 2019**, **Ship Recycling Rules, 2021** and **Ship Recycling Regulations, 2026** provide for facility authorisation, certification, inspections, recycling plans, hazardous-material management, worker safety and environmental standards, with the **Directorate General of Shipping (DGS)** as National Authority.
- **Hong Kong Convention Alignment:** The **Hong Kong Convention**, legally binding since **26 June 2025**, establishes global standards for safe and environmentally sound ship recycling. India has aligned its framework accordingly, including **₹53.5 crore** support to modernise **115 facilities**;



35 Alang yards have sought **European Union (EU)** approval.

- **Hazardous-Material Management:** The **Inventory of Hazardous Materials (IHM)** identifies hazardous substances aboard ships, enabling **safe handling, traceability and risk management**.
- **Ship-Breaking Credit Note:** Under **Ship Building Financial Assistance Scheme (SBFA) 2.0**, shipowners receive a Credit Note worth **40% of recycled vessel scrap value**, usable up to **5% of a new Indian-built vessel's value**, linking ship recycling with domestic shipbuilding.

Conclusion: India's ship-recycling industry combines **global standards, resource security and circularity**; sustained green technology, worker safety and compliance can strengthen its global leadership.

18. NITI AAYOG REPORT ON INDIA'S PROFESSIONAL SERVICES REGULATORY REGIME

Context: The India's Services Sector: Insights on Regulatory Regime in Professional Services report released by NITI Aayog in August 2026 evaluates the regulatory rules governing knowledge-intensive sectors in India.

Economic Significance

- **Growth:** Services grew at **~7% CAGR (2011-12–2023-24)**, generating **~30% employment** and attracting the highest **foreign direct investment (FDI)**.
- **Services Sector:** Contributed **~55% of Gross Domestic Product (GDP) and Gross Value Added (GVA)** in FY24
- **Consulting Exports:** Professional and management consulting formed **~20% of services exports in 2024-25**, versus **19.7% in 2023**.
- **Trade Growth:** Consulting exports grew **18% CAGR (FY15–FY25)**, while imports grew **8% CAGR** during the same period.
- **Competitive Advantage:** India's **Revealed Comparative Advantage (RCA)** rose from **0.95 (2005) to 3.0 (2024)**, indicating strong competitiveness.
- **Global Position:** India became the **7th-largest services exporter**, holding **4.3% global export share in 2024**, versus **2% in 2005**.
- **Regulatory Framework:** Professional businesses operate under cross-sectoral laws including **Companies Act, 2013; Limited Liability Partnership Act, 2008; Partnership Act, 1932; FEMA/RBI regulations**.

OECD Services Trade Restrictiveness Index

- **Services Trade Restrictiveness Index (STRI):** OECD index benchmarks regulatory barriers across **22 sectors and 51 countries**, identifying bottlenecks and reform impacts.
- **Architectural Services:** India ranks **2nd-most restrictive**, with a **highly restrictive** regulatory regime.
- **Legal Services:** India ranks **3rd-most restrictive**, with a **highly restrictive** regulatory regime.
- **Accounting Services:** India ranks **4th-most restrictive**, with a **highly restrictive** regulatory regime.
- **Engineering Services:** India ranks **38th-most restrictive**, reflecting a **comparatively liberal** regime.

India and Global Services Trade Rules

- **General Agreement on Trade in Services (GATS):** Effective since **1995**, governing services trade through four recognised modes.
- **Mode 1: Cross-border supply** of services between countries.
- **Mode 2: Consumption abroad**, where consumers obtain services overseas.
- **Mode 3: Commercial presence**, involving establishment of foreign service providers domestically.
- **Mode 4: Presence of natural persons**, involving temporary movement of service providers.
- **GATS Commitments:** India has **no commitments in legal and architectural services** and limited engineering commitments.
- **Engineering Restriction:** Under **Mode 3**, foreign equity in engineering services is capped at **51%**.

- **Joint Initiative:** India has not signed the **World Trade Organization's 2017 Joint Initiative on Services Domestic Regulation (JI-SDR)**.
- **JI-SDR Objective:** Promotes **transparent and predictable licensing and qualification requirements** for services providers.
- **Most-Favoured-Nation Principle:** India still benefits from JI-SDR disciplines through the **Most-Favoured-Nation (MFN)** principle applying to participating members.

Challenges in India's Professional Services Sector

1. Accounting and Auditing

- **Dual Regulation:** **Institute of Chartered Accountants of India (ICAI)** and **National Financial Reporting Authority (NFRA)** exercise overlapping regulatory oversight.
- **Jurisdictional Concerns:** Overlapping ICAI-NFRA roles in **auditing-standard setting and enforcement** create jurisdictional uncertainty.
- **Foreign Professionals:** Foreign accountants generally require **ICAI registration or association with Indian Chartered Accountant (CA) firms** to practise.
- **Limited Mobility:** Limited **MRAs** restrict international mobility of accounting professionals.
- **Bookkeeping Gap:** Bookkeeping lacks dedicated rules covering **qualifications, ethical standards and record-keeping requirements**.

2. Legal Services

- **Regulatory Gap:** **Advocates Act, 1961** recognises advocates, leaving **in-house counsels, Legal Process Outsourcing (LPO) professionals and legal consultants** insufficiently regulated.
- **Limited Mobility:** India has no **Mutual Recognition Agreements (MRAs)** with foreign bar bodies for legal-profession mobility.
- **BCI-England MoU:** **Bar Council of India (BCI)-Bar Council of England and Wales MoU** provides neither mutual recognition nor practitioner mobility.
- **Restrictive Structures:** Advocates cannot readily adopt **corporate structures or Multi-Disciplinary Practices (MDPs)** with non-law professionals, limiting global expansion.
- **Competitiveness:** Structural restrictions constrain Indian law firms' ability to **scale, provide integrated services and compete internationally**.

3. Healthcare and Allied Healthcare

- **Jurisdictional Overlap:** **AYUSH** regulation involves the **Ministry of AYUSH, National Commission for Indian System of Medicine (NCISM) and State bodies**.
- **Interstate Mobility:** Professionals require **No Objection Certificates (NOCs)** to transfer registration between State Medical Councils.
- **Standardisation Gap:** Delayed **National Exit Test (NExT)** implementation and partial **National Commission for Allied and Healthcare Professions (NCAHP) Act, 2021** operationalisation hinder competency standardisation.

4. Architectural and Engineering Services

- **Uneven Regulation:** Architecture follows the **Architects Act, 1972**, while engineering, particularly civil engineering, lacks comprehensive statutory regulation.
- **Pending Reform:** The proposed **Engineers Bill** remains pending; **All India Council for Technical Education (AICTE)** mainly regulates education, not professional practice.
- **Accountability Gap:** Weak professional regulation can cause **architect-engineer overlaps** and gaps in construction-related accountability.
- **Business Restrictions:** Architects generally operate as **sole proprietors or partnerships**, excluding **Limited Liability Partnerships (LLPs) and companies**.
- **Global Comparison:** Unlike **United Kingdom, New Zealand and Singapore**, Indian architects face limited organisational flexibility, scalability and global competitiveness.
- **Overlapping Compliance:** Architects face additional **State registration and building requirements** alongside **Council of Architecture (CoA)** registration.
- **International Mobility:** Absence of **architectural MRAs** limits international recognition and professional mobility.

NITI Aayog proposes a **four-pronged strategy** for an **agile, globally competitive and future-ready professional services sector**.

STUDENT'S
NOTES 

- **Continuous Professional Development (CPD):** Introduce **uniform, enforceable CPD-hour requirements** across professions to address technological change and standardise service quality.
- **Global Regulatory Practices:** Strengthen **transparency and Good Regulatory Practices (GRPs)** through public licensing criteria, appeal mechanisms and defined processing timelines.
 - **Malaysia's Unified Public Consultation (UPC):** Provides a **single-window platform** for stakeholder consultation.
 - **Australia's DFAT Unit:** The **Department of Foreign Affairs and Trade (DFAT) Professional Services and Mutual Recognition Unit** helps professional bodies negotiate **Mutual Recognition Agreements (MRAs)**.
- **Move Up Global Value Chains:** Shift from **cost-based delivery to high-value, knowledge-intensive services**, including **research and development, strategic technology, engineering design and complex advisory**.
 - **Global Capability Centres (GCCs):** India's **~1,700 GCCs employ 1.9 million+ professionals**, providing scope for further regulatory modernisation.
- **Prepare for Emerging Trends:** Build institutional capacity for **Artificial Intelligence (AI)/automation, green transition and geopolitical fragmentation** as emerging export opportunities.
 - **Green Transition:** Creates demand for **carbon accounting, climate-risk advisory and sustainable finance**.
 - **Geopolitical Fragmentation:** Increases demand for **supply-chain restructuring and compliance advisory**, creating high-value export niches.

Test Your Knowledge	
 Prelims Corner With reference to India's professional services sector, consider the following statements: 1. India is among the most restrictive countries in architectural services under the OECD Services Trade Restrictiveness Index. 2. India has made extensive GATS commitments in legal and architectural services. 3. India's Revealed Comparative Advantage in services has increased significantly since 2005. Which of the statements given above is/are correct? A. 1 and 3 only B. 2 only C. 1 and 2 only D. 1, 2 and 3 Answer: A	 Mains Corner India's services sector has emerged as a major source of GDP, employment, FDI and export earnings, yet restrictive professional regulations can limit its movement up the global value chain. Discuss. (15 marks, 250 words)

19. INDIA'S CORPORATE INVESTMENT STAGNATION

Context: India's **Corporate Investment-to-GDP ratio** remains structurally stagnant despite prolonged **Reserve Bank of India (RBI) monetary easing**. The Government reduced the **corporate tax rate from 30% to 22% in 2019**, but investment remained subdued.

Reasons for Stagnation

- **Low Capacity Utilisation:** RBI's **Order Books, Inventories and Capacity Utilisation Survey (OBICUS)** shows manufacturing utilisation around **74–76%**.
 - **Investment Threshold:** Fresh capital expenditure becomes viable only after utilisation approaches the **~80% threshold**.
- **Uncertainty & Confidence:** **RBI Financial Stability Report (June 2026)** cites supply shocks and uncertainty, encouraging firms' **wait-and-watch approach**.

- **Cash Preference:** Despite strong balance sheets and debt-servicing capacity, firms prefer **cash buffers over fixed-asset investment**.
- **Brownfield Expansion:** Slower **Private Final Consumption Expenditure (PFCE)** and uncertain global demand keep existing capacity underused.
 - Firms therefore favour **expanding existing facilities** over new **greenfield investments**.
- **Weak Long-Term Demand:** Subdued mass consumption and uneven recovery create future-sales uncertainty, discouraging **large, long-term greenfield projects**.
- **Structural Bottlenecks:** **High land costs, complex acquisition, skilled-labour shortages and high Incremental Capital Output Ratio (ICOR)** raise investment costs.
- **MSME Credit Constraints:** Small firms face high lending risk premiums due to their **limited capital base**, restricting expansion.
 - **Poor Rate Transmission:** Lower **RBI Repo Rate** fails to reduce MSME credit costs sufficiently below expected profitability.
 - **Firm Dwarfism:** **Economic Survey 2019–20** highlighted firms remaining small, limiting **economies of scale, productivity, investment and employment**.
- **Weak Foreign Direct Investment (FDI) Retention:** January 2026 FDI inflows were **USD 5.67 billion**, against **USD 4.92 billion repatriated profits**.
 - **Domestic Risk Aversion:** Indian promoters favour **wealth preservation, financial assets and overseas diversification** over productive-capacity expansion.
 - **Insolvency and Bankruptcy Code (IBC):** Delays and asset-value haircuts make lenders cautious, tightening credit and discouraging **debt-funded investment**.
- **Global Uncertainty:** **Trade tensions, protectionism, geopolitical risks and supply-chain disruptions** discourage export-oriented firms from undertaking large projects.

Factors Determining Corporate Investment

- **Expected Profitability:** Larger investments can generate higher margins through **economies of scale**, subject to overall market demand.
- **Keynesian “Animal Spirits”:** Business confidence about **future profits and economic conditions** drives investment; uncertainty discourages it.
- **Cost of Credit:** Investment depends on **interest rates and loan access**; Kalecki’s “**Principle of Increasing Risk**” links higher borrowing with greater risk and credit costs.
 - **Small Firms:** Face greater financing constraints because of **lower own capital and higher borrowing dependence**.

20. POINTERS FOR PRELIMS

20.1. REVISED SERIES OF INDEX OF CORE INDUSTRIES (ICI)

- The new series with Base Year 2022-23 will replace the existing series of ICI with Base Year 2011-12. || **New Core Sector:** Iron Ore added as the 9th core industry. (Earlier series covered only Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizer, Steel, Cement and Electricity.)
- **Lower IIP Weight:** Combined weight of the 9 core industries reduced to 32.88% of IIP (from 40.27% in the 2011–12 series).
- **Steel Index Revised:** Uses gross production data instead of net production to align with the IIP.
- **Coal Basket Rationalised:** Retains only Raw Coal; Coal Middling and Washed Coal removed to avoid double counting.

- **ICI:** Monthly Production Index → Measures combined and sector-wise output of core infrastructure industries.
- **Lead Indicator for the Index of Industrial Production (IIP):**
- Released By: **Office of the Economic Adviser (OEA)** under the Department for Promotion of Industry and Internal Trade (**DPIIT**), Ministry of Commerce & Industry.

20.2. AMENDMENTS TO THE ENVIRONMENT IMPACT ASSESSMENT (EIA) FRAMEWORK

- Notified by the Government.
- Key Amendments to the EIA Framework:
- **Standing Bodies for States/UTs: (1) Standing Authority on Environment Impact Assessment (SAEIA):** Replaces a non-functional/delayed **State Environment Impact Assessment**

Authority (SEIAA) for up to 1 year. (2) **Standing Committee on Environment Impact Appraisal (SCEIA):** Performs **State Expert Appraisal Committee (SEAC)** functions for up to 1 year if non-functional.

- **Longer Tenure:** **Expert Appraisal Committee (EAC)** and **SEAC** tenure increased from 3 to 4 years (max 2 terms).
- **Higher Age Limit:** Appointment age raised to 70 years (up to 75 years in exceptional cases).
- **Removal for Delays:** Members may be removed for missing environmental clearance timelines.
- **Changed Default Mechanism:** Inactive state cases will be appraised by **state-level standing bodies** instead of the **Central EAC**.
- **About EIA:** Identifies, predicts, evaluates and mitigates environmental and social impacts of proposed projects.
- **Legislative Framework:** Governed by the **EIA Notification, 2006** under the **Environment (Protection) Act, 1986**.

20.3. NATIONAL BANK FOR FINANCING INFRASTRUCTURE AND DEVELOPMENT (NABFID)

- NaBFID received approval to raise ₹20,000 crore through zero-coupon bonds.
- **Zero-Coupon Bonds:** Issued at a discount, pay no periodic interest and redeemed at face value on maturity.
- About NaBFID: Specialised **Development Finance Institution (DFI)** for infrastructure financing.
- **Established Under:** **National Bank for Financing Infrastructure and Development Act, 2021**.

20.4. INDIA'S FIRST GEOTHERMAL WELLS AT PUGA VALLEY

- India commissioned its **first and deepest geothermal wells at Puga Valley (Ladakh)**.
- **Power:** To support India's first 1 MW pilot geothermal power plant.
- **Temperature:** 135°C recorded at 400 m; further tests underway.
- **Agency:** **ONGC Energy Centre**, with the **Ladakh Administration** and **Ladakh Autonomous Hill Development Council (Leh)**

- **Puga Valley:** In **Changthang, SE Ladakh**, ~22 km from Salt Lake Valley.
- Known for **hot sulphur springs** and rich geothermal resources.
- **Geothermal Potential:** **Global** → **15.4 GW** installed capacity (2024); leaders—**United States, Indonesia, Philippines**. || **India** → **381** hot springs (35–89°C) identified by the **Geological Survey of India (GSI)**. **10** geothermal provinces; major sites include **Puga, Chumathang, Manikaran, Tapoban, Bakreshwar, Tuwa, Tattapani, and Deulajhari**.

20.5. RURAL SELF EMPLOYMENT TRAINING INSTITUTES (RSETIS)

- **RSETIs** have trained **60+ lakh** candidates and enabled livelihoods for **43+ lakh** rural youth.
- An initiative of the **Ministry of Rural Development (MoRD)** providing **free skill training** to rural youth (**18–50 years**) for self-employment and micro-enterprises.
- Offers **2 years of post-training support** and facilitates bank credit under schemes such as the **Pradhan Mantri Mudra Yojana (PMMY)**.
- **Scheme:** A sub-component of the **Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM)**.
- **Model:** Based on the **Rural Development and Self Employment Training Institute (RUDSETI)** model developed in Karnataka.
- **Implementation:** Operates through a **tripartite partnership** among the **MoRD**, **State Governments**, and the designated **Lead Bank** in each district.

20.6. NAYING HYDRO ELECTRIC PROJECT

- **Context:** The Ministry of Environment, Forest and Climate Change granted environmental clearance to the **Naying Hydro Electric Project**.
- **About:** **1,000 MW run-of-the-river** hydropower project on the **Siyom (Yomgo) River** in **Arunachal Pradesh**.
- **River:** **Siyom (Yomgo)** is a **right-bank tributary** of the **Brahmaputra River**.
- **Developer:** **North Eastern Electric Power Corporation Limited (NEEPCO)**.

20.7. REGULATION OF VIRTUAL DIGITAL ASSETS (VDAS)

- The Parliamentary Standing Committee on Finance recommended an appropriate regulatory framework for Virtual Digital Assets (VDAs).
- VDAs: Digital representation of value that can be **traded, transferred or used for payment**. Excludes digital representation of **fiat currency**.
- India has **no dedicated law** for VDAs such as cryptocurrencies.
- VDAs are currently regulated mainly for **anti-money laundering (AML)** and **taxation**.
- Under the **Securities Markets Code**, only VDAs with characteristics of **securities or derivatives** fall within its scope.
- **Similar technology-neutral approaches** are followed in the United States (US), Singapore, United Kingdom (UK) and European Union (EU).

Committee Recommendations

- **Address Regulatory Gap:** Frame a clear legal framework to reduce fraud, market manipulation and investor risks amid rising retail participation.
- **Interim Oversight:** Until a comprehensive law is enacted, establish **Self-Regulatory Organisations (SROs)** under the supervision of a designated regulator.

20.8. BHARAT AUDYOGIK VIKAS YOJANA RASAYAN (BHAVYA RASAYAN)

- **Context:** The Union Cabinet approved BHAVYA Rasayan under the Ministry of Chemicals and Fertilisers to establish three plug-and-play Chemical Parks.

Key Features

- Expand domestic chemical manufacturing and attract Foreign Direct Investment (FDI).
- **Reduce import dependence** and logistics costs.
- **Support downstream sectors** like pharmaceuticals, textiles, agrochemicals, automobiles, and electronics.
- **Financial Outlay:** ₹3,030 crore for FY 2026–27 to FY 2030–31. ₹3,000 crore for common infrastructure including Common Effluent Treatment Plants (CETPs) and Treatment, Storage and Disposal Facilities (TSDFs).
- **Funding Pattern:** Central Government: Up to ₹1,000 crore grant-in-aid per park.

|| **State Governments:** Minimum ₹500 crore contribution per park.

- **Selection Criteria:** Each park requires 2,000 acres (8 sq. km) contiguous, encumbrance-free land.
- States selected through competitive, challenge-based processes.

20.9. UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW (UNCITRAL)

- **Context:** India hosted the inaugural New Delhi conference marking UNCITRAL's **60th anniversary**.
- **About UNCITRAL:** Headquartered in Vienna, UNCITRAL is a UN General Assembly (UNGA) subsidiary body, established in 1966.
- **Core Objective:** Promotes progressive harmonisation and unification of international trade law, reducing legal barriers to cross-border commerce.
- **Role:** Develops modern, equitable and standardised rules for private international commercial transactions.
- **Composition:** 70 States are elected by UNGA for six-year terms, representing five regional groups: Africa, Asia-Pacific, Eastern Europe, Latin America & Caribbean, and Western Europe & Others. || India is among only eight countries with uninterrupted UNCITRAL membership since 1966.

20.10. SRI CITY DRY PORT PROPOSAL

- **Context:** An Inter-Ministerial Committee is examining the proposal to designate **Sri City, Tirupati district, Andhra Pradesh**, as a dry port.
- Sri City is a multi-product business hub comprising an **SEZ, Domestic Tariff Zone (DTZ), Free Trade Warehousing Zone (FTWZ)** and **Electronics Manufacturing Cluster (EMC)**.
- **Location Criteria:** CBIC guidelines generally restrict new dry ports within **200 km of seaports or 100 km of Inland Container Depots (ICDs)**.
 - **Exceptions:** Green-zone States receive explicit relaxations, while **Blue-zone States like Andhra Pradesh** may qualify where trade hubs lack adequate logistics.
- **Dry Port:** A **dry port or Inland Container Depot (ICD)** is an inland

intermodal terminal connected to a seaport by road or rail.

20.11. DHOLE (*CUON ALPINUS*)

- **Context:** Camera traps confirmed the dhole's return to Assam's Bornadi Wildlife Sanctuary and Manipur's Shirui Village.
- **Characteristics:** The dhole is a **social apex predator** with reddish-brown fur and bushy tail, living in packs and coordinating through whistles.
- **Distribution:** Native to Asia, India hosts its **largest population**, across the Western Ghats, Central Indian forests and Northeast. It is highly adaptable, occupying habitats ranging from forests to high-altitude steppes.
- **Diet:** A **carnivore**, it primarily hunts wild ungulates such as **chital and sambar**, while rarely preying on livestock.
- **Ecological Role:** As a **keystone species**, the dhole helps regulate prey populations and maintain **forest ecosystem balance**.
- **Conservation Status:** IUCN: **Endangered**; CITES: **Appendix II**; Wildlife Protection Act (WPA): **Schedule I**.

20.12. SUSTAINABLE AVIATION FUEL (SAF)

- **Context:** Ministry of Civil Aviation reviewed India's SAF adoption preparedness and compliance requirements under Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).
- **Definition:** SAF is a **sustainable, drop-in alternative** to conventional jet fuel, produced from **non-fossil feedstocks**. || SAF can reduce **lifecycle CO₂ emissions up to 80%** and eliminate **sulphur dioxide (SO₂)** emissions.
- **Compatibility:** SAF is chemically identical to **Jet A/Jet A-1** and can blend safely up to **50%** without aircraft modifications. || SAF supplies **under 1% of global aviation fuel**, constrained by high costs, supply shortages and feedstock competition.
- **Certified Pathways:** **ASTM International** has certified multiple thermochemical and biochemical SAF production pathways..

20.13. INDIA'S FIRST TELECOM MANUFACTURING ZONE (TMZ) IN GWALIOR

- The **Department of Telecommunications (DoT)** and **Madhya Pradesh** Government will sign an MoU establishing India's first TMZ in Gwalior.
- **Industry Coverage:** The zone will support equipment manufacturers, technology firms, MSMEs, start-ups and stakeholders across the telecom value chain.

20.14. BHARAT MARITIME INSURANCE POOL (BMIP)

- **Context:** Department of Financial Services (DFS) launched India's first **sovereign-backed Protection and Indemnity (P&I) insurance** product under BMIP.
- The first P&I policy was handed over to **Shipping Corporation of India Limited (SCI)**.
- **Launch:** BMIP was launched on **12 May 2026** by DFS, Ministry of Finance, following Cabinet approval on **18 April 2026**.
- **Structure:** A **state-backed co-insurance and reinsurance pool** where domestic insurers jointly underwrite and proportionately reinsure risks.
- **Sovereign Backstop:** The **sovereign guarantee** is triggered only after exhausting the pool's reserves, member contributions and reinsurance.
- **Administration:** **General Insurance Corporation of India** Re manages the pool.

20.15. ENVIRONMENTAL PERFORMANCE INDEX 2026

Context: **Global Rank:** India ranked **176th of 177 countries**, scoring **22.46**, ahead only of **Laos**; Estonia topped with **74.79**. India stood **7th among 8 South Asian countries** and has remained among the **five lowest performers since 2022**.

- **Overview:** The **Environmental Performance Index (EPI)** is a **biennial global index**, launched in **2000** by **Yale Center for Environmental Law & Policy (YCELP)** and **Columbia University's Center for International Earth Science Information Network (CIESIN)**.

- **Global Benchmark:** It tracks progress towards the **Sustainable Development Goals (SDGs)**, **Paris Agreement** and **Kunming-Montreal Global Biodiversity Framework**.
- **Ranking Trend:** India's rank shifted **141st (2016) → 177th (2018) → 168th (2020) → 180th (2022) → 176th (2024 & 2026)**.
- **Key Concerns:** India remains near the bottom in **environmental health, air quality and biodiversity**, with declines in **fishery, tree cover and pesticide pollution**.

20.16. MARKET DISTORTIONS PERFORMANCE INDEX

- **Context:** India climbed **25 places** in the **Market Distortions Performance Index**, from **82nd to 57th** between **2010 and 2023**.
- The index measures India's progress in **reducing market distortions** and **strengthening market competitiveness**.
- **Key Pillars:** Assessment covers **property-rights protection, domestic competition and international competition**.
- **Reform Drivers:** **Goods and Services Tax (GST), Insolvency and Bankruptcy Code (IBC)**.

20.17. VESSEL COMMUNICATION AND SUPPORT SYSTEM (VCSS)

- **Context:** Department of Fisheries approved nationwide VCSS rollout under **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** at **₹364 crore**.
- Indian Space Research Organisation (ISRO) designed VCSS for **monitoring, control and surveillance** of marine fishing vessels.
- **Free Transponders:** Indigenous transponders will be provided free to eligible fishermen, covering nearly **1 lakh marine vessels**.
- **Funding Pattern:** **60:40 Centre-State sharing**; Union Territories receive **100% Central assistance**.
- **'Nabhmitra' App:** ISRO-developed platform enables **real-time communication and support** for marine fishing communities. **Key Services:** Position tracking, two-way messaging, **SOS alerts**, geo-fencing warnings, weather and cyclone advisories.

20.18. MSME DEVELOPMENT (AMENDMENT) BILL, 2026

- **Context:** Rajya Sabha passed the Bill to amend the **Micro, Small and Medium Enterprises (MSME) Development Act, 2006**.
- **Core Aim:** Addresses delayed payments to MSMEs and streamlines dispute resolution.
- **Digital Registration:** Central Government will notify a free, voluntary national digital platform for MSME registration; States may provide similar platforms.
- **Facilitation Councils:** State Governments can establish additional **Micro and Small Enterprises Facilitation Councils** alongside existing councils.
- **TReDS Settlement:** Central Public Sector Enterprises must settle MSME procurement invoices through **Trade Receivables Discounting System (TReDS)**.
- **TReDS:** **RBI-regulated electronic platform** enabling competitive financing of MSME receivables by multiple financiers since 2017.
- **Faster Arbitration:** If mediation fails, arbitration must begin within **30 days** of mediation termination.
- **Time-Bound Awards:** Arbitration awards must be issued within **90 days** after completion of pleadings.
- **Pending Cases:** Cases pending beyond **six months** require payment of at least **50% of the awarded amount** to suppliers.

20.19. SOUTH INDIA'S FIRST SEMICONDUCTOR MANUFACTURING FACILITY

- **Context:** Prime Minister laid the foundation for **South India's first semiconductor facility** in **Visakhapatnam, Andhra Pradesh**.
- **Project Cost:** The **Outsourced Semiconductor Assembly and Test (OSAT)** facility involves an investment of **₹2,500 crore**.
- **India Semiconductor Mission:** It is the **first Andhra Pradesh and South India facility** approved under the **India Semiconductor Mission (ISM)**.
- **Technology Partner:** **South Korea-based APACT Co.** will provide technology partnership for the project.

20.20. INDIA ACHIEVES NEAR-UNIVERSAL BANKING COVERAGE

Context: 99.92% of inhabited villages now have access to a banking outlet within a 5-km radius, marking near-universal banking coverage.

- **Last-Mile Access:** Banking services reach villages through bank branches, Business Correspondents (BCs) and India Post Payments Bank (IPPB) centres.
- **BCs/Bank Saathis:** Bank-appointed agents providing essential financial services in **remote and branchless areas**.
- **Expanded Infrastructure:** India now has **1.81 lakh bank branches, 17.36 lakh BCs and 1.65 lakh IPPB centres**, strengthening rural financial access.

20.21. RBI TO RESUME LICENSING OF URBAN COOPERATIVE BANKS CONTEXT

- **Context:** The Reserve Bank of India (RBI) will resume 'on-tap' licensing of **Urban Cooperative Banks (UCBs)** after **over two decades**.
- New UCB licences were paused in **2004** after the **1993–2001 liberalised licensing policy** caused rapid expansion, governance weaknesses and financial instability.

Key Draft Licensing Conditions

- **Operational Track Record:** Only credit cooperative societies with at least **10 years of active operations** can apply.
- **Capital Base:** Applicants need a minimum **₹10,000 crore deposit base** and **₹300 crore net worth**, based on

audited accounts as of March 31 of the previous financial year.

- **Financial Health:** At licensing, applicants must maintain:
 - **Capital to Risk-Weighted Assets Ratio (CRAR) $\geq 12\%$**
 - **Net Non-Performing Assets (NPA) $\leq 3\%$**
- **Geographical Diversification:** RBI will initially prioritise societies registered under the **Multi-State Co-operative Societies Act, 2002**, particularly those operating across multiple States.

20.22. GREENIUM

Context: **Greenium (green premium)** – Investors accept lower yields on green bonds than comparable conventional government securities.

- **Price–yield relationship:** Lower yields imply higher bond prices, reflecting investor preference for environmentally sustainable investments.

Significance of a Stable Greenium

- **Lower borrowing costs:** Reduces government financing costs for renewable energy, electric mobility and climate-adaptation projects.
- **Supports Net Zero:** Facilitates cost-effective financing for India's **Net Zero by 2070** target.
- **Market Maturity:** Stable greenium signals stronger domestic green-finance markets and sustained investor confidence.
- **Credibility:** Reflects confidence in India's **green taxonomies** and **Environmental, Social and Governance (ESG)** project evaluation.

SECURITY AND DEFENCE

1. TECHNOLOGY-ENABLED EXPANSION OF TRANSNATIONAL ORGANIZED CRIME

Context: A United Nations Office on Drugs and Crime (UNODC) report highlights the growing use of advanced technologies by transnational organised crime groups to expand cross-border criminal activities.

Key Findings

- **Technology-Enabled Crime:** Criminal networks use **Artificial Intelligence (AI)**, malware, encrypted messaging platforms, and satellite communication to scale operations.
- **Cross-Border Crime Ecosystem:** Syndicates leverage digital payment systems, cryptocurrencies, and online platforms to build integrated criminal networks.
- **Huge Economic Losses:** Online scams caused an estimated **US\$88.3–114.1 billion** in global losses in **2025**, making cyber-enabled fraud among the fastest-growing organised crimes.
- **Expanding Illegal Trade:** Criminal groups increasingly engage in drug, human, and wildlife trafficking, and money laundering; the **Sulu–Celebes maritime corridor** has emerged as a key route for cocaine and other illicit goods.

2. INDIA'S INTEGRATED STRATEGY AGAINST LEFT-WING EXTREMISM

Context: India became effectively **Naxalism-free on 31 March 2026**, after nearly six decades of violence.

- **Whole-of-government approach:** Security, technology, infrastructure, welfare and rehabilitation were integrated around **Vishwaas, Nirman and Jan Kalyan**.

India's Success Strategy to Overcome Left-Wing Extremism

- **Integrated response:** Fragmented, incident-driven measures were replaced by a strategy addressing both **security threats** and **structural causes**.
- **Vishwaas (Trust):** Security operations, **inter-agency coordination**, **surrender-rehabilitation programmes** and community engagement rebuilt public trust.
- **Nirman (Development):** Expanded **physical/digital connectivity**, **governance**, **infrastructure** and **livelihood opportunities** reached remote regions.
- **Jan Kalyan (Welfare):** **Welfare**, **dignity**, **cultural inclusion** and mainstream development strengthened community integration.
- **Reinforcing cycle:** **Security enabled development; development built trust; trust improved welfare delivery**, creating sustained progress.
- **Shrinking footprint:** **LWE-affected districts declined from 126 (2014) to 2 (2026)**; most-affected districts fell from **35 to zero**.
- **Falling violence:** Incidents declined from **870 (2014) to 234 (2025)** and fatalities from **310 to 100**, versus **1,936 incidents and 1,005 deaths in 2010**.
- **Improved security:** Security operations, development and governance weakened Naxal networks, restoring **public confidence, peace, connectivity and safety**.



National Policy & Action Plan

- **Policy shift:** The 2015 National Policy and Action Plan replaced ad hoc responses with a structured whole-of-government framework.
- **Security-development mix:** CAPF deployment, specialised training, Security Related Expenditure, Special Infrastructure Scheme and Special Central Assistance combined security measures with socio-economic development.
- **Three-pronged strategy:** For the first time, Dialogue, Security and Coordination were pursued under central direction from the Ministry of Home Affairs.
- **Time-bound target:** After setting 31 March 2026 as the Naxal-free target on 24 August 2024, intensified operations, coordination and development achieved it.

**Expanded Security Grid**

- **Stronger security presence:** Infrastructure, specialised forces and coordination reduced security gaps, improving mobility, intelligence-sharing and counter-insurgency.
- **Police & CAPF expansion:** 597 fortified police stations vs 66 pre-2014; Naxal-incident stations fell 333 to 16; 408 CAPF camps were added.
- **Operational support:** 68 night-landing helipads, 400 bullet-/blast-proof vehicles and 5 hospitals improved troop mobility, evacuation and welfare.
- **Specialised forces:** CoBRA, CRPF, DRG, Jharkhand Jaguar, Chhattisgarh Police and Greyhounds created a layered security architecture.
- **Joint operations:** DRG, STF, CRPF and CoBRA training improved interoperability, coordination, readiness and command clarity.

**Technology-Led Operations**

- **Advanced surveillance:** UAVs, drones, satellite imagery and AI-based analytics enabled real-time monitoring and precision surveillance.
- **Intelligence tracking:** Location tracking, call-log, mobile-data and social-media analytics improved movement tracking and communication analysis.

Breaking Financial Networks

- **Financial disruption:** By December 2025, NIA seized ₹40+ crore, ED attached ₹12 crore, while states confiscated another ₹40 crore.
- **Investigation & prosecution:** NIA investigated 112 LWE cases and filed 100 charge sheets by June 2026.
- **All-agency strategy:** Whole-of-Government development and Whole-of-Agency security targeted both armed cadres and their support ecosystem.

Surrender & Rehabilitation

- **Reintegration approach:** Security operations were paired with **surrender and rehabilitation** to reintegrate former cadres into mainstream society.
- **Financial incentives:** Surrendering cadres received ₹5 lakh/₹2.5 lakh, ₹10,000 monthly for 36 months, plus surrender and weapon-compensation benefits.
- **Rising surrenders:** 2,337 surrendered in 2025; 3,927 during 2024–March 2026, aided by civil society, journalists and community leaders.

Targeted Initiatives

- **Special Central Assistance:** Funded critical infrastructure and development projects in severely LWE-affected districts.
- **Aspirational Districts Programme:** Converged schemes to improve health, education, financial inclusion, infrastructure and connectivity.
- **PM-JANMAN:** Supports Particularly Vulnerable Tribal Groups (PVTGs) through housing, water, education, healthcare and connectivity.
- **Dharti Aaba Janjatiya Gram Utkarsh Abhiyan:** Addresses infrastructure gaps, living standards and economic opportunities in tribal villages.

3. EMERGING TERROR THREATS FROM SOCIAL MEDIA

Context: Security agencies dismantled a Pakistan-based, Inter-Services Intelligence (ISI)-backed terror network, arresting 200+ people across 14 States.

Social Media as Security Threats

- **Algorithmic Radicalisation:** Extremist groups exploit Instagram, X and YouTube Shorts to target youth, including in Jammu & Kashmir and Punjab.
 - **Echo Chambers:** Engagement-focused algorithms can isolate vulnerable users within extremist content bubbles, limiting moderate viewpoints.
- **Recruitment Funnel:** Handlers identify extremist-content users on open platforms, establish contact, then shift recruits to **encrypted/private deep-web platforms**.
 - Recruitment can be completed **without any physical meeting**, making networks decentralised and difficult to detect.
- **Digital Tradecraft:** Shared anonymous email accounts use **Draft folders** for communication, avoiding transmission and leaving minimal digital traces.
 - **Metadata-less Apps: End-to-End Encryption (E2EE)** platforms may avoid storing metadata or requiring phone numbers, limiting conventional forensics and phone interception.
 - **Multi-layered Virtual Private Networks (VPNs):** VPNs and the **Dark Web** conceal Internet Protocol (IP) addresses during operational coordination.
- **Lone-Wolf Threat:** Online extremist content and **Do-It-Yourself (DIY) tactical manuals**, including Improvised Explosive Device (IED) guides, enable self-radicalised attackers.
 - Their absence of formal command structures makes **early detection particularly difficult**.
- **Digital Terror Financing:** Internet-based financing increasingly complicates monitoring by agencies such as the **Financial Intelligence Unit (FIU-IND)**.
 - **Crypto Funding:** Fake charity campaigns and cryptocurrency wallets, including **Monero and Bitcoin**, can facilitate difficult-to-trace funding and bypass **Anti-Money Laundering (AML)** controls.

Implications of Social Media for India's Internal Security

- **Targeted Propaganda:** Extremists tailor content to **public, adversaries and members** to gain sympathy, intimidate opponents and maintain cohesion.
 - **Psychological Operations (PsyOps):** Adversaries exploit emotions and beliefs to **manipulate opinion, deepen social divisions and destabilise India.**
- **Misinformation & Public Order:** Fake news can trigger **panic, violence and communal tensions**; WhatsApp rumours have contributed to **mob lynchings and localised riots.**
 - **Internet Shutdowns:** Government may resort to shutdowns as a **harsh measure to restore public order.**
- **Election Interference:** **Artificial Intelligence (AI) deepfakes and bot-driven campaigns** can manipulate voter perceptions and electoral narratives, threatening democratic stability.
- **Polarisation:** Engagement-driven algorithms amplify **polarised and extremist content**, pushing vulnerable users into ideological **echo chambers.**

Law Enforcement Challenges

- **Jurisdictional Barriers:** Foreign platforms/servers require **Mutual Legal Assistance Treaties (MLATs)** for evidence; delays can undermine time-sensitive intelligence.
- **Volume & Decentralisation:** Massive content volumes hinder monitoring; extremists shift to **fringe/decentralised platforms** with weaker moderation.
- **Language & Context:** Moderation struggles with **local languages, dialects, coded terms and cultural context**, causing missed threats or excessive censorship.
- **Security–Speech–Privacy Balance:** Counter-terrorism must protect security without undermining **freedom of speech or Right to Privacy** recognised in *K.S. Puttaswamy (2017)*.
 - **Surveillance Risks:** Excessive monitoring or blanket takedowns may **violate privacy, suppress expression and invite judicial scrutiny.**
- **First-Responder Gaps:** Though **Indian Cyber Crime Coordination Centre (I4C)** is capable, State police often lack **digital-forensics tools, Open Source Intelligence (OSINT) training and technical expertise.**

India's Counter-Measures

- **Information Technology (IT) Act, 2000:** Section 69A permits blocking content threatening India's **sovereignty, integrity, defence or security.**
- **Information Technology Rules, 2021:** Require due diligence by **Significant Social Media Intermediaries**, including unlawful-content mechanisms and **first-originator identification** in specified cases.
- **I4C & Indian Computer Emergency Response Team (CERT-In):** I4C coordinates cybercrime/cyber-terrorism responses; **CERT-In** handles cybersecurity incidents and response.
- **Intelligence Fusion: Multi-Agency Centre (MAC), National Intelligence Grid (NATGRID) and Crime and Criminal Tracking Network & Systems (CCTNS)** enable intelligence sharing among central agencies and State police.
- **Unlawful Activities (Prevention) Act (UAPA), 1967:** Principal framework against terrorism, covering **online recruitment, radicalisation, financing and facilitation**

Test Your Knowledge	
 Prelims Corner In the context of counter-terrorism, the term "lone-wolf attack" most appropriately refers to: A. An attack conducted by a terrorist organisation using only foreign nationals B. An attack carried out by an individual without requiring direct operational control from an established terrorist organisation C. An attack conducted exclusively through cyber means D. An attack involving only a single target Answer: B	 Mains Corner How do algorithmic radicalisation, encrypted communication and cryptocurrency-based financing alter the conventional methods of terrorist recruitment and financing? What institutional capabilities does India need to counter these emerging threats? (30 marks, 150 words)

4. POINTERS FOR PRELIMS

4.1. OPERATION SOUTHERN READINESS 26-2

- The Indian Navy hosted at **Southern Naval Command, Kochi**.
- Multinational maritime security exercise.
- **Organised By:** Indian Navy-led **Combined Task Force 154 (CTF 154)** with the **Combined Maritime Forces (CMF)**.
- **CMF: 47-nation** maritime partnership promoting the **International Rules-Based Order (IRBO)** by countering illicit non-state actors and enhancing maritime security.
- **Significance:** First **Operation Southern Readiness** hosted in India.

4.2. EXERCISE PITCH BLACK 2026

- **Biennial** multinational air combat exercise by the **Royal Australian Air Force (RAAF) in northern Australia**. || **2026 Edition:** Around 100 aircraft from 21 nations, including India.
- **Other India–Australia Exercises:** AUSTRA HIND (Army), AUSINDEX (Navy), MALABAR (India, USA, Japan & Australia).

4.3. KUSHA MISSILE

- **Context:** Defence Research and Development Organisation (DRDO) successfully conducted the maiden flight test of the **Kusha Long-Range Surface-to-Air Missile (LR-SAM)** system.
- Developed by **DRDO** under **Project Kusha** to build an indigenous long-range air defence network.
- Comparable to Global Systems
- Designed to match **Russia's S-400 Triumf** and the **United States (US) MIM-104 Patriot** systems.
- Intercepts fighter aircraft, cruise missiles, ballistic missiles, **Unmanned Aerial Vehicles (UAVs)**, and large enemy aircraft.
- Mission **Sudarshan Chakra**: Key component of **Mission Sudarshan Chakra** to establish a multi-layered national air and missile defence shield by **2035**.

4.4. MACHILIPATNAM – ASW SWC

- **Context:** *Machilipatnam (BY 529)*, the **7th of 8 Anti-Submarine Warfare Shallow Water Craft (ASW SWC)** for the Indian Navy, was launched by Cochin Shipyard Limited.
- **Builder:** The vessel is being constructed by **Cochin Shipyard Limited (CSL)** for the Indian Navy.
- **Capabilities:** Designed for **underwater surveillance, Anti-Submarine Warfare (ASW), Low Intensity Maritime Operations (LIMO)** and **mine warfare**.
- **Name:** Named after **Machilipatnam**, the historic port city in **Krishna district, Andhra Pradesh**, known for its maritime heritage and eastern-coast trade.

4.5. INS NIPUN

- **Context:** **INS Nipun**, Hindustan Shipyard Limited's second **Diving Support Vessel (DSV)**, was delivered to the **Indian Navy at Visakhapatnam**.
- **Indigenisation:** It is the sister ship of **INS Nistar**, featuring nearly **75% indigenous content**, supporting **Aatmanirbhar Bharat**.
- **Submarine Rescue:** Designed as a 'mother ship' for **Deep Submergence Rescue Vehicle (DSRV)** operations during underwater submarine emergencies.
- **Deep-Sea Diving:** Advanced equipment enables **saturation diving up to 300 metres** for prolonged deep-sea operations.
- **Remotely Operated Vehicles:** Equipped with advanced **Remotely Operated Vehicles (ROVs)** for diver monitoring, seabed inspection and deep-sea salvage.

4.6. LOKMANYA TILAK NATIONAL AWARD 2026

- **Awardee:** National Security Advisor (NSA) **Ajit Doval** received the award for strengthening **national security**.
- **Presented By:** Union Home Minister presented the award conferred annually by **Lokmanya Tilak Smarak Trust, Pune**.
- **Date & Purpose:** Awarded every **1 August**, Tilak's death anniversary,

recognising his legacy, values and patriotism.

4.7. EXERCISE ROTOR CLAP III

- **Conducted By:** Indian Air Force (IAF) concluded the week-long exercise at Pokhran Field Firing Range, Jaisalmer, Rajasthan.
- **Theme:** Counter-Unmanned Aerial Systems (Counter-UAS).
- **Objective:** Helicopter units validated operational concepts and capabilities against emerging aerial threats.

4.8. INS MALVAN COMMISSIONED INTO INDIAN NAVY

- **Context:** Indian Navy commissioned INS Malvan, the second indigenously designed and built Mahe-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC), at Karwar, Karnataka.
- **Production:** Built by Cochin Shipyard Limited (CSL), Kochi; it is the second of 8 Mahe-class vessels and sixth of 16 ASW-SWCs being inducted.
- **Historical Legacy:** Named after Malvan, Maharashtra, linked to Chhatrapati Shivaji Maharaj's maritime legacy.
- **Underwater Warfare:** Designed to detect, track and engage underwater threats in shallow coastal waters.
- **Indigenisation:** Mahe-class vessels demonstrate India's growing domestic naval design, shipbuilding and engineering capabilities.
- **Combat Readiness:** INS Malvan reinforces anti-submarine warfare, coastal security and maritime preparedness, supporting a Combat Ready, Credible, Cohesive and Future Ready Navy.

4.9. XTREME WEATHER GRADE (XWG) DIESEL

- The Chief of Army Staff launched Xtreme Weather Grade (XWG) Diesel, indigenously developed by the Indian Army and Oil Marketing Companies (OMCs).
- **Purpose:** This military-grade diesel remains fluid at subzero temperatures, enabling reliable vehicle operations in high-altitude and extreme winter conditions.

- **Key Specifications:** It has a -42°C pour point to prevent waxing and gelling and a 50°C flash point for safety.
- **Standards:** XWG diesel complies with Bharat Stage VI (BS-VI) and Indian Standard (IS) 1460:2025, requiring no engine modifications.

4.10. NITROSAMINES

- **Context:** The United States Food and Drug Administration (US FDA) identified a new nitrosamine impurity linked to mitapivat and revised its acceptable intake limits.
- **What are Nitrosamines?** These are organic compounds containing a nitroso group attached to an amine nitrogen and are considered potent, probable human carcinogens.
- **Formation:** They form when secondary or tertiary amines react with nitrosating agents such as nitrites, nitrates or nitrous acid under acidic, high-temperature or oxidative conditions.
- **Major Sources:** Common sources include pharmaceuticals, chloraminated drinking water, tobacco smoke, and nitrite-preserved or fermented foods such as bacon and sausages.
- **Health Effects:** Cytochrome P450 liver enzymes convert nitrosamines into reactive compounds that form DNA adducts, causing mutations and raising cancer risk. They can also damage the liver and kidneys.

4.11. SUSPENSION POLYVINYL CHLORIDE (S-PVC)

- **Context:** The Directorate General of Foreign Trade (DGFT) imposed a six-month import restriction on Suspension Polyvinyl Chloride (S-PVC) resin.
- **What is S-PVC?** It is a widely used synthetic plastic polymer produced by polymerising vinyl chloride monomer in water using specialised agitators and initiators.
- **Form & Uses:** S-PVC is a white, free-flowing powder processed into various plastic products.
- **Production Share:** It accounts for nearly 80% of global PVC production, producing a clean, granular and dust-free

powder suited to **rigid structural applications**.

- **About DGFT:** The **Directorate General of Foreign Trade (DGFT)** is an attached office of the **Ministry of Commerce and Industry** that implements India's **Foreign Trade Policy** and regulates exports and imports.

4.12. AGNI-4 BALLISTIC MISSILE TEST

- **Context:** India successfully test-fired the Agni-4 from the **Integrated Test Range (ITR), Chandipur, Odisha**, under the **Strategic Forces Command (SFC)**.
- **Missile Profile:** An indigenously developed **intermediate-range, surface-to-surface ballistic missile** of the **Agni series**, developed by **DRDO**.
- **Key Features:** About **20 m long**, with a range of nearly **4,000 km** and payload capacity of around **1,000 kg**.
 - Uses **advanced avionics, onboard computers, inertial navigation and guidance systems** for accuracy and flight stability.
- **Strategic Significance:** The successful test confirms **operational readiness** and strengthens India's **credible strategic deterrence**.

4.13. NATIONAL SECURITY GUIDELINES FOR RENEWABLE ENERGY PROJECTS NEAR BORDERS

Context: The Ministry of Home Affairs (MHA) issued security guidelines for solar, wind and hybrid renewable projects near the International Border, Line of Control (LoC) and Line of Actual Control (LAC).

Security Guidelines for Renewable Projects Near Borders

- **Zoning & Clearances:** Projects are **prohibited within 1 km** of the International Border, LoC or LAC; those within **1–50 km** need **Ministry of Home Affairs (MHA)** security clearance, while projects within **1–20 km** additionally require a **Ministry of Defence (MoD) NOC**.
- **Centralised Approval:** Proposals must route through the **Ministry of New and Renewable Energy (MNRE)** after State-level land approval, with project

coordinates; MHA should preferably decide within **60 days**.

- **Foreign Participation:** Personnel from countries sharing India's land borders require prior Central permission; foreign land transfers need **Central approval and MHA clearance**, while foreign-funded projects must comply with **Foreign Direct Investment (FDI)** and **Department for Promotion of Industry and Internal Trade (DPIIT)** norms.
- **Security Infrastructure:** Developers must fund **anti-drone systems** operated by the **Central Industrial Security Force (CISF)/State police**; layouts should facilitate defence movement, avoid border-parallel stretches and keep residential/hotel facilities generally **5 km away**.
- **Construction Controls:** Height limits are **3 m (1–8 km), 5 m (8–20 km) and 15 m (20–50 km)**, excluding core infrastructure such as wind turbines. Existing projects with prior

4.14. GALLANTRY AWARDS 2026

- **2026 Awards:** President Droupadi Murmu approved **78 Gallantry Awards** on **15 August 2026**, honouring exceptional bravery and sacrifice.
- **Composition:** **9 Kirti Chakras** (7 posthumous), **19 Shaurya Chakras** (1 posthumous), **36 Sena Medals** (5 posthumous), **5 Bars to Sena Medals**, **3 Nao Sena Medals** and **5 Vayu Sena Medals**.
- **Gallantry Awards:** Honour **exceptional bravery, courage and self-sacrifice** by military personnel and civilians.
- **Wartime Awards:** Recognise valour **in the presence of the enemy**—**Param Vir Chakra, Maha Vir Chakra and Vir Chakra**.
- **Peacetime Awards:** Recognise bravery **other than facing the enemy**—**Ashoka Chakra, Kirti Chakra and Shaurya Chakra**.
- **Evolution:** Peacetime awards began in **1952 as Ashoka Chakra Class I–III**, renamed in 1967.

4.15. EXERCISE MAITREE-XV

Context: MAITREE-XV (2026): Indian Army contingent departed for **Surat Thani, Thailand**, for the 15th India–Thailand Joint Military Exercise.

4.16. ROTATING DETONATION ENGINES

- **Context: Indigenous Breakthrough:** Indian defence start-up **D-Propulse** demonstrated India's first indigenous **5 kN air-breathing Rotating Detonation Engine (RDE)** at a **Defence Research and Development Organisation (DRDO)** facility.
- **Technology Readiness:** The engine achieved **Technology Readiness Level-5 (TRL-5)**, marking progress in indigenous next-generation air-breathing propulsion.
- **RDE Technology:** RDEs use continuous **supersonic detonation waves**, potentially providing higher thermodynamic efficiency and more compact combustors.
- **Deflagration:** Conventional combustors use **subsonic flame propagation at constant pressure**, causing greater heat loss during fuel-air expansion.
- **Detonation:** Detonation uses **supersonic shock waves at constant volume**, compressing the unburned mixture and converting more chemical energy into pressure and thrust.



ENVIRONMENT AND GEOGRAPHY

STUDENT'S
NOTES

1. ASSAM FLOODS

Context: Assam has witnessed its worst floods in 60+ years, affecting 8 lakh+ people and causing 30+ deaths, exposing gaps in India's flood management and the need for climate-resilient infrastructure.

Concerns in India's Flood Management

- **Funding & Project Delays:** Comptroller and Auditor General (CAG) audits highlight delayed Detailed Project Report (DPR) approvals, fund release, fund diversion, poor utilisation and lack of basin-level planning, leaving projects incomplete.
- **Federal Coordination Gaps:** Entry 17 (State List) gives states control over water, drainage and embankments, while Entry 56 (Union List) covers inter-state rivers, causing weak Centre-State and interstate coordination. River Basin Organizations (RBOs) remain non-operational despite the River Boards Act, 1956.
- **Transboundary Issues:** Weak international cooperation hampers flood management. The Indus Waters Treaty (1960) excludes climate change and flood management, while the Brahmaputra depends on seasonal Memoranda of Understanding (MoUs) with China for hydrological data.
- **Weak Flood Forecasting:** Poorly maintained Central Water Commission (CWC) telemetry stations and water-level sensors reduce data accuracy, weakening forecasting, evacuation and reservoir operations.
- **Poor Reservoir Management:** Violation of reservoir Rule Curves, sudden dam releases and inadequate Emergency Action Plans (EAPs) despite the Dam Safety Act, 2021 worsen downstream flooding.
- **Northeast-Specific Challenges:** Fragile Himalayan terrain, transboundary rivers, limited upstream data, weak regional cooperation, poor connectivity and inadequate forecasting hinder integrated flood management and resilience.
- **Weak Local Preparedness:** Underfunded State Disaster Response Forces (SDRFs), limited district capacity, poor rescue equipment and weak early-warning systems increase reliance on the National Disaster Response Force (NDRF) after disasters.



Measures to Strengthen Flood Management

- **Improve Reservoir Operations:** Revise reservoir Rule Curves, develop a National Water Model (NWM) and Decision Support System (DSS), and modernise hydro-meteorological networks, as recommended by the NITI Aayog Flood Management Committee (2021).
- **Build Flood Resilience:** Implement the Rashtriya Barh Ayog (National Flood Commission), 1980 and R. Rangachari Committee (2003) recommendations—shift from flood control to resilience through Integrated River Basin Management (IRBM), floodplain management, raised settlements, resilient agriculture, catchment treatment and community participation.

- **Strengthen Disaster Risk Reduction:** Prioritise resilient infrastructure, preparedness, early warning systems and **Build Back Better** under the **Sendai Framework for Disaster Risk Reduction (2015–2030)**.
- **Adopt Nature-Based Solutions:** Promote **Room for the River** and **Sponge City** approaches by restoring wetlands, reconnecting floodplains, rejuvenating urban water bodies and increasing permeable surfaces.
- **Promote Basin Governance:** Operationalise **River Basin Organizations (RBOs)** for coordinated planning, reservoir operations, sediment management and interstate data sharing.
- **Use Advanced Technology:** Expand **Artificial Intelligence (AI)-based Early Warning Systems (EWS)**, **Internet of Things (IoT)** monitoring, satellite flood mapping and strengthen the **Central Water Commission (CWC)** forecasting network.
- **Interlink Rivers Judiciously:** **Interlinking of Rivers (ILR)** can moderate floods by storing excess monsoon water and regulating releases, but should complement floodplain zoning, embankments and early warning systems.
- **Regulate Floodplains:** Implement floodplain zoning under the **Model Flood Plain Zoning Bill, 1975**, restricting construction on floodplains, wetlands and natural drainage channels.

Note: For details on flood management, please refer to the article “Flash Floods” in July Current Affairs Magazine

2. CLOUDBURSTS IN INDIA

- **Context:** The **India Meteorological Department (IMD)** clarified that recent **Assam and Nagaland floods** resulted from **prolonged heavy rainfall**, not cloudbursts.

What is a Cloudburst?

- **Definition:** The **India Meteorological Department (IMD)** defines a cloudburst as an **extreme, localised rainfall event** producing **≥100 mm (10 cm) in 1 hour over 20–30 sq. km**.
- **Mini-Cloudburst:** Some scientists suggest **≥50 mm (5 cm) rainfall in 1 hour** as a “mini-cloudburst”, which may cause severe damage depending on **local topography**.

India's Vulnerability

- **Climate Factor:** Warmer air can hold more moisture, potentially increasing extreme rainfall events; IMD recorded about **30 cloudburst incidents during 1970–2016**.

CLOUDBURST VS. HEAVY RAINFALL		
KNOW THE DIFFERENCE. STAY PREPARED.		
FEATURE	CLOUDBURST	HEAVY RAINFALL
RAINFALL INTENSITY	≥ 100 mm rainfall in one hour over 20–30 sq. km	High rainfall spread over a larger area and longer duration
EXTENT	Highly localized	Regional or widespread
IMPACT	Causes flash floods within minutes	Generally causes riverine or urban flooding
FREQUENCY	Rare event	Common during monsoon

Both can be dangerous. Understanding the difference can save lives!



- **Himalayan Region:** Uttarakhand, Himachal Pradesh and Jammu & Kashmir, along with the Northeast, are major hotspots due to steep terrain and orographic lifting, particularly during July–August.
- **Western Ghats:** Also vulnerable as their elevation acts as a **barrier to moisture-laden monsoon winds**.

Reasons Behind Difficulty in Predicting Cloudbursts

- **Rapid Development:** Can develop within a **few hours**, leaving little warning time.
- **Hyper-local Events:** Occur over only **20–30 sq. km**, often below the resolution of numerical weather models.
- **Radar Blind Spots:** Mountain terrain can obstruct **Doppler Weather Radar (DWR)** signals.
- **Sparse Monitoring:** Remote Himalayan areas have limited **Automatic Weather Stations (AWS)** and rain gauges.
- **Detection Gap:** Although IMD defines a cloudburst as **≥100 mm rainfall in 1 hour**, many conventional stations record rainfall over **3-hour or 24-hour periods**, making detection difficult.
- **Computational Demand:** Hyperlocal prediction requires **high-resolution models and high-performance computing**.

India's Initiatives

- **Nowcasting:** IMD is strengthening **short-term forecasts and alerts issued every few hours** to detect localised extreme weather.
- **Mission Mausam:** The **DWR network** expanded from **14 (2014) to 50**, covering over **87% of India**, with **50 additional radars planned**.
- **Artificial Intelligence (AI)** is also being integrated to improve **hyperlocal weather and extreme-event forecasting**.

Test Your Knowledge	
Prelims Corner Recent heavy flooding in Assam and Nagaland was distinguished from a cloudburst primarily because: A. Cloudbursts occur only in the Himalayan region. B. The rainfall was prolonged and widespread rather than meeting the IMD's cloudburst criterion of highly intense, localised rainfall within one hour. C. Cloudbursts cannot occur during the southwest monsoon. D. Floods caused by rainfall cannot occur without dam failure. Answer: B	Mains Corner What makes cloudbursts particularly difficult to predict and manage in India? Discuss the role of Doppler Weather Radars, Artificial Intelligence, high-resolution models and dense ground-based observation networks in improving early warning. (10 marks, 150 words)

3. TEESTA TUNNEL DISASTER

Context: Suspected methane and toxic gases exploded inside Sikkim's under-construction Head Race Tunnel, killing workers and trapping others.

Risk Posed Due to Methane

- **Methane Characteristics:** Methane is **colourless, odourless and highly flammable**, naturally accumulating in underground rocks and confined tunnel spaces.
- **Explosion Risk:** Methane-air mixtures can ignite from drilling sparks, causing explosions during tunnel construction.
- **Drilling Trigger:** Head Race Tunnel drilling may have disturbed **methane-bearing rocks**, releasing trapped gas suddenly.
- **Trapped in Rocks:** Methane occurs as natural gas within **porous rocks** or isolated pockets in young, fragile geological formations.
- **Organic Formation:** Coal-bearing or carbon-rich strata can generate methane through **ancient organic matter decomposition** over millions of years.
- **Anaerobic Conditions:** Waterlogged valleys and depressions enable microorganisms to decompose organic matter under oxygen-deficient conditions, releasing methane.

- **Fault-Based Migration:** Faults, cracks and fissures allow methane from underground coal, gas or geothermal deposits to migrate upwards.
- **Waste-Related Methane:** Poorly managed hilly waste dumps can generate methane through decomposition in oxygen-deficient layers.
- **Sikkim's Geology:** Though lacking major coalfields, southern Sikkim, including **Namchi**, has small coal deposits within the **Rangit Tectonic Window**.
- **Detection Difficulty:** Conventional surveys assess stability, water and structural risks, but localised methane pockets may remain undetected.

Vulnerability of Sikkim's Infrastructure

- **First Methane Incident:** Though Sikkim has faced floods and landslides, Teesta-VI is its **first recorded suspected methane-triggered explosion**.
- **Earlier Project Damage:** The **October 2023 Glacial Lake Outburst Flood (GLOF)** destroyed the 1,200 MW Chungthang dam and damaged 510 MW Teesta-V.
- **Repeated Damage:** The Teesta-V project suffered further damage from a **landslip in August 2024**, highlighting persistent vulnerability.
- **Fragile Himalayan Geology:** Young, tectonically active and erosion-prone terrain makes Sikkim vulnerable to **earthquakes, landslides and slope failures**.
- **Construction-Induced Risks:** Blasting and tunnelling for dams, highways and railways can destabilise slopes and intensify landslide and mudslide risks.
- **Human Pressures:** Unregulated urbanisation, tourism, deforestation and poor waste management amplify Sikkim's environmental and geological vulnerabilities.
- **Climate Risks:** Cloudbursts, glacier melting and expanding glacial lakes are increasing extreme disasters affecting Himalayan hydropower infrastructure.



Way Forward

- **Multi-hazard mapping:** Integrate methane, Glacial Lake Outburst Floods (GLOF), seismicity and landslides, following the **National Disaster Management Authority (NDMA)** approach.
- **Gas-safe tunnelling:** Mandate probe drilling, geophysical surveys and continuous multi-gas monitoring under **Bureau of Indian Standards (BIS) IS 4756** and **Directorate General of Mines Safety (DGMS)** practices.
- **Safety-by-design:** Ensure automatic ventilation, intrinsically safe equipment, refuge chambers and multiple escape routes, incorporating **Silkyara Tunnel** lessons.
- **Independent safety audits:** Conduct third-party geological audits, **3-D geological mapping and real-time rock monitoring** at every excavation stage.
- **Climate-resilient Himalayas:** Adopt **Sendai Framework's "Build Back Better"**, risk-sensitive land-use planning and **NDMA** guidelines for GLOF and landslides.

Test Your Knowledge

Prelims Corner

Consider the following statements regarding Sikkim's geological vulnerability:

1. Sikkim lies in a tectonically active Himalayan region.
2. Construction activities such as blasting and tunnelling can aggravate slope instability.
3. Sikkim's vulnerability to disasters is primarily confined to glacial lake outburst floods.

Which of the statements given above is/are correct?

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

Answer: A

Mains Corner

Methane accumulation in underground formations can create significant risks during tunnelling and excavation. Explain the geological processes responsible for methane occurrence and migration, and discuss measures required for safe tunnelling in geologically complex regions.

(10 marks, 150 words)

4. LANDSLIDES IN WESTERN GHATS

- **Context:** Exceptionally heavy rainfall triggered **landslides, mudslides and flooding in Kerala**.
- **Weather Trigger:** An **offshore trough from south Gujarat to Kerala**, strong south-westerly winds over the Arabian Sea and a steep **north-south pressure gradient** caused widespread rainfall.
- **Definition:** Landslides are natural hazards involving the **sudden downward movement of rocks, boulders, soil or debris**, mainly across mountainous terrain.
- **Conditioning Factors:** **Soil, topography, geology, geomorphology and slope angle** determine terrain susceptibility.

Factors Behind Frequent Landslides in Western Ghats

- **Steep & Fragile Terrain:** Steep slopes, geological conditions and changing land use make the region naturally landslide-prone.
- **Layered Structure:** Soil overlies hard rock; infiltrating water accumulates at the interface, reducing soil-rock cohesion and triggering slides.
- **Mining Pressure:** Expanding mining activities destabilise slopes while causing **agricultural, ecological and social disruptions**.
- **Hydropower Projects:** Large dams and associated infrastructure contribute to **ecological disturbance and social disruption** in fragile landscapes.
- **Climate Change:** Changing land use and deforestation alter **rainfall intensity and patterns**, increasing extreme rainfall, floods and landslide risks.

5. TACKLING NON-REVENUE WATER FOR A WATER-SECURE VIKSIT BHARAT

Context: India's **Viksit Bharat** vision depends heavily on urban centres, which face rising water stress due to **groundwater over-exploitation, rapid urbanisation and climate change**.

- A key concern is that urban utilities lose **over 30% of supplied water as Non-Revenue Water (NRW)**, weakening municipal finances, service efficiency and long-term water security.



Major Urban Water Governance Challenges

STUDENT'S
NOTES 

- **Wastewater & Linear Use:** Only ~28% urban wastewater is treated; the “use-and-discard” model, limited GIS-based mapping, SCADA and District Metered Areas (DMAs), and weak reuse/leak management cause major losses.
- **Ecological Degradation:** Encroachment of wetlands, lakes, floodplains and groundwater recharge zones increases urban flooding in monsoons and water scarcity in summers, weakening resilience.
- **Financial Weakness:** High Non-Revenue Water (NRW) leaves Urban Local Bodies (ULBs) recovering <55% of O&M costs, constraining infrastructure repair and service expansion.
- **Dependence on Distant Sources:** Reliance on distant rivers and deep aquifers increases pumping costs, inter-state water disputes and drought vulnerability.
- **Fragmented Institutions:** State parastatals develop infrastructure while ULBs operate it, creating an accountability gap and overburdening financially and technically weak ULBs.
- **Unequal Water Access:** Urban poor, especially informal settlements, often pay more through private tankers or lose income collecting water, while affluent households receive subsidised flat-rate piped water.

Measures for Effective Urban Water Governance

- **Adopt Sponge-City Planning:** Integrate green-blue infrastructure—permeable pavements, wetlands and bioswales—into master plans for aquifer recharge and flood mitigation.
- **Link NRW to Funding:** Divide networks into District Metered Areas (DMAs) and link State Finance Commission funds to verified NRW reductions.
- **Establish Water Regulators:** Create State Urban Water Regulatory Authorities to set NRW targets, conduct energy audits and depoliticise tariff revisions.
- **Integrate GIS-SCADA:** Combine Geographic Information Systems (GIS) and Supervisory Control and Data Acquisition (SCADA) for real-time pressure monitoring and predictive leak detection.
- **Separate Water Supply Chains:** Decouple potable and non-potable networks; enforce Zero Liquid Discharge (ZLD) for industries and commercial complexes using recycled effluent.
- **Price Groundwater Extraction:** Introduce volumetric pricing for private borewells in affluent and commercial areas to curb groundwater depletion.
- **Audit Sewer Networks:** Conduct concurrent sewer audits to prevent sewage exfiltration, groundwater contamination and related cholera or typhoid outbreaks.

Conclusion: Viksit Bharat needs a shift from crisis management to **water resilience** through integrated planning, efficient governance, wastewater reuse and equitable access. Strengthening urban water security enables **climate-resilient growth**, **SDG 6 (Clean Water and Sanitation)** and sustainable, inclusive urban development.

Test Your Knowledge	
Prelims Corner With reference to Non-Revenue Water (NRW) in Indian cities, consider the following statements: 1. NRW includes water that is supplied but does not generate revenue for the water utility. 2. High NRW can weaken the financial capacity of Urban Local Bodies to maintain and expand water infrastructure. 3. District Metered Areas (DMAs) can help utilities identify leakages and monitor water losses. Which of the statements given above is/are correct? A. Only one B. Only two C. All three D. None Answer: C	Mains Corner Rapid urbanisation, groundwater depletion and climate change are creating a water-security paradox in Indian cities, where water scarcity coexists with urban flooding. Discuss the role of wetland conservation, wastewater reuse and sponge-city planning in addressing this challenge. (15 marks, 250 words)

6. WESTERN GHATS ECOLOGICALLY SENSITIVE AREA

Context: MoEFCC reissued the **Western Ghats Eco-Sensitive Area (ESA)** draft (7th Draft) for the seventh time after the previous version lapsed. First issued in **2014**, the draft remains open for **public**

objections for 60 days. The Centre and six Western Ghats States continue to differ over villages and areas proposed under ESA.

Key Highlights of the 7th Draft

- **Geographical Coverage:** Proposed ESA covers **56,825.7 sq. km** across **Karnataka, Maharashtra, Kerala, Tamil Nadu, Goa and Gujarat**. **Karnataka:** Largest share at **20,668 sq. km**; **Gujarat:** Lowest at **449 sq. km**.
- **Prohibited Activities:** Completely bans **commercial mining, stone quarrying, sand mining, new thermal power plants, “red category” industries and large construction projects.**
- **Regulated Activities:** **Hydropower projects** will face strict regulation under the proposed ESA framework.
- **Local Livelihoods Protected:** **Agriculture, plantations and routine livelihood activities of local communities** will remain unaffected.
- **Phased Implementation:** ESA can be notified **state-wise or jointly**, avoiding the need to await consensus from all six States.
- **Expert Committee Extension:** The **Sanjay Kumar Committee**, formed in **2022** to examine State objections and village-demarcation discrepancies, will continue until **July 2027**.

Western Ghats ESA Proposal

- **Pending Since 2011:** The proposal to notify the **Western Ghats as an Eco-Sensitive Area (ESA)** has remained unresolved since **August 2011**, despite two major committee reports.
- **Gadgil Committee (WGEEP, 2011):** Led by **Madhav Gadgil**, it proposed declaring the **entire Western Ghats an ESA**, divided into **ESZ-I, II and III** based on ecological sensitivity. The approach faced strong **State and stakeholder opposition** for being excessively restrictive on development.
- **Kasturirangan Committee (2013):** Suggested a **balanced conservation-development approach**, recommending ESA status for about **37% of Western Ghats (~60,000 sq. km)** while permitting sustainable development elsewhere.



Impediments in ESA Notification

- **Centre–State Deadlock:** Disagreements over balancing **ecological conservation and developmental priorities** continue to delay final notification.
- **Demarcation Disputes:** Conflicts over **ESA mapping, village boundaries and satellite-based demarcation** complicate identification of sensitive areas.
- **Weak Conservation Incentives:** States bear conservation costs without adequate **financial compensation or ecological fiscal transfers**, weakening implementation support.
- **Regulatory Uncertainty:** Repeated draft notifications without finalisation create a **policy vacuum**, enabling illegal mining, quarrying, deforestation and unsustainable development.

About the Western Ghats

- **Geographical Extent:** The Western Ghats stretch ~1,490 km from Gujarat to Tamil Nadu/Kerala, covering ~1.4 lakh sq. km between 7°N–21°N. They span **Gujarat, Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu.**
- **Geological Origin:** Older than the Himalayas, they formed along the **faulted Deccan Plateau edge** after **Gondwana's breakup** during the late Jurassic–early Cretaceous.
- **UNESCO World Heritage Site:** Designated a **natural World Heritage Site in 2012** under **Criteria (ix) and (x)**, comprising **39 component sites.**
- **Conservation Status:** IUCN's **World Heritage Outlook** rates the Western Ghats' conservation status as **"significant concern."**

Test Your Knowledge

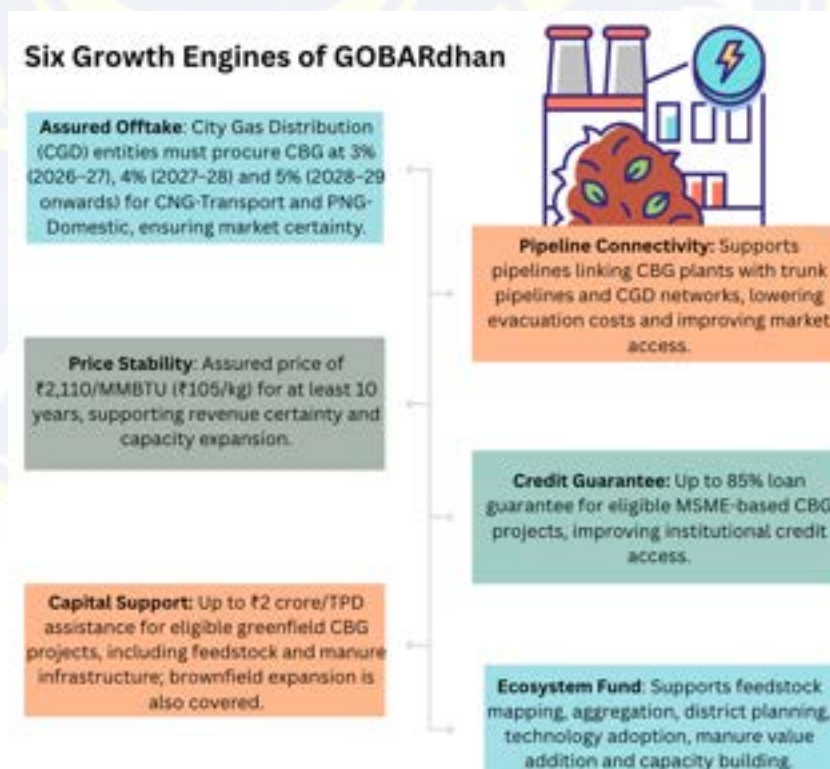
Prelims Corner	Mains Corner
Consider the following pairs: 1. Gadgil Committee — Entire Western Ghats as ESA with graded ecological zones 2. Kasturirangan Committee — ESA over about 37% of the Western Ghats 3. UNESCO — Western Ghats inscribed as a natural World Heritage Site in 2012 4. Sanjay Kumar Committee — Recommended complete abolition of ESA restrictions Which of the pairs given above are correctly matched? A. 1, 2 and 3 only B. 1 and 4 only C. 2 and 3 only D. 1, 2, 3 and 4 Answer: A	Q. The prolonged delay in notifying the Western Ghats as an Ecologically Sensitive Area (ESA) reflects the challenge of balancing ecological conservation with developmental and livelihood concerns. Discuss the major issues behind the Centre-State deadlock and suggest a framework for achieving a durable conservation-development balance. (15 marks, 250 words)

7. GOBARDHAN: NATIONAL CIRCULAR BIOENERGY SCHEME

Context: The Union Cabinet approved **GOBARDhan – National Circular Bioenergy Scheme** on **6 August 2026** to convert organic waste into clean energy and promote rural prosperity.

Key Features

- **Waste-to-Energy:** Converts **animal dung, crop residue, kitchen and market waste** into **Compressed Biogas (CBG)** and bio-slurry.
- **Implementation:** Runs from **FY 2026–27 to 2035–36** under the **Ministry of Petroleum and Natural Gas (MoPNG).**
- **Financial Outlay:** ₹23,731 crore, bringing the previously fragmented **CBG ecosystem** under one national framework.
- **Six Growth Engines:** Focuses on **assured offtake, pricing, capital support, pipelines, credit guarantees and ecosystem development.**



- **Energy Security:** With India importing nearly **half its natural gas**, and **55–60% of LNG imports** passing through the **Strait of Hormuz**, the scheme strengthens domestic energy production.
- **Circular Bioeconomy:** Targets nearly **10-fold growth in CBG production**, greater private investment and rural clean-energy hubs, while supporting **farmers and energy security**.
- **Unified Registration Portal:** Enables CBG/Bio-CNG plants to obtain registration for **MoPNG support**. As of **6 August 2026: 1,908 plants registered**, including **217 operational plants** producing **0.4 MMSCMD** and **339 under construction**.

8. OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES (OECMS)

- **Context:** OECMs offer India a flexible conservation approach by extending protection beyond statutory protected areas to **community and private lands**.

Key Features of OECMs

- **Definition:** The **Convention on Biological Diversity (CBD)** defines an OECM as a **clearly demarcated area outside the formal protected-area network** that delivers **positive, long-term in situ biodiversity conservation**.
- **Outcome-based Recognition:** Recognition depends on **conservation outcomes**, not the site's original purpose or commercial use. It grants **no new legal, financial or management authority** and relies on existing local laws for conservation.
- **Four Criteria:** A site must have: **(1)** location outside the statutory protected network, **(2)** clearly defined boundaries, **(3)** active and inclusive governance, and **(4)** demonstrated, lasting ecological benefits.

IUCN

Classification: The **International Union for Conservation of Nature (IUCN)** classifies OECMs as **Ancillary** (conservation is incidental), **Secondary** (conservation is one objective), and **Primary** (mainly managed for conservation).

- **Global Monitoring:** The **United Nations Environment**

Programme World Conservation Monitoring Centre (UNEP-WCMC) records OECMs in the **World Database on OECMs** to monitor global conservation progress.

- **India's First Site:** **Aravalli Biodiversity Park, Gurugram**, became India's **first OECM site in 2022**, following citizen and municipal efforts that restored a degraded mining area into forest.

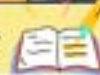
FEATURE	STATUTORY PROTECTED AREAS	OECM FRAMEWORK
PRIMARY INTENT	Long-term wildlife and biodiversity protection.	Effective conservation outcomes regardless of the primary management objective.
LEGAL FOUNDATION	Notified and enforced under the Wildlife Protection Act, 1972.	Operates voluntarily without formal domestic legal protection.
CONSERVATION APPROACH	Imposes restrictions on human activity to secure biodiversity.	Flexible management without rigid regulatory control.
GOVERNANCE MODEL	Administered centrally by state and union forest departments.	Managed flexibly by private entities, communities, and other local actors.
COMMUNITY RIGHTS	Restricts or extinguishes local resource use, often through relocation.	Retains community land tenure and rewards local stewardship.
FUNDING	Receives assured budgetary allocations under conservation schemes.	Receives no dedicated public budget; depends on voluntary or CSR finance.

Why the OECM Framework Matters

- **Restoring Gene Flow:** OECM corridors **reconnect isolated protected areas**, supporting gene flow and expanding dispersal ranges of wide-ranging species.
- **Expanding Conservation Coverage:** With only **5.32% of India's area** under the protected network, meeting the **30%-by-2030 Kunming-Montreal target** requires extensive, multi-use OECM landscapes.
- **Protecting Land Tenure:** Outcome-based recognition supports **community-led conservation** without transferring land ownership to the state.
- **Directing Corporate Social Responsibility:** OECM recognition can channel **Corporate Social Responsibility (CSR) funds** towards restoring degraded industrial and mining lands.

- **Enabling Climate Adaptation:** Habitats beyond fixed park boundaries let **climate-stressed species shift naturally** away from warming areas.
- **Decentralising Governance:** OECMs shift conservation responsibilities from centralised state departments to **local panchayats, municipal bodies and private land managers**.


Test Your Knowledge


 Prelims Corner	Mains Corner 
Which of the following statements correctly describe OECMs? 1. They can complement formal protected areas. 2. They may contribute to ecological connectivity between isolated protected areas. 3. They necessarily prohibit all commercial and livelihood activities. 4. They can support climate adaptation by providing habitats beyond fixed protected-area boundaries. Which of the statements given above are correct? A. 1 and 2 only B. 2 and 3 only C. 1, 2 and 4 only D. 1, 3 and 4 only Answer: C	Q. "Other Effective Area-Based Conservation Measures (OECMs) can complement India's protected-area network by combining biodiversity conservation with community participation and sustainable land use." Discuss the potential and limitations of the OECM framework in helping India achieve its biodiversity conservation targets. (15 marks, 250 words)

9. WORLD LION DAY

Context: On **World Lion Day 2026**, Observed annually on **10 August**. India highlighted its Asiatic lion population rising from **523 in 2015 to 891 in 2025**.

From Decline to Recovery

- **Historical Decline:** Overhunting and habitat loss reduced Asiatic lions to **fewer than 50 in Gir forests by the late 1890s**.
- **Early Protection:** The princely State of Junagadh initiated protection, followed by **Gir Wildlife Sanctuary (1965)** and expanding conservation landscapes.
- **Current Recovery:** The population reached **891 in 2025**, supported by **legal protection, habitat expansion, prey availability and community participation**.



Project Lion

- **Landscape Approach:** Launched on **15 August 2020**, **Project Lion** focuses on habitat improvement, disease monitoring and scientific tracking.
- **Conservation Tools:** It employs **radio-collaring, camera traps, prey management and human-wildlife conflict mitigation**.
- **Implementation:** The **Gujarat Forest Department** leads implementation, regular lion censuses and **community-based biodiversity protection**.
- **Beyond Protected Areas:** Conservation now covers **forests, grasslands, coastal and multi-use landscapes**, creating larger, connected habitats.

- **Range Expansion:** Lion distribution increased **59% between 2015–2025**, reaching about **35,000 sq km** across **11 Saurashtra districts**.
- **Barda Recovery:** Barda Wildlife Sanctuary, without lions since 1879, recorded **17 lions by 2025**.
- **Local Involvement:** Communities contribute to **wildlife protection and human-wildlife conflict management**.
- **Gir Gram Samiti:** The **2019 initiative** connects forest officials and villagers through **wildlife wardens, community leaders, eco-guides and eco-development committees**.

Technology-Driven Conservation

- **GPS Tracking:** **Global Positioning System (GPS)** tracking monitors lions and vehicles, improving surveillance efficiency.
- **SIMBA:** **Software with Intelligent Marking Based Identification of Asiatic lions (SIMBA)** enables **Artificial Intelligence (AI)-based individual identification**.
- **Real-Time Monitoring:** **Geographic Information System (GIS)** monitoring supports timely analysis, reporting and conservation management.

Major Threats

- **Genetic Bottleneck:** A small founder population causes **low genetic diversity and inbreeding**, increasing disease vulnerability.
- **Disease Threat:** Past **Canine Distemper Virus (CDV)** and **babesiosis** outbreaks have caused significant lion mortality.
- **Habitat Saturation:** Gir's population pressure pushes lions into **human-dominated areas**, increasing conflict and livestock depredation.
- **Infrastructure Risks:** **Open wells, railway lines and roads** across Greater Gir can cause accidental lion deaths.

Test Your Knowledge	
Prelims Corner With reference to Asiatic lions and their conservation in India, consider the following statements: 1. The Asiatic lion is primarily associated with the Gir landscape of Gujarat. 2. Project Lion was launched in 2020 with a landscape-based conservation approach. 3. Barda Wildlife Sanctuary has never recorded the presence of Asiatic lions. 4. SIMBA uses Artificial Intelligence for individual identification of Asiatic lions. Which of the statements given above are correct? A. 1 and 2 only B. 1, 2 and 4 only C. 2 and 3 only D. 1, 3 and 4 only Answer: B	Mains Corner Q. The recovery of the Asiatic lion in India represents a significant conservation success, but increasing population density and a geographically concentrated gene pool pose new challenges. Examine the major threats to the long-term conservation of Asiatic lions and assess how a landscape-based, technology-driven approach under Project Lion can address them. (15 marks, 250 words)

10. THINNING-INDUCED DECELERATION OF ZANSKAR GLACIERS

Context: A Cryosphere study of 12 Zaskar Basin glaciers (1992–2023) found climate-driven thinning and deceleration, threatening Upper Indus water security.

Important Findings

- **Slowing Glaciers:** Zaskar glaciers slowed by **2.4 metres/year per decade** over three decades.
- **Rapid Thinning:** Ice thinning increased from **0.22 m/year (2000–05)** to **0.57 m/year (2015–20)**.
- **Underlying Mechanism:** Global warming reduces glacier mass, making ice thinner and reducing its **driving stress and flow capacity**.
- Thinner glaciers transport less ice from **high-accumulation zones to lower elevations**.
- **Uneven Response:** **Glacier geometry, debris cover and terminus conditions** determine individual melting and flow patterns.

About Zaskar Valley

- **Location & Climate:** Zaskar lies in Ladakh in the northern Great Himalayas, covering ~5,000 sq. km; its rain-shadow location creates a cold, dry semi-desert climate, while



Ladakhi-Tibetan traditions remain prominent.

- **Pensi La Pass:** At 4,400 m, it is the highest point on the **Kargil–Zaskar road**, connecting Zaskar with **Suru Valley and Kargil**; heavy snowfall blocks it for nearly **8 months** annually. Unlike steep Zojila, it is a broad tableland with turquoise high-altitude lakes.
- **Rivers & Glacier:** The **Drang-Drung Glacier**, one of Ladakh's largest outside the Karakoram, feeds the **Doda (Stod) River**, which flows towards Padum. At Padum, the Doda joins the **Lungnak River** to form the **Zaskar River**, which passes through the **Chadar Gorge** before joining the **Indus at Nimmu near Leh**.
- **Chadar Trek:** The frozen **Zaskar River** historically served as a winter route when mountain passes were inaccessible.

Measures to Strengthen India's Himalayan Cryosphere Resilience

- **Improve Cryosphere Monitoring:** Expand **high-altitude weather stations and ground measurements** of ice thickness, mass balance and subglacial hydrology alongside satellites.
- **Reduce Black Carbon:** Regulate **brick kilns and diesel transport** and promote **clean cooking fuels** to limit glacier deposition.
- **Adopt Basin-Level Management:** Shift towards **Integrated River Basin Management**, linking glacier melt, snow, groundwater, hydropower, agriculture and downstream water needs.
- **Strengthen Disaster Preparedness:** Map **Glacial Lake Outburst Flood (GLOF)-prone lakes** and deploy **Early Warning Systems (EWS)** with measures like controlled lake siphoning.
- **Advance Climate Adaptation:** Promote **climate-resilient agriculture** and scale innovations like Ladakh's Ice Stupas for spring water storage.

11. AGASTHYAMALAI EVICTIONS AND FOREST RIGHTS ACT, 2006

Context: The **Forest Department** issued eviction notices to thousands of households in the **Agasthyamalai Biosphere Reserve (ABR)**, especially Tamil Nadu's Theni district.

Background of Eviction Orders

- **CEC Survey:** In **March 2025**, the Supreme Court directed the CEC to survey Agasthyamalai for non-forestry activities violating the **Forest (Conservation) Act, 1980** and **Wild Life (Protection) Act, 1972**.
- **Removal Orders:** Based on CEC findings, the Court ordered removal of **non-forestry activities, commercial infrastructure and encroachments** from critical protected areas.
- Affected areas include **Kalakkad-Mundanthurai Tiger Reserve** and **Srivilliputhur-Megamalai Tiger Reserve**.
- **Time-Bound Action:** Tamil Nadu must implement a **division-wise encroachment removal plan**, including **rehabilitation where applicable and ecological restoration**.
- **Core Conflict:** Conservation-driven evictions face criticism for potentially bypassing **FRA-mandated procedures protecting forest dwellers from arbitrary eviction**.

Key Concerns Over Eviction Orders

- **Bypassing Verification:** Forest Rights Act (FRA) claims require verification through Gram Sabhas and multi-departmental committees, but occupants were broadly labelled encroachers.
- **Eviction Bar:** FRA prohibits eviction until recognition and verification are completed.
- Wrongful dispossession of Scheduled Caste (SC)/Scheduled Tribe (ST) persons may attract the SC/ST (Prevention of Atrocities) Act, 1989.
- **Tenure Misinterpretation:** Authorities demand 75 years' occupation of the exact claimed land from Other Traditional Forest Dwellers (OTFDs), though FRA does not impose this requirement.
- **Livelihood Restrictions:** Commercial cultivation is cited against claims, although FRA permits surplus produce sales and grazing as bona fide livelihood activities.
- **Nodal Agency Silence:** Tribal-welfare authorities have faced criticism for limited intervention in protecting forest rights.



Agasthyamalai Biosphere Reserve (ABR)

- **Geographical Spread:** 3,500 sq. km across the southern Western Ghats, spanning Tamil Nadu and Kerala.
- **Tamil Nadu Protected Areas:** Includes Kalakad-Mundanthurai and Srivilliputhur-Megamalai Tiger Reserves, Nellai and Kanyakumari Wildlife Sanctuaries.
- **Kerala Protected Areas:** Covers Periyar Tiger Reserve and Shendurney Wildlife Sanctuary.
- **Tribal Communities:** Home to indigenous groups, particularly the Kani tribe, dependent on forests for livelihoods and cultural practices.
- **Global Recognition:** Added to the UNESCO World Network of Biosphere Reserves in 2016.
- **Ecological Significance:** A major biodiversity hotspot, supporting wildlife conservation and traditional forest-dependent communities.

Test Your Knowledge

Prelims Corner Consider the following statements regarding eviction of forest-dwelling communities under the Forest Rights Act, 2006: 1. Recognition and verification of forest rights must precede eviction on the ground of non-recognition of such rights. 2. Gram Sabha is involved in the process of determining forest rights claims. 3. Every person residing in a forest automatically acquires ownership over the land under the FRA. 4. Wrongful dispossession of eligible forest dwellers may have implications under other protective laws. Which of the statements given above are correct? A. 1 and 2 only B. 1, 2 and 4 only C. 2 and 3 only D. 1, 3 and 4 only Answer: B	Mains Corner Q. "Conservation of ecologically sensitive landscapes must be reconciled with the statutory rights of forest-dwelling communities." In the context of the Agasthyamalai Biosphere Reserve, examine the tension between wildlife conservation and rights-based forest governance under the Forest Rights Act, 2006. Suggest measures for achieving an equitable conservation framework. (15 marks, 250 words)
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12. WORLD ELEPHANT DAY 2026

Context: India reaffirmed **elephant conservation** at World Elephant Day 2026 celebrations in Visakhapatnam.

STUDENT'S
NOTES 

Initiatives Announced in 2026

- **Southern India Action Plan:** ₹500-crore plan covering Karnataka, Kerala, Andhra Pradesh and Tamil Nadu for corridors, restoration, early warnings and conflict mitigation.
- **Nilgiri Elephant Reserve:** Released a **Model Elephant Conservation Plan** for scientific habitat management and conservation.
- **Captive welfare:** Released “**Captive Elephant Husbandry: Science, Welfare and Practice**” to improve captive-elephant care standards.
- **Gaj Gaurav Awards 2026:** Honoured individuals for outstanding contributions to **elephant conservation and management**.
- **“30 Giant Steps”:** Documents **30 major Project Elephant milestones and initiatives from 2020–2026**.
- **Human-Elephant Conflict (HEC) research:** Launched Phase II covering **Kerala, Karnataka, Tamil Nadu, Odisha and West Bengal**.



India's Measures to Strengthen Elephant Conservation

- **Project Elephant:** Flagship programme integrating **habitat protection, AI/radio-collaring, genetic monitoring, DNA census and human-elephant conflict mitigation**.
- **Elephant Corridors:** **150 corridors across 14 States**, including **19 inter-State and 6 India-Nepal transboundary corridors**, secured through scientific monitoring and landscape planning.
- **Elephant Reserves:** Network expanded to **80,777 km²**, adding **8,610 km²** to strengthen **habitat connectivity and landscape-level conservation**.
- **Management Effectiveness Evaluation:** Since **2023**, measurable indicators, **CAMPA-funded national expansion** and **Regional Action Plans** promote **adaptive and outcome-based management**.
- **Railway Collision Mitigation:** **127 sensitive stretches** identified; AI-enabled **seismic, thermal and optical-fibre systems** and wildlife crossings help reduce collisions, with deaths falling **26 (2013) → 12 (2024)**.
- **Captive Elephant Genetic Monitoring:** **Gajah Suchana**, DNA profiling and **Captive Elephant Rules, 2024** strengthen identity verification, regulated transfers and prevention of illegal trade.
- **Community Compensation:** **Project Tiger & Elephant** and wildlife schemes provide ex-gratia support, while **2023 HWC guidelines** promote hotspot mapping, rapid-response teams and faster compensation.

SC Directs Nationwide Protection of Elephant Corridors

Supreme Court Directions

- **Nationwide Protection:** **Supreme Court (SC)** barred States from blocking elephant corridors and directed a **nationwide Central survey**.
- **Right of Passage:** Elephant herds must retain passage through **traditional corridors across State boundaries**.

- **Inter-State Coordination:** Corridors are not State-specific as elephants cross borders; conservation requires **inter-State cooperation**.
 - **Examples:** Herds move **Nepal–West Bengal–Jharkhand** and **Haryana–Uttarakhand–Himachal Pradesh**.
- **Ban on Cruel Practices:** SC reiterated its **2018 directions** to remove spikes and prohibit **fireballs** for driving elephants.
- **Legal Protection:** Elephants are **Schedule I** animals under the **Wildlife (Protection) Act, 1972**, receiving the highest statutory protection.
- **Conservation Status:** Asian Elephant (*Elephas maximus*) is **Endangered** on the **International Union for Conservation of Nature (IUCN) Red List**.

Test Your Knowledge

Prelims Corner	Mains Corner
With reference to the initiatives announced for elephant conservation in 2026, consider the following statements: 1. The Southern India Action Plan covers Karnataka, Kerala, Andhra Pradesh and Tamil Nadu. 2. The plan focuses exclusively on captive-elephant welfare. 3. The Nilgiri Elephant Reserve released a Model Elephant Conservation Plan. Which of the statements given above is/are correct? A. 1 only B. 1 and 3 only C. 2 and 3 only D. 1, 2 and 3 Answer: B	Q. "Elephant conservation requires protection of ecological connectivity beyond administrative boundaries." In the light of recent measures and judicial directions on elephant corridors, examine the challenges in ensuring habitat connectivity and mitigating human-elephant conflict in India. Suggest a comprehensive, landscape-level strategy. (15 marks, 250 words)

13. TOTAL SOLAR ECLIPSE

Context: On **12 August 2026**, a total solar eclipse was visible across **eastern Greenland, western Iceland, northern Russia, northern Spain and parts of Portugal**. Astronomers used the event to study the Sun's faint **corona**, normally obscured by the bright solar surface.

Solar Eclipse and Its Types

- **Solar Eclipse:** Occurs when the **Moon passes between the Sun and Earth**, blocking some or all sunlight.
- **New Moon condition:** Solar eclipses occur only during a **New Moon** when the Sun, Moon and Earth align suitably.
- **Why not monthly:** The Moon's orbit is tilted about **5° to the ecliptic plane**, so most New Moons pass above or below the Sun.
- **Eclipse seasons:** Solar eclipses occur during **two eclipse seasons annually**, when the New Moon crosses the ecliptic plane.

Types of Solar Eclipse

- **Total:** Moon completely covers the Sun within the **path of totality**, revealing the **corona**.



- **Annular:** Moon is near its **farthest distance from Earth**, appearing smaller and creating a bright “ring of fire”.
- **Antumbra:** Annular eclipses occur in the **antumbra**, the shadow extending beyond the umbra’s tip.
- **Partial:** Imperfect alignment causes only part of the Sun to be covered, producing a **crescent-like appearance**.
- **Hybrid:** Rarely appears **total at some locations and annular elsewhere**, due to Earth’s curvature and changing shadow position.

Significance of Total Solar Eclipses in Studying the Solar Corona

- **Inner corona visibility:** During totality, the Moon blocks the bright **photosphere**, enabling direct study of the faint inner corona.
- **Coronagraph advantage:** Eclipses overcome **scattered light and diffraction** that limit coronagraph observations near the Sun.
- **Coronal heating puzzle:** The **corona exceeds 1 million°C**, while the photosphere is only about **5,500°C**, raising questions about energy transfer.
- **Magnetic structures:** Coronal **plasma (charged gas)** follows solar magnetic fields, revealing structures driving solar activity and the **11-year solar cycle**.
- **Space weather:** The corona generates **solar wind** and **Coronal Mass Ejections (CMEs)**; studying it improves forecasts affecting satellites, GPS, communications and power grids.
- **Solar wind:** Coronal observations reveal how **electrons, protons and other charged particles** accelerate into space as solar wind.

Historical Discoveries Through Solar Eclipses

- **Helium discovery (1868):** During the **1868 Indian eclipse**, Pierre Jules Janssen detected an unexplained yellow spectral line, indicating an unknown element.
- **Naming helium:** Norman Lockyer later studied the line and named the element **helium**, derived from **Helios**, Greek for Sun.
- **General Relativity (1919):** **Arthur Eddington’s eclipse observations** provided early evidence that gravity bends light, supporting **Einstein’s General Theory of Relativity**.

Test Your Knowledge	
Prelims Corner Consider the following statements: 1. An annular solar eclipse occurs when the Moon is closest to Earth. 2. The antumbra is associated with the visibility of an annular eclipse. Which of the statements given above is/are correct? A. 1 only B. 2 only C. Both 1 and 2 D. Neither 1 nor 2 Answer: B	Mains Corner Q. Solar eclipses provide a rare natural laboratory for studying the Sun's outer atmosphere and have historically contributed to major scientific discoveries. Explain the scientific significance of total solar eclipses in understanding the solar corona and space weather. (10 marks, 150 words)

14. CENTRE RELAXES CONSTRUCTION RULES ALONG GANGA FLOODPLAINS

Context: The **River Ganga (Rejuvenation, Protection and Management) Authorities (Second Amendment) Order, 2026** amends the 2016 framework.

- **Legal basis:** The framework operates under the **Environment (Protection) Act, 1986** and supports the **Namami Gange Programme**.
- **Ban replaced:** The blanket “**construction-free zone**” is replaced by a **stratified, approval-based system**.

New Floodplain Zoning

- **Active Flood Plain:** Flooded at least **once every 5 years**; construction remains strictly prohibited, except limited temporary structures.

- **Regulatory Zone:** Flooded every 5–25 years; construction permitted subject to **official clearances**.
- **Warning Zone:** Flooded every 25–100 years; construction allowed with required **clearances**.
- **Basis:** Zoning follows **Central Water Commission (CWC)** flood-frequency guidelines.

Approval & Environmental Safeguards

- **Prior clearance:** Riverfront projects, bridges and roads require approval from the **National Mission for Clean Ganga (NMCG)** and regional authorities.
- **Government position:** Amendment addresses a legal gap by defining “**active floodplain**”, previously undefined under the 2016 framework.
- **Environmental standards:** Government maintains that the amendment **does not dilute environmental safeguards**.

Key Concerns

- **Reduced protection:** Replacing the blanket ban could increase construction pressure across ecologically sensitive floodplains.
- **Litigation safeguard weakened:** The earlier ban enabled the **National Green Tribunal (NGT)** to halt potentially harmful riverfront projects and embankments.
- **Ecological risk:** Relaxed construction norms may increase risks of **floodplain degradation, habitat loss and altered river ecology**.

15. POINTERS FOR PRELIMS

15.1. KOLLERU LAKE

- **Context:** The Supreme Court-appointed Central Empowered Committee (CEC) issued directions on illegal fish ponds and environmental degradation.
- **Location:** Andhra Pradesh; one of India's largest freshwater lakes.
- **Setting:** Lies between the **Krishna** and **Godavari** river deltas.
- **Inflows:** **Budameru, Ramileru, Tammileru** and **Errakalva** rivers.
- **Status:** **Ramsar Wetland**.

and Hamataliwa papikonda (Andhra Pradesh).

- ***Simonia lawbah*:** Microscopic **ray spider** found in **Krem Lawbah Cave**, Meghalaya. || **India's first record** of genus ***Simonia***.
- ***Hamataliwa papikonda*:** Small (<5 mm) yellow-bodied **lynx spider** found in **Papikonda National Park**, Andhra Pradesh. || **Ambush predator**; hunts without webs. || Uses specialised **hexagonal eyes** and **spiny legs** to capture canopy prey.

15.2. SEGUR PLATEAU ELEPHANT CORRIDOR

- **Context:** The Supreme Court upheld removal of all commercial activities from the Segur Plateau elephant corridor.
- **Segur Plateau:** Connects the **Western** and **Eastern Ghats**, enabling elephant movement and genetic diversity.
- **Location:** Between the **Nilgiri Hills** (southwest) and **Moyar River Valley** (northeast).
- **Protected Area:** Part of **Mudumalai Tiger Reserve** and **Nilgiri Biosphere Reserve** (UNESCO World Network of Biosphere Reserves).

15.3. TWO NEW SPIDER SPECIES

- **Context:** **Zoological Survey of India (ZSI)** documented **two new spider species**: ***Simonia lawbah*** (Meghalaya)

15.4. WHITE-BELLIED HERON (ARDEA INSIGNIS)

- The proposed **1,200 MW Lohit River Hydropower Project (Arunachal Pradesh)** has raised concerns over the survival of the White-bellied Heron.
- **About:** World's **second-largest heron**; among the **rarest birds**. Found in **Bhutan, India, Myanmar, China, and Bangladesh**. || **India:** Restricted to **Arunachal Pradesh** (Lohit, Anjaw, Changlang), including **Namdapha Tiger Reserve** and **Kamlang Tiger Reserve**.
- **IUCN Status:** **Critically Endangered**. || **Wildlife (Protection) Act, 1972:** **Schedule I**.
- **Key Threats:** Hydropower projects, habitat loss, hunting, human disturbance, and small gene pool. || **Key Fact:** Considered a **bio-indicator** of healthy Himalayan freshwater ecosystems.

15.5. FIVE NEW *ALLOGRAPHA* SPECIES DISCOVERED

- Researchers discovered **five new species** of lichen-forming fungi of the genus *Allographa* in the **Western Ghats**.
- **About Allographa:** A genus of script lichens with 200+ known species worldwide. Characterised by **elongated, script-like fruiting bodies**. Forms lichens through a **symbiotic** association between a **fungus** and **algae or cyanobacteria**. || Acts as a **bioindicator** of forest health and environmental quality due to its sensitivity to air pollution and habitat disturbance.

15.6. BRAZIL'S AMAZON RECORDS HISTORIC LOW IN FOREST FIRES

- **Reasons** for Decline: Delayed rainy season, lower deforestation, and stronger community vigilance reduced combustible vegetation and fire spread.
- **Human-Caused Fires:** Most **2024** fires resulted from agricultural clearing, deforestation, etc.
- **Future Risk:** A possible **Super El Niño** may prolong dry conditions.
- **Climate:** Hot, humid, high-rainfall climate supporting dense evergreen forests.
- **Location & Extent:** World's largest tropical rainforest (~6 million sq. km), spanning **9 South American countries/territories**; nearly **60%** lies in **Brazil**, within the **Amazon River Basin**.
- **Natural Boundaries:** **Guiana Highlands** (North), **Andes Mountains** (West), **Brazilian Plateau** (South), **Atlantic Ocean** (East).
- **Amazon River:** Originates in the **Peruvian Andes**; world's largest river by discharge and second-longest after the Nile; major tributaries are **Rio Negro, Madeira, and Xingu**.
- **Global Importance:** Called the "**Lungs of the Earth**," it acts as a major carbon sink, regulating global climate and ecological balance.

15.7. GREENHOUSE GAS (GHG) EMISSIONS FROM RICE FIELDS

Context: A study found India's irrigated paddy fields emit about **3.9 million tonnes** of methane annually, making them among the world's largest methane hotspots.

- **Rising Emissions:** Rice-field **Greenhouse Gas (GHG)** emissions

have doubled in **60 years**, reaching about **1.1 billion tonnes CO₂-equivalent** annually.

- **Emission Hotspots:** **Asia** remains the largest emitter due to straw incorporation; **Africa** is an emerging hotspot with a **7-fold** rise in rice cultivation.
- **India:** The irrigated **Indo-Gangetic Plain, Odisha**, and eastern coastal states record the highest emission densities.
- **Major Drivers:** Expansion of paddy cultivation and increased crop residue incorporation and **nitrogen fertiliser** use (**76%** rise since **2000**) have accelerated GHG emissions.
- **Mitigation Measures:** **Alternate Wetting and Drying (AWD)**, efficient nitrogen management, and reduced residue incorporation can cut paddy emissions by about **10%** without reducing yields.

Invasive Species from Stranded Ships in the Persian Gulf

Context: Over **1,500** commercial ships stranded after the **Strait of Hormuz** closure may trigger a large-scale marine invasive species outbreak when shipping resumes.

- Long stationary periods reduce hydrodynamic antifouling coating effectiveness, allowing barnacles, mussels, and macro-algae to colonise ship hulls.
- **Potential Impact:** Introduces non-native species, spreads parasites and pathogens, and increases hull drag, fuel consumption, and transport costs.

Invasive Species: **Non-native organisms** introduced intentionally or accidentally that spread rapidly, harming ecosystems, the economy, or human health.

Legal Position: The **Plant Quarantine (Regulation of Import into India) Order, 2003** prevents alien pests through **Pest Risk Analysis (PRA)** and phytosanitary inspections.

15.8. SAL HEARTWOOD BORER

Context: The Madhya Pradesh Forest Department sought approval to fell about 1.5 lakh sal trees in Dindori after a severe Sal Heartwood Borer outbreak.

- Under **Section 2** of the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980**, prior Central approval is required for forest

de-reservation, diversion, lease assignment, and clear felling.

- A dark-brown longhorn beetle; the most destructive insect pest of sal trees in **South Asia**.
- **Host:** Primarily infests mature sal trees with girth above **20 cm**.
- **Damage:** Larvae bore into heartwood, disrupting nutrient flow; infested trees show crown browning and sawdust-like frass at the base.
- **Outbreak Cycle:** Major infestations occur about every **30 years**.
- **Control:** Selected infested trees are felled after bark bruising; released resin attracts beetles and helps contain outbreaks.

15.9. SCIENTISTS DEVELOP IOT-BASED HEALTH TRACKER FOR YAKS

- **Context:** Indian scientists developed an **Internet of Things (IoT)**-based smart collar to monitor yak health, stress, and movement.
- **The Indian Yak:** The **Indian yak (*Bos grunniens*)**, the "Ship of the Himalayas," is a high-altitude bovine adapted to extreme cold.
- India has about **58,000 yaks**, nearly half located in **Ladakh**. Also reared in **Arunachal Pradesh, Sikkim, Himachal Pradesh, and Uttarakhand**. Wild yaks are mainly found on the **Tibetan Plateau**.
- **Physical Adaptations:** Wild males weigh up to **1,000 kg**; females about **300 kg**. || Long hair, curved horns, broad hooves, large lungs, and high haemoglobin aid high-altitude survival.
- **Behaviour & Diet:** Diurnal grazer living mainly in herds. Females and young form larger groups; adult males remain solitary or in small groups.
- **Conservation Status:** **International Union for Conservation of Nature (IUCN):** Vulnerable. || **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** Appendix I. || **Wildlife (Protection) Act, 1972:** Schedule I.

15.10. MAHARASHTRA TO GET INDIA'S FIRST AI-POWERED BIRD SANCTUARY

- Maharashtra approved a **₹45-crore Eco-Nature Park** at **Thane Creek Flamingo Sanctuary**.

- It will feature India's first **Artificial Intelligence (AI)**-powered bird detection and monitoring centre.
- **Thane Creek Flamingo Sanctuary:** Located between **Mumbai** and **Navi Mumbai** along **Thane Creek**. || Declared a **Wildlife Sanctuary** in **2015**. || India's first dedicated flamingo sanctuary.
- It forms part of the **Central Asian Flyway**, linking **Europe, Central Asia**, and the **Indian subcontinent**.
- **Flamingos:** Tall water birds with long **S-shaped necks** and long legs. Highly social, usually living in large flocks. Found in saline lagoons, saltpans, alkaline lakes, wetlands, mudflats, and coastal lagoons. **Six** flamingo species occur globally in tropical and subtropical regions. India has **two species: Greater Flamingo, Lesser Flamingo**

15.11. TYPHOON NOUL

- **Context:** Typhoon Noul made landfall in **Guangdong Province, southern China**.
- Formed over the **Philippine Sea** in the Western North Pacific Ocean, northeast of the Philippines.
- **Name:** "Noul" was contributed by **South Korea** and means the glow of sunrise or sunset.
- Typhoon: A typhoon is a tropical cyclone developing over the **northwestern Pacific Ocean**.
- Regional Names of Tropical Cyclones: **Hurricane:** North Atlantic and Northeastern Pacific Oceans. || **Typhoon:** Northwestern Pacific Ocean || **Cyclone:** North Indian Ocean and South Pacific Ocean.

15.12. KEN-BETWA LINK PROJECT

- **Context:** India's first major river interlinking project transfers water from **Ken River (Madhya Pradesh)** to water-deficit **Betwa River (Uttar Pradesh)**;
- Faces protests over displacement, compensation, and environmental concerns.

15.13. ZOOPHARMACOGNOSY

- **Context:** Scientific Reports indicates widespread

zoopharmacognosy—animals'

self-medication using medicinal plants.

- **Zoo** = animals, **pharmaco** = medicines, **gnosy** = knowledge.
- **Definition:** Wild animals select and use medicinal plants to treat diseases and protect against parasites.
- **Orangutans, Indonesia:** Mix saliva with *Dracaena* leaves to relieve muscle and joint pain while carrying babies.
- **Chimpanzees, Nigeria:** Swallow *Desmodium gangeticum* (shalaparni) leaves to eliminate skin-affecting parasites.
- **Elephants:** Chew **oregano** leaves to relieve phlegm. || **Monkeys, sheep, dogs and cats:** Eat **grass** to remove parasitic worms and amoeba.

15.14. SC VERDICT ON EX POST FACTO ENVIRONMENTAL CLEARANCES

- **Supreme Court Verdict:** Quashed the 2021 Office Memorandum (OM) permitting ex post facto Environmental Clearances (ECs); prior EC remains mandatory under the Environmental Impact Assessment (EIA) Notification, 2006.
- **Legal Basis:** Retrospective regularisation can be permitted only through a statutory notification under Section 3 of the Environment (Protection) Act, 1986, not an administrative OM.
- **Existing Clearances:** ECs granted under the 2017 Notification and 2021 OM remain valid unless individually challenged.
- **Limited Exception:** Ex post facto ECs are not absolutely barred; they may be allowed only through a narrow, time-bound, reasoned and supervised statutory window for projects of immense public utility such as hospitals, airports and strategic infrastructure.
- **Jurisprudential Shift:** Balances the precautionary principle with polluter pays and sustainable development, avoiding disproportionate demolition of major infrastructure.

15.15. SOUTHEAST ASIA'S BLUE ECONOMY

- **OECD Warning:** Environmental degradation and financing constraints threaten Southeast Asia's blue economy.

Financial & Ecological Constraints

- **Financing Gap:** Nearly USD 2.1 trillion is needed by 2030 for sustainable ocean management and climate adaptation.
- **Aid Misallocation:** Only **34% of ocean-related Official Development Assistance (ODA)** during **2010–2023** supported sustainable activities; most funded traditional marine sectors.
- **Ecosystem Damage:** **Overfishing, plastic pollution and habitat destruction** threaten fisheries, aquaculture and coastal tourism.
- **Climate Risks:** **Sea-level rise, ocean warming and storms** damage mangroves, coral reefs and coastal infrastructure; **Cambodia lost 42% mangrove cover (1989–2017).**

15.16. INDIA'S FIRST COMPREHENSIVE LEPIDOPTERA CATALOGUE

- **First National Inventory:** Zoological Survey of India (ZSI) completed India's first comprehensive **Lepidoptera catalogue** after **12+ years of research**.
- **Methodology:** Combined **field surveys, museum specimens and scientific literature** to resolve century-old taxonomic gaps.
- **Comprehensive Record:** **22 volumes** provide an updated, centralised inventory; the final volume appeared in **Zootaxa**.
- **Species Diversity:** India has **13,703 butterfly and moth species**, spanning **3,705 genera, 240 subfamilies, 102 families and 31 superfamilies**.
- **Global Significance:** India accounts for **8.25% of global Lepidoptera diversity**; the final volume added **1,689 species**.
- **Geometroidea Diversity:** India has **2,205 Geometroidea species**, around **8.8% of global diversity**.

15.17. GLAW LAKE

- **Context:** Glaw Lake became **India's 101st Ramsar Site** and **Arunachal Pradesh's first**, under the Ramsar Convention.
- **Location & Significance:** Pristine freshwater lake within **Kamlang Tiger Reserve**, Eastern Himalayas, fed by perennial streams and sustaining the **Kamlang River**.
- **Floral Diversity:** Lake and catchment support **150+ tree species and 49 orchid species**, reflecting rich biodiversity.

- **Faunal Diversity:** Basin supports all **four big cats**—Bengal Tiger, Indian Leopard, Clouded Leopard and Snow Leopard.
- **Conservation Importance:** It also shelters the **Critically Endangered White-bellied Heron**, strengthening its ecological significance.

15.18. TIGER CORRIDOR

- **Context:** Wildlife clearance was recommended for a **third railway line between Jujharpur–Chichonda, Madhya Pradesh**, affecting the Satpura–Melghat corridor.
- **Connectivity:** **Satpura Tiger Reserve** lies in Madhya Pradesh, while **Melghat Tiger Reserve** lies in Maharashtra.
- **Land Requirement:** Project requires **206.09 hectares**, including **74.69 ha forest** and **131.4 ha non-forest land** within the notified corridor.

15.19. SC EXTENDS 10-KM MINING BUFFER RULE TO WETLAND RESERVES

Context: The Supreme Court orally indicated that its **10-km mining restriction around Asan Wetland could extend to other wetland and community conservation reserves.**

- **Asan Wetland Order:** In February 2024, mining within **10 km of Asan Wetland** was barred without prior approval from the **Standing Committee of the National Board for Wildlife (NBWL)** and/or Environment Ministry.
- The Court directed the **NBWL Standing Committee/Environment Ministry** to determine whether **Asan Wetland** extends into Himachal Pradesh. If it does, the **2024 restrictions** apply; otherwise, mining proposals will follow the applicable legal framework
- **Asan Wetland:** Situated at the confluence of the **Asan and Yamuna rivers in Uttarakhand**. Designated a **Ramsar Site in 2020**.

Status of Buffer

- **No Fixed Buffer:** Neither the **Ramsar Convention** nor **Wetlands (Conservation and Management) Rules, 2017** mandates a fixed buffer around Ramsar sites.
- **2017 Rules:** Replaced the earlier framework with **State Wetland Authorities**, decentralising wetland

governance. Unlike the **2010 Rules**, the 2017 framework removed the detailed list of prohibited activities and gave States greater regulatory responsibility.

- **Legal Challenge:** The **constitutional validity of the 2017 Rules** is currently under challenge before the Supreme Court.

15.20. CATALOGUE OF LEPIDOPTERA OF INDIA

- **Context:** Scientists from the **Zoological Survey of India (ZSI)** compiled a comprehensive **Catalogue of Lepidoptera (Butterflies and Moths) of India**, creating an updated national biodiversity baseline.
- **Species Diversity:** India hosts **13,703 Lepidoptera species**, accounting for around **8.25% of global Lepidoptera diversity**.
- **Butterflies vs Moths:** The total includes **1,417 butterfly species** and **12,286 moth species**.
- **Geometroidea:** Scientists catalogued **2,205 species of Geometroidea**, predominantly nocturnal pollinators that perform the ecological **“night shift”** when butterflies are inactive.
- **Lepidoptera:** Butterflies and moths collectively constitute the insect order **Lepidoptera**, meaning **“scaly-winged.”**

15.21. PHOENIX SPECIES PROJECT

- **Context:** The **Phoenix Species Project** has launched a global initiative to recover **100 of the world’s most threatened species** from the brink of extinction.
- **Purpose:** Provides **long-term funding and support to local conservation leaders** working to recover critically endangered species.
- **Launch & Funding:** Launched in **August 2026** with a **\$200 million commitment** from **Leonardo DiCaprio’s Re:wild and Bezos Earth Fund**, supported by **Leonardo DiCaprio, Age of Union and Todd Graves Family Foundation**.
- **CBD Alignment:** Helps countries implement **Target 4 of the Kunming-Montreal Global Biodiversity Framework (KMGBF)**, which seeks to **halt human-induced extinctions and improve the**

conservation status of threatened species.

15.22. PYGMY HOG (*PORCULA SALVANIA*)

- **Context:** The Standing Committee of the National Board for Wildlife (SC-NBWL) recommended including the pygmy hog in the Integrated Development of Wildlife Habitats (IDWH) Scheme's Species Recovery Programme.
- **IDWH Scheme:** A Centrally Sponsored Scheme of the Ministry of Environment, Forest and Climate Change (MoEFCC) supporting wildlife habitats and recovery of critically endangered species.
- **World's Smallest Wild Pig:** The pygmy hog is the **smallest and rarest wild pig**, living in small maternal family groups.
- **Conservation Status:** IUCN Red List: Endangered; CITES: Appendix I; Wildlife Protection Act, 1972: Schedule I; Conservation Programme: Pygmy Hog Conservation Programme (PHCP), launched in 1995, maintains captive populations and reintroduces pygmy hogs into Assam's protected areas.

15.23. ASIATIC WILD WATER BUFFALO (*BUBALUS ARNEE*)

- **Context:** Chhattisgarh Forest Department plans to **translocate wild buffaloes from Assam** to prevent the local extinction of Chhattisgarh's state animal in Central India.
- **Species Profile:** The Asiatic wild water buffalo is the **Indian subcontinent and Southeast Asia's second-largest wild bovine**, after the Gaur. It has the **largest horns among living bovids**, exceeding two metres.
- **Behaviour:** It forms **female-led maternal herds** and wallows in mud to regulate body temperature.
- **Habitat & Distribution:** Found in **wet grasslands, swamps, alluvial plains and river valleys**. Over 90% of its global population occurs in **Northeast India**, mainly Assam.
- **Conservation Status:** International Union for Conservation of Nature (IUCN): Endangered; Convention on International Trade in Endangered Species (CITES): Appendix III;

Wildlife (Protection) Act (WPA): Schedule I.

- **Major Threats:** Genetic swamping through interbreeding and **disease transmission** from shared habitats with free-ranging domestic water buffaloes.

15.24. BLIND, BLOOD-RED EEL

- **Context:** Scientists discovered a **new blind, blood-red eel species** in two ordinary dug-out wells in **Goalpara, Assam**.
- **New Species:** Named *Rakthamichthys anchi*.
- **Genus:** *Rakthamichthys* is a genus of **phreatobitic swamp eels** (Synbranchidae) that live exclusively in the **phreatic zone of groundwater aquifers** and are **endemic to India**.
- **Northeast India:** Following *Rakthamichthys rongsaw*, *R. anchi* is the **second swamp eel of this genus discovered in Northeast India**.
- **Swamp Eels:** They are **freshwater fish**, but are **not closely related to true eels or other snake-like marine and freshwater fishes**.

15.25. COLOMBIA DECLARES NATIONAL EMERGENCY AFTER MAJOR EARTHQUAKE

Context: Colombia declared a **national emergency** after a **7.4-magnitude earthquake** struck western regions, causing over **100 deaths** and several casualties. The earthquake was centred near **San José del Palmar, Chocó**, and was called Colombia's **strongest 21st-century earthquake**.

15.26. INDIA'S FIRST GUIDE TO GRASSLANDS AND OTHER OPEN NATURAL ECOSYSTEMS

- **Context:** India launched its first **Guide to Grasslands and Other Open Natural Ecosystems (ONEs)** at UNCCD COP17 in **Ulaanbaatar, Mongolia**.
- **Coverage:** Documents India's **grasslands, savannas, deserts, scrublands, ravines, rocky plateaus** and other ONEs, including their ecology, biodiversity and communities.
- **Major Landscapes:** Covers **Himalayan and Terai grasslands, Thar and Banni, Deccan savannas, Aravalli scrublands,**

Yamuna-Chambal ravines, Western Ghats rocky plateaus, central Nicobar grasslands and Tamil Nadu's Theri Kaadu.

- **Beyond 'Wastelands':** Highlights that grasslands, scrublands and ravines are **natural ecosystems**, not wastelands merely because they lack tree cover.

15.27. INDIA LAUNCHES CLOUDED LEOPARD CONSERVATION ACTION PLAN

Context: On International Clouded Leopard Day (4 August), India launched the Clouded Leopard Conservation Action Plan (CAP) to strengthen conservation of this elusive Asian wild cat.

- **International Clouded Leopard Day, established in 2018** by The Aspinall Foundation, raises awareness about habitat loss and illegal wildlife trade.
- It is an **advocacy observance**, not a United Nations (UN)- or treaty-based event.
- **Clouded Leopard Conservation Action Plan (CAP):** Developed under the Government of India–Global Environment Facility (GEF)–United Nations Development Programme (UNDP) initiative.
- **Official Release:** Released at the 91st Standing Committee of the National Board of Wild Life (SCNBWL) meeting in Coimbatore, July 2026.



SOCIAL ISSUES

STUDENT'S
NOTES 

1. GEN Z PROTESTS: TRANSFORMING DEMOCRATIC PARTICIPATION IN INDIA

Context: A wave of Generation Z-led protests has emerged over irregularities, graduate unemployment, and rising education costs.

Similar to Gen Z movements in Bangladesh, Nepal, Indonesia and Peru, these protests highlight youth aspirations, civic engagement, accountability and systemic reform.

Major Shifts in Youth Movements

- **Leaders to Digital Networks:**

Movements shifted from Jayaprakash Narayan and Anna Hazare to decentralised, digitally coordinated campaigns.

- **Ideology to Issues:** Activism now focuses on education reforms, exam integrity, unemployment, climate action and gig economy rights.
- **Parties to Independent Mobilisation:** Recent movements operate outside traditional parties, using digital satire, memes and online campaigns.
- **Physical to Hybrid Protests:** Modern movements combine social media activism with demonstrations for faster, wider mobilisation.
- **Campus to Policy Debates:** Youth movements increasingly influence education, employment, governance, accountability and institutional reform.

COUNTRY	MAJOR TRIGGER	KEY OUTCOME
 BANGLADESH	 Student protests against job quotas	 Sheikh Hasina's government was ousted; Muhammad Yunus became interim leader before fresh elections.
 NEPAL	 Anti-corruption protests	 Government changed, with youth-backed leadership emerging.
 INDONESIA	 Lawmakers' privileges amid economic hardship	 Government withdraw several controversial measures.
 PERU	 Crime and political instability	 Political instability deepened through successive leadership changes.
 INDIA	 NEET paper leak and examination reforms	 Government accepted several demands, including the Education Minister's resignation.

★ From Classrooms to Streets, Gen Z is Driving Change Across the World. ★

Issues Concerning the Youth of India

1. Economic Stress and Educated Unemployment

- **Jobless Growth and Skill Mismatch:** Economic growth fails to generate enough formal, remunerative jobs to absorb India's youth bulge.
- **High Youth Unemployment:** ILO India Employment Report 2024 states that youth constitute **83% of India's unemployed workforce**.
- **Graduate Unemployment:** Graduate unemployment reaches **29.1%**, nearly nine times the **3.4% rate among those without schooling**.
- **AI and Automation:** AI and automation threaten routine jobs; WEF projects **92 million jobs displaced globally by 2030**, requiring reskilling.
- **Gig Economy Expansion:** Limited employment increasingly shifts towards gig work, reducing social security, career progression and economic stability.
- **Educational Inflation:** Higher-education expansion has increased degrees without matching market-relevant skills, weakening their economic value.

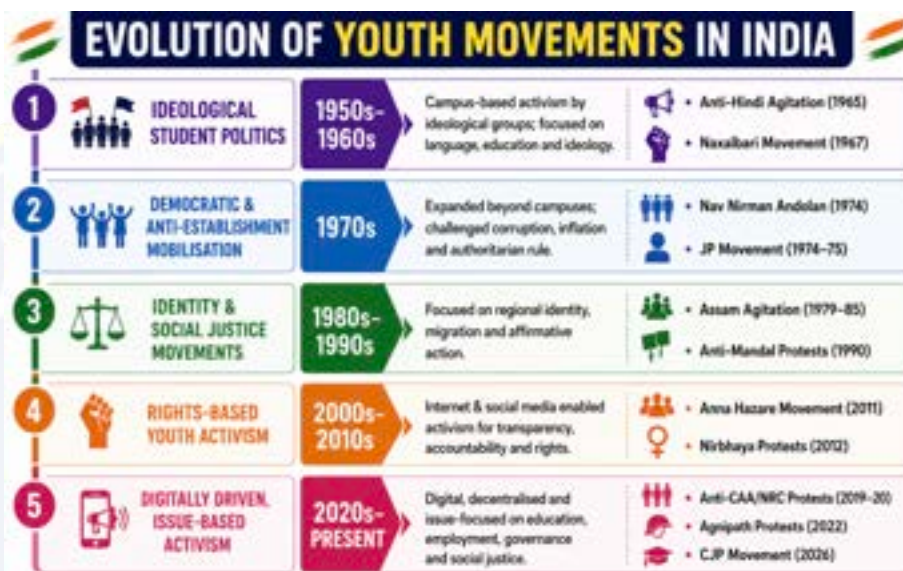
2. Institutional Decay and Merit Crisis

- **Broken Social Mobility:** Competitive exams like NEET, UPSC and State PSCs remain crucial pathways to upward social mobility.

- **Erosion of Meritocracy:** Paper leaks, proxy candidates and recruitment delays undermine faith in a meritocratic state.
- **Regulatory Deficit:** Weak examination oversight and unchecked coaching-sector commercialisation make education exclusionary and profit-driven.

3. Political Economy and Democratic Alienation

- **Failure of Interest Aggregation:** Traditional politics prioritises caste, religion, regionalism and welfare populism over Gen Z's material concerns.
- **Unaddressed Youth Concerns:** Housing, inflation and white-collar job creation remain inadequately represented in mainstream political agendas.
- **Shrinking Dissent Spaces:** Institutional failures push youth towards street mobilisation when conventional channels cannot address their grievances.
- **Democratic Alienation:** Criminalisation of dissent can deepen youth distrust and weaken their connection with democratic institutions.



Measures to Address Youth Discontent

- **New-Age Employment Ecosystems:** Promote **Orange, Creator, Sports, Care, Space and Green Economies** through finance, incubation and intellectual-property support.
- **Restore Examination Integrity:** Strengthen **Fast-Track Special Courts (FTSCs)** under the **Public Examinations (Prevention of Unfair Means) Act, 2024**.
- **Reform National Testing Agency:** Make **National Testing Agency (NTA)** autonomous, using blockchain credentials, zero-trust architecture, Artificial Intelligence surveillance and encrypted testing.
- **Diversify Success Pathways:** Expand **Performance Assessment, Review and Analysis of Knowledge for Holistic Development (PARAKH)**, multiple testing windows, micro-credentials and skill-based hiring.
- **Strengthen Digital Democracy:** Upgrade **MyGov** into interactive consultation platform enabling youth participation in policies, budgets and legislation, inspired by Taiwan's **vTaiwan**.
- **Promote Civic Innovation:** Establish **Youth Innovation Missions** and civic-tech incubators through **Atal Innovation Mission** and **Startup India**.
- **Whole-of-Government Youth Strategy:** Formulate **National Youth Strategy 2047** with measurable targets for education, employment, entrepreneurship, participation, mental health and digital inclusion.
- **Promote Employment-Intensive Growth:** Complement **Production Linked Incentive (PLI)** with incentives for labour-intensive textiles, leather, footwear, tourism and food processing.
- **Strengthen Gig-Worker Protection:** Implement **Code on Social Security, 2020**, establishing gig-worker welfare boards, health insurance and accident coverage.

Conclusion: Youth movements are **democratic feedback mechanisms**; harnessing youth aspirations and civic energy can transform India's demographic dividend into a **Youth Dividend** for **Viksit Bharat 2047**.

Test Your Knowledge	
Prelims Corner Consider the following pairs: 1. PARAKH – Holistic assessment reforms 2. vTaiwan – Digital public consultation 3. Atal Innovation Mission – Civic and innovation ecosystem 4. Code on Social Security, 2020 – Gig-worker social protection How many of the above pairs are correctly matched? A. Only one B. Only two C. Only three D. All four Answer: D	Mains Corner Q. "Youth protests are increasingly becoming new forms of democratic participation." Examine the factors driving youth discontent in India and suggest measures to channel it into constructive democratic engagement. (15 marks, 250 words)

2. EARLY RELEASE POLICY FOR ELDERLY & TERMINALLY ILL PRISONERS

Context: The Supreme Court directed all States and Union Territories (UTs) to notify, within **3 months**, a uniform policy for the premature release of elderly and terminally ill prisoners on humanitarian grounds. The order came on a petition by the **National Legal Services Authority (NALSA)**

Supreme Court Directions

- **Eligibility & Procedure:** Clearly define eligibility, application process and timelines, in consultation with **State Legal Services Authorities (SLSAs)**.
- **Uniform Definition:** Adopt a common definition of *terminal illness*, preferably from the **United Nations Office on Drugs and Crime (UNODC)** Handbook on Prisoners with Special Needs.
- **Medical Assessment:** Set up independent medical boards to certify terminal illness, advanced age and severe medical vulnerability.
- **Role of Under Trial Review Committees (UTRCs):** Periodically review eligible cases and recommend **bail, parole, remission or premature release**.
- **Digital Portal:** The **Union Government**, with the **National Informatics Centre (NIC)**, will develop an e-portal to process and track applications.
- **Time-Bound Decisions:** Avoid delays; all decisions must be reasoned and remain open to judicial review.
- **Compliance:** The Centre, States and UTs must submit compliance affidavits within **6 months**, detailing eligible prisoners, releases granted and pending cases.
- **Transparency:** The portal will provide alerts, timeline monitoring, compliance reports and oversight while protecting prisoners' privacy.

National Legal Services Authority (NALSA)

- Statutory body established in **1995** under the **Legal Services Authorities Act, 1987**, to implement and monitor legal aid programmes. It completed **30 years in 2025**. The **Chief Justice of India (CJI)** is its Patron-in-Chief.
- **Constitutional Basis:** Established under **Article 39A** to ensure free legal aid and equal justice; also upholds **Article 14** and **Article 22(1)**.



- **Key Functions:** Frames legal aid policies, monitors implementation, and provides grants to **State Legal Services Authorities (SLSAs)** and **Non-Governmental Organisations (NGOs)**.
- **Eligible Beneficiaries:** **Women, children, Scheduled Castes (SCs), Scheduled Tribes (STs), Economically Weaker Sections (EWS), industrial workers, persons with disabilities, and other notified groups.**

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding the National Legal Services Authority (NALSA): 1. It is a constitutional body established directly under Article 39A. 2. The Chief Justice of India is its Patron-in-Chief. 3. It provides grants to State Legal Services Authorities and NGOs for legal-aid programmes. Which of the statements given above is/are correct? A. 1 only B. 2 and 3 only C. 1 and 3 only D. 1, 2 and 3 Answer: B	Q. "Humanitarian considerations must inform the administration of criminal justice." Examine the need for a uniform premature-release policy for elderly and terminally ill prisoners and the role of legal-aid institutions in ensuring humane and equitable prison administration. (15 marks, 250 words)

3. NATIONAL ANTI-DOPING (AMENDMENT) ACT, 2025

Context: Ahead of the Commonwealth Games (CWG) 2026, two Indian medal prospects were excluded due to anti-doping violations, affecting India's medal chances. The Government of India has notified the National Anti-Doping Act, 2022 and the National Anti-Doping (Amendment) Act, 2025, strengthening the legal framework for clean sport.

Key Features of the National Anti-Doping (Amendment) Act, 2025

- **Statutory Status to the World Anti-Doping Code:** Inserts **Section 2A**, making specified **World Anti-Doping Code (WADA Code)** provisions legally enforceable. Allows the Central Government to update the Schedule through notification in line with **World Anti-Doping Agency (WADA)** amendments.
- **Expanded Definitions:** Defines **Anti-Doping Organisation**, covering WADA, International Federations, **International Olympic Committee (IOC)**, **International Paralympic Committee (IPC)**, **National Anti-Doping Organisations (NADOs)**, etc. Undefined terms carry the same meaning as in the WADA Code.
- **Wider Anti-Doping Rule Violations (ADRVs):** Includes **Anti-Doping Rule Violations (ADRVs)** under **Article 2** of the WADA Code: Participation during ineligibility/provisional suspension, complicity in doping, prohibited association, retaliation/intimidation against whistle-blowers.
- **Greater Institutional Independence:** Enhances autonomy of the **National Anti-Doping Agency (NADA)** and **National Anti-Doping Appeal Panel** in investigations, enforcement and appeals.
- **Stronger Appeals:** Revises the **National Anti-Doping Appeal Panel**. Permits eligible appeals to the **Court of Arbitration for Sport (CAS)** under the WADA Code.

IMPORTANCE OF DOPING ISSUE

Clean Sport Today. Stronger India Tomorrow

01 REDUCED QUOTA:

India's weightlifting quota for CWG 2026 fell from **16 to 11** due to repeated anti-doping violations.

→ Under CWG rules, each violation by an athlete or support staff member reduces the country's athlete quota.

CWG 2026 WEIGHTLIFTING QUOTA

Earlier	Now
16	11

02 HIGH DOPING RATE:

India recorded the **highest number of doping offenders in the World Anti-Doping Agency (WADA) 2024 report**, with a **3.6%** positivity rate, among the world's highest.

WADA 2024 REPORT

Doping Positivity Rate

3.6%

Among the world's highest

03 GLOBAL REPUTATION:

The issue is critical as India prepares to host the **2030 Commonwealth Games** and bids for the **2036 Olympic Games**, making stronger anti-doping enforcement essential.

2030 COMMONWEALTH GAMES

INDIA TO HOST

2036 OLYMPIC GAMES

INDIA'S BID

STRONG ANTI-DOPING MEASURES TODAY

CLEAN SPORT • GLOBAL RESPECT • GREATER GLORY

- **Mandatory Laboratory Accreditation:** Mandates WADA accreditation for all recognised dope-testing laboratories.
- **Flexible Rule-making:** Empowers the Central Government and NADA to frame rules aligned with the WADA Code, International Standards and global best practices.



Significance

- Strengthens **transparency, accountability and due process**.
- Enhances institutional autonomy and aligns with global best practices.
- Promotes **fair play** and a **level playing field** for athletes.

Test Your Knowledge

Prelims Corner	Mains Corner
Q. With reference to the National Anti-Doping (Amendment) Act, 2025, consider the following statements: 1. It gives legal enforceability to specified provisions of the World Anti-Doping Code. 2. It allows the Central Government to update the relevant Schedule in line with amendments to the WADA Code. 3. It completely replaces the WADA Code with domestic anti-doping rules. Which of the statements given above are correct? A. 1 and 2 only B. 2 and 3 only C. 1 and 3 only D. 1, 2 and 3 Answer: A	Q. "Effective anti-doping regulation requires not only stricter penalties but also institutional independence and due process." Examine how the National Anti-Doping (Amendment) Act, 2025 seeks to strengthen India's anti-doping framework. (10 marks, 150 words)

4. UN PROGRESS DECLARATION ON ROAD SAFETY

Context: United Nations (UN) Member States adopted the Progress Declaration on Road Safety at the United Nations General Assembly (UNGA) to accelerate global road safety action.

Key Highlights

- **Target:** Reduce road deaths and serious injuries by **50% by 2030** (from **2021** levels), in line with the **Sustainable Development Goals (SDGs)**.
- **National Action:** Adopt road safety strategies with clear targets, timelines, and budgets.
- **Institutional Measures:** Establish lead road safety agencies, strengthen data systems, enforce laws, and improve road, vehicle, and infrastructure safety.
- **Safe System Approach:** Accepts human error as inevitable and focuses on designing a safer road transport system.
- **Collaborative Effort:** Calls for participation of the private sector, civil society, academia, youth, and philanthropic organisations.

Latest World Health Organization (WHO) Findings

- **Global Progress:** Road traffic deaths declined by **21% (2011–2025)**.
- **Continuing Burden:** Around **1.16 million** people died in road crashes in **2025**; leading cause of death among **5–29-year-olds**.
- **South-East Asia:** The **WHO South-East Asia Region**, including India, recorded only a **2%** decline in road fatalities.
- **Economic Cost:** Road traffic injuries cause losses of nearly **3% of Gross Domestic Product (GDP)** in most countries.
- **Motorcyclists at Risk:** Nearly **one-third** of global road deaths involve motorcyclists.

5. ILO's CONVENTION 193 - PLATFORM ECONOMY

Context: At the **114th International Labour Conference (ILC)** in Geneva, the **ILO** adopted **Convention No. 193 – “Decent Work in the Platform Economy”**. Approved by **406 votes**, it is the world's first **legally binding treaty** for gig and platform workers.

- **India's Position:** Indian **government delegates abstained**, while employer and worker representatives voted in favour under the ILO's tripartite system.

Key Provisions of ILO Convention No. 193

- **Minimum Labour Rights:** Adopted in **June 2026**, it guarantees fair wages, social security and workplace protection across worker classifications.
- **Worker Protection:** Ensures **minimum wages, timely payments, occupational safety and health, and social security** for platform workers.
- **Algorithmic Transparency:** Platforms must explain automated decisions concerning **work allocation, wages, ratings and account deactivation**.
- **Human Oversight:** Requires human review of **significant automated decisions** affecting platform workers.
- **Work-Based Classification:** Governments must classify workers by the **actual work performed**, preventing misclassification through contractual labels.

Reasons for India's Abstention

- **Existing Framework:** The Centre maintains that the **Code on Social Security, 2020** already covers gig and platform workers.
- **Divergent Positions:** Government delegates abstained, while **employer and worker delegates supported** the Convention under ILO's tripartite framework.
- **Domestic Conformity:** India generally ratifies ILO Conventions after ensuring **full alignment with domestic laws**.
- **Economic Concerns:** Worker reclassification and **algorithmic transparency** could raise compliance costs, affect platforms and discourage digital innovation.
- **Federal Flexibility:** Since **labour is a Concurrent List subject**, States require flexibility to formulate their own labour regulations.

Implications of India's Abstention

- **Global Standing:** Abstention may conflict with India's **Vishwaguru and Global South leadership** aspirations on critical international labour issues.
- **Limited Redress:** Non-ratification denies workers an **international labour-rights baseline** for challenging platform abuses before domestic courts.
- **Protection Gap:** Workers in ratifying countries, including **China and European states**, may gain stronger enforceable rights than Indian workers.
- **Classification Risks:** Abstention may allow **worker misclassification and opaque algorithmic management** to continue without strict legal accountability.

Factors Driving Gig Economy in India

- **Flexible Employment:** Youth preference for **flexible schedules, freelance work and multiple income streams** is accelerating gig employment.
- **Digital Infrastructure:** **96.96 crore internet connections (2024)**, 85.5% household smartphone penetration and **Digital India** platforms enable large-scale gig work.
- **Expanding Workforce:** Gig workers rose from **7.7 million (2020–21)** to a projected **23.5 million by 2029–30**, forming 6.7% non-agricultural workforce.
- **Platform Commerce:** Expanding **e-commerce, quick commerce, ride-hailing and food delivery** platforms continuously generate demand for gig workers.
- **Urban Demand:** Growing preference for **instant, on-demand services** expands gig opportunities across logistics, transport and home services.
- **Labour Pressures:** **Unemployment, underemployment and a large semi-skilled workforce** make gig work an accessible income source.

Legal Framework for Gig Workers in India

- **Aggregator Contribution:** Aggregators must contribute **1–2% of annual turnover**, capped at **5% of worker payouts**, to the Social Security Fund.
- **Code on Social Security, 2020:** Enforced within **Labour Codes in November 2025**, it defined gig/platform workers and mandated aggregators' social-security contributions.
- **Implementation Gap:** Despite the central framework, the law remains **largely unoperationalized**, limiting effective delivery of worker benefits.
- **Social Security Benefits:** Eligible workers may receive **life/disability cover, accident insurance, health, maternity benefits, pensions and crèche facilities**.
- **State Initiatives:** **Rajasthan enacted its 2023 Platform-Based Gig Workers Act**, while Karnataka and Telangana proposed welfare boards and funds.
- **Ambiguous Entitlements:** Central and most State frameworks lack clarity on **benefit nature, quantum and eligibility criteria** for workers.



Challenges in India's Gig Economy

- **Worker Misclassification:** Treating gig workers as **independent contractors** denies minimum wages, paid leave and regulated working hours.
- **Algorithmic Opacity:** Opaque algorithms govern **task allocation, ratings, pricing and deactivation**, often without human oversight.
- **Weak Social Security:** Despite the **Code on Social Security, 2020**, worker welfare schemes remain largely non-operational.
- **Income Volatility:** Dynamic pricing, incentives and uncertain demand cause significant **fluctuations in gig workers' earnings**.
- **Occupational Risks:** Workers often lack **accident insurance, health coverage and protection** during heatwaves and other emergencies.

- **Women's Safety:** Women workers face **harassment during doorstep services** and inadequate institutional protection mechanisms.
- **Low Formalisation:** Many gig workers remain outside **official databases, welfare systems and social-security coverage**.

Way Forward to Regulate and Improve Gig Economy in India

- **Dedicated Gig Workers' Rights Law:** Create an intermediate employment category guaranteeing **minimum wages, regulated hours, paid leave and collective bargaining**.
- **Algorithmic Transparency:** Mandate automated-decision disclosure, **human review before deactivation** and independent grievance redress mechanisms.
- **Operationalise Social Security Fund:** Notify schemes, enforce **1–2% aggregator contributions**, and integrate benefits through the **e-Shram Portal**.
- **Minimum Earnings Standards:** Establish **statutory floor wages, transparent surge-pricing norms and timely payment guarantees** for workers.
- **Universal Accident and Health Insurance:** Ensure mandatory employer-funded coverage and **climate-resilient occupational safety standards**.
- **Platform Safety Protocols:** Require **verified customers, SOS/panic buttons, emergency helplines and strict harassment-complaint redressal**.
- **Universal e-Shram Registration:** Link registration with **UAN, social security, skill development and portable inter-State welfare**.

Conclusion: India can harness the platform economy as a **future-ready employment ecosystem** by balancing innovation with **worker dignity, social protection and responsible digital governance**, ensuring inclusive growth.

Test Your Knowledge	
Prelims Corner Q1. Consider the following statements regarding ILO Convention No. 193: 1. It is the first legally binding international treaty specifically dealing with decent work in the platform economy. 2. It requires human review of significant automated decisions affecting platform workers. 3. It requires governments to classify platform workers solely according to the contractual terms agreed with platforms. Which of the statements given above is/are correct? A. 1 and 2 only B. 2 and 3 only C. 1 and 3 only D. 1, 2 and 3 Answer: A	Mains Corner Q. "The platform economy offers employment flexibility but can also deepen labour insecurity." Examine the challenges faced by gig workers in India and assess the adequacy of India's existing regulatory framework in ensuring decent work and social security. (15 marks, 250 words)

6. STRENGTHENING INDIA'S SPORTS ECOSYSTEM

Context: India highlighted its progress towards becoming a sporting nation during the Commonwealth Games Glasgow 2026, continuing participation since 1934.

Role of Khelo India Transforming India's Sports Ecosystem

- **Integrated Framework:** Launched in **2017**, Khelo India merged **Rajiv Gandhi Khel Abhiyan, Urban Sports Infrastructure Scheme and National Sports Talent Search Scheme**.
- **Five Pillars:** It focuses on **training centres, coaches/support staff, sports science/technology, competitions/leagues and modern sports infrastructure**.
- **District Expansion:** The programme targets **one Khelo India Training Centre in every district** through coordinated State and Union Territory plans.
- **Scientific Training:** Athlete development integrates **sports science, psychology, nutrition and data-driven platforms** for real-time performance monitoring.
- **2036 Vision:** The integrated approach aims to build a **grassroots-to-elite ecosystem** and make India a leading sporting nation by **2036**.

Key Challenges

- **Talent Conversion Gap:** Large participation base but weak grassroots-to-elite conversion; inadequate school-Khelo India-academy-national camp pathways limit “participation to podium” outcomes.
- **Uneven Infrastructure & Access:** Quality facilities, coaches and sports science remain urban-centric, limiting rural, tribal, women and para-athletes; Khelo India’s district expansion addresses this gap.
- **Weak Sports-Science Ecosystem:** Shortage of sports psychologists, nutritionists, physiotherapists, biomechanists and strength-and-conditioning experts limits scientific training and injury prevention.
- **Governance & Coaching Deficits:** Federation disputes, selection inconsistencies, weak accountability and shortage of international-standard coaches hinder athlete development.
- **Sport as an Uncertain Career:** Limited financial security, sponsorship, insurance and post-retirement opportunities discourage sporting careers.

**6.1. REVAMPED KHELO INDIA SCHEME**

Context: Cabinet approval: Union Cabinet expanded Khelo India and enhanced Assistance to National Sports Federations (ANSFs) with ₹36,441 crore for 2026–27 to 2030–31.

Key Features

- **Sports-led development:** Positions sports as a tool for youth development, nation-building and India’s emergence as a global sporting power.
- **Policy alignment:** Aligns with Khelo Bharat Niti 2025 and National Education Policy (NEP) 2020, integrating sports, education, fitness, technology and training.
- **Athlete pathway:** Establishes progression from talent identification and scientific training to competition, international exposure and Olympic preparation.
- **Elite progression:** Connects grassroots events with Khelo India and the Target Olympic Podium Scheme (TOPS) for sustained athlete development.

Way Forward

- **End-to-End Talent Pipeline:** Build school → Khelo India → academy → national camp → elite pathways with longitudinal athlete tracking and transparent selection.
- **Decentralise Infrastructure:** Develop district-level sporting hubs, especially in rural, tribal and aspirational districts, with shared facilities and digital expert support.
- **Institutionalise Sports Science:** Establish multidisciplinary High-Performance Centres integrating medicine, nutrition, psychology, biomechanics and data analytics; UK’s English Institute of Sport offers a model.

- **Professionalise Governance & Coaching:** Ensure transparent selection, athlete representation, conflict-of-interest safeguards, continuous coach certification and stronger federation accountability.
- **Create an Athlete Security Net:** Provide scholarships, insurance, education, employment and post-retirement support, while leveraging CSR, professional leagues and Public-Private Partnerships (PPPs).

Conclusion: India's sporting future lies in converting **mass participation into sustained podium success** through scientific training, accountable institutions and athlete-centric pathways, realising the **2036 sporting vision**.



Test Your Knowledge



Prelims Corner	Mains Corner
Q. Consider the following statements regarding the Khelo India programme: 1. It was launched in 2017. 2. It was formed by merging three earlier sports-related schemes. 3. Its objective is restricted to developing athletes for the Olympic Games. 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	Q. India's expanding sports participation has not yet translated into commensurate elite-level success. Examine the key structural challenges in India's sports ecosystem and discuss how the revamped Khelo India scheme can bridge the gap from grassroots participation to international podium performance. (15 marks, 250 words)

6.2. INDIA AT COMMONWEALTH GAMES 2026

Context: 4th-place finish: India secured **4th position at Glasgow 2026** with **39 medals (13 Gold, 17 Silver, 9 Bronze)**.

- **2030 host handover:** India officially took over hosting duties for the **centenary 2030 Commonwealth Games in Ahmedabad**; **Neeraj Chopra** received the Commonwealth Flag.

India at CWG

- **Debut:** India participated in **1934 London Games**; **Rashid Anwar** won its first medal—wrestling bronze.
- **First individual gold:** **Milkha Singh** won India's first individual CWG gold in **440 yards at Cardiff 1958**.
- **Best performance:** At **Delhi 2010**, India won **101 medals (39G, 26S, 36B)**, finishing **2nd overall**.
- **2030 Games:** **Ahmedabad** will host the CWG for the **second time in India**.

Medal Winners

- **Saikhom Mirabai Chanu (Women's 48 kg):** Won gold with a **190 kg total lift (85 kg snatch + 105 kg clean and jerk)**. || Broke **Commonwealth Games** records in snatch, clean and jerk, and total lift. || Became the first Indian weightlifter to win **three consecutive Commonwealth Games golds** (2018, 2022, 2026). || Previously won **silver** at the **2014 Glasgow Commonwealth Games**.
- **Chanambam Rishikanta Singh (Men's 60 kg):** Won **silver** with a **264 kg combined lift**.
- **Raja Muthupandi (Men's 65 kg):** Won **silver** with a **286 kg combined lift**.
- **Para-athletes Dilip Mahadu Gavit** won Gold medal (10.72s) in the Men's 100m T47
- **Mohammed Basil Morssinganakath** won Silver (10.38s) at the same event.
- **Seema Kaliramna** secured bronze medal in women's discus throw with a best effort of 58.65m.
- **Dilip Mahadu Gavit** won **100m T47 Gold (10.72s)**; **Mohammed Basil Morssinganakath** secured **Silver (10.38s)**

7. JAN AUSHADHI NUTRACEUTICALS

Context: Government highlighted expanding **affordable nutraceuticals** under **Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)** through Jan Aushadhi Kendras.

Significance of PMBJP

- **Diverse Products:** The portfolio covers **protein, immunity, nutritional foods and specialised formulations** for children, women, elderly, fitness enthusiasts and specific conditions.
- **Affordability Role:** PMBJP offers **quality nutraceuticals through Jan Aushadhi Kendras** at lower prices, advancing **“Quality Healthcare and Nutrition for All.”**
- **Nutraceutical Need:** Protein supplements, vitamins, minerals, herbal products and probiotics support wellbeing, but high prices restrict low-income access.
- **Integrated Healthcare:** Combining **affordable medicines and nutrition** promotes comprehensive healthcare for students, professionals, homemakers, senior citizens and patients.

**Pradhan Mantri Bhartiya Janaushadhi Pariyojana**

- PMBJP was launched in **November 2008** by the **Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers**, providing affordable generic medicines.
- **Implementation:** **Pharmaceuticals and Medical Devices Bureau of India (PMBI)** implements PMBJP and is registered under the **Societies Registration Act**.
- **Price Advantage:** Jan Aushadhi medicines are generally **50–80% cheaper** than comparable branded medicines with similar therapeutic value.
- **Quality Control:** Medicines come from **World Health Organization-Good Manufacturing Practices** compliant manufacturers; every batch undergoes **National Accreditation Board-accredited** laboratory testing.
- **Special Incentives:** ₹2 lakh one-time incentive supports Kendras by women, ex-servicemen, Divyangjan, Scheduled Caste/Scheduled Tribe entrepreneurs and specified regions.
- **Janaushadhi Suvidha:** **Oxo-biodegradable sanitary napkins** cost ₹1 per pad; cumulative sales exceeded **100 crore pads** by **March 2026**.

8. THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD (SOFI) 2026

Context: The United Nations (UN) SOFI 2026 report states that Africa has surpassed Asia in absolute population facing hunger for the first time.

Key Findings of SOFI 2026

- **Global Hunger Declines:** Undernourishment fell for the third consecutive year, from 8.6% (2022) to 7.8% (2025), but 645 million remained undernourished.
- **Africa Becomes Hunger Epicentre:** Africa has **309 million hungry people (20%)**, surpassing Asia's 292 million (6%); by 2030, it may host **56% of global undernourished people**.
 - **Drivers:** Climate change, conflicts, poverty, food inflation, expensive nutritious foods, input costs and geopolitical tensions are worsening African food insecurity.
- **Food Insecurity Eases:** **2.1 billion people (25.8%)** faced moderate or severe food insecurity in 2025, though levels remain above pre-COVID-19 levels.
- **Healthy Diet Becomes Costlier:** **Cost of a Healthy Diet (CoHD)** reached **4.28 Purchasing Power Parity (PPP) dollars/person/day** in 2025 amid food inflation.

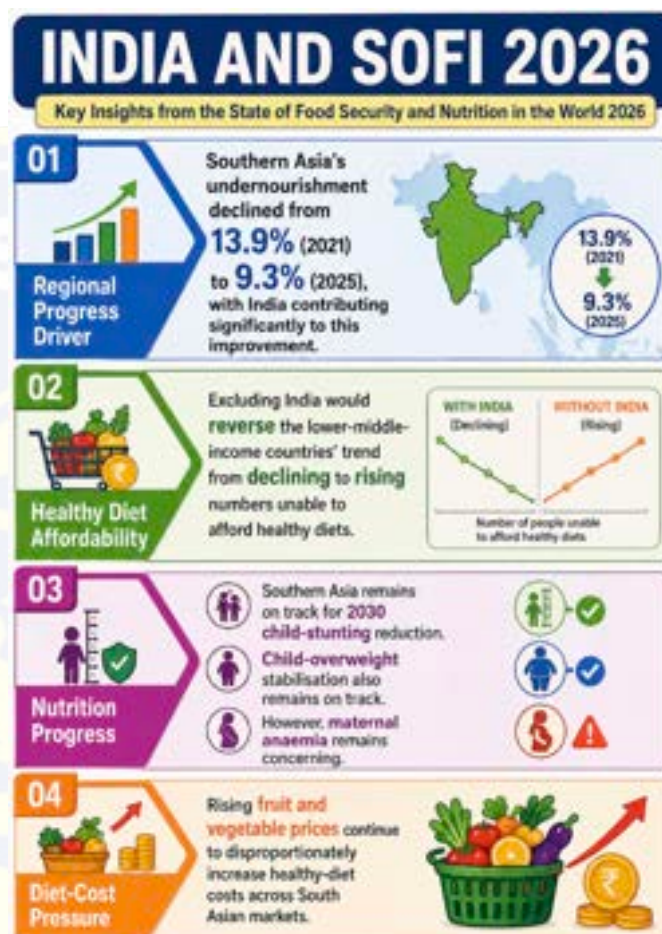
- **Affordability Crisis:** 2.69 billion people (32.7%) could not afford healthy diets; Africa recorded the highest unaffordability at 66.6%.
- **Sustainable Development Goal (SDG) 2 Off Track:** In March 2025, the UN Statistical Commission adopted Minimum Dietary Diversity for Children (MDD-C) and Women (MDD-W) for SDG Target 2.2.

Cost of a Healthy Diet (CoHD)

- **Origin:** FAO and World Bank introduced the Cost of a Healthy Diet (CoHD), also called Cost and Affordability of a Healthy Diet (CoAHD), in 2020.
- **Healthy Diet Basket:** CoHD measures minimum daily dietary cost using a basket covering starchy staples, animal foods, legumes, nuts/seeds, fruits, vegetables, oils and fats.

State of Food Security and Nutrition in India

- **Child Nutrition: National Family Health Survey-6 (NFHS-6, 2023–24)** shows improvements over NFHS-5 (2019–21).
 - **Stunting:** Declined among under-five children from 35.5% to 29.3%.
 - **Severe Wasting:** Fell from 7.7% to 5.2%, indicating improved child nutritional outcomes.
 - **Underweight:** Marginally declined from 32.1% to 31.8%, showing persistent nutritional challenges.
 - **Complementary Feeding:** Children aged 6–8 months receiving complementary foods alongside breastfeeding rose from 45.9% to 59.5%.
 - **Persistent Gap:** High malnutrition reflects continuing chronic undernutrition and intergenerational nutritional deprivation.
- **Largest Safety Net:** India's food-security system protects 81+ crore people from severe calorie deprivation through National Food Security Act (NFSA), 2013 and Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY).
 - **Production–Distribution Link:** National Food Security & Nutrition Mission (NFSNM) raises foodgrain output, while NFSA ensures equitable distribution through Targeted Public Distribution System (TPDS).
 - **Coverage:** TPDS covers 75% of rural and 50% of urban populations, integrating food production with inclusive distribution.
- **PM POSHAN:** Provides hot cooked meals from Bal Vatika to Class VIII, supporting nutrition, enrolment, attendance and learning.
- **Anaemia Challenge:** NFHS-5 found anaemia among 57% women (15–49 years) and 67.1% children (6–59 months), highlighting persistent micronutrient deficiency or hidden hunger.
 - **Key Interventions:** Anemia Mukh Bharat and rice fortification address persistent micronutrient deficiencies.



Test Your Knowledge	
Prelims Corner Q. With reference to the Cost of a Healthy Diet (CoHD), consider the following statements: 1. It was introduced jointly by the Food and Agriculture Organization (FAO) and the World Bank. 2. It measures the minimum daily monetary cost of a nutritionally adequate diet. 3. Its food basket includes only plant-based foods to assess dietary affordability. 4. Purchasing Power Parity (PPP) is used in expressing the cost across countries. Which of the statements given above are correct? A. 1 and 2 only B. 1, 2 and 4 only C. 2, 3 and 4 only D. 1, 2, 3 and 4 Answer: B	Mains Corner Q. Despite improvements in foodgrain availability and child nutrition, India continues to face challenges of malnutrition, anaemia and affordability of healthy diets. Examine the structural causes of India's nutritional insecurity and suggest measures to achieve the objectives of SDG 2. (15 marks, 250 words)

9. SUPREME COURT'S HANDBOOK ON GENDER SENSITIVITY

Context: New Handbook: The Supreme Court of India released '*Judgments and Gender: Sensitivity and Compassion in Writing Judgments*' to promote survivor-centric, trauma-informed judicial practices. The 2026 handbook builds on the 2023 Handbook on Combating Gender Stereotypes, extending beyond language to courtroom practices.

Key Highlight

- **Gender Jurisprudence:** The handbook traces India's gender-sensitive jurisprudence, from protective discrimination to stronger **dignity, autonomy and protection against gender-based discrimination**.
- **Anti-Stereotyping Rule:** Following *Aparna Bhat v. State of Madhya Pradesh (2021)*, judges must avoid **gender stereotypes and marriage or compromise suggestions** in rape cases.
- **Consent Assessment:** Survivor's **clothing, marital status, sexual history or lifestyle** cannot determine consent or credibility under **Section 146, Indian Evidence Act, 1872 and Section 48, Bharatiya Sakshya Adhiniyam (BSA), 2023**.
- **Neutral Judicial Language:** Replace terms like "prosecutrix," "modesty," "lust" and "chastity" with rights-based terms such as "survivor," "sexual assault" and "bodily autonomy violated."
- **Inclusive Terminology:** Use inclusive language for **LGBTQIA+ persons**, including **Sexual Orientation, Gender Identity, Expression and Sex Characteristics (SOGIESC)**.

Survivor-Centred Court Practices

- **Victim Protection:** Strengthen the **Witness Protection Scheme, 2018** and provide **mandatory legal aid from the First Information Report (FIR) stage**.
- **In-Camera Trials:** Hold rape and **Protection of Children from Sexual Offences (POCSO)** trials in-camera under **Section 366(2), Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**.
- **Child-Sensitive Trials:** Use **video-link testimony**, provide **support persons** and ensure **time-bound POCSO trials**.
- **Witness Dignity:** Treat witnesses as **guests**, minimising repeated adjournments and prolonged waiting, as directed in *State of U.P. v. Shambhunath Singh (2001)*.
- **Pre-Trial Counselling:** Provide suitable counselling to **reduce anxiety and prevent secondary victimisation**.

Key Concerns

- **Non-Binding Nature:** Guidelines remain **recommendatory**, making their effectiveness dependent on judicial training and internalisation.
- **Language Diversity:** India's **linguistic diversity** complicates uniform glossary implementation, particularly in vernacular trial courts.
- **Low Awareness:** **80.7% of respondents** were unaware of the **Witness Protection Scheme**, revealing weak implementation and awareness.
- **Continuous Sensitisation:** Gender sensitisation is an "**ongoing process**"; evolving language and attitudes require continuous reform.

- **Societal Bias:** Judicial training alone cannot eliminate **deep-rooted gender biases** without broader societal behavioural and attitudinal change.

Conclusion: Gender justice requires a **gender-sensitive justice ecosystem** combining **dignity, substantive equality, due process, institutional reform and digital safeguards** for survivor-centric justice.

STUDENT'S
NOTES 

10. POINTERS FOR PRELIMS

10.1. FRANCE'S SOCIAL MEDIA BAN

- France became the **first European Union (EU)** country to ban social media for **children below 15 years**.
- **Australia** was the first country to implement a nationwide ban (**under 16**).
- Similar measures: **Indonesia, Türkiye, Malaysia, UAE, and the UK**.
- **Karnataka** is the **first Indian state** to announce a social media ban for those **below 16 years**.

10.2. KUTKI (*PICRORHIZA KURROA*)

- **Context:** Farmers in **Mandi, Himachal Pradesh**, demonstrated sustainable **Kutki** cultivation by harvesting stolons instead of uprooting entire plants.
- **Kutki (*Picrorhiza kurroa*)** is a perennial high-altitude medicinal herb. Also known as **Katuka** or **Katukarohini** in Sanskrit.
- Features creeping woody rhizomes, toothed leaves, and pale purplish-blue flowers on cylindrical spikes.
- **Habitat:** Grows on moist, rocky Himalayan slopes at **2,700–4,500 m** altitude. Found in **Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Nepal, Bhutan, and the Tibetan Plateau**.
- **Medicinal Importance:** Roots contain **Kutkin**, a bitter glycoside. Used for hepatoprotective, anti-asthmatic, and stomachic properties.
- **Conservation Status:** **IUCN:** Endangered. **CITES:** Appendix II.

10.3. DOXXING

- **Recent Incidents:** Following a **Cockroach Janta Party (CJP)** student protest at Jantar Mantar, female participants faced severe **doxxing and coordinated online harassment**.
- **Meaning:** Doxxing involves **publicly exposing private or personal information without consent**, typically to cause harm, shame or harassment.

- **Techniques:** Doxxers combine **phishing, IP loggers, packet sniffing and dark-web leaks** with public-data aggregation from social media, registries and records.

10.4. UNITED TO END AIDS REPORT

Context: **UNAIDS (United Nations Programme on HIV/AIDS)** released *United to End AIDS* at the **26th International AIDS Conference** in **Rio de Janeiro, Brazil**.

- **Funding Crisis:** **2025** marked a turning point, as sharp cuts in international assistance disrupted HIV programmes across many countries.
- **Progress:** Annual **new HIV infections and AIDS-related deaths** reached their lowest levels in over **30 years**.
- **2030 Risk:** Despite progress, the global HIV response is increasingly fragile, threatening the goal of ending AIDS as a **public health threat by 2030**.
- **Funding Requirement:** Achieving the 2030 goal requires **US\$21.9 billion annually** for HIV programmes in **low- and middle-income countries**.
- **Funding Gap:** Only **US\$17.6 billion** was available in **2025**, with **59%** coming from domestic resources.

Political Declaration on HIV and AIDS, 2026

- **Global Roadmap:** UN Member States adopted the declaration in **2026** during the **UN General Assembly High-Level Meeting on HIV/AIDS** in New York.
- **2030 Commitments:** It targets ending AIDS as a public health threat through **95-95-95 targets**, mobilising **US\$21.9 billion annually by 2030** and protecting human rights.

10.5. LAKSHMI YOJANA

- **Initiative:** Delhi Government scheme provides **₹2,500 monthly assistance** to economically weaker women for **financial inclusion and savings**.
- **Eligibility:** **21–60-year-old women**, family income up to **₹2.5 lakh**

annually, Delhi voters residing there for 10+ years.

- **Family Limit:** Only **one eligible woman per family** can apply.

10.6. KARNATAKA BANS JUNK FOOD NEAR EDUCATIONAL INSTITUTIONS

Context: Karnataka Government banned the sale, free distribution, advertising and promotion of **High Fat, Sugar and Salt (HFSS)** foods in schools, colleges and within **50 metres**.

- **Legal Basis:** Directions follow the **Food Safety and Standards (Safe Food and Balanced Diets for Children in School) Regulations, 2020**.
- **FBO Compliance:** **Food Business Operators (FBOs)**, including canteens, bakeries, restaurants and stalls, need licences and must follow the **Food Safety and Standards Act, 2006**.

10.7. E-PRATYAROPAN PORTAL

- **Context:** National Organ and Tissue Transplant Organization (NOTTO) launched the e-Pratyaropan portal on the 16th Indian Organ Donation Day (3 August).
- It is a **unified digital platform** connecting **hospitals, doctors, donors, recipients and transplant authorities** for registration, waiting-list management, organ allocation and monitoring.
- **2025:** India performed **20,000+ organ transplants**, up fourfold from ~5,000 in 2013.
- **Major transplants:** Kidney, followed by **liver, heart and lung**.
- **Global position:** **3rd globally** in total organ transplants, after the **US and China**.
- India leads globally in **living-donor transplants**.



SCIENCE AND TECHNOLOGY

STUDENT'S
NOTES

1. LONG-DURATION ENERGY STORAGE (LDES)

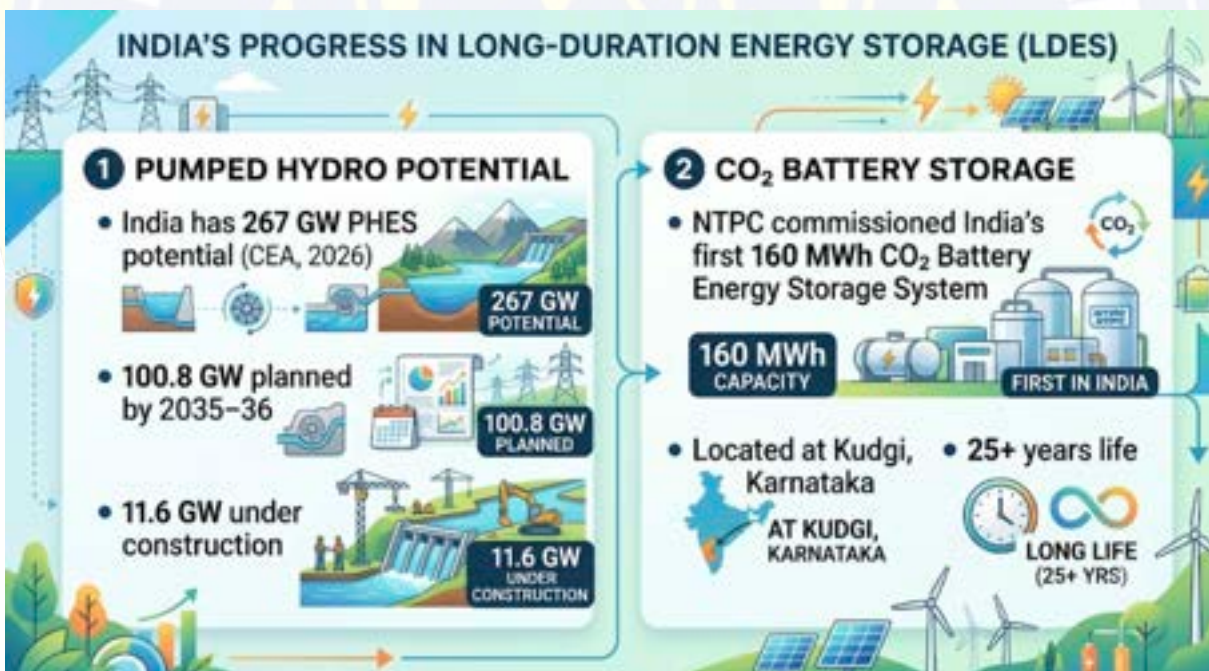
Context: Rising renewable capacity and power demand have increased the need for LDES to ensure grid reliability and clean energy transition.

About LDES

- **Definition:** Energy storage technologies storing electricity for >8 hours, ranging from days to weeks or seasons.
- **Role:** Stores excess renewable energy and supplies it during peak demand or low generation, ensuring a flexible grid.
- **Major Technologies:** Pumped Hydro Energy Storage (PHES), Compressed Air Energy Storage (CAES), thermal storage, hydrogen storage and flow batteries.

Need for LDES

- **Rising Power Demand:** Peak demand reached 270.8 GW (May 2026), nearly 90 GW higher than 2019.
- **Grid Reliability:** Ensures power availability during prolonged low solar/wind generation due to heatwaves, clouds or weak winds.
- **Energy Security:** Reduces dependence on fossil-fuel peaking plants and imported fuels.
- **Climate Goals:** Supports 500 GW non-fossil fuel capacity by 2030 and Net Zero by 2070.



Challenges in LDES Deployment

- **High Costs:** Large upfront investments hinder adoption.
- **Location Constraints:** PHES needs suitable terrain/water; CAES requires geological formations like salt caverns or depleted gas fields.
- **Technology Readiness:** Hydrogen, thermal storage and iron-air batteries remain at development/demonstration stages.
- **Policy Gaps:** Existing frameworks, including the National Electricity Plan, lack dedicated LDES pathways.
- **Grid Integration:** Limited guidelines and expertise for multi-day storage integration.
- **Limited Domestic Manufacturing:** Import dependence and weak supply chains raise costs and vulnerabilities.

Way Forward for LDES Deployment

- **Policy Integration:** Include LDES in the **National Framework for Promoting Energy Storage Systems** and future **National Electricity Plans**.
- **Technology-Neutral Support:** Provide **Viability Gap Funding (VGF)**, capital subsidies, tax incentives and production-linked support.
- **Ensure Revenue Certainty:** Develop capacity markets, long-term procurement contracts and suitable tariff frameworks.
- **Speed Up Approvals:** Fast-track environmental clearances, land acquisition, transmission connectivity and regulations.
- **Promote Domestic Innovation:** Strengthen R&D, pilots and indigenous manufacturing through **Make in India** and **Atmanirbhar Bharat**.
- **Improve Grid Readiness:** Train **Load Dispatch Centres (LDCs)** and utilities with protocols and digital tools for multi-day storage management.

2. SPACE ONCOLOGY & CANCER TREATMENT

Context: India is expected to record **1.87 million new cancer cases in 2026**, increasing health and economic burdens. **Space oncology** is emerging as a new field, using **microgravity** to study cancer and develop better therapies.

**Effects of Microgravity on Cancer Cells**

- **Cellular Changes:** Alters the cytoskeleton, cell signalling and extracellular matrix interactions.
- **Tumour Behaviour:** Influences cell adhesion, migration, proliferation, invasion and gene expression.
- **Tumour Spheroids:** Promotes multicellular spheroid formation for realistic tumour models.
- **Drug Response:** Changes cell behaviour, affecting drug uptake and treatment outcomes.

Applications in Cancer

- **Breast Cancer:** Reduces malignancy by altering adhesion, migration and cell-cycle regulation, improving therapy response.
- **Gastrointestinal Cancer:** Alters tumour progression and may increase drug sensitivity.

Strategic Importance of India

- **Promote Pharma Research:** Advance microgravity-based drug discovery, cancer models and space manufacturing.
- **Leverage Space Expertise:** Use **Indian Space Research Organisation (ISRO)** capabilities and the growing private space sector for biomedical research.
- **Global Leadership:** Use low launch costs to emerge as a hub for **space biotechnology** and cancer research.

- **Strengthen Partnerships:** Foster collaboration among **ISRO**, research institutions, hospitals, pharmaceutical firms and space startups.
- **Affordable Solutions:** Develop low-cost diagnostics, therapies and drug-delivery systems.

3. RESPONSIBLE DATA-CENTRE REGULATION FOR AN AI-DRIVEN FUTURE

Context: Rapid **Artificial Intelligence (AI)** expansion is increasing data-centre capacity, raising concerns over energy, water, infrastructure, and sustainability

AI Data Centres:

- **AI data centres** use high-density **Graphics Processing Units (GPUs)** requiring massive electricity and continuous cooling. India hosts **20%** of global data but only **3%** of global data centres.
- **As per International Energy Agency** Global data-centre electricity demand may exceed **945 terawatt-hours (TWh)** by **2030**.
- India's AI data-centre market may grow from **\$5.5 billion (1.6 GW)** to **\$90 billion (12–14 GW)** by **2035**.

Need for Strong Regulation

- **Rising Water Demand:** Artificial Intelligence (AI) data centres require 1–1.5 litres water/kWh for cooling, with demand projected at 359 billion litres by 2030.
- **Infrastructure Vulnerability:** With 72% districts facing extreme floods and 57% extreme heat, climate risks threaten data centre operations.
- **Power Grid Pressure:** Subsidised electricity transfers infrastructure costs to consumers while private operators retain commercial benefits.
- **Limited Employment:** Highly automated data centres generate limited jobs despite receiving subsidised land, tax incentives, and public support.
- **Ecological Concerns:** Hyperscale data centres in fragile regions threaten aquifers, soil stability, and local ecosystems.

Gaps in Existing Regulations

- **Global Approaches:** United States uses local moratoriums; European Union mandates energy reporting; Dublin and Amsterdam impose facility limits, **but no global treaty exists**.
- **India's Policy Gaps:** India lacks a **binding sustainable data centre framework**; 15 States provide subsidies without safeguards, while Bureau of Energy Efficiency (BEE) norms remain voluntary.

Way Forward

- **Green Energy Integration:** Reform Power Purchase Agreements (PPAs), end excessive subsidies, and mandate 24×7 renewable energy matching.
- **Mandatory Environmental Assessment:** Restore compulsory Environmental Impact Assessments (EIAs) for large facilities with enforceable carbon and water limits.
- **Sustainable Cooling:** Adopt closed-loop liquid cooling and waste-heat recovery systems to reduce water consumption.



- **AI Green Certification:** Introduce Artificial Intelligence (AI)-specific certification covering recycling, waste-heat utilisation, and reduced evaporative water loss.
- **Global Standards:** Align with the Greening Artificial Intelligence Data Centres Coalition (GADCC) for sustainable finance and prevention of greenwashing.

STUDENT'S
NOTES

Conclusion: India's AI ambitions must advance alongside **ecological responsibility** and **resource efficiency**. A framework based on **green digital infrastructure**, **sustainable innovation**, and **climate-resilient growth** can ensure an inclusive and future-ready digital economy.

Test Your Knowledge

Prelims Corner

Consider the following pairs:

1. Bureau of Energy Efficiency – Energy-efficiency norms
2. Power Purchase Agreement – Procurement of electricity
3. Environmental Impact Assessment – Assessment of environmental consequences
4. Waste-heat recovery – Reuse of thermal energy

Which of the pairs given above are correctly matched?

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

Answer: D

Mains Corner

Q. India's ambition to become a global AI hub is accompanied by rising concerns over the energy, water and ecological footprint of AI-driven data centres. Examine the regulatory gaps in India's data-centre ecosystem and suggest measures to ensure sustainable and climate-resilient digital infrastructure.

(15 marks, 250 words)

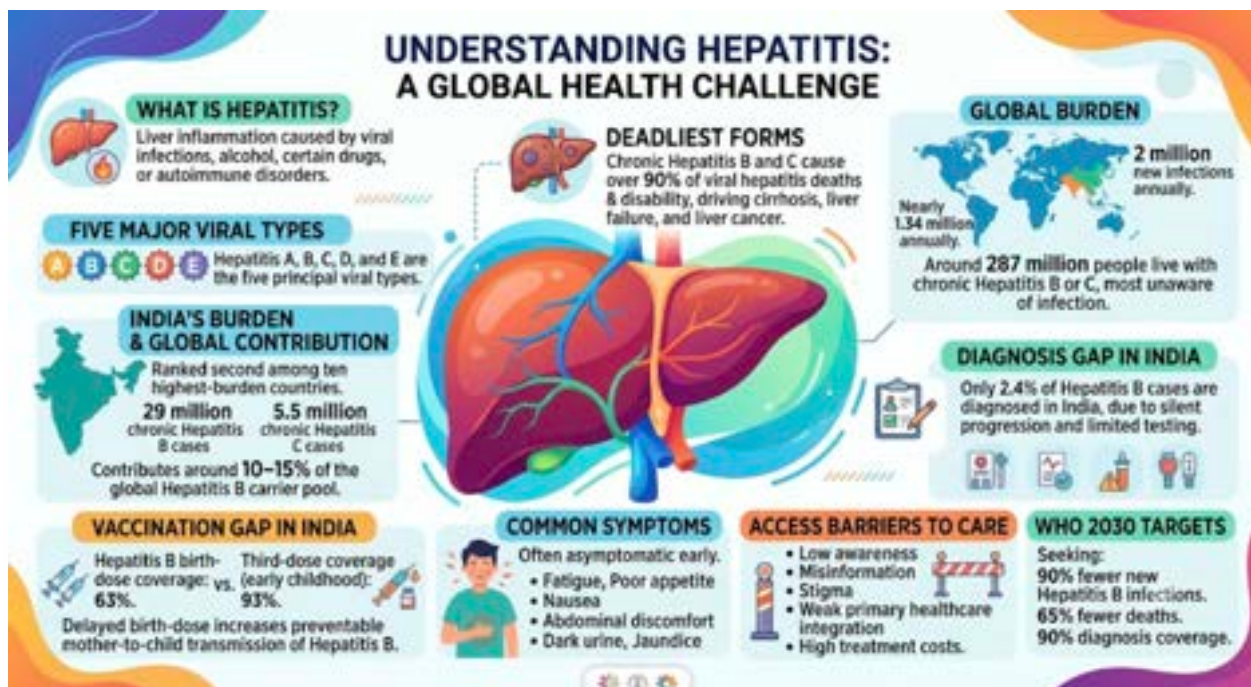
4. WORLD HEPATITIS DAY 2026

Context: World Hepatitis Day is observed annually on **28 July** to raise awareness about viral hepatitis, a major global infectious-disease killer. **2026 Theme:** "Hepatitis: Let's Break It Down" calls for removing financial, social and systemic barriers to hepatitis services.

HEPATITIS: TRANSMISSION, PREVENTION & MANAGEMENT

VIRUS	CAUSE	TRANSMISSION	PREVENTION	TREATMENT
Hepatitis A (HAV) & Hepatitis E (HEV) 	HAV/HEV infection 	Faecal-oral route through contaminated food/water; linked to poor sanitation and unsafe water. 	Safe water, hygiene and sanitation; Hepatitis A vaccination available. 	Usually self-limiting; supportive care with hydration and adequate nutrition; no specific antiviral.
Hepatitis B (HBV) 	HBV infection 	Mother-to-child transmission at birth; infected blood, blood products and body fluids. 	Hepatitis B vaccination under Universal Immunisation Programme; birth dose preferably within 24 hours, followed by doses at 6, 10 and 14 weeks. (Also: safe injections and transfusions) 	Eligible chronic HBV patients receive antiviral medicines as per national guidelines.
Hepatitis C (HCV) 	HCV infection 	Infected blood through unsafe injections/procedures, shared needles/syringes, blood products and body fluids. 	Safe injections/transfusions; harm reduction (needle-exchange programmes); no vaccine available. 	Nearly all patients can be cured within 12–24 weeks using pan-genotypic Direct-Acting Antivirals (DAAs).
Hepatitis D (HDV) 	HDV infection; occurs only with Hepatitis B infection. 	Contact with infected blood, blood products and body fluids. 	HBV vaccination also prevents Hepatitis D. 	Specialist care and treatment of the underlying Hepatitis B infection.

Early diagnosis, vaccination (where available), safe practices and timely treatment can prevent transmission, reduce complications and eliminate Hepatitis.



Government Initiatives for Hepatitis Control

1. National Viral Hepatitis Control Programme (NVHCP)

- **Launch & Goal:** Launched in 2018, NVHCP provides screening, diagnosis and treatment while reducing hepatitis-related morbidity and mortality.
- **Comprehensive Coverage:** Covers Hepatitis A, B, C, D and E through preventive, promotive and curative interventions, improving awareness and healthcare access.
- **Surveillance & Treatment:** Hepatitis A/E, generally acute, symptomatic and outbreak-prone, are monitored under **Integrated Disease Surveillance Programme**; free diagnostics and medicines treat B/C.
- **Digital Monitoring:** NVHCP Management Information System portal enables paperless registration, reporting, treatment monitoring and programme management.

2. National Health Programmes Supporting Hepatitis Control

- **Maternal & Child Health: Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition programme** provides universal hepatitis B screening for pregnant women.
- **Universal Immunisation Programme (UIP):** Ensures hepatitis B birth-dose vaccination; newborns of infected mothers receive Hepatitis B Immunoglobulin + vaccine within 24 hours.
- **National AIDS Control Programme (NACP):** Provides facility and outreach hepatitis B/C screening for high-risk groups, plus hepatitis B vaccination for healthcare workers and eligible negatives.
- **National Tuberculosis Elimination Programme (NTEP):** Uses existing molecular-testing machines to support hepatitis diagnosis.
- **Blood Transfusion Services:** Donors testing positive for hepatitis B/C are linked to healthcare facilities for further evaluation and management.
- **Helpline:** Toll-free 1800-11-6666 provides information on hepatitis prevention, transmission, management and available service-delivery centres.

Conclusion: Breaking hepatitis barriers requires **universal prevention, early detection and equitable treatment**, transforming India's healthcare ecosystem from reactive care to **elimination-focused, people-centred action**.

5. REGULATION OF FACIAL RECOGNITION TECHNOLOGY (FRT) IN INDIA

Context: A Rajya Sabha MP approached the **Supreme Court** against Delhi Police's FRT use during NEET-UG paper-leak protests. FRT is uses **Artificial Intelligence (AI)** and **Machine Learning (ML)** to identify/verify people through unique facial features converted into mathematical **faceprints**.

Key Challenges

- **Arbitrary Matching:** Delhi Police's unvalidated **80% similarity threshold** risks converting probabilistic matches into actionable targeting.
- **Protest Profiling:** Linking protest footage with convict databases may **chill constitutional dissent** and undermine peaceful assembly.
- **Familial Bias:** Shared genetic features can produce false matches, disproportionately affecting **historically over-policed communities and families**.
- **Irreversible Breaches:** Facial data cannot be changed after compromise, making biometric database breaches **permanent identity-theft risks**.
- **Consent Erosion:** Routine public FRT deployment can undermine **meaningful consent** protected under the **Puttaswamy privacy framework**.
- **Due-Process Concerns:** Proprietary algorithms can prevent scrutiny of identification logic, weakening **fair-trial and cross-examination safeguards**.

NITI Aayog: Responsible AI for All (2022)

- **Ethical Oversight:** Create independent **ethical committees** within deploying organisations to assess societal impacts and oversee risk mitigation.
- **Statutory Safeguards:** Establish a **data protection regime** ensuring government FRT meets **legality, reasonableness and proportionality** requirements.
- **Algorithmic Explainability:** Develop **Explainable AI (XAI)** enabling auditors and judges to trace facial-match decision-making.
- **Inclusive Datasets:** Train models on **diverse demographic datasets** representing India to reduce gender and skin-tone identification biases.
- **Human Redressal:** Create **human-in-the-loop grievance mechanisms** allowing citizens to challenge wrongful profiling and false-positive matches.
- **Technical Standards:** Establish **binding technical standards** defining acceptable error rates and algorithmic-bias thresholds.



Test Your Knowledge

Prelims Corner	Mains Corner
Q. Which one of the following best distinguishes facial identification from facial verification? A. Identification compares a face against multiple identities, while verification tests whether a face corresponds to a claimed identity. B. Identification requires consent, whereas verification never requires consent. C. Identification uses photographs, whereas verification uses only video. D. Identification is always more accurate than verification. Answer: A	Q. The growing use of Facial Recognition Technology (FRT) by law-enforcement agencies raises concerns regarding privacy, algorithmic bias and constitutional freedoms. Examine these concerns in the context of the Supreme Court's proportionality framework and suggest safeguards for responsible deployment of FRT in India. (15 marks, 250 words)

6. 25 YEARS OF HIMALAYAN CHANDRA TELESCOPE (HCT) AT HANLE

Context: The 2-m Himalayan Chandra Telescope (HCT) at Hanle completed 25 years of successful operations.

- **History:** Indian Astronomical Observatory's foundation was laid in **1997** and dedicated in **August 2001**.
- **Name:** HCT honours **Nobel Laureate Subramanyan Chandrasekhar**, reflecting his contributions to astrophysics.
- **Remote Operation:** Since 2001, HCT operates remotely in real time from **IIA Hosakote, Bengaluru**, via **ISRO's INSAT-3B**.

Astronomical Importance of Hanle

- **Location:** Hanle lies in Ladakh, approximately 260 km from Leh, offering exceptional astronomical observing conditions.
- **Clear Skies:** Hanle provides around **250 usable nights annually**, supporting extensive optical and near-infrared observations.
- **Low Water Vapour:** Precipitable water vapour below **2.5 mm** ensures favourable conditions for near-infrared astronomy.
- **Low Atmospheric Pressure:** Hanle's very low atmospheric pressure reduces atmospheric interference during astronomical observations.
- **Minimal Light Pollution:** Limited artificial light pollution provides dark skies suitable for sensitive astronomical observations.

Astronomical Facilities at Hanle

- **Existing Facilities:** Hanle hosts **GROWTH-India Telescope**, MACE and HAGAR gamma-ray telescopes, alongside the **Hanle Dark Sky Reserve**.
- **Collaborations:** GROWTH-India operates with **IIT Bombay**, while MACE and HAGAR involve **BARC and TIFR**.
- **Upcoming Facilities:** A **3.7-m upgraded HCT** and **13.7-m National Large Optical-infrared Telescope**, led by **IIA**, are planned.

7. INDIA'S RESEARCH BRAIN DRAIN

Context: Nearly 120 ISRO scientists' resignations have renewed concerns over India's growing research talent outflow.

Scale of Research Talent Outflow

- **Scholar Migration:** **60–70% of PhD scholars and 30% of engineering graduates** from premier institutes move abroad for better research ecosystems.
- **Permanent Settlement:** Over **73% of**



internationally mobile Indian researchers never return, settling overseas permanently.

- **Economic Loss:** Skilled scientist, researcher and engineer migration costs India an estimated **\$35–50 billion annually**.

- **AI & Deep Tech:** These sectors face severe researcher outflow, with a **talent outflow index of -16.9**.
- **Migration Intent: 52% of Indian researchers** surveyed by Elsevier intend to move abroad—the highest among countries surveyed.

Consequences of Research Brain Drain

- **Academic Stress:** Talent shortages contribute to a **27:1 student-faculty ratio**, exceeding the **20:1 benchmark**.
- **Clinical Research Gap:** Despite bearing **20% of global disease burden**, India conducts only **4% of clinical trials**.
- **Startup Weakness:** Scientist migration reduces technical mentorship, worsening the **90% five-year startup failure rate**.
- **Innovation Leakage: 85–87% of Indian STEM doctorates** reportedly remain in the United States long-term, strengthening foreign innovation ecosystems.
- **Patent Loss:** Overseas relocation shifts **high-value patent creation** from Indian to foreign jurisdictions.
- **Import Dependence:** Reduced domestic technical expertise increases reliance on **costly proprietary foreign technologies** for critical infrastructure.

Government Initiatives

- **Anusandhan National Research Foundation (ANRF):** ₹50,000-crore apex mechanism promotes competitive, mission-oriented university research and industry–academia collaboration.
- **Research, Development and Innovation (RDI) Scheme:** ₹1-lakh-crore corpus finances private-sector R&D, deep-tech and strategic technologies through long-term funding.
- **VAIshvik BHAratiya Vaigyanik (VAIBHAV) Fellowship:** Connects overseas Indian scientists with domestic institutions through collaborative research, facilitating knowledge and talent repatriation.
- **Innovation in Science Pursuit for Inspired Research (INSPIRE):** Supports 12,000 undergraduate scholarships, 1,000 PhD fellowships and 100 faculty fellowships annually.
- **National Quantum Mission (NQM):** ₹6,003.65-crore mission establishes four technology hubs, creating domestic opportunities in quantum computing and communications.

Way Forward

- **Raise R&D intensity:** Progressively target **2% of GDP**, substantially expanding research capacity and narrowing India's global innovation-investment gap.
- **Streamline research administration:** Introduce single-window procurement, delegated financial powers and time-bound approvals for specialised equipment and laboratory supplies.
- **Strengthen researcher autonomy:** Replace seniority-driven progression with **research-impact metrics**, recognising patents, prototypes, datasets and high-quality publications.
- **Build return pathways:** Expand VAIBHAV-style fellowships into tenure-track positions, relocation grants and laboratory-startup packages for returning scientists.
- **Deepen industry linkages:** Use RDI financing to incentivise corporate laboratories, university consortia and industry-funded doctoral programmes in strategic technologies.

Conclusion: India's research renaissance requires **talent retention, institutional agility and global collaboration** to transform scientific potential into sustained innovation, strategic self-reliance and a globally competitive knowledge economy.

Test Your Knowledge

Prelims Corner

Mains Corner

With reference to the Anusandhan National Research Foundation (ANRF), consider the following pairs:

1. ANRF — Promote competitive, mission-oriented research and industry-academia collaboration
2. RDI Scheme — Finance private-sector R&D and deep-tech development
3. VAIBHAV Fellowship — Facilitate collaboration between overseas Indian scientists and domestic institutions
4. INSPIRE — Provide support exclusively to established senior scientists

How many of the above pairs are correctly matched?

A. Only one
B. Only two
C. Only three
D. All four

Answer: C

Explanation: Pairs 1, 2 and 3 are correctly matched. INSPIRE primarily supports students and young researchers through scholarships and fellowships, not exclusively established senior scientists.

Q. India's growing research brain drain threatens its innovation capacity, strategic autonomy and knowledge economy. Examine the structural factors driving the outflow of scientific talent and assess the measures needed to make India's research ecosystem globally competitive.

(15 marks, 250 words)

8. LAB-GROWN DIAMONDS

Context: With **40 mines accounting for 90% of global diamond production** expected to exhaust within 50 years, lab-grown diamonds offer a scalable supply alternative.

Key Features

- **Properties:** Lab-grown diamonds have **identical chemical, physical and optical properties** to mined diamonds, as both consist of pure carbon in a cubic crystal lattice.
- **Production:** Laboratory processes compress **billions of years of natural formation into weeks** through two technologies:
 1. **Chemical Vapour Deposition (CVD):** Uses ionised **methane and hydrogen plasma** in a vacuum chamber to deposit diamond **layer by layer**.
 2. **High Pressure High Temperature (HPHT):** Crystallises carbon around a diamond seed at **1,300–1,600°C and 5–6 GPa pressure**.
- **Natural Analogy:** CVD resembles carbon crystallisation in interstellar gas clouds, while **HPHT** replicates conditions deep inside Earth's mantle.
- **Advanced Technology:** High **hardness and thermal conductivity** make lab-grown diamonds useful in **high-power electronics, laser diodes and precision cutting tools**.
- **Russia:** Largest producer of **natural diamonds by volume**.
- **Botswana:** Leads by **market value**, supported by premium mines such as **Jwaneng and Orapa**.
- **India:** **Panna Diamond Belt (Madhya Pradesh)** is the country's sole commercial natural-diamond producer.
- **Gujarat:** Major **lab-grown diamond manufacturing hub** and global centre for **diamond cutting and polishing**.

9. NEUTRINOS AS A TOOL FOR NUCLEAR SAFEGUARDS

Context: Researchers from the **Double Chooz Collaboration, France**, have made the first **high-precision measurement of antineutrino energy signatures** from spent nuclear fuel, opening a potential method for remote nuclear-facility monitoring.

- **About Neutrinos:** Neutrinos are extremely light, electrically neutral subatomic particles that interact very weakly with matter, allowing huge numbers to pass through objects and human bodies undetected.
- **Reactor Antineutrinos:** Nuclear fission produces large quantities of antineutrinos. Even after reactor shutdown, radioactive isotopes such as praseodymium-144 and rhodium-106 continue decaying and emit a low-intensity antineutrino flux from partially used and spent fuel.
- **Key Finding:** Researchers detected the residual antineutrino signal from spent fuel: **56% originated from fuel in reactor cores. 44% came from spent fuel in nearby cooling pools.**

- **Nuclear Safeguards:** Changes in residual antineutrino flux could allow inspectors to remotely verify spent-fuel inventories. Clandestine removal of fuel assemblies would reduce the detectable neutrino signal.
- **Potential Applications:** Detectors could estimate plutonium content in reactor cores in real time. They could also identify premature fuel removal intended to produce weapons-grade plutonium.
- **Limitations:** Current detectors are large and stationary because substantial shielding is required to filter cosmic-ray interference. A Double Chooz detector weighed over 500 tonnes, including 300 tonnes of shielding.

10. POINTERS FOR PRELIMS

10.1. QDENGGA

- Approved by the Central Drugs Standard Control Organisation (CDSCO) as India's first dengue vaccine.
- Dengue: Viral disease caused by the **dengue virus (DENV)** and spread through **infected mosquito bites**.
- Qdenga: Live, attenuated **tetravalent** dengue vaccine. || **Developer: Takeda GmbH**, Germany. || Uses **recombinant DNA technology**. || Produced in **Vero cells** using a **DENV-2 backbone** with genetically modified organisms (GMOs). || **WHO Status: World Health Organization (WHO)** prequalified.

10.2. ULTRAFast ORGANIC ANODES

- **Context:** Researchers developed a porous organic material (covalent organic framework) enabling faster lithium-ion movement in batteries.
- **Key Features:**
- **Rapid Charging:** Reaches **80% charge in over 1 minute** while maintaining performance over multiple cycles.
- **Enhanced Durability:** Improves battery lifespan and long-term performance.
- **Sodium-Ion Potential:** Stores sodium ions, enabling cheaper **sodium-ion batteries**.

10.3. DYSLIPIDEMIA

- **Context:** Around **87.3% of Indian adults have at least one abnormal lipid level**, indicating high prevalence.
- **Dyslipidemia:** Condition involving abnormal **blood lipid (fat) levels**.
- **Causes:** Imbalance in **High Low-Density Lipoprotein (LDL)** (bad cholesterol); **Low High-Density Lipoprotein (HDL)** (good cholesterol); **High triglycerides**.
- **Detection:** Usually asymptomatic; diagnosed through **lipid profile blood test**.

- **Health Risks:** Can cause **atherosclerosis** (arterial plaque buildup), coronary artery disease, heart attack and stroke.

10.4. MISSION GOLDEN SPICE

- The **Ministry of Development of North Eastern Region (MDoNER)** launched **Mission Golden Spice** to promote Meghalaya's **GI-tagged Lakadong turmeric** as a global premium spice.
- **Duration: 5-year mission (2025–30)** with two phases: **Phase I:** Value-chain strengthening. || **Phase II:** Expansion and scale-up.
- **Targets:** Triple cultivation area and double farmers' incomes.
- **Objective:** Supports the **Ashtalakshmi Initiative**, which identifies a **Unique Selling Proposition (USP)** for each Northeastern state.
- **Lakadong Turmeric:** Premium turmeric grown in **Jaintia Hills, Meghalaya**. || Contains **7–12% curcumin**, compared to **2–3%** in conventional varieties. || Traditionally grown **organically**, using heirloom seed rhizomes without synthetic fertilisers or pesticides. || **Awarded Geographical Indication (GI)** tag in 2024.

10.5. FLOW IN SUN'S UPPER ATMOSPHERE

- Researchers at **Aryabhata Research Institute of Observational Sciences (ARIES)** found that the Sun's **meridional plasma flow** extends into the **upper chromosphere**, contrary to earlier observations limited to lower layers.
- **Meridional Flow:** Slow movement of hot **plasma** from the Sun's **equator to the poles**.
- **Role:** Regulates the **11-year solar cycle**, influencing **sunspots** and solar activity.

- **Key Finding:** Plasma flows poleward at 5–15 m/s, supporting the '**magnetic tree**' hypothesis, which links upper-atmosphere magnetic structures with deeper solar layers.
- **Significance:** Improves understanding of **solar dynamics** and **space weather**, enabling better prediction of impacts on satellites, communication, navigation, and power grids.

10.6. WORLD ARTIFICIAL INTELLIGENCE CONFERENCE (WAIC) 2026

- **WAIC 2026** was held in **Shanghai, China**, bringing together policymakers, researchers, industry, and international organisations. An Annual global AI conference held every **July** in **Shanghai**. || **First Edition: 2018**.
- **WAICO: 29 countries** signed an agreement to establish the **World Artificial Intelligence Cooperation Organisation (WAICO)**, an independent intergovernmental organisation headquartered in **Shanghai**. || India attended **WAIC 2026** but **did not join WAICO as a founding member**.

10.7. YOUNG STAR: BETA PICTORIS

- Two teams—using the **European Southern Observatory's Very Large Telescope (VLT)** and **National Aeronautics and Space Administration (NASA)'s James Webb Space Telescope**—discovered a faint planet orbiting the young star **Beta Pictoris**.
- Dimmest planet ever **directly imaged** from Earth. || **Characteristics:** Slightly larger than **Jupiter**; hidden by the glare of its host star and two known companion planets. || **Location:** About **63 light-years** away in the southern constellation **Pictor**.

10.8. INDIGENOUS BIOMEDICAL TECHNOLOGIES TRANSFER

- The **Indian Council of Medical Research (ICMR)** licensed **three indigenous biomedical technologies** to Indian manufacturers under its **Medical Innovations Patent Mitra** initiative.
- Technologies Transferred: (1) **Anti-HPV Therapeutic (SHetA2):** Licensed to **Emcure Pharmaceuticals**; to treat

Cervical Intraepithelial Neoplasia (CIN) by selectively destroying HPV-induced precancerous and cervical cancer cells. (2) **Typhoid Vaccine:** Licensed to **Biological E**; developed by **ICMR–National Institute for Research in Bacterial Infections (NIRBI)**, **Kolkata** using *Salmonella Typhi* outer-membrane protein. (3) **Recombinant Enteric Vaccine:** Licensed to **Biological E**; developed by **ICMR-NIRBI** against *Salmonella Typhi*, *S. Paratyphi*, and *Shigella*.

- **Patent Mitra Initiative:** Centralised **IP incubator** to accelerate transfer of publicly funded biomedical innovations into affordable healthcare through industry partnerships. (Launch: 2018)
- **Implemented By:** **ICMR** with the **Department of Pharmaceuticals (DoP)**, supported by **NITI Aayog** and the **Department for Promotion of Industry and Internal Trade (DPIIT)**.

10.9. TRAMADOL HYDROCHLORIDE

- The **Central Bureau of Narcotics (CBN)** busted an interstate syndicate attempting to smuggle **12 crore Tramadol Hydrochloride tablets** abroad.
- **Tramadol Hydrochloride:** Synthetic **opioid analgesic (painkiller)**, often misused as the "**fighter drug**" to suppress pain, anxiety, and fatigue during prolonged combat.
- **Regulation:** Controlled as a **psychotropic substance** under the **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985**.
- **Central Bureau of Narcotics (CBN):** Apex agency regulating and enforcing laws on **licit opium cultivation, synthetic drugs, and precursor chemicals**. (Lauch: **1950**). **Headquarters:** **Gwalior, Madhya Pradesh**.
- **Ministry:** Functions under the **Department of Revenue, Ministry of Finance**.
- **Head:** **Narcotics Commissioner of India**.
- **International Role:** Helps India implement the **1961 Single Convention on Narcotic Drugs**, **1971 Convention on Psychotropic Substances**, and **1988 UN Convention against Illicit Traffic**

in Narcotic Drugs and Psychotropic Substances.

10.10. BOROPHENE-BASED GREEN LUBRICANT

- Researchers at the **Institute of Advanced Study in Science and Technology (IASST), Guwahati**, under the **Department of Science and Technology**, demonstrated the first use of borophene as a lubricant additive in castor oil, enabling efficient and sustainable green lubrication.
- **Need:** Friction and wear cause major **energy losses** and **machine failure**; **castor oil**, though **renewable and biodegradable**, has limited lubricating performance.
- **Borophene:** A **two-dimensional (2D) nanomaterial** made entirely of **boron atoms**, with **high strength** and **excellent electrical conductivity**; used in **batteries, supercapacitors, fuel cells**, and now **green lubricants**.
- **Significance:** Enhances **machine efficiency, equipment life, and energy savings**, with applications in **renewable energy, marine systems, sustainable manufacturing, and green lubrication technologies**.

10.11. PELLET GUNS AND SHOCK BATONS

Pellet guns have come under scrutiny following allegations of their use during the July 2026 Delhi youth and student protests.

Pellet Guns

- **Nature:** Considered **non-lethal** crowd-control weapons (like **tear gas** and **water cannons**); fire cartridges containing **hundreds of lead pellets**.
- **Manufacture & SOPs:** Ammunition is produced at the Ordnance Factory, Ishapore. Standard Operating Procedures (SOPs) require minimum force and firing below the waist. First deployed during the 2010 Kashmir unrest.

Shock Batons

- Handheld electroshock devices used for self-defence and crowd control.
- Deliver a **high-voltage, low-current** shock, causing **temporary pain and muscle incapacitation** without intended long-term injury.

10.12. SAMUDRA PRADAKSHINA

- India's **first tri-service all-women global sailing expedition**, undertaken aboard the indigenous yacht **IASV Triveni**.
- Covered about **25,500 nautical miles** in **314 days**, crossing the **Equator twice**, traversing **all longitudes**, and rounding the **Three Great Capes**—**Cape Leeuwin (Australia)**, **Cape Horn (South America)**, and the **Cape of Good Hope (Africa)**.

10.13. GRAVITY-1 (YINLI-1) ROCKET

- World's **most powerful commercial all-solid propellant expendable medium-lift launch vehicle**, developed by Chinese private aerospace company **Orienspace**.
- Designed to launch satellite constellations directly from **mobile ocean platforms**.
- **Payload Capacity:** Up to **6.5 tonnes** to **Low Earth Orbit (LEO)** and **4.2 tonnes** to a **500 km Sun-Synchronous Orbit (SSO)**.

10.14. INDIGENOUS TECHNOLOGY TRANSFER BY CSIR

Context: Council of Scientific and Industrial Research (CSIR) transferred four indigenous technologies developed by CSIR—Central Scientific Instruments Organisation (CSIO), Chandigarh to industry partners.

Technologies Transferred

- **Induction Motor Stethoscope (MSCOPE):** Assesses induction motor health using acoustic and vibration signatures.
- **Portable & Universal Motor-cum-Pump Performance Monitor (PU-MPPM):** Measures and optimises real-time efficiency of industrial motors and water pumps.
- **i-Power Quality Analyser (IPQA):** Detects power disruptions, voltage fluctuations, and harmonics, preventing industrial equipment damage.
- **Optical Module & Beam Combiner Assembly:** Defence-grade optical assembly for the **Head-Up Display (HUD)** of the **SU-30** fighter aircraft.
- **Additional Development:** CSIR commercially launched an **Internet of Things (IoT)**-enabled system to monitor

rural water quality, quantity, and service delivery.

10.15. IMBALANCE IN INDIA'S ANTIBIOTIC CONSUMPTION

- A Lancet Public Health study reported significant imbalance in India's antibiotic consumption.
- Analysed **186 countries** using the **World Health Organization (WHO) AWaRe** framework to estimate optimal antibiotic use.
- Found **72%** of countries overused antibiotics, while **60%** still prescribed antibiotics no longer recommended for routine use.
- **WHO AWaRe Classification of Antibiotics:** AWaRe classifies antibiotics to promote rational use and combat **Antimicrobial Resistance (AMR)**.
 - **Access Group:** Narrow-spectrum, first-line antibiotics with lower resistance risk. Recommended for common bacterial infections.
 - **Watch Group:** Broad-spectrum, high-potency antibiotics with greater resistance risk. Reserved for specific or severe infections.
 - **Reserve Group:** Last-resort antibiotics for life-threatening, multidrug-resistant infections when other treatments fail.

10.16. ULTRASOUND STIMULATION TECHNOLOGY

- **Researchers at Indian Institute of Science (IISc), Bengaluru** identified **Low Frequency Ultrasound (LFU)** stimulation as a potential oral cancer therapy.
- **Low Frequency Ultrasound (LFU) Mechanostimulation:** Non-invasive therapy using **20–100 kHz** ultrasound to mechanically disrupt cancer cells and improve treatment.
- **Recent Discovery:** IISc researchers found **Stage IV oral cancer cells** highly vulnerable to LFU. || LFU breaks tumour barriers, enhancing drug delivery and immune-cell penetration. || Shows potential for **breast cancer** and **melanoma** treatment.
- **Oral Cancer in India:** India contributes nearly **one-fourth of global oral cancer**

cases. Oral cancer mortality increased by **11.18% (1990–2021)**.

10.17. CONTACTSEEK

- **Context:** Researchers developed **ContactSeek**, an **Artificial Intelligence (AI)** tool improving precision and safety of DNA base editing.
- Uses **AlphaFold3** to map protein–DNA interactions accurately.
- Predicts amino acid interactions of gene-editing proteins with DNA.
- Identifies features causing **off-target DNA editing**.
- Improves **CRISPR-based base editors**, including **Cas9**, reducing unwanted mutations.
- **DNA Base Editing:** Next-generation genome-editing technology converting one DNA base (**A, T, G, C**) into another.
 - Unlike **CRISPR-Cas9**, it avoids double-stranded DNA breaks, improving precision and safety.
 - Corrects genetic mutations through chemical nucleotide conversion.
 - May treat inherited monogenic disorders such as: **Sickle Cell Disease, Beta-thalassemia, Cystic Fibrosis**, Other single-gene disorders.

10.18. FIRST EXOMOON DETECTED

- **Context:** Astronomers detected a candidate exomoon in the **CD-35 2722** system using the radial velocity method. It remains unconfirmed as no exomoon has been conclusively detected yet.
- **Discovery:** Located **73 light-years** from Earth in the **CD-35 2722** system. Estimated mass: **~90% of Jupiter**. Orbits a **brown dwarf** every **170 days** in an elliptical orbit. Observed using **European Southern Observatory (ESO) Very Large Telescope (VLT), Chile**.
- **Exomoon:** A natural satellite orbiting an **exoplanet** (planet outside the Solar System). Despite **6,000+ confirmed exoplanets**, no exomoon is conclusively confirmed.
- **Radial Velocity Method:** Detects unseen companions by measuring a star's wobble. || Uses **Doppler effect**-based light shifts to estimate orbiting object's mass.

10.19. INDIA'S FIRST INDIGENOUS EXPENDABLE TURBOJET ENGINE

- **Context:** The Gas Turbine Research Establishment (GTRE) under the Defence Research and Development Organisation (DRDO) has developed India's first indigenous **350 kg-thrust expendable turbojet engine**.
- **Applications:** The engine is designed to power **cruise missiles, Unmanned Aerial Vehicles (UAVs), drones** and other turbojet-powered platforms.
- **Strategic Significance:** Turbojet technology is mastered by only a few countries and is considered one of the world's most advanced engineering capabilities.
- **Jet Engine Technology:** Jet engines use **atmospheric air as the working fluid** and carry only fuel onboard for combustion.

10.20. BITCHAT REPOSITORY RESTRICTIONS

- **Context:** The Indian Cybercrime Coordination Centre (I4C) directed GitHub to remove BitChat repositories, citing national security concerns.
- **BitChat:** An **open-source messaging app** using **Bluetooth mesh networks** for end-to-end encryption without internet, cellular networks or centralised servers.
- **Attribution Challenge:** No registration, phone verification or centralised metadata logging limits **user identification and evidence collection**, increasing misuse risks.
- **Legal Basis:** The notice invoked **Section 79(3)(b), Information Technology Act, 2000** and **Rule 3(1)(d), IT Rules, 2021**.
- **Concerns:** Blocking repositories over potential misuse may violate

10.22. FIELDS MEDAL 2026

- **2026 Laureates:** The Fields Medal 2026, a premier mathematics award, was given to **Yu Deng, John Pardon, Jacob Tsimerman and Hong Wang**.
- **Origin:** Established in **1936** through Canadian mathematician John Charles Fields, the medal is awarded by the International Mathematical Union (IMU) for exceptional achievements and future mathematical promise.

proportionality and bypass Section 69A safeguards.

10.21. BANK OF BARODA DATA BREACH ON DARK WEB

Context: Data Breach: Bank of Baroda began a **forensic investigation** after an alleged breach exposed nearly **1 TB of customer data** on the dark web.

- **Cybersecurity Concerns:** Incidents involving **Tata Electronics ransomware (2026), BSNL breach (2024), WazirX heist (2024), ICMR leak (2023), Air India cyberattack (2021)** and BoB breach highlight concerns over India's **cybersecurity preparedness, data privacy, critical information infrastructure protection** and cyber resilience.

India's Cybersecurity & Data Protection Framework

- **CERT-In:** India's nodal agency for cyber threats such as **hacking and phishing**; financial institutions must report serious incidents within **6 hours**.
- **RBI Cyber Security Framework:** Requires banks to maintain a **Board-approved cybersecurity policy**, establish a **Cyber Crisis Management Plan (CCMP)** and promptly report unusual cyber incidents.
- **Digital Personal Data Protection (DPDP) Act, 2023:** Requires **Data Fiduciaries, including banks, to protect personal data**; breaches can attract penalties for inadequate security safeguards.
- **Information Technology (IT) Act, 2000:** **Sections 43A and 66** address unauthorised access and failure to protect sensitive personal data

- **Eligibility & Frequency:** Awarded every four years to mathematicians under 40, with 2–4 recipients per cycle.
- **Women in Mathematics:** Hong Wang became the 3rd woman recipient, after Maryam Mirzakhani (2014) and Maryna Viazovska (2022).
- **Chinese Laureates:** Yu Deng and Hong Wang became the first Chinese nationals to win since Shing-Tung Yau (1982).

- **Indian-Origin Laureates:** Indian-origin mathematicians Manjul Bhargava (2014) and Akshay Venkatesh (2018) have previously won the medal.

10.23. BLUE STRAGGLER STAR (BSS)

- **Context:** Indian and international astronomers observed a **forming BSS**, offering rare direct evidence of its stellar formation process.
- **Discovery:** **TIC 327546480**, a binary system in the old open cluster **Collinder 261**, about **9,500 light-years** away, contains a BSS.
- **Mass Transfer:** The BSS is **actively accreting mass from its companion**, directly supporting the **mass-transfer theory** of BSS formation.
- **Characteristics:** BSSs in star clusters appear **hotter, brighter, bluer and more massive** than other stars of similar age.
- **Stellar Anomaly:** They appear **younger than surrounding stars**, challenging conventional stellar-evolution models because cluster stars formed nearly simultaneously.
- **Formation Mechanisms:** **Binary mass transfer** is the leading explanation, where one star gains matter; **stellar mergers** can also create rejuvenated stars.

10.24. NANOFLUID ELECTROLYTE FOR ZINC-AIR BATTERIES (ZABS)

- **Context:** Indian scientists developed a **nanofluid electrolyte** to make water-based rechargeable **Zinc-Air Batteries (ZABs)** an eco-friendly lithium-ion alternative.
- **Why ZABs Matter:** They offer **high theoretical energy density** and safer **water-based chemistry**, but commercialisation faces electrode-level challenges.
- **About ZABs:** **Metal-air electrochemical devices** generate electricity through zinc-atmospheric oxygen reactions; rechargeable versions use external current to restore **zinc oxide into zinc**.

10.25. ANDROMEDA GALAXY

- **Context:** Hubble Telescope data shows Andromeda's star formation declined

sharply over 40 million years, placing it in the "green valley."

- **Green Valley:** A transitional galaxy class between actively star-forming "blue cloud" and quiescent "red sequence" populations.
- **Galaxy Profile:** Messier 31 (M31) is a massive barred spiral galaxy in Andromeda constellation, approximately 2.5 million light-years away.
- **Milky Way Proximity:** Andromeda is the nearest major spiral galaxy to the Milky Way, making it an important astronomical neighbour. || It is the largest Local Group galaxy, a cluster exceeding 80 galaxies, including the Milky Way.

10.26. VIRTUAL MAGNETS

- **Context:** Bengaluru-based Vimag Labs reportedly **replaced rare-earth magnets** in **electric motors** with technology called virtual magnets.
- **Core Technology:** Virtual magnets **combine wireless power transfer and software algorithms** to create motor electric fields behaving like permanent magnets.
- **Material Advantage:** This technology enables motors using only **copper and steel**, **eliminating dependence on rare-earth materials**.
- **EV Significance:** Around **90–95% of rare-earth materials used in EV permanent magnets** are processed or controlled by **China**, creating supply-chain dependence.
- **Motor Principle:** Electric motors require a **magnetic field**, generated either through permanent magnets or temporary electromagnets.
- **Electromagnets:** Passing current through **copper coils wound around ferromagnets** temporarily magnetises the material, producing the required magnetic field.

10.27. SOOTY BARK DISEASE

- **Context:** Scientists confirmed Sooty Bark Disease in **Canada's Bigleaf Maple**, the country's **largest native maple species** and a key West Coast forest component.
- **Cause:** A **fatal fungal disease caused by Cryptostroma corticale**, affecting maple and sycamore trees, especially under heat and drought stress.

- **Tree Impact:** The fungus can remain dormant for years before activation, then rapidly spreads through wood, causing wilting and tree death.
- **Spore Risk:** Infected trees release billions of airborne spores, which can cause Hypersensitivity Pneumonitis (Farmer's Lung), a rare inflammatory lung disease.

10.28. DENGUE VIRUS

- **Serotype Circulation:** ICMR's Virus Research and Diagnostic Laboratory (VRDL) found all four dengue serotypes—DENV-1, DENV-2, DENV-3 and DENV-4—circulating in India.
- **Serotypes:** Serotypes classify microorganisms, including viruses, based on surface antigens or other molecular characteristics.
- **Vaccine Status:** India has no dengue vaccine under the Universal Immunisation Programme.
- **Vaccine Development:** Indigenous dengue vaccine candidates are in advanced clinical development, while an internationally approved vaccine recently received regulatory clearance for import and sale in India.

10.29. RECORD R&D SPENDING IN INDIA

- **15-year high:** India's Gross Expenditure on Research and Development (GERD) reached 0.84% of GDP in FY 2023–24, reversing a decade-long decline.
- **Funding surge:** Total R&D funding nearly doubled from ₹1.33 lakh crore (FY 2019–20) to ₹2.45 lakh crore (FY 2023–24).
- **Private sector leads:** Industry R&D spending nearly tripled from ₹44,800 crore to ₹1.26 lakh crore, reaching 51.8% share and surpassing public funding.
- **Global gap:** India's 0.84% GERD remains below Israel (5%), US (3.5%) and China (2.4%), limiting innovation competitiveness.
- **National target:** India aims to raise GERD to 2% of GDP, matching advanced knowledge economies and strengthening its innovation ecosystem.

10.30. ALANINE AMINOTRANSFERASE (ALT)

- **Context:** Union Health Ministry urged monitoring Alanine Aminotransferase (ALT) as an early indicator of liver injury, enabling timely disease detection.
- ALT, also called Serum Glutamic-Pyruvic Transaminase (SGPT), is predominantly found in liver cells (hepatocytes). || Smaller amounts occur in the heart, skeletal muscles and kidneys.
- **Function:** ALT supports amino acid metabolism by catalysing conversion of alanine into pyruvate.
- **Early injury marker:** Damaged or inflamed liver cells release ALT into blood, making it an early indicator of liver-cell injury.
- **Liver Function Test (LFT):** ALT is routinely measured with AST, ALP, GGT, bilirubin, albumin and prothrombin time to assess liver health.
- **Not diagnostic alone:** Elevated ALT indicates liver-cell injury but cannot establish its specific cause or disease severity.

Causes of Elevated ALT

- **Metabolic:** Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD).
- **Infectious:** Viral hepatitis.
- **Lifestyle-related:** Alcohol-related liver disease.
- **Drug-related:** Drug-induced liver injury.
- **Immune-mediated:** Autoimmune hepatitis.

10.31. LEPTOSPIROSIS

- **Rising mortality:** Kerala is witnessing increased leptospirosis (rat fever) deaths, with a higher case-fatality rate than previous years.
- **Cause:** A bacterial zoonotic disease caused by the spirochete bacterium *Leptospira*, prevalent in tropical and subtropical regions.
- **Kerala endemicity:** Endemic in Kerala, with monsoon peaks linked to heavy rainfall, flooding and waterlogging.
- **Transmission:** Spreads through infected animal urine or contaminated water, soil and food; reservoirs include rats, cattle, pigs and dogs.

- **Symptoms:** Ranges from **fever, muscle pain and vomiting** to jaundice, kidney failure, liver damage, meningitis and lung haemorrhage.
- **Treatment & prevention:** **Early antibiotics** aid treatment; prevention requires **rodent control, sanitation, protective clothing and avoiding contaminated water.**
- **Weil's disease:** A severe, potentially fatal form of leptospirosis caused by *Leptospira* infection.

10.32. AI & PHOTONIC QUANTUM COMPUTING FOR CANCER TREATMENT

Context: **AI-quantum breakthrough:** Researchers combined **Artificial Intelligence (AI)** with a **photonic quantum computer** to improve immune-peptide design for personalised cancer vaccines.

Functioning

- **Immune targeting:** **Synthetic peptides** must precisely bind patient-specific **Human Leukocyte Antigen (HLA)** surface proteins to trigger an immune response against cancer.
- **AI limitation:** Conventional AI struggles with **rare HLA variants** because insufficient historical data limits model training.
- **GAN solution:** A **Generative Adversarial Network (GAN)** models complex probability patterns, enabling AI to generate **novel peptide sequences.**
- **Experimental validation:** Synthesised peptides successfully bound **rare HLA targets**, potentially extending personalised cancer vaccines across diverse genetic backgrounds.

Key Concepts

- **Human Leukocyte Antigens (HLA):** Cell-surface proteins helping immunity distinguish **healthy self-cells from cancerous or foreign cells.**
- **Photonic Quantum Computer:** Uses **photons as qubits**, exploiting quantum wave-interference dynamics to solve complex mathematical problems.
- **Generative Adversarial Network (GAN):** Uses competing **generator and discriminator networks** to create increasingly realistic synthetic data.

10.33. INDIA'S FIRST T2T REFERENCE GENOME OF PIGEONPEA

- **Context:** Indian Council of Agricultural Research (ICAR) developed India's first fully annotated telomere-to-telomere (T2T) reference genome of pigeonpea (*Cajanus cajan*) variety 'Asha'.
- **Importance of Pigeonpea:** Commonly called **Arhar/Tur**, pigeonpea is a major Indian **pulse crop and dietary protein source**, crucial for food and nutritional security.
- **Earlier Milestone:** In **2011**, ICAR-National Institute for Plant Biotechnology published the world's first **draft pigeonpea genome**, with 'Asha' becoming the first crop genome sequenced entirely in India.
- **Latest Advancement:** The new **T2T sequence** provides a **complete, highly accurate genetic blueprint**, offering a more comprehensive understanding of pigeonpea's genome.
- **Agricultural Significance:** Enables faster breeding of **climate-resilient, high-yielding and nutritionally enriched varieties**, improving productivity and farmer livelihoods.

10.34. MAGNETORHEOLOGICAL (MR) FLUIDS

- **Context:** IIT Patna scientists developed a **hybrid magneto-rheometer** to improve testing and characterisation of nanoscale MR fluids.
- **Smart Material:** MR fluid rapidly changes from a **free-flowing liquid to a viscoelastic solid** when exposed to a magnetic field.
- **Composition:** Contains **magnetisable metal particles**, non-magnetic carrier liquid and stabilising additives preventing settling/agglomeration.
- **Working:** Without a magnetic field, particles remain dispersed; under magnetic influence, they form **rigid chains**, increasing viscosity with field strength.
- **Applications:** Used in **shock absorbers, motor dampers, clutches, brakes, seismic dampers, prosthetics and precision polishing.**

10.35. AFRICAN SWINE FEVER (ASF)

- **Context:** ICAR-National Institute of High Security Animal Diseases (ICAR-NIHSAD), Bhopal, developed

India's first indigenous ASF vaccine for pigs.

- **Type:** MA-104 cell line-based live-attenuated vaccine for healthy pigs above 8 weeks, followed by a booster after 14 days.
- **Global Context:** Vietnam became the first country to announce commercial ASF vaccine production in 2022, in cooperation with the United States.
- **Disease:** A highly contagious haemorrhagic viral disease caused by African Swine Fever Virus (ASFV), affecting domestic and wild pigs.
- **WOAH Status:** Classified as a notifiable disease, requiring mandatory reporting of every outbreak.
- **Transmission:** Through infected pigs, swill feed and infected soft-tick bites; ASFV can persist for months in pens, clothing and cured/frozen pork. **Human Health:** Not zoonotic; cannot spread from pigs to humans and poses no public-health risk. **Symptoms:** High fever, appetite loss, skin haemorrhages and respiratory distress; mortality can approach 100%.

10.36. THREE MEDICINES CLASSIFIED AS CARCINOGENIC

- **Context:** WHO's cancer research agency, International Agency for Research on Cancer (IARC), classified three widely prescribed medicines as Group 1 carcinogens.
- **Hydrochlorothiazide:** Diuretic used for hypertension; associated with skin and lip cancers through sun-induced phototoxicity.
- **Voriconazole:** Antifungal used for severe infections; associated with skin cancer due to severe photosensitisation.
- **Tacrolimus:** Immunosuppressant used after organ transplantation; associated with non-Hodgkin lymphoma due to long-term immune suppression.
- **Essential Medicines:** All three are included in the WHO Model List of Essential Medicines, updated biennially based on public-health relevance, safety and cost-effectiveness.

10.37. LIGHT-ACTIVATED NANOBOTS FOR TARGETED BREAST CANCER THERAPY

- **Innovation:** Scientists at the Institute of Nano Science and Technology (INST), Mohali developed light-activated multifunctional nanobots for precise breast cancer treatment.
- **Light-Responsive Movement:** Upconversion Nanoparticle (UCNP)-based nanobots respond to near-infrared (NIR) light and exhibit phototaxis, moving directionally towards the light source.
- **Targeted Therapy:** Folic acid functionalisation enables selective recognition of breast cancer cells with overexpressed folate receptors. A 980-nanometre NIR laser then generates localised heat to destroy cancer cells.
- **Dual Therapy:** A photosensitizer produces Reactive Oxygen Species (ROS) under NIR irradiation. Combined photothermal and photodynamic effects achieve greater tumour inhibition than either approach alone.
- **Key Advantage:** These fuel-free nanobots enable externally controlled, localised treatment, potentially reducing healthy-tissue damage and systemic toxicity.

10.38. NASA INVITES ISRO TO JOIN MOON BASE PROGRAMME

- **Context:** National Aeronautics and Space Administration (NASA) invited the Indian Space Research Organisation (ISRO) to join its Moon Base programme.
- The programme aims to establish a permanent human outpost near the Moon's South Pole.
- **Civil Space Dialogue:** The invitation came during the 9th India-US Civil Space Joint Working Group (CSJWG) meeting at ISRO headquarters, Bengaluru.
- **US-India TRUST:** The meeting advanced civil and commercial space cooperation under the Transforming the Relationship Utilising Strategic Technology (TRUST) initiative.
- **NISAR Collaboration:** Both sides reviewed the successful NASA-ISRO Synthetic Aperture Radar (NISAR)

mission and explored further cooperation.

- **Space Sustainability:** India and the US reaffirmed commitment to **United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)** guidelines for sustainable outer-space activities.
- **Artemis Accords:** The invitation builds on the growing partnership under the **Artemis Accords**, which India joined in **June 2023**.

10.39. EVEREST: INDIA'S FIRST PRIVATE 800 kN FFSC LOX-METHANE ENGINE

Context: Astrobase Space Technologies, Bengaluru, unveiled **EVEREST**, India's first privately built **800 kN Full-Flow Staged Combustion (FFSC) LOX-Methane engine**.

Key Features

- **Engine Performance:** Produces **800 kN thrust**, **~340-second specific impulse** and **50–110% throttle range**.
- **Application:** Designed for **reusable medium-lift launch vehicles**, improving launch efficiency and reusability.
- **FFSC Technology:** Fuel and oxidiser pass through **separate pre-burners**, driving turbopumps before entering the main chamber.
- This enables **better propellant utilisation, higher efficiency and multiple engine cycles**.
- **LOX-Methane:** Relatively clean combustion makes it suitable for **reusable launch systems**.
- **Reusable Launch System:** The system targets **better turnaround time, precision control and launch economics**. Vehicle architecture targets about **3 tonnes to 500-km Low Earth Orbit (LEO)** with **return-to-launch-site recovery**.

10.40. DEEPAK DHAR AND THE 2026 DIRAC MEDAL

- **Award:** Indian theoretical physicist **Deepak Dhar** received the **2026 Dirac Medal** from the **Abdus Salam International Centre for Theoretical Physics (ICTP)** for pioneering contributions to **statistical physics and non-equilibrium systems**; he is only the **second India-based scientist** to receive it after **Ashoke Sen (2014)**.

- **Abelian Sandpile Model:** Developed by **Dhar** in **1990**, building on the **Self-Organized Criticality** concept of **Per Bak, Chao Tang and Kurt Wiesenfeld (1987)**. It shows how **simple local interactions can produce complex cascading behaviour**.

Dirac Medal

- **About:** Instituted in **1985** by the **Abdus Salam International Centre for Theoretical Physics (ICTP)**, Trieste, to honour **Paul A.M. Dirac**, Nobel laureate and pioneer of quantum mechanics.
- **Selection:** Announced annually on **8 August (Dirac's birthday)** for outstanding contributions to theoretical physics; traditionally excludes prior **Nobel, Fields or Wolf Prize** winners.
- **ICTP:** Founded in **1964** by **Abdus Salam** to promote scientific collaboration between developing countries and the global scientific community; operates under **Italy–UNESCO–IAEA** arrangements.

10.41. CANCER AS A NOTIFIABLE DISEASE

- **Supreme Court Direction:** The **Supreme Court** directed the **19 States/Union Territories** that have not yet notified cancer to consider doing so; **17 of 36 States/UTs** have already notified it.
- **Notifiable Disease:** A disease legally required to be reported to health authorities; surveillance is primarily undertaken through the **Integrated Disease Surveillance Programme (IDSP)** under the **National Centre for Disease Control (NCDC)**. Lists vary across States/UTs, with diseases such as **tuberculosis, dengue, malaria, cholera and polio** commonly notified.
- **Federal Dimension:** India has **no uniform national list**; States/UTs primarily determine notifiable diseases, creating variations. Globally, the **International Health Regulations (IHR), 2005** require countries to report public-health events with potential international implications to the **World Health Organization (WHO)**.

10.42. WEST NILE FEVER

Context: Recent concern: Suspected **West Nile fever (WNF)** cases have been reported in

Ernakulam, Kerala, prompting health authorities to issue a caution.

- **Cause:** WNF is caused by the **West Nile virus (WNV)**, a positive-sense, single-stranded RNA virus of the **Flaviviridae** family and **Orthoflavivirus** genus.
- **Spread:** WNV mainly spreads through the **bite of infected mosquitoes**. Casual human-to-human transmission is not documented. Rare transmission can occur through **blood transfusion, organ transplantation, laboratory exposure**, and from **mother to child during pregnancy, delivery or breastfeeding**.
- **Vector & Reservoir:** **Birds are the main reservoir hosts**, while **Culex mosquitoes** are the primary vectors. They often breed in **stagnant or polluted water** and are mainly active at night.
- **Clinical Features:** About **80% of infections are asymptomatic**, 20% cause symptoms, and **less than 1% lead to neuroinvasive disease**. The usual incubation period is **2–6 days**, ranging from **2–14 days**, and may be longer in immunocompromised individuals.
- It was first isolated from a woman in **Uganda's West Nile district in 1937** and later detected in birds in the **Nile Delta in 1953**.
- **Diagnosis & Treatment:** Diagnosis requires **laboratory testing**, along with symptom assessment and possible mosquito exposure. **No licensed human vaccine or specific antiviral treatment** is currently available.
- **Prevention:** Protection mainly involves **avoiding mosquito bites and removing mosquito breeding sites**



CULTURE

STUDENT'S
NOTES 

1. SARNATH: INDIA'S 45TH UNESCO WORLD HERITAGE SITE

Context: Sarnath (Uttar Pradesh) was inscribed on the **United Nations Educational, Scientific and Cultural Organization (UNESCO)** World Heritage List. India now has **45 UNESCO World Heritage Sites**, ranking **6th globally** and **2nd in Asia-Pacific**.

Importance of Sarnath:

- **Gautama Buddha** delivered his first sermon here after attaining enlightenment at **Bodhgaya** in the **6th century BCE**.
- The event is called **Dharmachakra Pravartana** ("Turning of the Wheel of the Law").
- Buddha met his first five disciples here, founding the **Sangha** and teaching the **Noble Eightfold Path**.
- Four principal pilgrimage sites: **Lumbini, Bodhgaya, Sarnath, and Kushinagar**.
- **Lumbini, Mahabodhi Temple (Bodhgaya), and Sarnath** are now **UNESCO World Heritage Sites**.
- Other Buddhist World Heritage Sites include **Sanchi, Nalanda, Ajanta, Anuradhapura, Paharpur, Taxila, and Takht-i-Bahi**.
- Ancient Names: Also known as **Rishipatana, Ishipatana, and Mrigadava (Deer Park)**.

Archaeological Significance

- Excavations uncovered **Ashoka's Lion Capital**, later adopted as India's **National Emblem**.
- Also discovered the **Gupta-period Dharmachakra Pravartana Buddha** statue.
- Artefacts are preserved in the **Sarnath Site Museum (1904)**, among India's earliest site museums.

UNESCO Inscription

- **Selection Criteria:** On India's Tentative List since **1998**; inscribed under: **Criterion (iii):** Outstanding testimony to a living spiritual tradition and pilgrimage; **Criterion (vi):** Direct association with Buddha, his teachings, and the **Triratna**.

2. GOR BOLI'S INCLUSION IN THE EIGHTH SCHEDULE

Context: The Ministry of Tribal Affairs informed Parliament about the continuing demand to include Gor Boli in the Eighth Schedule of the Constitution.

Gor Boli

- An **Indo-Aryan language** spoken mainly by the **Banjara community** in **Telangana, Andhra Pradesh, Karnataka, Maharashtra, and Rajasthan**.
- Script: Has no standard native script; commonly written in **Devanagari, Telugu, and Kannada**.
- **Banjara Community:** Also known as **Lambadi, Lambani, Vanjara, or Sugali**; traditionally a **nomadic trading and pastoral community** originating from the **Mewar region of Rajasthan**.

Eighth Schedule

- Constitutional Basis: Provided under **Articles 344(1) and 351 of the Constitution**; lists India's scheduled languages.
- **Languages:** Expanded from **14 to 22** through constitutional amendments → **21st Amendment Act, 1967: Sindhi** || **71st Amendment Act, 1992: Konkani, Manipuri, Nepali** || **92nd Amendment Act, 2003: Bodo, Dogri, Maithili, Santhali**
- **No Fixed Criteria:** The **Ashok Pahwa Committee (1996)** and **Sitakant Mohapatra Committee (2003)** found **no fixed criterion** for inclusion.

3. STONE AGE TOOLS & SANGAM-ERA WORKSHOPS IN TAMIL NADU

Context: Recent excavation: Excavations at **Malayadipatti, Tenkasi district**, reveal a settlement evolving for millennia along the **Vaippar River**.

Cultural & Archaeological Sequence

- **Excavation:** Tamil Nadu State Department of Archaeology opened **18 trenches** under its wider archaeological programme, including **Keeladi**.
- **Material culture:** Finds include **microlithic tools, iron implements, hematite, glass/coral beads, shell bangles, terracotta figurines and spindle whorls**.
- **Other artefacts:** Archaeologists recovered **gaming pieces, copper coins, graffiti-marked pottery and black-and-red ware**, indicating diverse cultural activity.
- **Continuous occupation:** Evidence spans the **Microlithic, Iron Age, Early Historic and Historic periods**, with no clear Neolithic or Chalcolithic phase.

Structural Significance

- **Sangam connection:** Peacock motifs in the burial context may have links with references to **peacocks in Sangam literature**.
- **Burial practice:** A **red-slipped pot with painted peacocks**, human teeth and black-and-red ware indicates ritual burial practices.
- **Water-management structure:** An **8.7 × 4.2 m brick structure with descending steps** may have served as an **underground granary or rainwater-harvesting tank**.

Craft, Technology & Trade

- **Production centre:** Evidence of **iron-tool making, bead production, shell-bangle manufacture and weaving** indicates organised craft production.
- **Trade networks:** The settlement was likely connected to wider trade routes linking **Tamil Nadu's eastern and western coasts**.

Significance

- **Deep antiquity:** Findings reinforce Tamil Nadu's **long cultural continuity, technological sophistication and economic vitality**.
- **Historical transition:** Further scientific dating may clarify the settlement's evolution from the **Stone Age to the Sangam period**.

4. NATIONAL HANDLOOM DAY 2026

- **Context:** India observed the **12th National Handloom Day on 7 August 2026**, recognising the cultural and socio-economic contribution of handloom weavers and allied workers.
- **Historical Significance:** Instituted in **2015**, the day commemorates the **1905 Swadeshi Movement**, which promoted indigenous products and self-reliance.

Key Features of India's Handloom Sector

- **Expanding Markets:** Contemporary designs, digital platforms and national/international exhibitions are helping handlooms reach new consumers and markets.
- **Handloom Census:** India has conducted four handloom censuses—**1987–88, 1995–96, 2009–10 and 2019–20**, generally every 8–12 years.
- **Employment:** The **Fourth All India Handloom Census 2019–20** recorded about **31.45 lakh handloom households and 35.22 lakh weavers and allied workers**.
- **Allied Workforce:** Around **8.48 lakh workers** undertake pre- and post-loom activities such as **winding, warping, dyeing and calendaring**.



- **Worker Identification:** Census-identified workers receive **Pehchan/e-Pehchan cards**. The **e-Pehchan portal**, launched in **January 2025**, enables registration, detail correction and card downloads. By **July 2026**, about **84,000 additional workers** had been approved for e-Pehchan cards.
- **Women's Participation:** Women comprise over **72% of the workforce**, with around **25.46 lakh women** engaged in weaving and allied activities.
- **Social Inclusion:** The sector includes about **4.84 lakh Scheduled Caste (SC)**, **6.28 lakh Scheduled Tribe (ST)** and **12.67 lakh Other Backward Classes (OBC) workers**, highlighting its role in supporting disadvantaged groups.
- **Rural Dominance:** Of **28.20 lakh looms**, about **25.30 lakh** are rural and **2.90 lakh urban**, meaning nearly **nine in ten looms** are located in rural India.

Government Initiatives for Handloom Sector

- **National Handloom & Handicraft Programme (2026–27):** Budget 2026–27 proposes integrating and strengthening existing handloom/handicraft schemes for **income enhancement, market linkages and heritage preservation**.
- **Handloom Hackathon 2026 – “Weaving Innovation”:** Launched on National Handloom Day 2026 to develop solutions in **design, sustainability, digital technology, branding, market access and productivity**.
- **National Handloom Development Programme (NHDP):** Provides **end-to-end support** through cluster development, technology/design intervention, infrastructure, marketing and capacity building. It remains a key handloom scheme in 2026.
- **Raw Material Supply Scheme (RMSS):** Ensures affordable yarn through **15% price subsidy on cotton hank yarn and doorstep transport subsidy**, reducing input costs for weavers.
- **Mahatma Gandhi Gram Swaraj Initiative (2026–27):** Focuses on **global market linkages, branding, skilling, quality improvement and modernisation** of khadi, handloom and handicrafts, with convergence with ODOP.

Issues with the Indian Handloom Sector

- **Low incomes:** **67.1% of handloom households** earn below ₹5,000 monthly, indicating weak economic viability of weaving (Fourth All India Handloom Census 2019–20)
- **Low work intensity:** Handloom workers average only **207 working days annually**, limiting stable incomes and making weaving less attractive (Official Census data, Ministry of Textiles).
- **Weak producer bargaining:** **73.2% of workers operate independently**, while only 6.3% work under cooperatives, weakening collective procurement and marketing (Fourth Handloom Census).
- **Credit constraints:** **56% of surveyed participants reported unmet credit needs**, while 58.4% specifically sought greater credit support (NABARD) Study on Credit & Marketing in Handloom Sector
- **Skill & technology gaps:** Over **55% of households sought design, technology-upgradation and skill-training support**, indicating limited capacity for market diversification (NABARD Study)

Way Forward

- **Modernise without mechanisation:** Promote ergonomic looms, electronic jacquards and improved tools while preserving **authentic handloom production processes**.
- **Strengthen producer institutions:** Build cooperatives/FPO-like entities for **collective yarn procurement, production planning, credit access and stronger price bargaining**.
- **Expand digital markets:** Integrate **IndiaHandmade, GeM and ONDC** with digital cataloguing, logistics and payment training for direct-to-consumer sales.
- **Build premium authenticity:** Combine **GI + Handloom Mark + QR-based provenance** with common testing, finishing and packaging facilities.
- **Protect skills and heritage:** Map **languishing weaves**, fund master-weaver apprenticeships and connect **Weavers Service Centres/NIFTs** with clusters for contemporary designs.

Conclusion: India's handloom sector can become a **globally competitive creative industry** by blending heritage with innovation, ensuring **dignified livelihoods, women-led growth and sustainable rural prosperity**.

Test Your Knowledge	
Prelims Corner Which one of the following best describes the Raw Material Supply Scheme (RMSS) in the handloom sector? A. It provides direct income support to handloom households based on annual production. B. It facilitates affordable yarn supply through price and transportation support. C. It provides subsidised loans exclusively for purchasing power looms. D. It provides export incentives exclusively to handloom cooperatives. Answer: B	Mains Corner Q. Despite its socio-economic and cultural significance, India's handloom sector faces low incomes, weak producer institutions and limited market access. Examine the challenges and suggest measures for its sustainable and globally competitive growth. (10 marks, 150 words)

5. VEERAGALLU DISCOVERY AND VISHNUVARDHANA

- **Archaeological Discovery:** A 12th-century Veeragallu (hero stone) with an Old Kannada inscription was found at Neeragunda, Karnataka, during restoration of the Lakshmi Narayana Swamy Temple.
- **Clue to Vishnuvardhana's Death:** The inscription says **Maravve** erected the stone for her husband **Boppa, a Hoysala soldier**, who died soon after King Vishnuvardhana's death at **Bankapura**.
 - It dates the event to **11 December 1141 CE**. If authenticated, it could settle the debate over Vishnuvardhana's death, earlier placed in **1149 or 1152 CE**.
- **Veeragallu Tradition:** Hero stones commemorated those who died defending the **king, village or cattle**.
 - Usually show **battle, ascent to heaven and deity worship**, symbolising **Moksha**.
 - They also reflect the Hoysala **Garuda tradition**, where royal bodyguards demonstrated loyalty and sometimes followed the king in death.

Vishnuvardhana & Hoysalas

- **Vishnuvardhana:** Originally **Bitti Deva**, he was a major Hoysala ruler who **defeated the Cholas at Talakad (1116 CE)**.
- **Architecture:** He commissioned the **Chennakeshava Temple, Belur**, consecrated in **1117 CE** as **Vijaya Narayana Temple**, commemorating the Chola victory.
- **Religion:** Influenced by **Ramanujacharya**, he embraced **Srivaishnavism** while patronising **Jainism and Shaivism**.
- **UNESCO Status:** The **Belur, Halebidu and Somanathapura** temple ensembles became a **UNESCO World Heritage Site in 2023**.
- **Hoysala Empire:** Ruled parts of **Karnataka, Tamil Nadu and Andhra Pradesh (11th–14th centuries CE)**; capitals included **Belur and Halebidu (Dwarasamudra)**.
- **Temple Architecture:** Known for **Vesara style, stellate plans, Jagati platforms, tiered friezes and intricate soapstone carvings**.

6. POINTERS FOR PRELIMS

6.1. MUGA SILK

- **Context:** Assam launched Mission Senehgori to convert GI-tagged Muga silk waste into high-value spun yarn.
- Muga Silk is a **natural Silk Variety**: One of the **five** natural silks—**Mulberry, Tropical Tasar, Oak Tasar, Eri** and **Muga**.
- **Source:** Produced by the semi-domesticated multivoltine silkworm *Antheraea assamensis*, endemic to Northeast India.

- **Silk:** Natural protein fibre produced by silkworms, mainly *Bombyx mori*.
- **Unique Identity:** World's only naturally golden silk; India's first **GI-tagged silk (2007)**.
- **Production:** Assam produces about **90%** of the world's Muga silk.

6.2. KARIVALAMVANTHANALLUR, TAMIL NADU

- **Context:** Tamil Nadu State Department of Archaeology is **excavating the site**

on the Vaippar River in Tenkasi district.

- **Historical Continuity:** Continuous habitation from Microlithic to Iron Age and Early Historic periods. No evidence of Neolithic or Chalcolithic phases.
- **Key Findings:**
- **Ancient Stepwell:** 2,500-year-old square brick stepwell.
- **Burial Evidence:** Red-slipped burial urns with peacock motifs.
- **Artefacts:** Perforated bowls and Black-and-Red Ware pottery.
- **High-Tin Bronze:** Sixth Tamil Nadu site confirming this early historic alloy.
- **Trade Significance:** Copper coins and graffiti-inscribed pottery indicate links with ancient trade routes between Madurai and the west coast.

6.3. SHABDALOK: INDIA'S FIRST IMMERSIVE LANGUAGE MUSEUM

- **Context:** The Union Home Minister inaugurated the **first phase of Shabdalok (Museum of Word)** at the **National Library, Kolkata**. Uses visual, audio, tactile, and immersive exhibits to showcase India's linguistic heritage.
- **Developed By:** **National Library of India** under the **Ministry of Culture**.
- **National Library:** India's largest library by collection; established as the **Imperial Library** and renamed after Independence.
- **Historical Journey:** Traces language evolution from **Omkar**, **Pāṇini's** grammar, **Shruti** and **Smriti** traditions to inscriptions, manuscripts, the printing press, and digital archives.

6.4. TENZING NORGAY NATIONAL ADVENTURE AWARD

- The **Ministry of Youth Affairs and Sports** invited nominations for the **Tenzing Norgay National Adventure Award 2025**.
- **About:** Instituted in **1993**, it is India's highest national award for adventure sports. || Named after **Tenzing Norgay**, who summited **Mount Everest** with **Edmund Hillary** in **1953**. || Presented **annually** for outstanding achievements, leadership, and lifetime contribution to **adventure sports**.
- **Categories:** **Land Adventure**, **Water (Sea) Adventure**, **Air Adventure**, **Lifetime Achievement**

- **Status:** Enjoys status equivalent to the **Arjuna Award**.

6.5. UNJHA CUMIN AND FENNEL GET GI TAGS

- **Context:** The **GI Registry** granted **Geographical Indication (GI) tags** to **Unjha Cumin (Jeera)** and **Unjha Fennel (Saunf)** of North Gujarat under **Class 30 (spices)**.
- **Unjha Cumin:** Small, greyish-brown split seeds with strong aroma and high **essential-oil content**, suited to North Gujarat's sandy-loam soils and arid climate.
- **Unjha Fennel:** Elongated greenish seeds with naturally sweet flavour from high **anethole content**; the annual herb grows up to six feet.
- **Legal Dispute:** Western Rajasthan farmers challenged the tags, arguing the **GI of Goods Act, 1999** requires GI recognition for genuine cultivation regions, not trading or processing hubs like Unjha.

6.6. UNDAVALLI CAVES

- **Context:** Andhra Pradesh hosted a two-day **Telugu Mahotsavam** at Undavalli Caves to promote **Telugu language and heritage**.
- These **4th–5th century CE monolithic rock-cut temples** are carved into a sandstone hill at **Guntur, Andhra Pradesh**, beside the **Krishna River**.
- Initially a **Jain abode**, the complex later housed **Buddhist monks** before becoming a **Hindu temple**. It represents a regional adaptation of **Gupta rock-cut architecture**, patronised by the **Vishnukundina dynasty**.
- A **5-metre reclining Vishnu (Ananta Padmanabha Swamy)** was carved from a single **monolithic granite block**.

6.7. INTERNATIONAL FILM FESTIVAL OF INDIA (IFFI)

- Asia's oldest film festival, held annually in Goa, jointly organised by **National Film Development Corporation (NFDC)** and **Government of Goa**.
- **57th IFFI (2026) theme:** *Stories Without Borders*.
- **ICFT-UNESCO Gandhi Medal:** Awarded annually to a film reflecting

Gandhian ideals of peace, tolerance and non-violence.

6.8 PITHORA PAINTING

- Government promotes Pithora's **2021 GI tag** to empower tribal artisans and strengthen **cultural tourism** in Gujarat.
- **Nature:** Pithora is an ancient **ritual mural art** practised by **Rathwa, Bhil, Nayak and Bhilala** communities.
- **Geography:** The tradition is mainly practised across **Gujarat and Madhya Pradesh**, reflecting the region's tribal cultural heritage.
- **Religious Significance:** The paintings are created to honour **Baba Pithora**, regarded as the **food-grain deity**.
- **Artists:** Only male artists, known as **Lakharas**, create Pithora paintings under the ritual guidance of **Badwa**, the tribal priest.
- **Materials:** Walls use **cow dung, mud and chalk**, while paints combine pigments with **milk and mahua liquor**.
- **Sacred Motifs:** **Horses** are the primary sacred motif, symbolising divine vehicles; other motifs include **sun, moon, elephants, farming and tigers**.

6.9. KANWAR YATRA

- Kanwar Yatra begins across North India during Shravan, with extensive security arrangements for millions of devotees.
- **Pilgrimage:** An annual Hindu pilgrimage undertaken by **Shiva devotees (Kanwariyas)** during **Shravan (July–August)**.
- **Ritual:** Kanwariyas collect Ganga water from Haridwar, Gangotri, Sultanganj, Prayagraj or Varanasi and carry it in pots. || **Kanwar:** Water-filled pots hang from a decorated bamboo pole (Kanwar), which devotees carry to Shiva temples and Jyotirlingas.

12 Jyotirlingas

- **Gujarat:** Somnath, Nageshwar | **Andhra Pradesh:** Mallikarjuna | **Madhya Pradesh:** Mahakaleshwar, Omkareshwar | **Uttarakhand:** Kedarnath | **Maharashtra:** Bhimashankar, Trimbakeshwar, Grishneshwar | **Uttar Pradesh:** Kashi Vishwanath | **Jharkhand:** Baidyanath | **Tamil Nadu:** Ramanathaswamy

6.10. DHIMSA DANCE

- **Context:** World record: Guinness World Records recognised 13,000 tribal women and girls performing Dhimsa at Alluri Sitarama Raju International Airport, Andhra Pradesh, as the largest Dhimsa dance.
- **Tribal tradition:** Indigenous folk dance of **Bagata, Gadaba, Kondadora, Poraja and Valmiki** communities in **Araku Valley and ASR district**; traced to **Koraput**.
- **Performance style:** Usually performed by **15–20 women** in colourful attire, moving in synchronised circles to **dappu, tudumu, mori, kidgi, gilka and jodukommulu**.
- **Cultural themes:** Reflects **tribal mythology, folklore, livelihood, kinship and social life**.
- **Occasions:** Traditionally performed during **Chaitrapurab (Eetela Panduga)**, marriages, festivals and religious ceremonies.

6.11. BANCHHADA COMMUNITY

- **Recent concerns:** The **Banchhada community** of Madhya Pradesh and Rajasthan was recently in the news over persistent social and economic challenges.
- **Geographical spread:** Primarily concentrated in **Madhya Pradesh and Rajasthan**.
- **Colonial classification:** Notified as a "**Criminal Tribe**" under the **Criminal Tribes Act** during British rule.
- **Post-Independence status:** **Denotified** after Independence and currently classified as a **Scheduled Caste (SC)**.

6.12. VARSHA ASHOK AGLAWE: FIRST WOMAN DG OF GSI

- **Historic Appointment:** **Varsha Ashok Aglawe** became the **54th Director General (DG) of Geological Survey of India (GSI)**, the first woman to lead it in its **176-year history**.
- **Succession:** She succeeds **Asit Saha**, who completed his two-year administrative tenure.
- **Geological Survey of India (GSI):** Established in **1851** to explore coal resources for railways; currently an **attached office of the Ministry of Mines**.

- **Headquarters:** Kolkata, with six regional offices at Kolkata, Lucknow, Jaipur, Nagpur, Hyderabad and Shillong, besides State units.
- **Core Functions:** Conducts geological mapping, mineral-resource assessment, geophysical, airborne and marine surveys, hazard studies, glaciology, seismotectonics and geoinformatics.

6.13. TANVI SHARMA WINS TAIPEI OPEN SUPER 300

- **Historic Win:** Tanvi Sharma won her maiden BWF World Tour title at the Taipei Open Super 300, aged 17 years and 222 days.
- **Record Achievement:** She became the youngest finalist in the tournament's history, surpassing Lee Yong Dae's 2006 record.
- **Indian Milestone:** Coached by Park Tae-sang, former coach of P.V. Sindhu, Tanvi became the first Indian woman since Saina Nehwal (2008) to win the Taipei Open singles title.
 - She joined Saina Nehwal, P.V. Sindhu and Devika Sihag among Indian women to win a BWF World Tour Super 300 title.
- **Junior Success:** Former World Junior No. 1; she became the first Indian to win two medals at one World Junior Championships—silver in girls' singles and bronze in mixed-team.
- **Other Achievements:** Runner-up at the 2025 US Open Super 300 and member of India's gold-medal winning team at the Asian Team Championships.
- **BWF Super 300:** A Level 5 tournament under BWF's Grade 2 structure, ranked below Super 1000, Super 750 and Super 500, offering world-ranking points and prize money.

6.14. GYAN BHARATAM MISSION

- **Concern:** Parliamentary Committee flagged slow digitisation; only 7.5 lakh manuscripts digitised against 20 lakh target by March 2027.
- **About:** Gyan Bharatam Mission (GBM), announced in Union Budget 2025–26, preserves, digitises and disseminates India's manuscript heritage.

- **Status:** Central Sector Scheme for 2024–31, with total outlay of ₹482.85 crore.
- **Background:** Builds on National Mission for Manuscripts (2003), which documented 44.07 lakh manuscripts in Kriti Sampada.
- **Digital Repository:** Creates a National Digital Repository (NDR) for globally accessible manuscript heritage.
- **2030 Target:** Digitise 1 crore manuscripts by 2030, integrating heritage with modern technology.
- **Significance:** Promotes education, research, digital access and global knowledge exchange, advancing "Virasat aur Vikas" and Viksit Bharat @2047.

6.15. PINGALI VENKAYYA (1876–1963)

- **Context:** 150th birth anniversary: Prime Minister paid tribute to Pingali Venkayya, freedom fighter and designer of the original Indian National Flag.
- **Early life:** Born in Bhatlapenumarru, Andhra Pradesh; popularly known as "Jhanda Venkayya."
- **National movement:** Participated in movements including Vande Mataram, Home Rule and Andhrodyamam between 1906–1922.
- **Gandhian influence:** Strong advocate of Gandhian principles; met Mahatma Gandhi in Africa during his British Army service.
- **National Flag:** Presented multiple designs to the Indian National Congress; Gandhi endorsed one at the 1921 Vijayawada Congress session.
- **Flag evolution:** Constituent Assembly adopted the present flag on 22 July 1947, replacing the Charkha with the Ashoka Chakra while retaining Venkayya's tricolour concept.
- **Diamond mining:** Set a record in diamond mining in Andhra Pradesh, earning the title "Diamond Venkayya"; authored *The Mother of Diamonds* in 1955.
- **Andhrodyamam:** Early 20th-century political campaign demanding a separate State for Telugu-speaking people.

SCHEMES IN NEWS

1. SMILE SCHEME

Context: SMILE Scheme rehabilitates over 10,200 persons engaged in begging across 216 cities

More About the Scheme

- **SMILE Scheme** (Support for Marginalized Individuals for Livelihood and Enterprise)
- **Type:** Central Sector Scheme under the Ministry of Social Justice & Empowerment.
- **Coverage:** Operational in 216 cities; targets 295 cities and rehabilitation of 35,000 persons by FY 2030–31.
- **Sub-Schemes:** (1) Comprehensive Rehabilitation for Welfare of Transgender Persons (1) Comprehensive Rehabilitation of Persons Engaged in Begging

Key Features

- **Social Reintegration:** Promotes dignity, inclusion and self-reliance.
- **Convergence Approach:** Implemented with States/UTs, district administrations and schemes like DAY-NULM, NRLM and Mission Vatsalya.
- **Digital Monitoring:** Uses the SMILE-Beggary National Portal to register and track beneficiaries and rehabilitation centres.

2. PARIVARTAN SCHEME

- **Context:** Delhi Cabinet approved **PARIVARTAN** (*Programme for Accelerated Renewal and Incentivization of Vehicle Assets for Reducing Transport Air Pollution and Network Emissions*).
- **Implementing Ministry:** Ministry of Road Transport and Highways (MoRTH).
- **Objective:** Replace old polluting trucks and buses with BS-VI or electric vehicles (EVs).

- **Key Benefits** (*for replacing BS-IV or older goods vehicles*): **100%** motor vehicle tax exemption for **10 years**. || Full registration fee waiver. || **5%** interest subsidy. || **8%** OEM discount on new BS-VI/EV goods vehicles.

3. PM-YASASVI SCHEME

Context: The Government reaffirmed its commitment to expanding educational opportunities for disadvantaged students through the Prime Minister Young Achievers Scholarship Award Scheme for Vibrant India (PM-YASASVI).

Key Features

- **About:** Umbrella scheme of the Ministry of Social Justice and Empowerment.
- **Beneficiaries:** Other Backward Classes (OBCs), Economically Backward Classes (EBCs) and Denotified, Nomadic and Semi-Nomadic Tribes (DNTs) with annual family income below ₹2.5 lakh.
- **Scholarship Components:** **Pre-Matric:** ₹4,000/year for Classes 9–10 in Government schools. || **Post-Matric:** ₹5,000–20,000/year based on course category.
- **Top Class School Education:** Up to ₹75,000/year (Classes 9–10) and ₹1.25 lakh/year (Classes 11–12), including tuition, hostel and institutional charges.
- **Top Class College Education:** Tuition up to ₹2 lakh/year (private institutions), ₹3,000/month living expenses, ₹5,000 book grant and ₹45,000 one-time laptop assistance.

4. AMRIT BHARAT STATION SCHEME (ABSS)

Context: The Prime Minister recently inaugurated 75 redeveloped railway stations across 20 States under the Amrit Bharat Station Scheme (ABSS) to modernise railway infrastructure and create passenger-centric transit hubs.

Key Features of ABSS

- **Localised Redevelopment:** Stations are redesigned based on local needs, blending **modern infrastructure** with **regional heritage, culture, and architecture**.
- **Accessible for All:** In line with the **Sugamya Bharat Abhiyan**, stations provide ramps, accessible parking, low-height counters, Braille signage, tactile pathways, accessible toilets, and lifts in subways/foot overbridges for **Divyangjan** and passengers with reduced mobility.
- **One Station One Product (OSOP):** Dedicated kiosks promote **local artisans, weavers, tribal products, handicrafts, handlooms, and regional food items**, boosting local livelihoods.
- **Multimodal & Green Infrastructure:** Integrates railway stations with **bus and metro networks**, improves city-side connectivity, and promotes **green spaces, sustainable infrastructure, and eco-friendly planning**.

5. DISHA 2.0

- **Context:** The Union Government launched **DISHA 2.0** (Designing Innovative Solutions for Holistic Access to Justice) with **₹255 crore outlay** for technology-driven justice access. **Central Sector Scheme (2026–31)** with nationwide implementation. **Aim:** Develop citizen-friendly legal service platforms using technology.

Four Components

- **Tele-Law:** Provides pre-litigation legal advice through mobile app and **Toll-Free Number 14454**; engages **Nyaya Sahayaks** in Aspirational Blocks.
- **Nyaya Bandhu (Pro Bono Legal Services) Programme:** Provides voluntary legal aid under **Section 12 of Legal Services Authorities Act, 1987**; pro bono panels formed in **23 High Courts**.
- **Legal Literacy and Legal Awareness Programme (LLLAP):** Promotes legal awareness through institutional partnerships and grassroots capacity building.
- **VIDHI (Vision for Integrated Delivery of Harmonized Legal Initiatives) –**

Sanjeevani: Enables monitoring through a centralized integrated dashboard.

- **Target:** Aims to benefit **50 lakh beneficiaries (2026–31)** without State-specific targets

6. ATAL BEEMIT VYAKTI KALYAN YOJANA (ABVKY)

- **Context:** Employees' State Insurance Corporation (ESIC) extended ABVKY's operational period from **1 July 2026 to 30 June 2027**. ABVKY is an **unemployment relief scheme** administered by **ESIC, Ministry of Labour and Employment**.
- **Objective:** Provides **short-term financial support** to formal-sector workers covered under the **ESI Act** facing involuntary job loss.
- **Compensation:** Eligible workers receive up to **50% of average daily earnings** through **Direct Benefit Transfer (DBT)** for maximum **90 days** during their lifetime.
- **Medical Continuity:** Beneficiaries and eligible dependents retain uninterrupted access to **ESIC medical benefits** during the relief period.
- **Eligibility:** Applicants must:
 - Have **12 months' continuous insurable employment** immediately before unemployment.
 - Have at least **78 days of ESIC contributions** during a completed contribution period in the preceding 12 months.
- **Disqualification:** Benefits are unavailable for unemployment due to **misconduct, voluntary retirement, factory lockout, superannuation or fraud**.
- **Claim Process:** Insured workers can **file claims independently online through the ESIC portal** after a reduced **30-day waiting period** from unemployment.

7. DAANVEER INITIATIVE

- **Launch:** The **Ministry of Panchayati Raj (MoPR)**, with **National Informatics Centre (NIC)** and **DigiHaat**, launched DAANVEER.
- **Core Purpose:** DAANVEER is a **transparent, verifiable, end-to-end digital platform** connecting voluntary

support with Gram Panchayats' identified technology needs.

- **Donation Mechanism:** Through the **Meri Panchayat App**, individuals and organisations can donate **quality-verified, standardised computer bundles**.
- **DigiHaat Integration:** Integration with **DigiHaat** enables selection of **State-specific, pre-approved computer bundles** with end-to-end digital tracking.
- **Digital Ecosystem:** **DAANVEER** complements **e-GramSwaraj, Meri Panchayat, Sabha Saar, AuditOnline** and **Gram Manchitra** platforms.

8. MISHTI SCHEME

- **Context:** Andhra Pradesh secured **second place** among States **under the Centre's MISHTI scheme** for mangrove conservation.
- **State Initiative:** Andhra Pradesh launched the **Great Green Wall of Andhra Pradesh** to strengthen large-scale mangrove restoration.
- **Fish Bone Technique:** The State adopted the Fish Bone Technique to improve tidal circulation, mangrove survival and ecological resilience.
- **About MISHTI:** Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI) was launched in 2023 to restore mangroves.
- **Objectives:** MISHTI aims to strengthen coastal climate resilience, protect shorelines and generate livelihood opportunities for local communities.

9. PRADHAN MANTRI VIKSIT BHARAT ROJGAR YOJANA (PM-VBRY)

Context: **One-year milestone:** PM-VBRY completed one year on **1 August 2026**, promoting formal employment and social security coverage.

Key Features

- **Objective:** Incentivises **first-time employment and additional job creation** through separate employee and employer benefits.
- **Implementation:** **Employees' Provident Fund Organisation (EPFO)**

administers the scheme, expanding organised employment and social security coverage.

- **Duration & outlay:** Announced **August 2025**, implemented **1 August 2025–31 July 2027**, with **₹99,446 crore** outlay.

10. NASHA MukT YUVA FOR VIKSIT BHARAT SANKALP ABHIYAN

- **Context:** Prime Minister Narendra Modi launched the campaign to build a drug-free India through youth awareness and community participation.
- **Youth-Led Initiative:** Ministry of Youth Affairs and Sports implements it through **MY Bharat**, aligned with **Nasha MukT Bharat Abhiyaan**.
- **Core Objective:** Eradicate **youth substance abuse** as essential for achieving **Viksit Bharat @2047**.
- **Guiding Framework:** **Kashi Declaration**, adopted at the **Youth Spiritual Summit, Varanasi (July 2025)**, treats substance abuse as a **public health challenge**.
- **Recovery & Reintegration:** Campaign seeks to **destigmatised recovery**, recognise recovered individuals as **"Real Warriors"** and support their social reintegration.

11. 10 YEARS OF GOVERNMENT E-MARKETPLACE (GEM)

Context: **GeM completed 10 years on 9 August 2026**, marking a decade of technology-led transformation in public procurement.

- **About:** The **Government e-Marketplace (GeM)** is a unified digital platform enabling **paperless, cashless, contactless, transparent and competitive** government procurement.
- **Wide Coverage:** Serves **Central and State Ministries, Departments, PSUs, Autonomous Bodies, local bodies, Panchayats and Cooperatives**.
- **Defence Procurement:** The **Department of Military Affairs** crossed **₹1.35 lakh crore cumulative Gross Merchandise Value (GMV)** on GeM as of **6 August 2026**.

ETHICS

STUDENT'S
NOTES

1. IAS TUKARAM MUNDHE — FROM INDIVIDUAL INTEGRITY TO ETHICAL FOOD GOVERNANCE

Context: IAS officer Tukaram Mundhe's efforts to ensure safe and quality food raise a larger GS4 question: **Should enforcing basic public duties be considered extraordinary, or should ethical governance make such conduct the norm?**

Key Ethical Concerns Associated with Food Adulteration

- **Profit vs public welfare:** Economic gain is prioritised over consumer health.
- **Means vs ends:** Profit cannot ethically justify harmful means.
- **Violation of dignity:** Consumers are treated as **means to profit**, contrary to Kant's categorical imperative.
- **Breach of trust:** Food markets function on an implicit trust that products are safe.
- **Information asymmetry:** Consumers often cannot detect adulteration themselves.
- **Injustice:** Poor and vulnerable consumers may be disproportionately exposed to unsafe food.
- **Intergenerational responsibility:** Unsafe food can create long-term health and nutritional consequences.
- **Administrative inaction:** Failure to intervene despite known risks can itself constitute an ethical failure.

Important Values Involved

- **Utilitarianism:** Food safety regulation seeks the **greatest good for the greatest number** by preventing widespread health risks.
- **Kantian Ethics:** The officer has a **duty** to uphold universally applicable standards and treat every citizen as an **end in themselves**, not as a source of profit.
- **Virtue Ethics by Aristotle:** Effective enforcement requires virtues such as **courage, integrity, justice, temperance and practical wisdom (*phronesis*)**.
- **Nishkama Karma:** The Gita's principle of **duty without excessive attachment to its fruits** is relevant when an officer acts despite the possibility of criticism, transfer or professional inconvenience.
- **"You have a right to perform your prescribed duties, but you are not entitled to the fruits of your actions."** — Bhagavad Gita



STAKEHOLDERS IN FOOD SAFETY & THEIR ETHICAL INTERESTS/RESPONSIBILITIES		
STAKEHOLDER	ETHICAL INTEREST/RESPONSIBILITY	
1. Consumers	Right to safe, quality food; informed choice	✓
2. Children, elderly & vulnerable groups	Greater protection from health risks	👶
3. Food businesses	Profit with integrity and compliance	📈
4. Farmers/producers	Fair prices and ethical supply chains	👨🌾
5. Food Safety Officers	Impartial enforcement and accountability	⚖️
6. FSSAI & State authorities	Standards, surveillance and enforcement	🏛️
7. Local bodies	Licensing, hygiene and local monitoring	📋
8. Laboratories	Accurate and timely testing	🔬
9. Courts/adjudicating authorities	Fair and timely justice	⚖️
10. Civil society/media	Awareness and social accountability	🗣️
11. Government	Public health, regulation and institutional capacity	🏛️
ETHICAL PRINCIPLE Good governance requires balancing stakeholder interests while placing public health and human dignity above vested interests.		

Best Practices: Lessons from States & Countries

- Kerala has emphasised **district-level coordination, hygiene ratings and extensive awareness activities**;
- **Telangana**: Telangana has used **high-risk category identification, special drives, mobile testing and planned sampling**, demonstrating targeted use of scarce enforcement resources.

Way Forward: An Ethics-Centred Food Safety Model

- **From punishment to prevention**: Use **risk-based surveillance, predictive analytics and regular testing** rather than waiting for complaints.
- **From individual heroism to institutional integrity**: Create systems where enforcement continues effectively despite **transfers or changes in leadership**.
- **From secrecy to transparency**: Publish inspection, testing and enforcement outcomes in accessible formats while protecting due process.
- **From discretion to accountability**: Ensure **time-bound adjudication, transparent procedures and proportionate penalties**. FSSAI has emphasised risk-based inspection and timely adjudication as part of stronger enforcement.

***Mains Question:** “Ethical governance should make integrity-driven administrative action the norm rather than an exception.” Discuss with reference to food safety and the ethical challenges posed by food adulteration. (10 marks, 150 words)*

2. ETHICS OF TRANSFORMATIVE TEACHING: LESSONS FROM INDIA'S NATIONAL TEACHERS' AWARDEES

Context: National Teachers' Award (1958) recognises teaching marked by **duty, empathy, innovation, social responsibility & public service**.

- **Duty Beyond Formal Responsibility:** **Palash Chowdhury & Santanu Patra (West Bengal)**—breakfast; **Sunita Yadav (Chhattisgarh)**—milk-based nutrition; **Pushpa Prasad (Bihar)**—nutrition, menstrual hygiene, girls' education & disaster vulnerability. Reflects **Kantian duty ethics + Gandhian service**.

“The best way to find yourself is to lose yourself in the service of others.” — Gandhi

- **Empathy & Emotional Intelligence:** **Khushbu Kumari (Bihar)** used **home visits, dialogue & community engagement** to raise attendance from **40–50% to 90%+** amid communal tensions—showing **stakeholder sensitivity & human-centred administration**.
- **Equality of Opportunity:** **Divyendu Sen (Rajasthan)** enabled rural students in NASA-supported citizen science; 12 asteroid candidates, 4 provisionally recognised. Reflects **substantive equality (Rawls) + education as empowerment (Ambedkar)**.
- **Scientific Temper:** Sen prioritised **curiosity over exam scores**, advancing **Article 51A(h)**—scientific temper, humanism, inquiry & reform; promotes **critical thinking & independent judgement**.
- **Innovation with Scarcity:** **Munmun Bhattacharjee (Jharkhand)**—waste-based teaching aids; **Pushpa Prasad**—low-cost/QR learning; **Bompelli Bhavani (Telangana)**—parental contributions + prize money for computer. Reflects **resourcefulness, frugality, creativity & phronesis (practical wisdom)**.
- **Participatory Leadership:** **Palash Chowdhury**—digital education + CPR/AI literacy for mothers; **Bhavani**—parent mobilisation; **Khushbu**—parents as partners. Shows **transformational leadership + Gandhian Gram Swaraj**.
- **Capability Enhancement:** **K.P. Sunil Kumar (Kerala)**—post-COVID literacy/communication; **Shalini Kushwaha**—real-life-linked Teaching-Learning Materials (TLMs); **Iftkhar Khan**—outdoor/observation-based learning. Reflects **Amartya Sen's Capability Approach—capability, agency & freedom**.
- **Moral Courage & Perseverance:** Teachers overcame **resource constraints, social resistance & scepticism**, demonstrating **moral courage, resilience & public-interest commitment**.



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