

Today's Prelims Topics

SC guidelines on DNA

Context

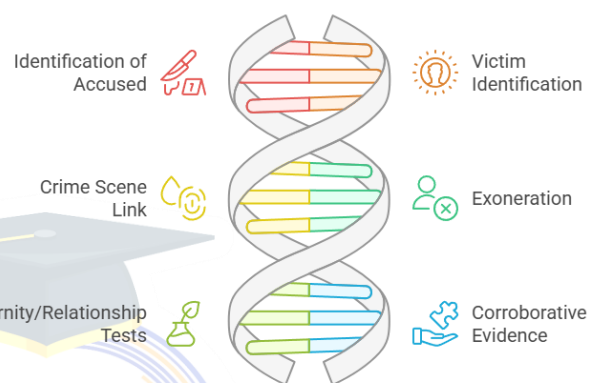
The recent Supreme Court provided guidelines on DNA samples in criminal cases from Kattavalli @ Devakar v. State of Tamil Nadu.

What are the Guidelines?

- **Uniform Documentation:** States must prepare standard formats for Chain of Custody Register and related records.
- **Chain of Custody:** Must record FIR details, officer names, designations, signatures, FSL serial number, etc.
- **Secure Transport:** Investigating officer responsible for safe, sealed, and timely transport of samples to FSL.
- **Proper Storage:** Samples must be preserved without contamination or delay.
- **FSL Quality Control:** Labs must ensure proper testing standards and note any lapses.

Source: [The Hindu](#)

DNA Evidence in Justice



Broadly Neutralising Antibodies

Context

A **Journal of Virology** study (Translational Health Science & Technology Institute, Faridabad) found that **Indian HIV strains** are most effectively neutralised by **bNAbs targeting the V3 glycan region**.

What are bNAbs (Broadly Neutralising Antibodies)?

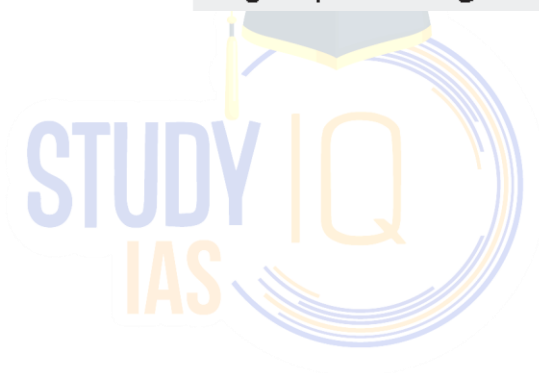
- A type of antibody that can neutralize many different strains of a virus, most notably HIV-1
- First identified in 1994 (antibody b12).
- **How they work:** They stick to important parts of the HIV spike protein (like the **V3 glycan** or **CD4 binding site**) that the virus needs to survive.
 - If HIV mutates them, it loses its power to infect.
- **What are Antibodies?** Antibodies are produced by the immune system to help protect the body from harmful bacteria and viruses.

■ Indian strains responded strongly to V3 glycan and CD4-site antibodies but resisted V1/V2-apex antibodies

Infected T-cell (blue). US NIAID

■ Researchers proposed a three-antibody cocktail, BG18, N6, PGDM1400, to overcome HIV resistance and enable region-specific strategies

Source: [The Hindu](https://www.thehindu.com/news/national/article6141411.html)



Ho Tribe

Context

Recently, members of the Ho tribe in Jharkhand staged a protest to protect their traditional Manki-Munda system.

About Ho Tribe

- Mainly found in Jharkhand's Kolhan region (West Singhbhum, East Singhbhum, Saraikela-Kharsawan districts).

Manki-Munda System (a traditional self-governance system)

- After the Battle of Buxar (1764), the company signed '**Treaty of Allahabad**' with Shah Alam II (1765) & gained '**diwani rights**' (right to collect taxes in Bengal, Bihar, Odisha, Jharkhand).
- In 1793 British introduced **Permanent Settlement act** → In Kolhan, zamindars began seizing Ho lands and imposing heavy taxes → led to tribal revolts (Ho Revolt (1821–22) and Kol Revolt (1831)).
- **Wilkinson's Rules (1837)**: Wilkinson's Rules recognised **Mankis and Mundas** as formal leaders, assigned them governance and revenue roles, and **introduced private property** through **pattas (land deeds)**, turning collective landholders into ryots (tenants).

Source: [Indian Express](#)

Structure

What is a Munda?

A hereditary village head who settles disputes at the village level, especially social and cultural matters.

What is a Manki?

The head of a group of approximately 15 villages (called a pidh) who looks into inter-village disputes and broader governance.



Operation Polo

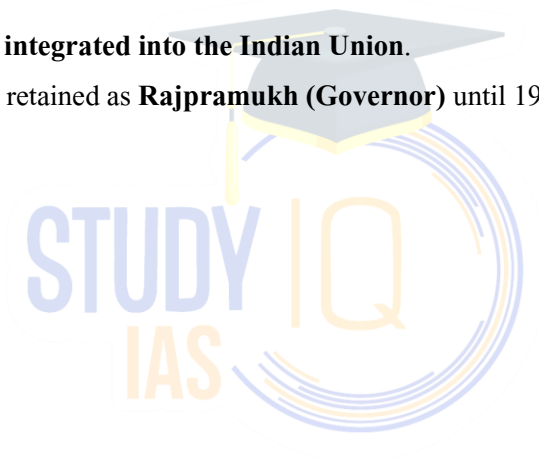
Context

September 13, 2025 marks the 77 years of Operation Polo.

About Operation Polo

- After Independence (1947), the **Nizam of Hyderabad, Mir Osman Ali Khan**, refused to sign the **Instrument of Accession** and sought to remain independent, despite Hyderabad being a **Hindu-majority state** in the heart of India.
- To defend his rule, the Nizam relied on the **Razakar militia** led by **Kasim Razvi**, which terrorised villages, suppressed pro-India movements, and created communal tensions.
- There was also a strategic fear that Hyderabad might **align with Pakistan**, threatening India's unity and security.
- That's why India launched Operation Polo on 13th September 1948 and on 17 September 1948, the Nizam surrendered.
- **Aftermath:**
 - Hyderabad was **integrated into the Indian Union**.
 - The Nizam was retained as **Rajpramukh (Governor)** until 1956.

Source: [Indian Express](#)



INS Androth

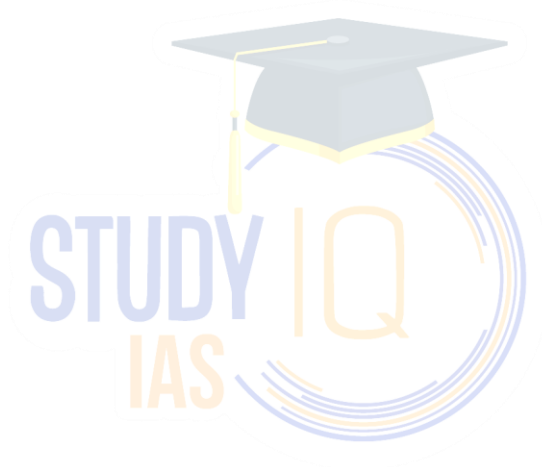
Context

INS Androth was recently commissioned by the Indian Navy.

About it

- **Type:** Anti-Submarine Warfare Shallow Water Craft (ASW-SWC).
- **Builder:** Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- **Class:** **Second of 8** such vessels under construction for the Navy. (**First was INS Arnala**)

Source: [Indian Express](#)



Neural Accelerators

Context

Neural Accelerators embedded in each GPU core in the new A19 Pro chip.

What are Neural Accelerators?

- These are specialized hardware units designed to perform the **types of mathematical operations that AI models rely on**, particularly matrix multiplications, at lightning-fast speeds with **much greater energy efficiency than a CPU or general-purpose GPU**.
- These operations form the foundation of deep learning tasks like image recognition, language translation, speech processing, and other tasks.

Source: [The Hindu](#)



Erra Matti Dibbalu

Context

Erra Matti Dibbalu added to the tentative list of UNESCO's Natural Heritage Sites.

About it

- These are **red sand dunes** located in Visakhapatnam, Andhra Pradesh.
- Spread along the Bay of Bengal coastline.
- Formed during the **Last Glacial Maximum (LGM)**, ~18,500–20,000 years ago.
- **Red colour** → due to **ferrous minerals** in the sand, which oxidised (rusted) over time.
- Already declared as **one of India's 34 National Geo-Heritage Sites**.

Source: [The Hindu](#)

Scarborough Shoal



News? The Philippines has strongly objected to China's plan to set up a national nature reserve at **Scarborough Shoal in the South China Sea**.

About Scarborough Shoal

- **Also called:** Huangyan Island (China), Panatag Shoal or Bajo de Masinloc (Philippines).
- A triangle-shaped atoll with a large lagoon and a coral reef ecosystem.

Dispute

- Both **China and the Philippines** claim the shoal.
- The **Permanent Court of Arbitration (2016)** ruled against China's claims in the South China Sea, but Beijing rejected the verdict.

Source: [Indian Express](#)

Mains Topics

Global Plastic Pollution Crisis

Context

According to OECD's Global Plastic Outlook, plastic production doubled from 2000 to 2019, reaching 460 million tonnes, while waste grew to 353 million tonnes.

Current Status

- Global plastic production is now around **400-460 million tonnes per year**.
- A very small share of that plastic is recycled. In 2022, only about **9-10%** of plastic produced was from recycled material.
- Between **19-23 million tonnes** of plastic waste leak into aquatic ecosystems every year.
- In 2024, **India became the world's largest plastic emitter country**, releasing 9.3 million tonnes (Mt) annually.

Why is Plastic Pollution Increasing

- **High Consumption and Demand:** Economic growth, urbanisation, and rising incomes mean more packaged goods → more use of plastics.
- **Design and Production Issues:** Many plastics (like multi-layered packaging) are hard to reuse or recycle.
- **Weak Waste Management:** Poor collection, segregation, and transport systems. Lack of recycling plants and funding in cities and towns.
- **Governance Gaps:** Rules exist but weakly enforced. Producers and brands not made fully responsible (EPR issues).
- **Economic Barriers:** Eco-friendly alternatives are often costlier or unavailable. Recycling is costly and less profitable.
- **Behavioural and Cultural Factors:** People prefer plastic for convenience. Low awareness about pollution and health effects.
- **Global Trade and Supply Chains:** Some countries dump or export plastic waste. Oil and gas industry promotes plastic production for profits.

Challenges in Tackling Plastic Pollution

- **Scale and momentum of production:** Production capacity keeps growing. Stopping leakage only through cleanup is insufficient.
- **Fragmented responsibilities.** Multiple actors (producers, brands, municipalities, citizens) & lack of coordination.
- **Informal Sector Issues:** In many countries (including India), a lot of waste picking / recycling is done by informal workers. They have little support.

- **Technological limits.** Some plastics cannot be recycled economically or safely.
- **Finance and incentives.** Developing countries need funds to build modern recycling and collection infrastructure.
- **International politics.** Fossil-fuel producing countries and industry lobbyists resist measures that limit production. This complicates global agreements.
- **Global Disagreements:** On what actions are fair or feasible for different countries. E.g. limiting production of plastic vs only addressing waste.

Global & Indian Efforts to Tackle the Crisis

Global Efforts

- **UN Environment Assembly (2022):** All 193 UN member states agreed to negotiate a legally binding treaty to **end plastic pollution**.
- **UNEP's Target:** Reduce plastic waste by 80% in two decades through innovation, better product design, alternatives, and efficient waste management.
- **Cleanup and innovation:** Organisations remove plastic from rivers and oceans and pilot new interception technologies.

Indian Government Efforts

- Plastic Waste Management Rules → Extended Producer Responsibility (EPR).
- Ban on Identified Single-Use Plastic (SUP) Items.
- Rules on thickness of plastic bags (Plastic carry bags below certain thickness are banned).

GLOBAL PLASTIC ACTION TREATY

 **What Is It?**
An international treaty to end plastic pollution, launched in March 2022

 **Aim**
To address the full life cycle of plastics – from production to disposal

 **Importance**

- Global problem
- Growing production
- Climate link
- Ecosystem & health threat

 **Issues**

- Scope of the treaty
- Production limits
- Toxic additives
- Financing
- Decision-making

 **Current Status**
Still no final agreement. Disagreements over production caps, chemicals regulation

 **Way Forward**

- Compromise solutions
- Global fund
- Technology sharing
- Accountability
- Inclusion of stakeholders

Way Forward

- **Adopt life-cycle approach:** Regulate design, production, use, and disposal together.
- **Set global targets:** Reduce virgin plastic production and packaging, not just manage waste.
- **Provide finance & technology:** Support developing countries to build recycling and waste systems.
- **Strengthen EPR:** Make producers responsible for collection and recycling.
- **Level market incentives:** Make recycled plastic competitive through taxes, subsidies, or mandatory recycled content.
- **Change behaviour:** Raise awareness, ensure household segregation, promote reuse.
- **Support informal workers:** Integrate waste pickers into formal systems with protection and incentives.
- **Finalize global treaty:** Resolve disputes on production limits and finance to make the plastics treaty effective.

Source: [The Hindu](#)

NITI Aayog - Armchair Body or Driver of the Indian Economy?

Context

NITI Aayog was formed to drive long-term planning, Centre–State coordination, and structural reforms, but a decade later it is often seen as an armchair body focused more on reports and indices than real economic transformation.

Background

- **Established:** 1 January 2015, replacing the **Planning Commission**.
- **Purpose:** To act as the government’s **policy think tank**, promoting **cooperative and competitive federalism**, long-term strategic planning, and policy innovation.
- **Structure:** Prime Minister as Chairperson, Vice-Chairperson, full-time members, part-time members, and ex-officio members (Union Ministers) and a Chief Executive Officer (CEO).
- It has a **Governing Council with Chief Ministers and Lt. Governors of States/UTs**.

NITI AAYOG vs. PLANNING COMMISSION (SHORT COMPARISON)

Aspect	Planning Commission (1950–2014)	NITI Aayog (2015–present)
Nature	Centralized planning body	Policy think tank
Financial Powers	Controlled fund allocation to States via plan grants	No fund allocation powers (Finance Ministry + Finance Commission handle this)
Approach	Top-down, five-year plans	Bottom-up, cooperative federalism
Role	Implementation of plans	Policy advisory, strategy formulation

Why NITI Aayog is Criticised as an “Armchair Institution”

- **Lack of Financial Powers:**
 - Unlike the Planning Commission, NITI Aayog has no power to allocate funds.
 - States see little incentive to engage seriously since financial transfers are handled by the **Finance Ministry and Finance Commission**.
- **Advisory Role Only:**
 - Recommendations are **non-binding** on ministries and states.
 - Ministries often ignore NITI Aayog’s policy suggestions, reducing it to a **recommendatory think tank**.
- **Weak Influence on Structural Reforms:**
 - Limited say in big-ticket reforms such as disinvestment, labour codes, or fiscal policy.
 - Its proposals on agriculture reforms, health policy, and education financing often remain unimplemented.
- **Overemphasis on Indices & Reports:**
 - Aayog is better known today for publishing indices (Health, SDG, Innovation) than for **driving transformative economic strategy**.
 - This “data obsession” risks reducing it to a **statistical armchair institution**.
- **Politicisation and Limited Autonomy:**

- Headed by the Prime Minister, with political appointees as Vice-Chairman and Members. Critics argue this makes it less of an independent policy body and more of a **government mouthpiece**.
- **Centralisation Concerns:**
 - State governments often complain that their voices are not adequately factored into policy.

Major Initiatives of NITI Aayog

- **Aspirational Districts Programme (ADP):** Monitoring socio-economic indicators in 112 lagging districts.
- **Atal Innovation Mission (AIM):** Promoting startups, innovation labs in schools.
- **SDG Index & Health Index:** Ranking states on sustainable development and health outcomes.
- **National Energy Policy / EV Roadmap:** Advisory role in clean energy and mobility transition.
- **Export Preparedness Index & Innovation Index:** Benchmarking states on competitiveness.
- **Strategic Policy Papers:** Long-term strategy documents (e.g., *India @ 75*, *Strategy for New India @ 75*).

Way Forward

- **Grant Financial Role:** Some control over fund allocation to incentivise states to follow its policy advice.
- **Strengthen Cooperative Federalism:** Ensure genuine consultation and partnership with states.
- **Focus on Implementation:** Move beyond report-writing to actively monitor and support execution of reforms.
- **Strengthen Autonomy:** Reduce political interference, allow greater role for domain experts.
- **Global Partnerships:** Position NITI as a bridge between Indian economy and global best practices.
- **Outcome-based Evaluation:** Link its reports with concrete reforms and measurable economic impact.

Source: [Caravan Magazine](#)

