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FOR UPSC CIVIL SERVICE EXAMINATION

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1. Allegations of Population Mix Change in Border Areas – Key Summary

- **Issue Raised by PM:**

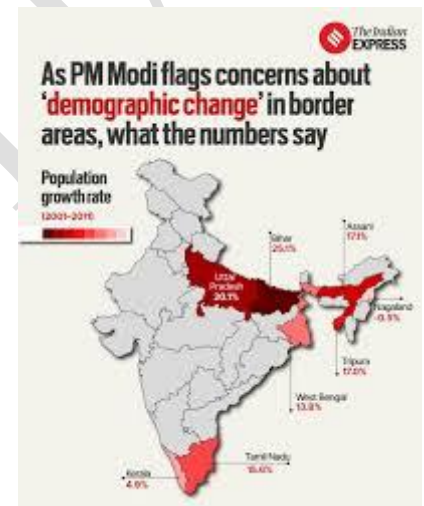
Prime Minister Narendra Modi alleged a conspiracy to change the demographic composition of India's border areas, particularly in Assam, through large-scale infiltration from Bangladesh. He termed it a **grave threat to national security** and announced plans for a “**demography mission**” to address this issue.

- **Accusations Against Opposition:**

The PM accused the Congress of shielding and protecting infiltrators during its rule, enabling encroachment on farmers' land, tribal areas, and religious sites. He asserted that BJP is reversing this by reclaiming encroached land, such as in **Darrang district's Gorukhuti**.

- **Key Constitutional & Legal Provisions:**

- **Article 355:** Duty of the Union to protect States against external aggression and internal disturbance.
- **Article 19(1)(e) & (g):** Right of Indian citizens to reside and settle freely, which illegal migrants cannot claim.
- **Foreigners Act, 1946:** Governs the entry, stay, and deportation of foreigners.
- **Citizenship Act, 1955:** Defines who is a citizen; amended in 2019 (CAA) to provide citizenship to persecuted minorities from neighboring countries (except Muslims).
- **Assam Accord (1985):** Cut-off date of March 24, 1971, for detection and deportation of illegal migrants in Assam.
- **NRC (National Register of Citizens):** Mechanism to identify legal citizens in Assam.



- **Definition – Infiltration:**

Infiltration refers to the **illegal entry and settlement of foreign nationals** into Indian territory without authorization, often posing challenges to **national security, resource distribution, cultural balance, and political stability**.

- **Security & Demographic Concerns:**

The government views infiltration as a **strategic and demographic challenge** that could alter electoral politics, impact communal harmony, strain land and resources, and undermine sovereignty in sensitive border regions.

- **Conclusion & UPSC Relevance:**

The issue links **national security, federal relations, border management, citizenship laws, and socio-political stability**. It is crucial for UPSC as it involves constitutional provisions, legislative measures, demographic concerns, and governance challenges in managing border states.

- **Relevant for:** GS-II (Polity, Governance, Citizenship), GS-III (Internal Security, Border Management), Essay Paper (National Integration, Demography).



2. PLI Scheme for White Goods Reopened – Key Summary

- **PLI Scheme Context:**

The **Production Linked Incentive (PLI) Scheme** is a government initiative to boost domestic manufacturing by offering financial incentives based on incremental sales. It covers multiple sectors, including **white goods (Air Conditioners and LED lights)** since April 2021.

- **Latest Development:**

The Centre has **reopened the application window (Sept 15 – Oct 14, 2025)** for the PLI scheme in white goods, citing growing market demand and industry confidence. Both **new applicants and existing beneficiaries** seeking additional investments can apply.

- **Investment & Coverage:**

So far, **83 applicants** with committed investment of around **₹10,406 crore** have been selected. The scheme promotes the manufacturing of AC and LED components across the value chain, including those **not previously made in India in sufficient quantity**.

- **Key Constitutional & Legal Provisions:**

- **Article 39(b) & (c)** (Directive Principles): Aim for equitable distribution of resources and prevention of wealth concentration.
- **Article 301**: Ensures freedom of trade, commerce, and intercourse throughout India.
- **Atmanirbhar Bharat Abhiyan** (Self-Reliant India): Policy framework supporting PLI schemes.
- **Industrial Policy Resolutions & Make in India** initiative: Legal-policy context for strengthening domestic industry.

Switching on

The Union government is reopening the application window for the Production-Linked Incentive scheme for white goods

■ **Application window:** Sept. 15 to Oct. 14

■ **Scheme goal:** To boost manufacturing of **AC and LED light** components, including those not currently produced in sufficient quantities in India

■ **Who can apply:** Both **new applicants** and **existing beneficiaries** who wish to invest more



■ **Current status:** 83 applicants with a committed investment of **₹10,406 crore** have already been selected

- **Definition – White Goods:**

White goods are **large electrical appliances** used in households such as refrigerators, washing machines, air conditioners, and LED lights. The PLI scheme specifically focuses on **components and sub-assemblies** of ACs and LED lights.

- **Conclusion & UPSC Relevance:**

The reopening of the PLI scheme reflects India's push for **self-reliance, import substitution, job creation, and export competitiveness** in the electronics and appliance sector. For UPSC, it connects with **GS-III (Economy – Infrastructure, Industrial Growth, Government Policies)**, **GS-II (Governance – Policy Implementation)**, and **Essay (Atmanirbhar Bharat, Employment & Industrialization)**.

3. Pendency in Supreme Court – Key Summary

- **Current Situation:**

The **Supreme Court's case pendency has reached an all-time high of 88,417 cases** (69,553 civil and 18,864 criminal), despite having full judicial strength of 34 judges. In August 2025 alone, **7,080 cases were filed vs 5,667 disposed (80.04%)**, leading to net backlog increase.



- **Judicial Efforts to Reduce Backlog:**

Chief Justice B.R. Gavai introduced “**partial working days**” during the summer recess with 21 Benches functioning, aiming to improve disposal. Successive CJIs, including Justices D.Y. Chandrachud, Sanjiv Khanna, and Gavai, have ensured **minimal judicial vacancies** by prompt collegium recommendations and quick government approvals.

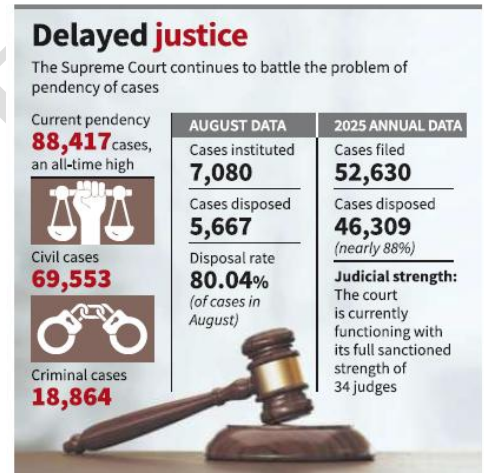
- **Structural Challenges:**

Persistent backlog despite full strength reflects **systemic issues** such as:

- High volume of fresh filings vs disposal rates.
- Increased litigation post-pandemic years (since 2023).
- Limited bench capacity and procedural delays.
- Rising workload on judges and absence of adequate alternative dispute resolution mechanisms.

- **Key Constitutional & Legal Provisions:**

- **Article 124 & 130:** Provide for establishment, composition, and seat of the Supreme Court.
- **Article 136:** Special leave jurisdiction, a major contributor to case load.
- **Article 142:** Power to do complete justice, often leading to broad jurisdiction.
- **Article 21:** Right to speedy trial as part of Right to Life (recognized in *Hussainara Khatoon case*).
- **NJDG (National Judicial Data Grid):** A digital mechanism for monitoring pendency statistics.



- **Definition – Judicial Pendency:**

Judicial pendency refers to the **accumulation of cases awaiting resolution** in courts due to mismatch between case inflow and disposal, causing **delayed justice, erosion of public trust, and governance inefficiency**.

- **Conclusion & UPSC Relevance:**

The rising pendency highlights the need for **judicial reforms, technology adoption, case management systems, expanding judge strength, and promoting ADR mechanisms**. For UPSC, this issue is highly relevant under **GS-II (Polity, Constitution, Judiciary)**, **GS-III (Governance & Reforms)**, and **Essay (Judicial Backlog, Rule of Law, Access to Justice)**.

3. Hindi and Indian Languages – Key Summary

- **Context & Statement by Home Minister:**

On **Hindi Divas**, Union Home Minister Amit Shah emphasized that there is **no competition between Hindi and other Indian languages**. Instead, all languages complement each other in building a **self-reliant, confident, and developed India**. He urged respect for all Indian languages and their use in governance, education, technology, and justice.

- **Cultural & Historical Role of Languages:**

Indian languages have historically carried forward **culture, traditions, knowledge, science, and**



spirituality across generations. Works of literary figures like **Tiruvalluvar, Krishnadevaraya, Subramania Bharati, Tulsidas, Kabir, Sankardeva, and Bhupen Hazarika** reflect the unifying cultural power of linguistic diversity. Slogans like “**Vande Mataram**” and “**Jai Hind**” emerged from linguistic consciousness during the freedom struggle.

- **Institutional Measures for Language Promotion:**

Since 2014, Hindi's use in governance has been encouraged, but alongside steps to promote all major Indian languages. Initiatives include:

- **Bharatiya Bhasha Anubhag (2022)** for seamless translation of major Indian languages.
- **Sarathi system** for official communication across languages, enabling CMs to write in their native languages with replies in the same.
- **Shabd Sindhu dictionary project** (expanding to 7 lakh+ words, aiming to be the largest multilingual dictionary by 2029).

- **Key Constitutional & Legal Provisions:**

- **Article 343:** Hindi as the official language of the Union.
- **Article 344:** Commission and Committee on official language.
- **Articles 345-347:** States' power to adopt their official language(s).
- **Eighth Schedule:** Recognition of 22 scheduled languages of India.
- **Article 350 & 350A:** Right to submit representations in any language, and mother-tongue instruction at primary stage.
- **Article 351:** Directive to promote the spread of Hindi without harming other languages.



- **Definition – Linguistic Diversity:**

Linguistic diversity refers to the **coexistence of multiple languages within a region or nation**, reflecting its cultural pluralism, heritage, and identity. India, with **22 scheduled languages and hundreds of dialects**, is one of the most linguistically diverse countries in the world.

- **Conclusion & UPSC Relevance:**

Amit Shah's statement underlines **unity in diversity through linguistic harmony**. The approach reflects the **constitutional vision of respecting all languages while promoting Hindi as a link language**. For UPSC, the topic is significant in **GS-II (Polity – Official Language Policy, Governance)**, **GS-I (Culture, Diversity of India)**, **Essay (Unity in Diversity, Language & National Identity)**, and **Ethics (Respect for Pluralism)**.

5. Kerala's 3-Phase Campaign to Mitigate Human-Wildlife Conflict

- **Context & Scale of Problem:**

Kerala faces significant **human-wildlife conflict**, affecting around **300 gram panchayats**, with nearly 30 identified as **critical hotspots**. Incidents include crop loss, property damage, and threats to human safety due to wild animal incursions.



- **Three-Phase Mitigation Drive:**

1. **Phase 1 (Sept 16–30):** Establish help desks in forest range and panchayat offices; collect written complaints on crop loss, compensation delays, and safety issues; data collection within 15 days.
2. **Phase 2 (Oct 1–15):** Address unresolved issues at the **district-level committees** for faster redressal.
3. **Phase 3 (Oct 16 onwards):** Escalate persistent and structural issues to the **State government** for long-term **policy-level solutions**.



- **Underlying Causes of Conflict:**

Expansion of agriculture and settlements in forest-fringe areas, habitat loss and fragmentation, insufficient food/water sources inside forests, and climate-related changes often push wild animals into human-dominated landscapes.

- **Key Constitutional & Legal Provisions:**

- **Article 48A:** State shall protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g):** Fundamental duty of citizens to protect wildlife and natural environment.
- **Wildlife (Protection) Act, 1972:** Provides legal framework for wildlife conservation.
- **Forest Rights Act, 2006:** Balances rights of forest-dwelling communities with conservation.
- **Biological Diversity Act, 2002:** Conserves ecosystem integrity and species.

- **Definition – Human-Wildlife Conflict:**

Human-wildlife conflict refers to **negative interactions between humans and wild animals** resulting in **loss of life, property, crops, or habitat**, often arising from competition over space and resources.

- **Conclusion & UPSC Relevance:**

Kerala's campaign highlights the need for **community participation, grievance redressal, and policy interventions** in mitigating ecological challenges. It reflects the **delicate balance between conservation and human livelihood security**. For UPSC, this is relevant under **GS-III (Environment & Ecology, Conservation, Disaster Management)**, **GS-II (Governance – Policy Implementation, Local Governance)**, and **Essay (Sustainable Development, Man-Nature Relationship)**.

6. Karnataka CM on Cauvery Water Sharing – Key Summary

- **Present Situation:**

Karnataka CM Siddaramaiah stated that **no water dispute with Tamil Nadu is expected this year** due to good rainfall over the past two years, resulting in **full reservoirs** and sufficient water for both drinking and irrigation needs.





- **Cauvery Water Release:**

Karnataka is obligated to release **177.52 tmcft of water to Tamil Nadu** in normal rainfall years, with a **distress formula** applied during droughts. This year, **221 tmcft has already flowed to Tamil Nadu**, which is **122 tmcft more than required**.

- **Mekedatu Dam Project:**

CM questioned Tamil Nadu's opposition to the **Mekedatu dam** (capacity: 66 tmcft). He argued it would **benefit both States**—storing water during surplus years and releasing it during droughts, ensuring stability in Cauvery water management.

- **Key Constitutional & Legal Provisions:**

- **Article 262:** Parliament may provide for adjudication of inter-State water disputes.
- **Inter-State River Water Disputes Act, 1956:** Governs resolution of river disputes.
- **Cauvery Water Disputes Tribunal (1990):** Final award in 2007 allocated water among Karnataka, Tamil Nadu, Kerala, and Puducherry.
- **Supreme Court Judgment (2018):** Modified allocations, reduced Tamil Nadu's share slightly, and recognized Bengaluru's water needs.

- **Definition – Inter-State River Water Dispute:**

An inter-State river water dispute arises when **riparian states disagree over the allocation or management of river waters**, impacting agriculture, drinking water, power generation, and federal relations.

- **Conclusion & UPSC Relevance:**

The current year's surplus situation has eased tensions, but **Cauvery remains a politically sensitive and legally contested river**. The Mekedatu project is emerging as a new flashpoint. For UPSC, this issue is relevant in **GS-II (Federalism, Inter-State Relations, Tribunal System)**, **GS-III (Water Resources, Agriculture, Energy)**, and **Essay (Water Security, Federal Challenges)**.

7. Expanded AB PM-JAY for 70+ Citizens in Tamil Nadu – Key Summary

- **Scheme Expansion Context:**

The **Ayushman Bharat Pradhan Mantri-Jan Arogya Yojana (AB PM-JAY)** was expanded in October 2024 to provide **free treatment up to ₹5 lakh annually for all citizens aged 70 and above and their families**, irrespective of socio-economic status. Nationally, about **6 crore elderly (4.5 crore families)** are estimated beneficiaries.

- **Status in Tamil Nadu:**

Despite nearly a year since its launch, the scheme is **not yet rolled out in Tamil Nadu** due to unresolved differences between the Union and State governments. An estimated **43.19 lakh elderly (32.35 lakh families)** in Tamil Nadu stand to benefit.

- **Data & Coverage Issues:**

- Tamil Nadu's Election Commission (2024) recorded **53.12 lakh individuals aged 70+**.





- PM-JAY database currently lists only **4.06 lakh individuals (3.69 lakh families)**.
- Estimated new beneficiaries: **39.13 lakh individuals from 28.66 lakh families**. This indicates a **large gap in coverage and identification**.
- **Financial Implications:**
 - Premium sharing ratio: **60:40 between Centre and State** (90:10 for NE and Himalayan states).
 - At present, Union bears **₹1,000 crore annually**, State contributes **₹200 crore**.
 - Expansion may add **₹200 crore more burden on Tamil Nadu**, with potential escalation due to **higher life expectancy and rising medical costs**.
- **Key Constitutional & Legal Provisions:**
 - **Article 21:** Right to life includes right to health (recognized by SC in multiple judgments).
 - **Directive Principles (Articles 39(e), 41, 47):** Duty of State to ensure health, social security, and public assistance for elderly.
 - **National Health Policy, 2017:** Universal access to healthcare.
 - **Senior Citizens Act, 2007:** Provides welfare framework for elderly citizens.
- **Definition – AB PM-JAY:**

A centrally sponsored health insurance scheme under **Ayushman Bharat**, offering **cashless and paperless hospitalization up to ₹5 lakh per family per year**, targeting socio-economically weaker households, and now expanded to **universal coverage for elderly (70+)**.
- **Conclusion & UPSC Relevance:**

The delay in Tamil Nadu highlights the **Centre-State friction in welfare implementation**, financial constraints, and challenges in **healthcare federalism**. For UPSC, this is relevant in **GS-II (Governance, Centre-State Relations, Welfare Schemes)**, **GS-III (Health, Inclusive Growth)**, and **Essay (Social Security, Healthcare Access, Federalism in India)**.

8. Positioning India in an Unruly World – Key Summary

- **Criticism and India's Response:**

A *Foreign Affairs* article (2025) described India's Great Power ambitions as “delusional,” arguing it lags far behind the U.S. and China. However, India's belief in its rise rests on strong foundations — overcoming famine, achieving food security, and gradually building economic and technological strength.
- **Civilisational Approach and Strategic Autonomy:**

India and China are both civilisational powers with different developmental models. Despite border disputes, neither is seeking direct conflict. India does not depend on U.S. military support, relying instead on **strategic autonomy**, a principle rooted in its past experiences (1962, 1971) and its **Non-Aligned Movement (NAM)** legacy.





- **Historical Trajectory:**

- India transformed from a food-deficient nation to a food exporter (Green Revolution).
- Adopted a “**butter before guns**” approach — prioritizing economic growth before military expansion.
- Exercised **moral authority** in global politics (e.g., Korean War mediation, NAM leadership).
- Post-1970s, U.S.-China rapprochement and India’s Russia ties reduced India’s importance in Western eyes.

- **India’s Diplomatic Balancing:**

India has managed contradictions:

- Signed **India-Soviet Treaty (1971)** and conducted **Pokhran test (1974)**, despite Western disapproval.
- Improved ties with U.S. post-2000s, culminating in the **2008 Civil Nuclear Agreement**.
- Simultaneously joined the **Quad** while engaging Russia and China through **SCO/BRICS**. This reflects India’s **multi-alignment strategy**.

- **Technology as the New Power Driver:**

Global power is increasingly determined by **technological superiority** rather than military might. Data, AI, and digital innovation form the new “empires of the mind.” India, with its demographic advantage and strong digital ecosystem, is emerging as a key player. The dominance of Indian-origin professionals in global tech underscores this trend.

- **Key Constitutional & Policy Dimensions:**

- **Article 51 (Directive Principles):** Advocates for international peace and security.
- **Non-Alignment & Strategic Autonomy:** Foundational principles of India’s foreign policy.
- **Digital India & National AI Strategy:** Strengthening technological sovereignty as part of global positioning.
- **Atmanirbhar Bharat:** Reducing dependency in strategic sectors, including defense and technology.

- **Conclusion & UPSC Relevance:**

India’s journey toward Great Power status is not a “delusion” but a gradual process rooted in civilisational depth, economic resilience, and technological growth. Its ability to manage contradictions, balance alignments, and assert moral authority distinguishes it in world politics. For UPSC, this is highly relevant under **GS-II (International Relations, India’s Foreign Policy)**, **GS-III (Science & Tech, Economy)**, and **Essay (India as a Civilisational State, Multipolar World Order)**.

9. Cutting off Online Gaming with the Scissors of Prohibition – Key Summary

- **Key Features of the Bill:**

The **Promotion and Regulation of Online Gaming Bill, 2025** was passed without debate or stakeholder consultation. It bans **online real-money games** but permits **e-sports and social games**. This sudden prohibition disrupts a sunrise sector that had attracted significant **FDI, jobs, and tax revenues**.



- **Economic and Employment Impact:**

- Online gaming was projected to employ **1.5 lakh people by 2025** across technology, design, and support roles.
- The industry was expected to contribute nearly **₹17,000 crore in GST revenues** annually.
- Prohibition risks capital flight, reduced investor confidence, and slowdown in the **Digital India** ecosystem.



- **Government's Rationale vs. Alternatives:**

The Centre justifies the ban citing **addiction, financial ruin, and societal harm**, likening gaming to drug addiction. However, global experience suggests **regulation** (age-gating, self-exclusion, deposit/time limits, KYC/AML norms) is more effective than blanket prohibition. States like **Tamil Nadu** were already experimenting with regulatory models.

- **Legal and Constitutional Concerns:**

- **Article 19(1)(g):** Right to practice any profession or business — ban infringes this right.
- **State List (7th Schedule, Entry 34):** Betting and gambling are State subjects — unilateral Central law undermines **federalism**.
- Courts have consistently upheld the legitimacy of **games of skill** vs. banning only **games of chance**. The Bill blurs this distinction.
- Likely judicial review on grounds of **constitutional propriety**.

- **Risks of Prohibition:**

Driving players to **illegal offshore platforms**:

- Loss of tax revenues.
- Exposure to fraud, unsafe practices, and unregulated gambling.
- Collapse of accountability mechanisms and consumer safeguards.

- **Definition:**

- **Games of Skill:** Outcomes depend on player ability (e.g., chess, rummy).
- **Games of Chance:** Outcomes depend primarily on luck (gambling). Legal treatment differs under Indian law.

- **Conclusion & UPSC Relevance:**

The Bill highlights a **classic dilemma of regulation vs. prohibition**. While addressing societal harms is important, outright bans may harm economic growth, job creation, digital innovation, and federal principles. A **middle ground** with a **licensing and compliance framework** would balance public interest and industry potential.

UPSC Relevance: GS-II (Constitution, Federalism, Governance), GS-III (Economy, Digital India, Employment, Technology Regulation), and Essay (Balancing Innovation and Regulation, Federal Challenges in Policymaking).



10. Bringing Global Education Home – Key Summary

- **Policy Framework & Background:**

- The **UGC (2023 Regulations)** allow top foreign universities to establish campuses in India with **operational autonomy**.
- This aligns with the **National Education Policy (NEP) 2020**, which envisions globally competitive yet locally rooted higher education.
- The Ministry of Education has already issued **12 Letters of Intent**; some campuses are opening in Gurugram, Bengaluru, Chennai, Mumbai, and NCR.

- **Why India is Attractive Now:**

- India has a **large aspirational youth population**, a **stable, growing economy**, and a **booming startup ecosystem**.
- Rising demand in **new-age fields**: AI, data science, design, finance, sustainability.
- Foreign universities face challenges at home (rising costs, demographic shifts) and see India as a **strategic hub for intellectual capital**.



- **Advantages for Students & Society:**

- Access to **international-quality education at lower cost** without going abroad, reducing financial and logistical burdens.
- Broader exposure through **peer diversity, industry linkages, and entrepreneurial ecosystems**.
- Encourages **social inclusion**—students who earlier could not afford foreign education now gain opportunities.

- **Impact on Indian Higher Education Ecosystem:**

- **Healthy competition** will push Indian universities to innovate and raise standards.
- Strengthens **research collaboration** (e.g., renewable energy, health, engineering) with global partners.
- Enhances India's position as a **global education hub**, complementing its strength in technology and diplomacy.

- **Constitutional & Legal Dimensions:**

- **Entry 66, Union List** (coordination and determination of standards in higher education) empowers Centre/UGC to regulate.
- **Article 19(1)(g)**: Right to practice any profession – foreign universities allowed to establish campuses under regulatory framework.
- Balances **federal concerns** by involving States in facilitation, but higher education largely remains a **Union subject**.



- **Definition (Key Term):**

- **Global Education Hub:** A nation that attracts students, researchers, and institutions worldwide, integrating **academic excellence, cultural exchange, and research collaboration** within its domestic system.

- **Conclusion & UPSC Relevance:**

Establishing foreign university campuses in India is a **landmark reform**—it democratizes access to global education, enhances research collaboration, and positions India as a **knowledge and innovation powerhouse**. While challenges remain (ensuring equity, preventing brain drain, regulatory clarity), the move strengthens India's higher education system in line with NEP 2020.

UPSC Relevance: GS-II (Education, Governance, Policy-making, Federalism), GS-III (Economy, Innovation, Human Capital), Essay (Education Reforms, India as Knowledge Superpower), and Ethics (Equity & Access in Education).

11. Supreme Court Guidelines on DNA Evidence in Criminal Cases

- **Background & Need for Guidelines:**

- In *Kattavellai @ Devakar v. State of Tamil Nadu (2024)*, the Supreme Court found lapses in **handling, delays, and chain of custody** of DNA samples in a rape-murder case.
- Such lapses raised the risk of **sample contamination** and undermined the credibility of forensic evidence.
- Since there was no **uniform procedure** across States, the Court stepped in despite “Police” and “Public Order” being **State List subjects**.

- **Key Guidelines Issued by SC:**

1. Proper **documentation at collection stage**, including FIR details, IO (Investigating Officer), medical professional, and witness signatures.
2. **Transportation by IO** to police station/hospital and delivery to Forensic Science Laboratory (FSL) within **48 hours**; delays must be explained.
3. Samples in storage cannot be **opened or resealed without court authorization**.
4. A **Chain of Custody Register** must be maintained till final disposal (conviction/acquittal) and appended to the trial record.

- **Judicial Precedents on DNA Evidence:**

- *Anil v. State of Maharashtra (2014)* – DNA profile is valid if **quality control in lab** is ensured.
- *Manoj v. State of Madhya Pradesh (2022)* – DNA rejected due to contamination in open recovery.
- *Rahul v. State of Delhi (2022)* – DNA rejected as samples were kept in **police custody for 2 months** without safeguards.
- Court stressed that both **pre-lab handling** and **lab procedures** are critical for reliability.

- **Legal & Constitutional Provisions:**



- **Section 45 of Indian Evidence Act, 1872** (now Section 39 of Bharatiya Sakshya Adhiniyam, 2023) – Expert opinion admissibility.
- **Entry 66, Union List (7th Schedule)** – Standards in higher education & research empower Centre to regulate scientific procedures.
- **Articles 21 & 50** – Protection of life and fair trial require reliable forensic evidence.
- Despite State jurisdiction over police, SC invoked its **constitutional duty to ensure fair trial** (Article 142).



- **Definition (Key Term):**

- **Chain of Custody:** A chronological record showing the collection, handling, transfer, and storage of evidence to establish its integrity in court.

- **Importance of DNA Evidence:**

- DNA is a **genetic identifier** from biological materials (blood, saliva, hair, bone, etc.).
- While highly accurate, DNA evidence is **not substantive by itself**; it is **opinion evidence** and must be corroborated with other facts.
- Its probative value varies case-to-case, depending on **collection, preservation, and handling**.

- **Conclusion & UPSC Relevance:**

The SC's guidelines bring **uniformity, accountability, and scientific rigour** to forensic investigations in India. By strengthening the chain of custody and quality control, the Court ensures DNA evidence is reliable and admissible, protecting the accused's right to a fair trial while enhancing conviction rates in heinous crimes.

UPSC Relevance: GS-II (Judiciary, Constitutional Provisions, Rights of Accused), GS-III (Science & Technology in Forensics, Internal Security), Ethics (Integrity in Criminal Justice System), Essay (Rule of Law & Scientific Evidence).

12. Global Plastic Pollution Crisis – Key Summary

- **Scale & Severity of the Problem:**

- Global plastic production reached **460 million tonnes (2019)**, with waste generation at **353 million tonnes** (OECD Global Plastic Outlook).
- In **2024 alone, 500 million tonnes** were produced, generating **400 million tonnes of waste**.
- Only **9% is recycled**, 19% incinerated, ~50% ends up in landfills, and **22% leaks into the environment**.
- By **2060, waste could triple to 1.2 billion tonnes**; UNEP warns of **more plastic than fish in oceans by mid-century**.

- **Environmental & Health Impacts:**

- Plastics are **non-biodegradable**, breaking into **microplastics and nanoplastics** that contaminate soil, water, and air.



- Plastics contribute **3.4% of global GHG emissions**; by 2040, production and disposal may account for **19% of carbon budget**.
- They affect ecosystems, marine biodiversity, food chains, and human health (toxicity, ingestion, hormone disruption).

- **International Efforts & Agreements:**

- **UN Environment Assembly (2022)** – All 193 UN member states agreed to draft a **legally binding treaty on plastic pollution**.
- Linked with achieving **UN Sustainable Development Goals (SDGs 12, 13, 14, 15)**.
- UNEP targets an **80% reduction in plastic waste within two decades** through innovation, design, and cooperation.



- **Policy & Regulatory Measures Needed:**

- Ban/eliminate **single-use plastics** and reduce virgin (primary) plastic production.
- Strengthen **Extended Producer Responsibility (EPR)** schemes, landfill/incineration taxes, and **deposit-refund/pay-as-you-throw systems**.
- Boost **recycling technologies and markets**; currently, recycled plastics are only **6% of global production**.
- Governments must enforce **legal frameworks and circular economy principles**.

- **Role of Individuals & Society:**

- Adopt **sustainable alternatives** (cloth, jute, biodegradable materials).
- Reduce personal plastic use, segregate waste, and support recycling initiatives.
- **Media & awareness campaigns** are crucial to shaping behavioral change.

- **Definitions & Constitutional Provisions:**

- **Plastic Pollution:** Accumulation of plastic objects and microplastics in the environment, harming ecosystems and health.
- **Article 21 (Right to Life)** – Interpreted by SC to include right to clean environment.
- **Articles 48A & 51A(g)** – Directive Principles and Fundamental Duties mandate protection of the environment.
- **Environment Protection Act, 1986** – Umbrella legislation for controlling plastic use in India.

- **Conclusion & UPSC Relevance:**

Plastic pollution is not only an **environmental challenge** but also a **climate, health, and developmental issue**. It requires a **multi-level strategy** involving governments, industry, and individuals to transition towards a **circular economy**.

UPSC Relevance: GS-III (**Environment, Pollution Control, Climate Change, SDGs, Circular Economy**), GS-II (**Policies & International Agreements**), Essay (**Sustainability & Global Commons**), Ethics (**Intergenerational Justice, Responsibility to Nature**).