
Prelims Exam Topics

ADI VAANI PLATFORM

Context

The **Ministry of Tribal Affairs** launched the full-fledged **Adi Vaani Platform** during the National Conclave on Tribal Languages & Museums in **Mysuru, Karnataka**.

About Adi Vaani Platform

- **Nature:** India's first **AI-powered translator for tribal languages**, aimed at reducing communication barriers and preserving endangered languages.
- **Development:** Developed by a consortium led by **IIT Delhi**, with **BITS Pilani, IIIT Hyderabad and IIIT Naya Raipur**, along with Tribal Research Institutes.
- **AI Models:** Uses language models such as **NLLB (No Language Left Behind)** and **IndicTrans2**, adapted for low-resource tribal languages.
- **Text Translation:** Translates **text, images and documents** between Hindi/English and tribal languages.
- **Speech Translation:** Converts **live or recorded speech into text** and translates it into indigenous languages.
- **Speech-to-Speech:** Enables real-time voice translation between Hindi/English and languages such as **Santali, Mundari and Bhili**.

INDIA'S FIRST NON-GMO HIGH-EXPANSION POPCORN MAIZE HYBRID SEED

Context

India's first **indigenous, non-GMO high-expansion popcorn maize hybrid seed** was launched at **Musunuru, Andhra Pradesh**.

About the Hybrid Seed

- **Development:** Developed jointly by **ICAR-Indian Institute of Maize Research (ICAR-IIMR)** and **Gourmet Popcornica**.
- **Hybrids:** Includes **Krisna459 and Godari234**, developed to match the popping quality of leading global varieties.

- **Non-GMO:** Developed through **conventional cross-breeding**, without introducing foreign genetic material.
- **Objective:** Reduce dependence on **imported hybrid technology** and support self-reliance in popcorn production.
- **Popping Quality:** These hybrids are selected for **higher expansion volume**, an important parameter for commercial popcorn.
- **Popping Mechanism:** The kernel contains **moisture and starch enclosed by a hard outer hull**. Heating converts water into steam, increasing pressure until the hull bursts and the starch expands into popcorn.

UN MISSION IN SOUTH SUDAN (UNMISS)

Context

India has condemned a deadly **ambush on UN peacekeepers** deployed with the UN Mission in South Sudan (UNMISS) near **Pajut in Jonglei State**, in which an Ethiopian peacekeeper was killed.

About UNMISS

- **Nature:** A **multidimensional UN peacekeeping mission** operating under **Chapter VII of the UN Charter** in South Sudan.
- **Establishment:** Set up on **8 July 2011** by **UN Security Council Resolution 1996**, soon after South Sudan became independent.
- **Mandate:** Strengthen peace and security, **protect civilians**, **support humanitarian assistance and monitor human rights**.
- **Peace Process:** Supports implementation of the **Revitalized Agreement on the Resolution of the Conflict in South Sudan (R-ARCSS)** through dialogue and mediation.

CHLORPHENIRAMINE AND PHENYLEPHRINE COMBINATION

Context

The **Union Health Ministry** has tightened rules for fixed-dose combinations (FDCs) containing **chlorpheniramine maleate and phenylephrine**, requiring warnings against their use in **children below 4 years**.

About the Chlorpheniramine and Phenylephrine Combination

- **Nature:** An **FDC** commonly used in syrups, drops and tablets for temporary relief from **cold, allergic rhinitis and nasal congestion**.
- **Chlorpheniramine:** A **first-generation H1 antihistamine** that reduces sneezing, runny nose and watery eyes.
- **Phenylephrine:** A **nasal decongestant** that constricts blood vessels in nasal passages and reduces stuffiness.

How Does It Work?

- **Dual Action:** Chlorpheniramine controls **allergic symptoms**, while phenylephrine relieves **nasal congestion**.
- **Symptomatic Relief:** The combination **does not cure or shorten viral infections**; it only reduces symptoms.
- **Systemic Effects:** Chlorpheniramine may cause **drowsiness**, while phenylephrine can increase **blood pressure and heart rate**.

Why Restricted Below 4 Years?

- **Higher Sensitivity:** Young children may respond differently to these medicines, increasing the risk of **adverse effects**.
- **Serious Reactions:** Excess exposure may cause **rapid heartbeat, seizures or abnormal excitation**.
- **Overdose Risk:** These ingredients occur in multiple cold medicines, increasing the risk of **accidental duplicate dosing**.
- **Safer Measures:** For uncomplicated viral colds, measures such as **saline nasal drops and adequate hydration** are generally preferred.

HAWK FIRE

Context

The **Hawk Fire**, a human-caused wildfire in the **United States**, spread rapidly across Peavine Peak near **Reno, Nevada**, prompting a **State of Emergency in Washoe County**.

About Hawk Fire

- **Type:** A **wildland-urban interface (WUI) fire**, occurring where wild vegetation meets human settlements.

- **Affected Areas:** Mainly **Washoe County, Nevada**, with some spread into **Sierra County, California**.

Why Did It Spread Rapidly?

- **Dry Fuels:** Dry brush and grasses provided highly combustible fuel.
- **Strong Winds:** Southwest wind gusts of up to **40 mph** rapidly carried flames and embers.
- **Low Humidity:** Humidity fell to around **18%**, increasing fire intensity and spread.
- **Ember Spotting:** Wind-borne embers allowed the fire to cross roads and other barriers.

Impact

- **Rapid Expansion:** Grew from around **15 acres** to over **15,000 acres** within **24–36 hours**.
- **Property Damage:** Destroyed **32 homes** and damaged several others.
- **Utilities:** Emergency power shutdowns affected more than **59,000 customers**.

DAK MITRA AND DAK SEWA APPS

Context

The **Department of Posts** has launched upgraded **Dak MITRA** and **Dak Sewa** apps and inaugurated **14 renovated Post Office buildings** to modernise postal services.

About Dak MITRA

- **Developer:** Developed by the **Centre for Excellence in Postal Technology (CEPT)** under the **Advanced Postal Technology (APT)** platform.
- **Coverage:** Serves more than **1.4 lakh Branch Post Offices** through Android-based handheld devices.
- **Services:** Enables **paperless postal and financial transactions**, including mail booking, doorstep delivery, banking, insurance, Aadhaar-based e-KYC and PLI/RPLI premium collection.

About Dak Sewa

- **Purpose:** Provides citizens **24x7 access** to multiple postal services through a single digital platform.
- **Services:** Includes **tracking, booking, complaints, Post Office and PIN-code locators and financial calculators**.
- **Languages:** Available in **23 Indian languages** with support from **BHASHINI**.

LEAD

Context

Researchers at **ICMR-National Institute of Nutrition (ICMR-NIN), Hyderabad** found that lead exposure can disrupt the **waste-clearing and recycling system of nerve cells**.

About Lead

- **Nature:** Naturally occurring **heavy metal** found in small amounts in the Earth's crust.
- **Properties:** A **soft, dense, highly malleable and corrosion-resistant metal** belonging to **Group 14** of the periodic table.
- **Occurrence:** Mainly found in ores of **zinc, silver and copper**. The principal lead ore is **galena (PbS)**.

Major Uses

- **Batteries:** Widely used in **lead-acid batteries** for vehicles, backup power and telecom systems.
- **Industrial Uses:** Used in **glass and plastics, radiation shielding, rolled products and ammunition**.
- **Corrosion Resistance:** Used for containing **corrosive substances**, including sulphuric acid.

Health Impacts

- **Neurotoxicity:** Lead can damage the **nervous system** and interfere with normal cellular functions.
- **Multiple Systems:** Chronic exposure can affect the **brain, kidneys, blood and other organs**.
- **Vulnerable Groups:** **Children and women of child-bearing age** are particularly vulnerable to lead toxicity.
- **Environmental Hazard:** Lead is **toxic to humans, animals and ecosystems**, with persistent contamination posing long-term risks.

INFORMATION TECHNOLOGY RESILIENCE INDEX (ITRI)

Context

The **Securities and Exchange Board of India (SEBI)** has introduced the **Information Technology Resilience Index (ITRI)** for **Market Infrastructure Institutions (MIIs)**.

About ITRI

- **Purpose:** Assesses the **resilience and performance of IT systems** of stock exchanges, depositories and clearing corporations.

- **Objective:** Strengthens regulatory oversight and helps identify **emerging IT weaknesses early** for timely corrective action.
- **Nodal Institution:** SEBI.

Key Features

- **Nine Parameters:** The index measures **availability, security, integrity, governance, reliability and monitoring, business continuity, modularity and flexibility, scalability**, and other relevant factors.
- **Weightage:** **Availability and security** carry the highest weightage of **20% each**; the other major parameters carry **10% each**.
- **Assessment:** MIIs must calculate the index **half-yearly**, within **60 days** of the end of each half-year.
- **Reporting:** MIIs must submit a **rolling comparison of two consecutive half-years**, along with corrective measures, to their **Standing Committee on Technology (SCOT)** and governing boards.
- **Early Warning System:** MIIs must establish an **EWS** to detect deterioration in IT resilience that may cause system slowdowns, performance issues or disruptions.

GUGGAL PLANT

Context

A Kutch-based non-profit is planting **Khara and Mitha Guggal** in five villages to restore **native medicinal biodiversity on** community grazing lands.

About Guggal Plant

- **Distribution:** Native to **India, Arabia and Pakistan**; in India, found mainly in the arid regions of **Rajasthan, Gujarat, Madhya Pradesh and Karnataka**.
- **Habitat:** Prefers **arid and semi-arid climates**, poor soils and rocky or sandy areas.

Key Features

- **Adaptation:** Tolerant to **drought and salinity** and can grow in soils with low organic matter.
- **Appearance:** Has **ash-coloured, peeling bark** and remains largely leafless for much of the year.
- **Growth:** Seeds have **low germination rates**, while plants may take around **10 years to mature**.

Guggul Gum & Uses

- **Traditional Uses:** Resin, known as **guggul**, is used in **Ayurvedic medicine**, incense, ointments, varnishes and perfumes.
- **Medicinal Potential:** Guggul extracts have been traditionally used for several ailments and are studied for their role in **lipid and bile-acid metabolism**.
- **FXR Interaction:** Guggul compounds interact with the **Farnesoid X Receptor (FXR)**, involved in regulation of **bile acids and cholesterol metabolism**.

WATERSPOUT

Context

A rare **waterspout-like phenomenon** was recently observed over the **Brahmaputra River in Barpeta district, Assam**.

About Waterspout

- **Nature:** A rotating **column of air and water mist** extending over a water body.
- **Conditions:** Favoured by **high humidity and relatively warm water** beneath cooler air.
- **Typical Features:** Usually lasts around **5 minutes**, though it can persist for up to 10 minutes; an average waterspout may be about **165 feet wide** with winds near **100 km/h**.

Types of Waterspouts

- **Tornadic Waterspout:** A **tornado over water** or one that moves from land to water; associated with severe thunderstorms, strong winds, hail and lightning.
- **Fair-Weather Waterspout:** Usually forms under **developing cumulus clouds** in relatively calm conditions. It develops **upward from the water surface**, is generally not linked to thunderstorms and moves little.

Mains Exam topics

UNEMPLOYMENT IN INDIA

Context

India's falling **Unemployment Rate (UER)** masks deeper weaknesses in the labour market. Despite UER declining to **3.1% in 2025**, youth unemployment remains high, educated youth face particularly high unemployment, and much of the recent employment growth has been concentrated in **agriculture and low-paying work**. At the same time, the UER excludes discouraged workers and others outside the labour force, making **NEET (Not in Employment, Education, or Training)** a broader measure of youth labour-market exclusion.

What are the structural causes of educated unemployment in India?

- **Job Creation Deficit:** The primary problem is that the economy is not creating enough formal, productive jobs to absorb the growing number of educated entrants to the labour market.
 - e.g., The ILO found that in **2022, youth unemployment was 29.1% among graduates**, showing that higher education has expanded faster than suitable employment opportunities.
- **Sectoral Imbalance:** Recent employment growth has been concentrated heavily in sectors with limited capacity to absorb large numbers of educated workers in skilled occupations.
 - e.g., The **State of Working India 2026** reported that **40 million of the 83 million jobs added between 2021-22 and 2023-24 were in agriculture**, indicating weak movement of labour towards higher-productivity sectors.
- **Skill Mismatch:** Skill gaps matter mainly after jobs are created, as employers may select workers with practical and technical capabilities over graduates with only general qualifications.
 - e.g., The **ILO India Employment Report 2024** shows that technical and vocational qualifications improve young people's chances of obtaining regular employment, highlighting the role of job-relevant skills.
- **Weak School-to-Work Transition:** Even when suitable jobs exist, young graduates often lack apprenticeships, workplace exposure and first-job experience needed to enter them.
 - e.g., The ILO identifies the transition from education to work as a major challenge for Indian youth, with young first-time jobseekers facing an experience disadvantage.

- **Qualification-Occupation Mismatch:** Many educated workers either remain unemployed or accept jobs below their qualifications when the economy cannot provide enough suitable occupations.
 - e.g., The persistence of educated unemployment alongside large informal employment indicates that the issue is often **a shortage of suitable jobs, rather than a complete absence of work.**

How does rural-to-urban migration affect urban unemployment?

- **Raises Urban Labour Supply:** Migration increases the number of people seeking work in cities. If urban job creation does not keep pace, competition for available jobs increases.
 - e.g., The **Economic Survey 2025-26** identifies the search for jobs and better livelihoods as major drivers of rural-to-urban migration.
- **Creates Search Unemployment:** Migrants may remain unemployed temporarily while searching for jobs, building networks and adjusting to the urban labour market.
 - e.g., **Urban youth unemployment remains significantly higher than rural youth unemployment**, showing the difficulty of absorbing large numbers of young workers into urban labour markets.
- **Shifts Underemployment to Cities:** Migrants who cannot find suitable formal jobs may enter casual work or low-productivity self-employment. Thus, rural underemployment can reappear as **urban informal employment.**
 - e.g., Migrants entering **construction, street vending or casual services** may obtain work but remain in unstable, low-productivity employment rather than secure formal jobs.
- **Exposes Skill Mismatch:** Rural workers often bring occupation-specific experience that may not match urban demand, forcing them to accept jobs below their previous skill level.
 - e.g., A worker moving from agriculture to a city may enter **construction or delivery services**, even when their earlier agricultural experience has little value in those occupations.
- **Improves Labour Allocation:** Migration can still improve employment outcomes by moving labour from regions with limited opportunities to regions with greater demand. The problem arises when **urban labour demand is insufficient to absorb the inflow productively.**

- e.g., Employment-driven migration towards industrial and service centres allows workers to access opportunities unavailable in their villages, provided cities have adequate job-creating capacity.

What are the consequences of persistent youth unemployment for social stability?

- **Economic Dependence:** Prolonged unemployment delays financial independence and keeps young people dependent on families for income and basic needs.
 - e.g., Long periods spent searching for jobs after graduation delay the transition from education to stable earnings and independent economic life.
- **Human Capital Erosion:** Long periods without work reduce opportunities to acquire practical experience and workplace skills, making future employment more difficult.
 - e.g., A graduate who remains unemployed for several years loses opportunities for **on-the-job learning and experience**, creating a cycle of weak employability and continued unemployment.
- **Reduced Social Mobility:** When education fails to produce employment, the expected link between education and upward economic mobility weakens.
 - e.g., High unemployment among graduates means that families may invest heavily in education without seeing a corresponding improvement in the young person's income or occupational position.
- **Wasted Demographic Dividend:** Unemployed youth represent productive capacity that the economy is failing to utilise. Persistent exclusion therefore reduces the potential gains from India's large working-age population.
 - e.g., With India having one of the world's largest youth populations, prolonged unemployment means that a significant share of potential workers does not contribute fully to production and income generation.
- **Social Dissatisfaction:** Persistent unemployment can widen the gap between rising aspirations and actual opportunities, increasing frustration and weakening confidence in existing pathways to economic advancement.
 - e.g., High unemployment among educated youth, despite years of investment in education, creates a visible gap between **educational achievement and economic opportunity**.

Way Forward

- **Prioritise Job-Rich Growth:** India must increase employment generation in sectors that can absorb large numbers of workers rather than relying mainly on capital-intensive growth.
 - e.g., **Textiles, footwear, food processing, tourism and electronics assembly** can create more jobs per unit of investment than highly automated industries.
- **Accelerate Structural Transformation:** Employment must gradually shift from low-productivity agriculture towards manufacturing, modern services and productive non-farm activities.
 - e.g., The large share of recent employment gains coming from agriculture, highlighted by the **State of Working India 2026**, strengthens the case for faster expansion of non-farm employment.
- **Strengthen the Education-to-Work Link:** Skill development should complement, not substitute for, job creation. Curricula should be linked with employers, apprenticeships and workplace training.
 - e.g., **Industry-linked apprenticeships** can reduce the experience gap faced by first-time jobseekers.
- **Build Productive Rural and Smaller-City Economies:** Expanding rural non-farm industries and employment in smaller cities can reduce distress migration and distribute labour demand more evenly.
 - e.g., **Rural MSMEs, food processing and local service enterprises** can provide employment closer to where workers live.
- **Improve Urban Labour Absorption:** Cities receiving migrants need better employment services, affordable housing, transport and portable social protection so that migration results in productive employment rather than persistent informality.
 - e.g., **Portable social-security benefits** can protect migrant workers who move across States and jobs.
- **Measure Employment Beyond UER:** India should assess unemployment alongside **NEET(Not in Employment, Education, or Training), underemployment, wages, productivity, job security and labour-force participation**.
 - e.g., The **NEET indicator** captures youth who are neither working nor studying or training, revealing labour-market exclusion that the conventional unemployment rate can miss.