Prelims Exam Topics

MOBILE PHONE MANUFACTURING SCHEME (MPMS)

Context

The **Union Cabinet** recently approved the **Mobile Phone Manufacturing Scheme (MPMS)** to strengthen India's mobile manufacturing ecosystem.

About Mobile Phone Manufacturing Scheme (MPMS)

- **Nature:** A **Central Sector incentive scheme** to promote large-scale manufacturing of mobile phones in India.
- **Background:** Introduced as the successor to the **Production Linked Incentive Scheme for Large Scale Electronics Manufacturing (PLI-LSEM)**, whose tenure ended on **31 March 2026**.
- **Objective:** To **increase domestic value addition**, strengthen electronics supply chains, boost exports, and enhance India's global competitiveness in mobile manufacturing.
- **Production Incentive:** Provides incentives ranging from **2.25% to 5%** on eligible sales of mobile phones manufactured in India.
- **Innovation Incentive:** Provides an additional **3%** incentive for investments in **product design, research & development (R&D), and Indian brands**.

INDIA SEMICONDUCTOR MISSION (ISM) 2.0

Context

The **Union Cabinet** has approved the **India Semiconductor Mission (ISM) 2.0** to strengthen India's semiconductor manufacturing ecosystem and integrate the country into the global chip supply chain.

About India Semiconductor Mission (ISM) 2.0

- **Nature:** A **Central Sector Scheme** to promote semiconductor manufacturing, design, packaging, research, and supply-chain development in India.
- **Launched In: 2025-26** (announced in the Union Budget 2025-26; approved by the Cabinet in 2026).
- **Nodal Ministry: Ministry of Electronics and Information Technology (MeitY)**.
- **Objective:** To develop an end-to-end semiconductor ecosystem by promoting domestic manufacturing, design capabilities, research, skilled workforce, and supply-chain resilience.

HYDROGEN TRAIN

Context

The **Prime Minister** recently flagged off **India's first hydrogen-powered train** on the **Jind–Sonipat route in Haryana**, marking India's entry into hydrogen-based rail transportation.

About Hydrogen Train

- **Nature:** A **hydrogen fuel cell-powered train** that generates electricity onboard to operate an electric propulsion system.
- **Maximum Speed: 75 km/h**.
- **Power Output: 2,400 kW**, making it among the **world's most powerful hydrogen trainsets**.
- **Hydrogen Storage:** Carries about **440 kg of hydrogen** onboard under **high pressure**.
- **Imported Technology:** The hydrogen fuel cells are supplied by **Ballard Power Systems (Canada)**.
- **First Commercial Hydrogen Train: Coradia iLint** by **Alstom** was launched in **Germany in 2018**.
- **Working Mechanism**
    - **Power Generation:** Uses **hydrogen fuel cells** and **Lithium Iron Phosphate ($LiFePO_4$) batteries**, where hydrogen reacts with oxygen in the fuel cell to generate electricity, emitting only **water vapour**.
    - **Power Management:** The **fuel cell provides continuous power**, while the **battery supplies additional power during acceleration and stores surplus energy** when demand is low; the system is retrofitted by replacing the diesel engines of a **Diesel Electric Multiple Unit (DEMU)** with a hydrogen-electric propulsion system.

PROGRAMME FOR ACCELERATED RENEWAL AND INCENTIVIZATION OF VEHICLE ASSETS FOR REDUCING TRANSPORT AIR POLLUTION AND NETWORK EMISSIONS (PARIVARTAN) SCHEME

Context

The **Ministry of Housing and Urban Affairs (MoHUA)** recently approved the **Guidelines for the PARIVARTAN Scheme** to promote cleaner transport in the National Capital Region (NCR).

About PARIVARTAN Scheme

- **Nature:** A **Central Government scheme** to replace old, polluting commercial vehicles with cleaner alternatives.
- **Implementing Ministry: Ministry of Road Transport and Highways (MoRTH)**.
- **Funding Agency: National Capital Region Planning Board (NCRPB)**.
- **Objective:** To facilitate the replacement of **older trucks and buses** operating in the **National Capital Region (NCR)** with **Bharat Stage (BS)-VI compliant** or **electric vehicles (EVs)**.
- **Vehicle Incentives:** Provides **motor vehicle tax concessions**, **registration fee waivers**, and **5% interest subvention** on eligible vehicle loans.
- **Manufacturer Support:** Mandates a **minimum 8% Original Equipment Manufacturer (OEM) discount** on eligible new vehicles.
- **Coverage:** Applicable in the **National Capital Territory (Delhi)** and the NCR districts of **Haryana, Uttar Pradesh, and Rajasthan**.

KOALA

Context

Scientists in **Australia** are cryopreserving **koala eggs and sperm** to create a **genetic backup** for conserving the species against future population decline.

About Koala

- **Nature:** An **arboreal marsupial (a mammal that carries and nurtures its young in a pouch)** endemic to Australia.
- **Family: Phascolarctidae**, of which it is the **only living species**.
- **Distribution:** Found in **eastern Australia**, from **northern Queensland** to **south-western Victoria**.
- **Habitat:** Inhabits **eucalyptus forests and woodlands**, where eucalyptus trees provide both **food and shelter**.
- **Behaviour:** Primarily **arboreal** and **solitary**, occupying home ranges consisting of multiple eucalyptus trees.
- **Lifestyle:** A **slow-moving herbivore** that sleeps for **up to 18 hours a day**.
- **IUCN Red List: Vulnerable**.

TRIAL IN ABSENTIA

Context

The provision of **trial in absentia** has come into focus after a **Special NIA Court in Jammu** issued a **non-bailable warrant** against **Hafiz Saeed** in the **Pahalgam terror attack case**.

About Trial in Absentia

- **Definition:** A **criminal trial conducted in the absence of the accused**.
- **Legal Provision:** Governed by **Section 356 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**.
- **Applicability:** Can be invoked when a **proclaimed offender** has **absconded to evade trial** and there is **no immediate possibility of arrest**.
- **Proclaimed Offender:** A person **declared by the court for absconding after failing to appear despite a proclamation**, in cases punishable with **10 years or more imprisonment, life imprisonment, or death**.

STANDING DEPOSIT FACILITY (SDF)

Context

The **Reserve Bank of India (RBI)** recently absorbed **₹1.67 lakh crore** through the **Standing Deposit Facility (SDF)** to manage excess liquidity in the banking system.

About Standing Deposit Facility (SDF)

- **Nature:** A **monetary policy tool** used by the **RBI** to absorb excess liquidity from the banking system.
- **Introduced In: 2022**, following the amendment to **Section 17 of the RBI Act, 1934** in **2018**.
- **Objective:** To absorb surplus liquidity, strengthen monetary policy transmission, and maintain financial stability.
- **Collateral Requirement:** Enables banks to deposit surplus funds with the RBI **without providing collateral**.
- **LAF Corridor Position:** Serves as the **lower bound of the Liquidity Adjustment Facility (LAF) corridor**, replacing the **Fixed Rate Reverse Repo (FRRR)**.
- **Tenor:** Primarily operates as an **overnight deposit facility**, with the RBI retaining the flexibility to absorb liquidity for **longer durations** when required.
- **Availability:** Available throughout the year alongside the **Marginal Standing Facility (MSF)**.

- **Eligible Participants:** Allows **eligible financial institutions** to park surplus funds with the RBI.

KUDANKULAM NUCLEAR POWER PLANT (KKNPP)

Context

Reports recently claimed that a **ransomware group** had leaked data allegedly linked to the **Kudankulam Nuclear Power Plant (KKNPP),** India's **largest nuclear power plant** on the dark web.

About Kudankulam Nuclear Power Plant (KKNPP)

- **Location: Kudankulam**, **Tirunelveli district**, **Tamil Nadu**.
- **Implemented By: Nuclear Power Corporation of India Limited (NPCIL)** in collaboration with **Russia's Atomstroyexport**.
- **Origin:** Established under the **1988 Indo-Soviet Agreement** on peaceful uses of nuclear energy.
- **Status:** India's **largest nuclear power plant**.

AI SQUATTING

Context

Cybersecurity researchers have warned about **AI Squatting**.

About AI Squatting

- A cyberattack that exploits **AI-generated hallucinations** by creating **fake websites, domains, or software packages** to steal credentials, data, or distribute malware.
- **Types**
    - **Phantom Squatting:** Involves registering **AI-hallucinated domain names** and using them for **phishing, credential theft, and malware attacks**.
    - **HalluSquatting:** Involves publishing **malicious software packages** using names hallucinated by AI coding assistants, targeting the **software supply chain**.

CHENGDU J-20 (MIGHTY DRAGON)

Context

China's **J-20 (Mighty Dragon)** has emerged as the backbone of the **People's Liberation Army Air Force (PLAAF)** amid growing focus on next-generation fighter aircraft.

About Chengdu J-20

- **Status:** China's **first indigenously developed operational fifth-generation stealth fighter aircraft**.
- **Developer:** Developed by the **Chengdu Aircraft Corporation (CAC)** under the **J-XX programme** for the **People's Liberation Army Air Force (PLAAF)**.
- **Stealth Design:** Incorporates a **canard-delta configuration**, **stealth shaping**, and **Diverterless Supersonic Intakes (DSI)** to reduce radar signature and improve manoeuvrability.
- **Combat Radius: ~2,000 km**.
- **Speed: Mach 2+**.

Mains Exam Topics

DIGITAL EMPOWERMENT OF WOMEN

Context:

The release of **NFHS-6 (2023–24)** has renewed attention on India's gender digital divide. While women's internet usage has nearly doubled since NFHS-5, concerns remain over converting digital access into meaningful social, economic, and political empowerment.

Why Has Greater Digital Access Not Translated into Women's Empowerment?

- **Access Without Ownership:** Having access to a mobile phone does not mean women can use it independently. Many rely on shared family phones, with usage controlled by male family members, limiting digital autonomy.
  - **E.g.:** NFHS-5 shows many women use mobile phones but far fewer own one exclusively.
- **Ownership Without Digital Capability:** Owning a smartphone is not enough unless women have the skills and confidence to use digital services for learning, finance, and livelihoods.
  - **E.g.:** PMGDISHA has improved digital literacy, but many women still rarely use digital banking or e-governance services.
- **Capability Without Economic Agency:** Digital skills create empowerment only when they translate into income, entrepreneurship, or employment opportunities.
  - **E.g.:** Women's participation in e-commerce, gig work, and digital entrepreneurship remains relatively low despite rising smartphone use.
- **Economic Capability Without Household Autonomy:** Even digitally skilled women may lack decision-making power if families control their phone use, finances, or online activities.
  - **E.g.:** LIRNEasia surveys identify family restrictions as a major barrier to women's internet use.
- **Household Autonomy Without Safe Digital Spaces:** Online harassment, cyberstalking, and abuse discourage women from using digital platforms for education, work, or public participation.
  - **E.g.:** NCRB reports a rising number of cybercrimes against women, including cyberstalking and identity theft.

- **Safe Access Without Inclusive Digital Design:** Many digital platforms are designed for literate, English-speaking users, making them difficult for rural, low-literacy, and first-generation women users.
  - **E.g.:** Voice-based platforms like **Jugalbandi AI** are often easier for rural women to use than text-heavy government applications.

How does digital agency transform women from beneficiaries of development into drivers of development?

- **Strengthens Independent Decision-Making:** Digital agency enables women to directly access government services, healthcare, education, legal rights, and market information, reducing dependence on family members for information and decisions.
  - **E.g.:** Women independently accessing Ayushman Bharat, Poshan Tracker, or PM-KISAN information can make timely decisions on health, welfare, and livelihoods.
- **Expands Women's Participation in the Digital Economy:** Digital platforms create opportunities for entrepreneurship, e-commerce, online work, and digital services, enabling women to generate income and contribute to economic growth.
  - **E.g.:** Women SHGs using ONDC, GeM, and digital marketplaces expand businesses and reach wider markets.
- **Enhances Financial Autonomy:** Digital banking, UPI, and DBT enable women to receive, save, and manage money independently, increasing control over household finances.
  - **E.g.:** Direct transfer of welfare benefits into women's Jan Dhan accounts improves their financial independence.
- **Builds Bridging Social Capital:** Digital networks connect women with SHGs, producer groups, financial institutions, government agencies, and legal services, expanding opportunities beyond their immediate communities.
  - **E.g.:** WhatsApp-based SHGs help women share business opportunities, financial advice, and information on government schemes.
- **Improves Household and Community Development:** Greater control over information and finances allows women to influence spending on education, healthcare, nutrition, and productive investments, improving long-term family welfare.
  - **E.g.:** Income controlled by women is more likely to be invested in children's education and family health.

- **Promotes Leadership and Civic Participation:** Digital agency enables women to participate in local governance, community organisations, and public discourse, strengthening their role as leaders and change-makers.
    - **E.g.:** Women use digital platforms to participate in Gram Sabhas, community initiatives, and local entrepreneurship networks.

How Can India Build an Inclusive Digital Ecosystem for Women?

- **Promote Affordable Device Ownership:** Independent ownership of digital devices should be promoted through targeted subsidies, affordable credit, and integration with welfare schemes, particularly for low-income and vulnerable women.
    - **E.g.:** Scale up initiatives like **PMGDISHA** to ensure universal digital literacy, secure digital access, and affordable smartphone ownership for women.
- **Build Gender-Responsive Digital Literacy:** Digital literacy should go beyond basic smartphone use to include digital finance, cybersecurity, e-governance, entrepreneurship, and AI literacy while addressing social norms through community participation.
    - **E.g.: Singapore's Digital for Life Movement** delivers community-based digital literacy through volunteers, NGOs, and public-private partnerships.
- **Strengthen Women's Digital Financial Inclusion:** Digital financial services should be linked with personal bank accounts, mobile ownership, financial literacy, and access to credit to strengthen women's economic independence.
    - **E.g.: Kenya's M-Pesa** revolutionized women's financial inclusion by expanding mobile payments, savings, and entrepreneurship.
- **Create Safe and Trustworthy Digital Spaces:** Robust cyber laws, digital safety education, grievance redressal mechanisms, and platform accountability are essential to encourage women's confident participation online.
    - **E.g.:** Strengthen the **National Cyber Crime Reporting Portal** with faster grievance redressal, victim support, and gender-sensitive cyber policing to improve women's online safety.
- **Design Inclusive and Accessible Digital Platforms:** Digital platforms should adopt vernacular languages, voice-enabled interfaces, assistive technologies, and user-centric design to improve accessibility for rural, low-literacy, and differently-abled women.

  - **E.g.:** Scale up voice-enabled, multilingual platforms such as **Jugalbandi AI** to make government services more accessible for rural, low-literacy, and first-generation women users.
- **Leverage Community Institutions for Digital Empowerment:** Self-Help Groups (SHGs), Panchayats, and civil society organisations can provide peer learning, digital training, entrepreneurship support, and financial inclusion.
  - **E.g.: Bangladesh's Grameenphone Village Phone Programme** empowered rural women as mobile entrepreneurs, improving both income and digital inclusion.