Prelims Exam Topics

GURUDWARA HEMKUND SAHIB

Context

Every year, the opening of the portals of Gurudwara Hemkund Sahib marks a significant spiritual event.

About Hemkund Sahib

- Hemkund literally translates to "Lake of Ice." It is situated at an altitude of approximately **4,632 meters** in the Chamoli district of Uttarakhand.
- The region is famous for the rare Brahmakamal (Saussurea obvallata), the "lotus of the gods," which blooms in the high-altitude meadows surrounding the lake.
- **Tapo-Bhumi of Guru Gobind Singh:** The shrine is dedicated to the tenth Sikh Guru, **Guru Gobind Singh Ji**.
    - According to the autobiographical *Bichitra Natak*, the Guru meditated at this very spot in a previous incarnation as the sage Dusht Daman.

SESHACHALAM FOREST

Context

A recent forest fire in the Jeevakona-Mondodikona section of Tirupati district has highlighted the vulnerability of the Seshachalam forest, a critical biodiversity hotspot in Andhra Pradesh.

About Seshachalam forest

- The Seshachalam Hills are part of the **Eastern Ghats** in southern Andhra Pradesh.
    - It means "Hill of Sesha" (Lord Vishnu's serpent), representing his seven hoods, with the highest point, Venkatadri, known as the abode of Lord Venkateswara, the Lord of Seven Hills.
- **Status:** Designated as the **Seshachalam Biosphere Reserve** in 2010, it is the first biosphere reserve in Andhra Pradesh.
- **Topography:** The terrain is characterized by steep slopes, rocky cliffs, and deep gorges. It is home to the famous **Tirumala Hills**, which house the Venkateswara Temple.
- **Vegetation:** The forest primarily consists of **Dry Deciduous** types, with patches of moist deciduous forests in the valleys.
- **Flora:** Red sanders
- **Fauna**: rare species such as the Golden Gecko and the Slender Loris, also a habitat for the Indian Giant Squirrel, Mouse Deer, and the Yellow-throated Bulbul.

ASTRONOMY IN THE ATACAMA

Context

While Atacama Desert remains the premier global hub for deep-space observation, increasing industrial development and light pollution are forcing a re-evaluation of environmental laws to protect "dark sky" corridors.

Key Facts

- **Dark Sky Reserve:** An area kept free of artificial light pollution.

- **Paranal Observatory:** Operated by the European Southern Observatory (ESO), it is one of the most advanced optical facilities on the planet.
- **Extremely Large Telescope (ELT):** A $1.5 billion project scheduled for 2030. It will feature 798 mirrors and be **15 times sharper than the Hubble Space Telescope**, allowing for unprecedented light-gathering capability.
- **Leading Observatories in India:**
    - India's first Dark Sky Reserve is located at **Hanle, Ladakh**, within the Changthang Wildlife Sanctuary.
    - **ARIES:** Located in Nainital, home to the 3.6m Devasthal Optical Telescope (DOT), India's largest.

About Atacama Desert

- Located in northern Chile between the Andes Mountains and the Chilean Coast Range,
- Globally recognized as the driest non-polar place on Earth.
- Despite its proximity to the equator, it is a cold desert. Average temperatures range from **0°C to 25°C**, and it lacks the scorching heat typical of the Sahara.
- The Atacama is part of the "Lithium Triangle" (along with Bolivia and Argentina), containing some of the world's largest reserves of lithium
- It houses major projects like the ALMA (Atacama Large Millimeter/submillimeter Array) and the upcoming Extremely Large Telescope (ELT)

Light Pollution

- Alteration of night natural lighting level caused by unwanted, inappropriate or excessive anthropogenic artificial sources of light.
- **Environmental Impact of Light Pollution**
    - **Nocturnal Wildlife:** Disrupts behaviour, breeding, feeding cycles
    - **Ecosystem Imbalance:** Affects birds, insects, turtles ⟶ chain effects
    - **Migration Disruption:** Confuses navigation (stars/moon cues)
    - **Insect Decline:** Alters movement, reproduction ⟶ biodiversity loss

SAINT FRANCIS XAVIER

Context

A Youtuber was booked for allegedly making derogatory remarks against Saint Francis Xavier.

About Saint Francis Xavier

- **Origins:** Born in **1506** in the Kingdom of Navarre (modern-day Spain).
- **The Society of Jesus:** While studying at the University of Paris, he met **Ignatius of Loyola**. Together with five others, they founded the Jesuit Order in 1534, which was formally recognized by the Pope in 1540.
- **Mission to the East:** At the request of King John III of Portugal, Xavier was sent to the Portuguese East Indies to restore Christian values among the settlers and spread the faith among local populations.
- **Missionary Work in India**

- **Goa (1542):** Xavier arrived in Goa, which served as his headquarters. He is credited with revitalizing the faith among the Portuguese and reaching out to the marginalized.
- **The Pearl Fishery Coast:** He spent significant time among the **Paravas** (fishermen community) of the Tuticorin region in Tamil Nadu. He translated basic Christian prayers and the Catechism into Tamil to make the faith accessible.
- **The "Inquisition" Controversy:** Historically, Xavier is also linked to the request for the establishment of the **Goa Inquisition** (which began after his death in 1560) to address "crypto-Judaism" and ensure religious orthodoxy among new converts.

- **Death:** He died in **1552** on Shangchuan Island while waiting for entrance into mainland China.
- **The Basilica of Bom Jesus:** His remains were eventually brought back to Goa.
  - His body is famously described as "incorrupt" and is housed in a silver casket in the Basilica of Bom Jesus (a UNESCO World Heritage site).

HISTORY OF CONFLICT OVER STRAIT OF HORMUZ

Context

While modern tensions often center on the Strait of Hormuz as a chokepoint for global energy, a historical analysis reveals its long standing position as a vital geographical lever at the core of imperial competition for hundreds of years.

History of Hormuz

- **11th–15th Century:** The Kingdom of Hormuz controlled the Strait of Hormuz and emerged as one of the richest trading powers, acting as a key link between India, Persia, Arabia, and East Africa.
- **Early 16th Century:** The Portuguese Empire conquered Hormuz Island to dominate the spice and silk trade, building costly fortresses and imposing heavy taxes on merchants.
- **1622 (End of Portuguese Control):** The English East India Company, in alliance with the Safavid Empire and supported by the Dutch East India Company, defeated the Portuguese and ended their century-long control over the strait.
- **17th Century (European Rivalry):** After the Portuguese exit, intense rivalry developed between the English East India Company and the Dutch East India Company, with the Dutch dominating trade from Bandar Abbas before declining in the 18th century due to financial and administrative issues.
- **18th–19th Century (British Hegemony):** The British Empire established dominance over the region, securing maritime routes to Bombay through a mix of naval power and diplomatic control rather than expensive fortifications.
- **1809 & 1819 (Trucial System Formation):** Through naval campaigns, the British subdued local forces and established treaty-based protectorates known as the Trucial States, which later evolved into the modern United Arab Emirates.
- **1901–1908 (Beginning of Oil Era):** William Knox D'Arcy secured oil exploration rights in Persia, leading to the discovery of oil at Masjed Soleyman in 1908 and the formation of the Anglo-Persian Oil Company.
- **1914 (Strategic Shift to Oil):** The British government acquired a controlling stake in the Anglo-Persian Oil Company to ensure a steady oil supply for its navy, marking a shift from coal to oil as the primary fuel.

- **20th Century (Energy Chokepoint):** The Strait of Hormuz transformed into a critical global energy corridor, facilitating the movement of petroleum and becoming central to global geopolitics.
- **1971 (End of British Control):** The British military withdrew from the Gulf, ending the Trucial States system and marking the transition to independent regional states.

HLA INDEPENDENT T CELL RECEPTORS FOR CAR-T CELL THERAPY

Context:

- A new advancement in CAR-T cell therapy shows promise in treating **solid tumours**, overcoming earlier limitations where such therapies worked mainly for blood cancers.

About CAR-T Cell Therapy

- **What is CAR-T Therapy:** CAR-T (Chimeric Antigen Receptor T-cell) therapy is a type of **immunotherapy** where a patient's own T-cells are genetically modified to recognise and attack cancer cells.
- **Working Mechanism:** T-cells are extracted, engineered with receptors targeting cancer proteins, and reinfused to destroy tumour cells.
- **Success in Blood Cancers:** Highly effective in **leukaemia and lymphoma**, where target proteins are clearly expressed on cancer cells.
- **Limitation in Solid Tumours:** Faces challenges due to **antigen heterogeneity**—tumours have mixed cells, some with detectable targets and others appearing "invisible".

New Discovery: HIT-Based CAR-T Advancement

- **Pseudo-Heterogeneity Discovery:** Tumour cells previously thought to lack target proteins actually contain them in **very low (faint) amounts**, hidden due to gene suppression (e.g. CD70 protein suppressed by EZH2 enzyme).
    - **Difference:** Earlier CAR-T assumed these cells had **no target**, whereas now they are recognised as having **faint but present targets**.
- **New HIT Receptor:** Scientists developed an **HLA-independent T-cell (HIT) receptor** that can detect these faint signals by linking directly to the T-cell's natural activation pathway.

How HLA Works in CAR-T Cell Therapy

HLA molecules are like identity tags on cells that help T-cells recognise what is "self" and what is foreign (infected or abnormal cells).

- **Role in Traditional CAR-T Therapy:** Traditional CAR-T cells are **designed to** directly bind to surface proteins on cancer cells, but their activation system is still **synthetic and threshold-based** (i.e. they require a sufficiently strong antigen signal to trigger attack).
- **New HIT approach:** Links to the natural T-cell system and detects even weak antigen signals without HLA dependence.

- **Effective Tumour Elimination:** In experimental models, HIT-based T-cells achieved **complete and lasting removal of tumours** (kidney, ovarian, pancreatic).
    - **Difference:** Conventional CAR-T initially shrinks tumours but fails later as hidden cells survive, whereas HIT eliminates **both visible and hidden cells**, preventing relapse.

Issues in the New Therapy

- **Goldilocks Challenge (Balance Problem):** Increasing sensitivity may cause T-cells to attack **normal cells with low levels of the same protein**, requiring a balance between effectiveness and safety.
- **Need for safeguards:** i.e **molecular "switches"** to control or deactivate engineered cells if adverse effects occur.
- **Complexity & Cost:** Advanced genetic engineering makes therapy **expensive and technically demanding**, limiting accessibility.

Potential of the new Therapy

- **Targeting Drug-Tolerant Cancer Cells:** The discovery shows that cancer cells are not truly invisible but only **suppress target proteins to survive**, meaning therapies can now eliminate these "drug-tolerant persister" cells that usually cause relapse.
- **For Solid Tumours:** Solid tumours were difficult to treat due to heterogeneous targets, but this approach enables **uniform targeting by detecting even faint antigen levels**.
- **Shift in Therapy Design:** Instead of searching for perfectly expressed targets, future therapies can focus on **building highly sensitive receptors**, expanding the range of treatable cancers.

CHINA–PAKISTAN SPACE COOPERATION

Context

- The long-standing "all-weather" relationship between China and Pakistan has expanded into the space domain, with recent developments like a Pakistani astronaut mission to China's space station.

China–Pakistan Space Cooperation

Dimension	Details
Historical Beginning	Started in 1990 with launch of Badr-I satellite by China for Pakistan, forming the base of long-term cooperation
Satellite Launch & Development	China built/launched multiple satellites (e.g. PRSS-1 (2018), PRSS-2 (2025), EO-3 (2026), PakSat MM1 (2024)) enabling communication, surveillance and remote sensing
Human Spaceflight Cooperation	Under a 2025 agreement, Pakistan will send astronaut to Tiangong Space Station (training in China; payload specialist role)
Lunar Exploration Collaboration	Joint ICUBE-Q (2024) mission (Pakistan and China) captured images of Moon's far side, enhancing deep-space capability
Navigation System Integration	Pakistan adopted China's BeiDou Navigation Satellite System (first foreign user in 2014) providing high-precision positioning (~2 cm accuracy)
Ground Infrastructure Development	Establishment of **BeiDou-enabled CORS network in Pakistan (2020)** enhances navigation accuracy and geospatial capabilities.

Strategic Implication

- **Strategic & Defence Dimension:** Space cooperation complements defence ties (e.g. integration of satellite data with military operations, surveillance and targeting capabilities).

- **BRI & Space Silk Road:** Cooperation aligns with China's **Space Silk Road initiative**, extending satellite services and influence across partner countries.
- **Dual-Use Nature:** Technologies have both civilian and military applications (e.g. disaster management vs surveillance and reconnaissance).

WAR POWERS ACT

Context:

- **The War Powers Act** limits Trump's unilateral ability to continue war without Congressional approval.

About War Powers Act

- **Origin & Purpose:** The **War Powers Resolution (1973)** was enacted to curb excessive presidential power in war-making (e.g. after the Vietnam War, where President Nixon engaged in conflict without Congress approval).
- **Constitutional Balance:** It aims to ensure **shared war authority between President and Congress** (Congress declares war; President acts as Commander-in-Chief).
- **Mandatory Consultation:** President must consult Congress **before deploying troops abroad whenever possible** (e.g. intended to avoid unilateral decisions like Cambodia operations).
- **48-Hour Reporting Rule:** President must inform Congress within **48 hours of military deployment**
- **60-Day Limit:** Military engagement must end within **60 days unless Congress authorises continuation** (core legal restriction on prolonged wars).
- **30-Day Extension Clause:** President can extend operations by **30 additional days** for safe withdrawal.

Ambiguity in Practice:

- Deadlines and interpretations remain disputed (e.g. debate whether ceasefire period counts towards 60 days).

Options for Trump

- **Seek Congressional Approval:** Comply with the Act by **getting formal authorisation** to continue military action.
- **Withdraw Military Forces:** End or scale down operations within the deadline.
- **Use 30-Day Grace Period:** Extend involvement temporarily for **orderly withdrawal of troops and assets** (not for escalation but for exit strategy).
- **Circumvent the Act (Past Precedent):** Ignore or reinterpret provisions (e.g. Trump in Yemen 2019; earlier Presidents like Nixon or Barack Obama in Libya bypassed Congress).
- **Exploit Legal Ambiguities:** Argue over **timeline definitions or ceasefire exclusions** to delay compliance (e.g. debate over whether ceasefire counts in 60-day limit).

DRONE WARFARE: STRATEGIC SHIFT IN MODERN CONFLICTS

Context:

- Recent conflicts in Ukraine and West Asia show that drones have moved from auxiliary tools to **central weapons of war**.

Strategic Advantages of Drones

- **Low Cost–High Impact:** Cheap drones can destroy expensive assets (**e.g.** $20,000 drone destroying multi-million-dollar tanks or air defence systems in Ukraine).
- **Asymmetric Warfare Tool:** Enables weaker actors to challenge stronger militaries (**e.g.** Houthis using drones to attack Red Sea shipping; Hezbollah targeting Israeli positions).
- **Decentralised & Flexible Use:** Can be launched from anywhere **(e.g**. pickup trucks, remote areas), reducing dependence on fixed infrastructure.
- **Reduced Human Risk:** No pilot involvement reduces casualties (**e.g**. FPV (First-person view) drones in Ukraine replacing manned missions).
- **Swarm Capability:** Large numbers overwhelm defences **(e.g.** Iranian swarm attacks and Ukraine's mass drone deployments).
- **Rapid Innovation Cycle:** Easy to modify and scale (**e.g.** Ukraine's shift from hobby drones to advanced FPV (First-person view) and interceptor drones).

Counter-Drone Capabilities Adopted

- **Multi-Layer Detection Systems:** Combination of sensors **(e.g.** Ukraine uses acoustic detectors + 3D radar + open-source intelligence for early warning).
- **Interceptor Drones:** Drones used to destroy other drones (e.g. Ukraine's FPV interceptor drones targeting incoming threats).
- **Integrated Air Defence:** Advanced systems combining aircraft and sensors **(e.g**. Israel using F-35 with sensor fusion achieving >95% interception against drone threats).
- **Directed Energy Weapons:** Cost-effective interception (**e.g.** Israel's Iron Beam laser system targeting drones cheaply compared to missiles).
- **Electronic Warfare & Jamming:** Disrupt drone signals (though limited as newer drones use fibre-optic control to bypass jamming).
- **Cost-Matching Strategies:** Use cheaper countermeasures (**e.g.** U.S. deploying LUCAS interceptor drones instead of expensive missiles).

Major Risks of Drone Arms Race

- **Lower Threshold for War:** Cheap and easy deployment reduces deterrence (e.g. drones launched from proxy territories without clear attribution).
- **Escalation Imbalance:** Low-cost attacks trigger high-cost responses (**e.g.** $20,000 drone forcing $10 million defence response).
- **Loss of Air Superiority:** Traditional dominance by air forces weakens
- **Expanded Battlefields:** War spreads beyond frontlines (**e.g**. drone strikes reaching cities in Israel, Iran, Ukraine).
- **Autonomous Warfare Risks:** Increasing AI-driven operations raise ethical and legal concerns (**e.g.** drones selecting targets independently).
- **Legal & Ethical Gaps:** International law struggles to regulate drone warfare **(e.g**. unclear rules on civilian zones and autonomous targeting).

GOOGLE AI DATA CENTRE IN VISAKHAPATNAM

Context:

- Google has laid the foundation for a large AI data centre in Visakhapatnam.

About the Google AI Centre

- **Capacity: ~1 Gigawatt (GW) data centre capacity** (largest in Asia at a single location; India currently ~1.3 GW total).
- **Scale & Investment:** One of India's largest FDI projects (~₹1.35 lakh crore; part of Google's $15 billion India investment plan 2026–2030).
- **Subsea Cable Connectivity:** Planned **international cable landing station** linking India to Australia, U.S. West Coast, West Asia and Africa (enhances global data flow integration)
- **Location Advantage:** Situated at **Tarluvada (Vizag)** on ~601 acres (coastal location ideal for subsea cable connectivity and cooling infrastructure).
- **Partnership Model:** Developed with **AdaniConneX and Airtel Nxtra** (public-private and multi-company collaboration).
- **AI & Cloud Infrastructure:** Supports **high-performance computing, AI model training and cloud services** (critical for scaling AI startups and enterprises).
- **Digital Hub Vision:** Part of Andhra Pradesh's plan to create a **6.5 GW digital ecosystem**, making Vizag a major tech corridor.

INDEX OF SERVICE PRODUCTION: WHY INDEX OF SERVICE PRODUCTION MATTERS FOR INDIA'S ECONOMY

Context

- The Ministry of Statistics and Programme Implementation (MoSPI) has released an 'Approach Paper' outlining its plan to measure the output of India's formal services sector every month through a new Index of Service Production (ISP).
- The index will use 2024-25 as the base year and will rely heavily on GST Network data as a key input. Public comments on this proposal have been invited.
- A Technical Advisory Committee on ISP (TAC-ISP) was formed in May 2025. It consisted of 24 experts. It has prepared the current approach paper after extensive discussions.

What is the ISP and Why is it Needed

- Currently, India publishes two key high-frequency (monthly) economic indicators:
    - Index of Industrial Production (IIP) — measures monthly output of the industrial sector (manufacturing, mining, electricity).
    - Consumer Price Index (CPI) — measures retail inflation and forms the basis of India's headline inflation number.
- Both are closely watched by policymakers, the RBI, and economists to understand the economy's trajectory.
- However, there is no equivalent monthly index for the services sector — a glaring gap given that services contribute more than half of India's GDP and generate millions of jobs.

What Do Policymakers Use Currently

- To understand services sector performance, policymakers and economists currently rely on the S&P Global's HSBC Purchasing Managers' Index (PMI).
- However, the PMI is a survey-based sentiment index — it captures how businesses feel about activity, not what is actually being produced.
- It does not measure actual output. The ISP is designed to fill this gap with hard, output-based data.

Index of Service Production (ISP)

- ISP aims to track short-term movements in the services sector. It will be similar in concept to IIP but for services.
- It will be developed by the National Statistical Office (NSO).

What Will the ISP Cover

The approach paper studies 40+ service sub-sectors, including:

- Trade (wholesale & retail)
- Transport
- Banking and insurance
- Communication
- Hotels and restaurants
- Real estate
- Professional and technical services
- Entertainment and recreation
- Focus is on availability of output data and price deflators.

How Will Output be Adjusted for Prices

- To convert nominal output into real output (adjusted for price changes), a Producer Price Index (PPI) would ideally be used as it measures the prices received by producers.
- However, since India does not yet have a comprehensive PPI, MoSPI plans to use non-food CPI and sub-sector specific CPI as proxies in the interim.
- DPIIT is currently working on revising the Wholesale Price Index (WPI) and developing a full Producer Price Index (PPI).
- A Working Group has recommended methodologies for compiling PPIs for services sub-sectors like Banking, Insurance, Securities, Pensions, Air Transport, Railways, and Telecom.

MERGER OF AAP RAJYA SABHA MPS WITH BJP

Context

The Chairman of the Rajya Sabha accepted the merger of seven Members of Parliament (MPs) from the Aam Aadmi Party with the Bharatiya Janata Party. The development has triggered political and constitutional debate regarding the Anti-Defection Law.

Issue

- Seven Rajya Sabha MPs from AAP were recognised as merged with the BJP.

- The Chairman accepted their claim under provisions related to merger in the Tenth Schedule of the Constitution.
- AAP's representation in the Rajya Sabha reduced sharply from 10 MPs to 3 MPs.
- This weakens the party's influence in parliamentary discussions and legislative processes.

Constitutional and Legal Basis

Tenth Schedule and Anti-Defection Law

- The Tenth Schedule deals with disqualification of legislators who defect from their parties.
- It was added through the 52nd Constitutional Amendment Act, 1985 to prevent political defections.
- A merger is considered valid if at least two-thirds of members of a legislative party agree to join another party.
- Such members are protected from disqualification under the Anti-Defection Law.

Key Features of the Tenth Schedule

- **Definitions**: Clarifies terms such as "legislature party" and "original political party."
- **Grounds for Disqualification:** Applies when a member voluntarily leaves their party or violates the party whip without permission.
- **Independent Members:** Disqualified if they join a political party after election.
- **Merger Clause:** Protects members from disqualification if at least two-thirds of the legislative party agrees to merge with another party.
- **Exemptions**: Presiding officers (Speaker/Chairman) can resign from their party and rejoin later.
- **Decision Authority**: The Speaker or Chairman decides on disqualification.
- **Judicial Review**: Courts can review decisions after they are made.
- **Rule-Making Power:** The presiding officer can frame procedural rules.

When Does Disqualification Apply?

Leads to Disqualification:

- Leaving one's party and joining another
- Voting against the party whip without approval
- Independent members joining a party post-election
- Nominated members joining a party after six months

Protected Situations:

- Mergers backed by at least two-thirds of members
- Speaker resigning from party for neutrality
- Voting against whip if condoned within 15 days
- Elections where party whips are not applicable (e.g., Presidential polls)

Penalty for Defection:

- A disqualified member loses their seat for the remainder of the term and is barred from holding ministerial or remunerative political positions until re-elected.

LAUNCH OF ASIA'S FIRST UNESCO CHAIR ON GENDER INCLUSION AND SKILL DEVELOPMENT

Context

The Government of India launched Asia's first UNESCO Chair on Gender Inclusion and Skill Development at Symbiosis Skills and Professional University. The initiative aims to strengthen women's participation in emerging sectors and promote inclusive skill development.

About the UNESCO Chair Initiative

- **Launch of the UNESCO Chair**: The UNESCO Chair on Gender Inclusion and Skill Development was inaugurated in Pune.
    - The initiative seeks to promote research, training, and policy support for women's participation in skill development and employment.
- **Leadership and Collaboration**: The programme was launched by Jayant Chaudhary in collaboration with UNESCO.
- **First Such Initiative in Asia**: It is the first UNESCO Chair in Asia dedicated specifically to gender inclusion in skill development.
    - This highlights India's growing role in promoting inclusive workforce policies.
- **Promoting Women's Participation in Emerging Sectors**: The initiative focuses on sectors such as artificial intelligence, robotics, semiconductors, and advanced manufacturing.
- **Reducing Gender Gaps in Employment**: The programme aims to improve access of women to education, training, and skilled jobs.
    - Women continue to face barriers in employment, especially in technology-intensive sectors.
- **Building Inclusive Skill Ecosystems**: The Chair seeks to connect governments, industries, and educational institutions.

Significance for India

- **Economic Growth through Inclusion**: Greater workforce participation by women can boost productivity and economic output. Inclusive growth helps in better utilisation of human resources.
- **Support for Social Empowerment:** Skill development improves women's confidence, independence, and decision-making ability. Economic empowerment strengthens social equality.
- **Alignment with National Priorities**: The initiative supports India's focus on skilling and entrepreneurship. It complements programmes aimed at preparing youth for future employment.

Challenges in Gender Inclusion

- **Low Female Labour Force Participation:** Women's participation in the workforce remains lower than men in India.
    - Social barriers, unpaid care work, and safety concerns limit opportunities.
- **Digital and Skill Gaps:** Many women lack access to advanced technical education and digital resources.
    - This reduces their representation in high-growth sectors.
- **Underrepresentation in STEM Fields:** Women remain underrepresented in science, technology, engineering, and mathematics careers.
    - Gender stereotypes and unequal opportunities contribute to this gap.

Way Forward

- **Expand Gender-Focused Skill Training:** Increase specialised training programmes for women in advanced technologies.
- **Strengthen Industry Partnerships:** Encourage industries to provide internships, apprenticeships, and mentorship opportunities.
- **Promote Safe and Inclusive Workplaces:** Ensure equal opportunities, fair wages, and supportive working conditions for women.
- **Improve Access in Rural and Underserved Areas:** Extend skill development initiatives to rural and disadvantaged communities.