Prelims Exam Topics

BATTLE OF PLASSEY

Context

June 23 this year marks 269 years since the famous 1757 Battle of Plassey.

About Battle of Plassey

- **Background:** Dissatisfied nobles in Siraj-ud-Daulah's court conspired with the English East India Company (EIC), giving rise to the Plassey Conspiracy of 1757.
- **Key Conspirators:** Mir Jafar (Mir Bakshi/Commander-in-Chief of the Nawab's army), Manik Chand (officer in-charge of Calcutta), Amir Chand (a rich merchant), Jagat Seth (Bengal's biggest banker), and Khadim Khan (commander of a large section of the Nawab's troops).
- **Outcome:**
    - Siraj-ud-Daulah was assassinated by Mohammad Ali Beg, hired by Mir Jafar's son, Miran.
    - Mir Jafar was installed as Nawab of Bengal, while Robert Clive became Governor of Bengal (1757–60).
    - The EIC secured free trade rights across Bengal, Bihar, and Orissa, and obtained the Zamindari of 24-Parganas.
    - French settlements in Bengal were surrendered to the English, and Mir Jafar paid the Company officials ₹50 lakh along with personal gifts to Clive.
    - The British emerged as kingmakers in Bengal, establishing a monopoly over its trade and sidelining French and Dutch rivals.
    - Bengal's vast resources subsequently financed British territorial expansion across India.

BAOBAB TREE

Context

Khurasani Imli, the fruit of the Baobab tree from Mandu in Madhya Pradesh's Dhar district, has received a Geographical Indication (GI) tag. It is traditionally used to treat digestive ailments.

About Baobab Tree

- Commonly called the "Upside-down Tree" and native to Africa.
- Features: Marked by a massive water-storing trunk and leafless, root-like branches, making it highly drought-resistant.

- **Significance:** Classified as a keystone species (an organism whose impact on its ecosystem is disproportionately large relative to its population or biomass)
- **Distribution:** Found in parts of India including Madhya Pradesh, Gujarat, Maharashtra, and Karnataka.

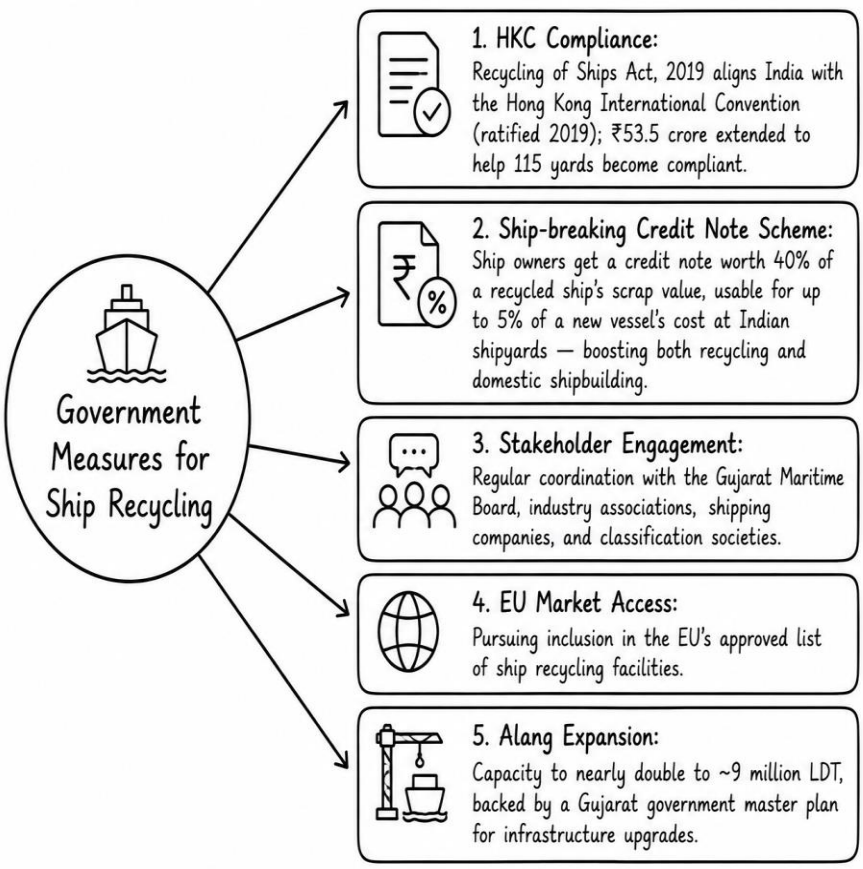
INDIA BECOMES WORLD'S TOP SHIP RECYCLING NATION IN 2025

Context

India has become the world's leading ship recycling nation, capturing a 35.India has become the world's leading ship recycling nation, capturing a 35.4% global share in 2025, as per a report by the United Nations Conference on Trade and Development (UNCTAD).

Key Highlights

- India's share of global ship recycling rose from 30.1% in 2024 to 35.4% in 2025,
- Achieves the Maritime India Vision (MIV) 2030 target ahead of schedule, positioning India to recycle 500–600 vessels annually amid rising global demand.



The Maritime India Vision (MIV) 2030

- It provides a comprehensive framework for the holistic development of India's maritime sector, encompassing ports, shipping, and waterways.
- MIV 2030 outlines 150 initiatives aimed at propelling India to global maritime leadership.
- Major Themes: port infrastructure development, enhancing logistics efficiency, improving Indian shipbuilding tonnage, increasing coastal and waterway traffic, fostering technology innovation and policy support, promoting sustainability and global collaboration.

GROUND LEVEL OZONE

Context

Heatwaves are intensifying ground-level ozone pollution in India, significantly raising mortality risk, a new study has found.

About Ground level ozone (Bad Ozone)

- Ozone occurs near the Earth's surface, unlike stratospheric ozone (15-50 km altitude) which shields the planet from harmful UV rays.
- **Formation:**
  - Not directly emitted, but forms through chemical reactions between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight.
  - Heat accelerates these reactions, causing concentrations to spike further during heatwaves.
- Affects the lungs and heart, contributing to COPD and Ischemic Heart Disease (IHD), besides raising cancer and diabetes risk.
- Ozone isn't monitored under NAMP (which regularly monitors SO_2, NO_2, PM10, PM2.5), but it is included under the AQI (8 pollutants) and SAFAR.

RAKHIGARHI

Context

ASI has transferred human skeletal remains excavated from Rakhigarhi to the Anthropological Survey of India for advanced scientific study.

About Rakhigarhi:

- Located in the Ghaggar-Hakra River plain, Haryana. Important nearby sites are Bhirrana, Kunal, Siswal and Kalibangan.
- The largest known settlement of the Harappan Civilization.

- Shows continuous habitation from Early Harappan to Mature Harappan phases.
- Key findings at Rakhigarhi include Granary, Tools Culture, Cemetery and burial sites.

PYQ Anchor

Q. Which one of the following ancient towns is well-known for its elaborate system of water harvesting and management by building a series of dams and channelizing water into connected reservoirs? (UPSC 2021)

(a) Dholavira

(b) Kalibangan

(c) Rakhigarhi

(d) Ropar

Ans. (a)

CHAPEKAR BROTHERS

Context

On June 22, 1897, the Chapekar brothers assassinated British officer Walter Charles Rand in Pune

About Chapekar Brothers

- Damodar Hari Chapekar, Balkrishna Hari Chapekar, and Vasudeo Hari Chapekar were revolutionaries from Chinchwad, near Pune,
- Inspired by Vasudev Balwant Phadke's armed struggle and Lokmanya Tilak's nationalist writings in *Kesari*.
- **Asssaniation**
    - Walter Charles Rand, Chairman of the Poona Plague Committee, had enforced harsh measures to control the bubonic plague, including forced house searches and public body inspections
    - The trio assassinated Rand at Ganeshkhind on the night of Queen Victoria's Diamond Jubilee celebrations, after sending him a prior warning letter
    - All three were subsequently tried and executed (1898).
- **Contribution to the Freedom Struggle:**
    - Marked one of the earliest armed revolutionary acts against British colonial officials, predating the more widely known revolutionary movements of the early 20th century.
    - Inspired later revolutionaries, includingVinayak Damodar Savarkar.

- The case also implicated Tilak, who was imprisoned for incitement through his writings, linking the episode to the broader nationalist press movement.

THREE NAVAL PLATFORMS COMMISSIONED BY PRIME MINISTER

Context

Prime Minister Narendra Modi commissioned three indigenously built naval vessels INS Dunagiri, INS Sanshodhak, and INS Agray at Kolkata.

About Naval Vessels

- **INS Dunagiri**
  - Advanced stealth frigate
  - Part of the Project 17A Frigates programme.
- **INS Sanshodhak**
  - Large Survey Vessel (LSV) of the Indian Navy.
  - Used for hydrographic surveys.
  - Supports safe navigation.
- **INS Agray**
  - Anti-Submarine Warfare Shallow Water Craft (ASW-SWC).
  - Designed to detect and neutralize enemy submarines.

Project 17A Frigates

- Follow-on class of stealth guided-missile frigates for the Indian Navy.
- Built by: Mazagon Dock Shipbuilders Limited and Garden Reach Shipbuilders & Engineers

Places in News

BOLIVIA

News: Bolivian President declared a state of emergency following a wave of protests calling for him to step down.

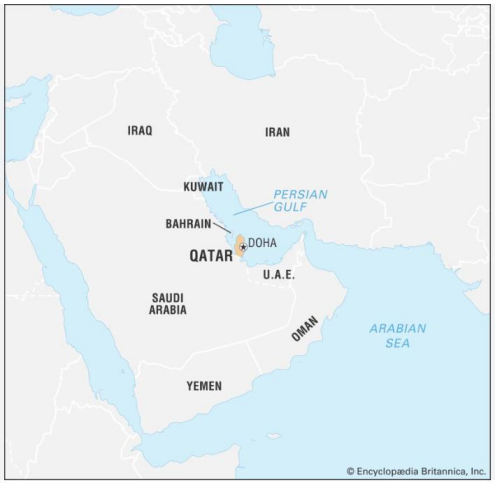
About Bolivia

- Landlocked nation in west-central South America.
- **Bordering Countries:** Brazil (north and east), Paraguay (southeast), Argentina (south), Chile (southwest), Peru (northwest).
- **Geographical Features:**
    - It shares Lake Titicaca with PeruSouth America's largest freshwater lake and the highest of the world's largest lakes.
    - **Mountain Range:** Andes Mountains.
    - **Major Rivers:** Madeira, Paraguay, Mamore.
    - Along with Argentina and Chile, it forms the **"Lithium Triangle,"** holding over half the world's known lithium reserves.

QATAR

News: 12 Indians were killed in a major explosion at the Barzan local gas supply facility in Ras Laffan Industrial City, Qatar (located on Qatar's northeast coast).

About Qatar:



- Occupies the Qatar Peninsula on the northeastern coast of the Arabian Peninsula in West Asia
- **Borders:** shares its sole land border with Saudi Arabia to the south, with the rest of its territory surrounded by the Persian Gulf.
    - The Gulf of Bahrain, an inlet of the Persian Gulf, separates Qatar from nearby Bahrain.
- Member of Gulf Cooperation Council.

Terms in News

VERSATILE DEUTERATED COMPOUNDS PRODUCTION PLANT (VDPP)

- Deuterated Compounds are chemical compounds in which hydrogen atoms are replaced by deuterium. The VDPP is a domestic manufacturing facility engineered to produce high-purity deuterated compounds.
- Recently, the Department of Atomic Energy (DAE) inaugurated the Versatile Deuterated Compounds Production Plant (VDPP) at the Heavy Water Board Facilities, Vadodara.

LOOP ENGINEERING

- Loop engineering is the practice of designing automated systems that manage, prompt, and supervise AI coding agents rather than manually prompting them turn-by-turn. Instead of a developer doing the back-and-forth work, a "loop" continuously discovers tasks, assigns them to AI, verifies the output, and adjusts until a goal is met.

SPINTRONICS

- Spintronics is a technology that utilizes both the charge and the intrinsic quantum "spin" of electrons (acting like tiny magnets oriented either "up" or "down") to process and store data.
- **Advantage:** faster, non-volatile, and highly energy-efficient computing devices compared to conventional electronics.
- **Application:** Includes MRAM (Magnetoresistive RAM), AI & Neuromorphic Processors and quantum computing.

Mains Exam Topics

THE CHALLENGE OF INDIA'S DIGITAL SOVEREIGNTY

Context

In **April 2026**, Indian CCTV networks linked to defence assets were compromised via the Chinese platform **EseeCloud**.

In **July 2025**, **Microsoft unilaterally cut off Nayara Energy's** access to email, collaboration tools, and cloud data after EU imposed sanctions linked to Rosneft's stake, without India's consent or prior notice.

What is Digital Sovereignty?

Digital sovereignty means organizations and governments can operate securely and independently in the digital economy, retaining control over their data, infrastructure, and operations.

What is the need of Digital Sovereignty?

- **Security:** Dependence on foreign digital infrastructure exposes India to risks such as surveillance, cyber sabotage, and data breaches.
- **Economic Sovereignty:** Without control over its digital ecosystem, India risks creating value for foreign entities while losing ownership of critical digital assets.
- **Strategic Autonomy:** Digital sovereignty enables India to make independent technological and policy decisions without external pressure.
- **Democratic Integrity:** Digital platforms and algorithms influencing public opinion must remain accountable to Indian laws, institutions, and constitutional values.

What are the challenges to India's Digital Sovereignty?

- **Dependence on Foreign Digital Infrastructure:** Critical cloud and software are foreign-owned. A single foreign directive can suspend Indian government or commercial operations with no legal recourse.
    - E.g., *Microsoft cutting Nayara Energy's access, India had no institutional mechanism to intervene.*
- **Strategic Technology Dependence in Defence:** Foreign-sourced defence software gives manufacturers remote leverage over India's own weapon systems in conflict scenarios.
  Example: GPS denial at Kargil 1999; NavIC built two decades later as a corrective.
- **Low R&D Investment:** At 0.74% of GDP vs. global average of 2.07%, India's R&D deficit makes indigenous capability structurally weak regardless of policy intent.

- **Weak Domestic Tech Alternatives:** No globally competitive Indian platform exists in search, cloud, or enterprise software. India is a top-3 market for Google, Meta, AWS but controls none of them.
- **Platform Dominance and Algorithmic Opacity:** Foreign firms control Indian information flows and market access through opaque, unaudited algorithms and convert platform dominance into regulatory retreat.
    - *E.g., India withdrew its 6% equalisation levy on digital advertising under trade pressure in 2025.*
- **Cybersecurity Dependence:** Critical infrastructure protection relies on imported cybersecurity tools which themselves become vulnerability vectors.
    - E.g.*WazirX hack (2025) by North Korea-linked Lazarus Group exposed fintech gaps.*

What are the Government Initiatives to Strengthen Digital Sovereignty?

- **Digital Public Infrastructure (DPI):** Platforms such as **Aadhaar, UPI, DigiLocker, DIKSHA, and RuPay** have created a secure ecosystem while reducing dependence on foreign digital platforms.
- **Data Sovereignty and Digital Infrastructure:** Initiatives like **MeghRaj (GI Cloud), National Data Centres (NDCs), empanelment of Cloud Service Providers (CSPs), and expansion of subsea cable networks** strengthen domestic control over data storage.
- **Strategic Technology and Semiconductor Ecosystem:** The **Micron Technology ATMP facility at Sanand (Gujarat)** and participation in **Pax Silica** enhance India's semiconductor capabilities.
- **AI and Deep-Tech Development:** The **DeepTech Fund of Funds**, **10,000 advanced technology fellowships in IITs and IISc**, and **National Centres of Excellence for Skilling** promote indigenous innovation in AI.
- **Cybersecurity and Strategic Autonomy:** The **TRUST Framework** and indigenous technologies such as **NavIC (IRNSS)** strengthen cybersecurity, secure critical infrastructure.
- **Digital Governance and Capacity Building:** Platforms such as **iGOT Karmayogi**, **e-Office**, and the **Government e-Marketplace (GeM)** are modernizing governance, and improving administrative efficiency.

How Can India Achieve Digital Sovereignty?

- **Adopt a Comprehensive Digital Sovereignty Framework:** Formulate a legal framework identifying critical digital infrastructure, strategic technologies, and sectors requiring indigenous or localized control.

- **Build Indigenous Digital Ecosystems:** Replicate the success of UPI and RuPay in cloud computing, digital identity, cybersecurity and e-commerce through targeted public investment and startup support.
- **Increase Strategic Technology R&D:** Raise R&D expenditure to at least **2% of GDP** and incentivize industry led innovation in semiconductors, AI, and advanced computing.
- **Develop a Resilient Cyber and Regulatory Architecture:** Establish robust data protection, cybersecurity, and digital rights frameworks to safeguard national interests while ensuring citizen privacy and trust.
- **Reduce Critical Technology Dependence:** Gradually migrate government and strategic sector operations to trusted domestic platforms.
- **Strengthen Global Tech Diplomacy:** Actively shape emerging digital governance frameworks, technology alliances, and bilateral partnerships to secure market access, technology transfer, and strategic autonomy.