

# CURRENT AFFAIRS

WEEKLY

WEEK: 2

APRIL  
2024

## MAINS ARTICLE

GS- II

- ▣ RISING ANTI INDIA SENTIMENTS
- ▣ RESURGENCE OF MINILATERAL GROUPINGS AGAINST CHINA
- ▣ RUSSIAN OIL PRICE CAP
- ▣ GCC'S 'VISION FOR REGIONAL SECURITY'
- ▣ INDIA'S ONE AIRSPACE IDEA
- ▣ CLIMATE CRISIS IMPACTS CITIZENS' RIGHT TO LIFE: SC
- ▣ SC CAUTIONS AGAINST CENTRE-STATE'S DISPUTES
- ▣ TELEMEDICINE IN INDIA

GS- III

- ▣ INDIA'S STRUGGLE WITH AGRICULTURAL LABOR DEPENDENCY
- ▣ GAPS IN WEALTH AND INCOME IN AN UNEQUAL INDIA
- ▣ INNOVATION IN TRADITIONAL PRACTICES OF AGRICULTURE
- ▣ LOW WAGES HAUNTS INDIA'S ECONOMY
- ▣ INDIA RESTARTS IMPORT RESTRICTIONS ON SOLAR MODULES
- ▣ SURGE IN INDIA'S STEEL IMPORTS
- ▣ RISKS AT ZAPORIZHZHIA NUCLEAR POWER PLANT
- ▣ MAPPING OF SOIL EROSION IN INDIA

## PRELIMS ARTICLE

### GEOGRAPHY

- ▣ Total Solar Eclipse
- ▣ Taiwan and its Earthquake Problem
- ▣ Lesotho Highlands Water Project
- ▣ Andaman and Nicobar Islands
- ▣ Unified standard of time for the moon
- ▣ India's Mineral Production

### INTERNATIONAL RELATIONS

- ▣ India abstains from UNHRC Gaza ceasefire resolution

### POLITY & GOVERNANCE

- ▣ Voter Verified Paper Audit Trail
- ▣ Women candidates grew from 1957: ECI
- ▣ Election Symbols
- ▣ State's power to regulate industrial alcohol
- ▣ QS World University Rankings
- ▣ RBI Monetary Policy

### ECONOMY

- ▣ RBI's G-sec App
- ▣ UPI-based Cash Deposit Facility
- ▣ India's Built-Up Area

### SCIENCE & TECHNOLOGY

- ▣ Semiconductor Chip
- ▣ Superconductivity
- ▣ AI Regulation around the globe
- ▣ Glycaemic Index (GI)
- ▣ Cancer capital of the world
- ▣ Prostate cancer
- ▣ WHO's 2024 Global Hepatitis Report
- ▣ PSLV Orbital Experimental Module-3 (POEM-3)
- ▣ Rice vampireweed
- ▣ Lavender AI
- ▣ Higgs Boson

### ENVIRONMENT

- ▣ Cicada (Cicadoidea)
- ▣ Preservation of Baobabs

## TERMS OF THE WEEK

**GS SCORE**

An Institute for Civil Services

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## DISCLAIMER

**T**he current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

# Contents

**WEEK - 2 (APRIL, 2024)**

| <b>Section - A: MAINS ARTICLE</b>   |   |   |    |
|-------------------------------------|---|---|----|
| SECTION OF GS                       | TOPICS IN NEWS  | PAGE NO.  |    |
| GS II                               | INTERNATIONAL RELATIONS                               | • Rising Anti India Sentiments                        | 02 |
|                                     |   | • Resurgence of Minilateral Groupings against China   | 03 |
|                                     |   | • Russian Oil Price Cap                               | 03 |
|                                     |   | • GCC's 'Vision for Regional Security'                | 04 |
|                                     | POLITY & GOVERNANCE                                   | • India's One Airspace Idea                           | 04 |
|                                     |   | • Climate crisis impacts citizens' right to life: SC  | 05 |
|                                     |   | • SC cautions against Centre-State's disputes         | 06 |
|                                     |   | • Telemedicine in India                               | 07 |
| GS III                              | ECONOMY   | • India's Struggle with Agricultural Labor Dependency | 07 |
|                                     |   | • Gaps in wealth and income in an unequal India       | 09 |
|                                     |   | • Innovation in Traditional Practices of Agriculture  | 09 |
|                                     |   | • Low wages haunts India's economy                    | 11 |
|                                     |   | • India Restarts Import Restrictions on Solar Modules | 12 |
|                                     | SCIENCE & TECHNOLOGY                                  | • Risks at Zaporizhzhia nuclear power plant           | 13 |
|                                     | ENVIRONMENT   | • Mapping of soil erosion in India                    | 14 |
| <b>Section - B: PRELIMS ARTICLE</b> |   |   |    |
| Section of GS                       | Topics in News  | Page No.  |    |
| GEOGRAPHY                           | • Total Solar Eclipse                                 | 17  |    |
|                                     | • Taiwan and its Earthquake Problem                   | 17  |    |
|                                     | • Lesotho Highlands Water Project                     | 18  |    |
|                                     | • Andaman and Nicobar Islands                         | 18  |    |
|                                     | • Unified standard of time for the moon               | 19  |    |
|                                     | • India's Mineral Production                          | 19  |    |
| INTERNATIONAL RELATIONS             | • India abstains from UNHRC Gaza ceasefire resolution | 20  |    |

# ALL INDIA PRELIMS MOCK TEST

OMR BASED

GET REAL TIME FEEL *of*  
Prelims Examination *in*  
UPSC SIMULATION ENVIRONMENT

Across 50+ Cities

- AGRA
- AHMEDABAD
- ALIGARH
- AURANGABAD (MAHARSTRA)
- BARAILY
- BENGALURU
- BHOPAL
- BHUBANESWAR
- BILASPUR
- CHANDIGARH
- COIMBATORE
- CUTTACK
- DEHRADUN
- DELHI
- DHARMSHALA
- DHARWAD
- GORAKHPUR
- GUWAHATI
- GWALIOR
- HYDERABAD
- INDORE
- ITANAGAR
- JABALPUR
- JAIPUR
- JAMMU
- JODHPUR
- KOCHI
- KOLKATA
- LUCKNOW
- LUDHIANA
- MADURAI
- MUMBAI
- MYSORE
- NAGPUR
- NAVI MUMBAI
- PANAJI
- PATNA
- PRAYAGRAJ
- PUNE
- RAIPUR
- RAJKOT
- RANCHI
- SAMBALPUR
- SHILLONG
- SHIMLA
- SRINAGAR
- SURAT
- THIRUVANANTHA-PURAM
- UDAIPUR
- VARANASI
- VIJAYAWADA
- VISAKHAPATNAM

1  
MOCK  
TEST

13  
APRIL

2  
MOCK  
TEST

19  
MAY

3  
MOCK  
TEST

02  
JUNE

TEST  
TIMING

PAPER 1: 9:30 AM to 11:30 AM  
PAPER 2: 01:00 PM to 03:00 PM

TEST  
DISCUSSION

ONLINE MODE  
5:30 PM on the Day of Test

ENGLISH & हिंदी माध्यम

₹ 500/- PER MOCK TEST

₹ 1000/- for ALL 3 MOCK TESTS



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|                      |  |    |
|----------------------|--|----|
| POLITY & GOVERNANCE  | • Voter Verified Paper Audit Trail             | 20 |
|                      | • Women candidates grew from 1957: ECI         | 20 |
|                      | • Election Symbols                             | 21 |
|                      | • State's power to regulate industrial alcohol | 21 |
|                      | • QS World University Rankings                 | 22 |
|                      | • RBI Monetary Policy                          | 22 |
| ECONOMY              | • RBI's G-sec App                              | 23 |
|                      | • UPI-based Cash Deposit Facility              | 24 |
|                      | • India's Built-Up Area                        | 24 |
| SCIENCE & TECHNOLOGY | • Semiconductor Chip                           | 24 |
|                      | • Superconductivity                            | 25 |
|                      | • AI Regulation around the globe               | 25 |
|                      | • Glycaemic Index (GI)                         | 25 |
|                      | • Cancer capital of the world                  | 26 |
|                      | • Prostate cancer                              | 26 |
|                      | • WHO's 2024 Global Hepatitis Report           | 27 |
|                      | • PSLV Orbital Experimental Module-3 (POEM-3)  | 27 |
|                      | • Rice vampireweed                             | 27 |
|                      | • Lavender AI                                  | 28 |
|                      | • Higgs Boson                                  | 28 |
| ENVIRONMENT          | • Cicada (Cicadoidea)                          | 29 |
|                      | • Preservation of Baobabs                      | 29 |

### Section - C: TERMS OF THE WEEK

# CURRENT AFFAIRS COMPILATION



Comprehensive Coverage of  
Last **2 Yrs.** of Current Affairs



Static & Current  
**Interlinking**



**Thematic** arrangement  
of Topics



**PYQs** & Practice **MCQs** to  
validate **your learning**

1

POLITY

2

PROGRAMMES  
& POLICIES

3

ECONOMY

4

ENVIRONMENT  
& ECOLOGY

5

GEOGRAPHY

6

INTERNATIONAL  
RELATIONS

7

SCIENCE &  
TECHNOLOGY

8

ART &  
CULTURE

9

GIST OF INDIA  
YEAR BOOK



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## SECTION

# A

### MAINS ARTICLES

1. Rising Anti India Sentiments
2. Resurgence of Minilateral Groupings against China
3. Russian Oil Price Cap
4. GCC's 'Vision for Regional Security'
5. India's One Airspace Idea
6. Climate crisis impacts citizens' right to life: SC
7. SC cautions against Centre-State's disputes
8. Telemedicine in India
9. India's Struggle with Agricultural Labor Dependency
10. Gaps in wealth and income in an unequal India
11. Innovation in Traditional Practices of Agriculture
12. Low wages haunts India's economy
13. India Restarts Import Restrictions on Solar Modules
14. Surge in India's steel imports
15. Risks at Zaporizhzhia nuclear power plant
16. Mapping of soil erosion in India

## 1. RISING ANTI INDIA SENTIMENTS

**Context:** Recent developments have highlighted a growing anti-India sentiment in **Bangladesh**, reminiscent of the wave observed earlier in **Maldives**. Social media trolls have sparked controversy, leading to a diplomatic standoff between India and Bangladesh. This emerging trend underscores a significant shift in the bilateral relations between the two countries.

### 1: Dimension-Factors fuelling the Anti-India Wave in Bangladesh

- ◆ **Historical grievances:** Some segments of the Bangladeshi population harbor historical grievances, particularly regarding India's role in the **Bangladesh Liberation War of 1971**.
- ◆ **Perceived interference:** Recent political developments in Bangladesh, coupled with allegations of Indian interference in internal affairs (India's actively siding with Sheikh Hasina), have contributed to the anti-India sentiment.
- ◆ **Social media influence:** Similar to the situation in Maldives, social media platforms have played a pivotal role in amplifying anti-India narratives, further exacerbating tensions between the two nations.

### 2: Dimension-Significance of Bangladesh for India

- ◆ Bangladesh is in a **geographic position** to provide **India's landlocked Northeast** with access to the **sea**.
- ◆ Bangladesh offered India the usage of **its Mongla and Chattogram ports** for cargo movement and the development of Assam and Tripura.
- ◆ Furthermore, as India's immediate eastern neighbour and a land bridge to Southeast Asia, Bangladesh is critical for **India's Act East** and **Neighbourhood First policies**.

### 3: Dimension-Implication for Both Countries

- ◆ **Diplomatic tensions:** The brewing anti-India sentiment has strained diplomatic relations between India and Bangladesh, potentially undermining years of bilateral cooperation and goodwill.
- ◆ **Regional stability:** As two neighboring countries, India and Bangladesh share a crucial relationship that impacts regional stability and security. Any deterioration in relations could have broader implications for **South Asian geopolitics**.
- ◆ **Economic cooperation:** A reduction in Indian imports may force Bangladesh to import from China. It will increase Bangladesh's dependence on China.

- ▶ It will impact Bangladesh's corporate sector, particularly in software and service-based businesses, as well as the hiring of Indian skilled workers and experts in Bangladesh.

### 4: Dimension-Transformation in India's global image

India's global image has transformed and it signifies its emergence as a dynamic player in the evolving geopolitical landscape, navigating complex international relations while pursuing its strategic interests and aspirations for global leadership. This shift is evident in several aspects:

- ◆ **Evolving Diplomatic Alliances:** India's diplomatic engagements have expanded beyond its historical allies to include new partners, particularly in the Indo-Pacific region.
  - ▶ **Example:** The Quad alliance comprising India, the **United States, Japan, and Australia** aims to promote a free and open **Indo-Pacific**, reflecting India's strategic recalibration.
- ◆ **Economic Aspirations and Power Dynamics:** India's robust economic growth and aspirations for global leadership have influenced its foreign policy priorities.
  - ▶ **Example:** Initiatives like the '**Make in India**' campaign and participation in multilateral trade agreements signify India's ambition to enhance its economic stature on the world stage.
- ◆ **Security and Defense Cooperation:** India's focus on bolstering its defense capabilities and security partnerships has reshaped its global positioning.
  - ▶ **Example:** Defense agreements with countries like the United States and France demonstrate India's proactive approach to safeguarding its interests in an evolving geopolitical landscape.
- ◆ **Multilateral Engagements:** India's active involvement in **multilateral forums** reflects its desire to shape global discourse and policies.
  - ▶ **Example:** Leadership roles in organizations like the **United Nations** and participation in climate change initiatives highlight India's commitment to addressing global challenges.

#### FACT BOX

- India shares a **4,100-km-long border with Bangladesh**. Bilateral trade between the countries exceeded **USD 15 billion in 2021-22**.
- India is **Bangladesh's biggest trading partner**.
- Bangladesh depends on India for essential imports, including **raw materials, machinery, and agricultural goods**.
- India gains from Bangladesh's exports of **its garments, textiles, and medicines**.
- **International Forums where India and Bangladesh are Common Members**



- ▶ South Asian Association for Regional Cooperation (SAARC)
- ▶ Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)
- ▶ Indian Ocean Rim Association for Regional Cooperation (IORA)
- **Major Issues Between India and Bangladesh:** Teesta River Water Dispute, illegal migration, trafficking, Rohingya issue

UPSC PYQ

Q. "The long sustained image of India as a leader of the oppressed and marginalised nations has disappeared on account of its newfound role in the emerging global order". Elaborate (UPSC 2019)

## 2. RESURGENCE OF MINILATERAL GROUPINGS AGAINST CHINA

**Context:** China's assertive foreign policy has spurred the formation of several **minilateral groupings** in recent years. The resurgence of the **Quad**, comprising Australia, India, Japan, and the US, in 2017-2018 and the establishment of **AUKUS**—Australia, UK, and the US—in 2021 were largely driven by concerns over Beijing's aggressive and coercive policies. Now, a novel trilateral partnership between the **US, Japan, and the Philippines** is currently in progress.

### 1: Dimension- Reasons for Resurgence of Minilateral Groupings:

- ◆ **China's Assertive Foreign Policy:** Beijing's aggressive and coercive policies, particularly in the South China Sea and beyond, have alarmed countries in the Indo-Pacific region and spurred them to form minilateral alliances as a response.
- ◆ **Concerns over Regional Stability:** China with its activity, has raised concerns among neighboring countries about regional stability and security.
- ◆ **Need for Collective Security:** Recognizing the limitations of bilateral engagements, countries have turned to minilateral groupings to strengthen collective security and deterrence against China's hegemonic ambitions.

### 2: Dimension- Implications of Minilateral Groupings:

- ◆ **Enhanced Security Cooperation:** Minilateral alliances like the Quad and the trilateral partnership between the **US, Japan, and the Philippines** facilitate enhanced security cooperation, intelligence sharing, and joint military exercises to counter China's influence.

- ◆ **Balancing China's Power:** By forming alliances, countries aim to balance China's growing power and influence in the region, preventing any **single country from dominating the Indo-Pacific** and ensuring a **rules-based order**.
- ◆ **Geopolitical Realignment:** The resurgence of minilateral groupings signifies a geopolitical realignment in the Indo-Pacific, with countries aligning themselves strategically to safeguard their interests.
- ◆ **Diplomatic Pressure on China:** It puts diplomatic pressure on China and signals a united front against its aggressive policies, thereby influencing Beijing's behavior and promoting stability in the region.
- ◆ **Economic Cooperation:** Such groupings also promote economic collaboration among member countries, fostering trade, investment, and development initiatives.

FACT BOX

#### About Minilaterals

- Minilaterals enable like-minded countries to work together in areas that are hindered by multilaterals or bigger groups of nations.
- They are part of a new effort to transcend the traditional alliance framework.
- Minilaterals are networks, not blocs, making it possible to rethink regional geographies.

#### Asia's minilaterals Examples

- The **Quadrilateral Security Dialogue** (known as the Quad and made up of Australia, India, Japan, and the United States)
- The **Australia-United Kingdom-United States** pact (known as AUKUS)
- **India, Israel, the United Arab Emirates, and the United States** established the **I2U2** cooperative format in 2021

## 3. RUSSIAN OIL PRICE CAP

**Context:** US is urging India to maintain the implementation of the **oil price cap** aimed at limiting profits to Russia, while also promoting **stable global energy markets**.

### 1: Dimension- Price Cap and Objective

- ◆ Following Russia's invasion of Ukraine, the **G7 nations, the European Union, and Australia** jointly implemented a price cap.
- ◆ The price cap is helping maintain a **steady supply of energy** to global consumers and businesses, and providing key importers like India with **more leverage to drive steeper bargains**.

- ◆ At the same time, the price cap, along with key sanctions enforcement measures, is **reducing Russia's profits from selling that oil**.
- ◆ India, which was the top buyer of Russian oil in 2023, has been heavily criticised for its continued purchase of discounted oil from Moscow.

## 2: Dimension- Impact of price caps

The imposition of price caps due to **Western sanctions on Russian oil** significantly impacts India's oil trade with Russia in several ways:

- ◆ **Supply Disruption and Dependency Concerns:** Price caps may disrupt the steady supply of crude oil to India, which heavily relies on imports to meet its energy needs.
- ◆ **Economic Impact and Trade Relations:** It could lead to increased prices for Indian importers, resulting in higher costs for refining and production. This may strain India's trade relations with Russia, as the country seeks cost-effective energy sources to sustain its economic growth and development.
- ◆ **Diversification Efforts and Strategic Considerations:** It may prompt India to accelerate its efforts to diversify its oil imports, reducing reliance on Russian oil and exploring alternative markets.
- ◆ **Impact on Bilateral Cooperation:** The imposition of price caps could affect bilateral cooperation between India and Russia in the energy sector, potentially leading to renegotiations of existing agreements and contracts.
- ◆ **Global Energy Market Dynamics:** It can contribute to volatility in the global energy market, affecting oil prices and supply chains worldwide.

## 4. GCC'S 'VISION FOR REGIONAL SECURITY'

**Context:** The **Gulf Cooperation Council (GCC)** announced the launch of its '**Vision for Regional Security**', a new initiative formulated by the six-country bloc earlier.

### 1: Dimension-Issues covered in the vision

- ◆ There are several topics that the vision covers, outlined in 15 specific points, such as issues relating to **regional security and stability, economy and development**, as well as **climate change**.
- ◆ **Israel issue:** One geopolitical challenge that the vision seeks to resolve is **the issue of Israel's occupation of the Palestinian territories**, reaffirming the GCC's commitment to the **Arab Peace Initiative** that was first endorsed by the **Arab League in 2002**, despite Bahrain and the UAE normalising relations with Israel.

- ▶ The vision also calls for the end of Israeli settlements in the occupied West Bank and notes that the conflict is a key issue destabilising the region.
- ◆ **Two-State Solution:** Among others, it calls for a **two-State solution**, the withdrawal of Israeli forces to the pre-June 1967 borders and the establishment of an **independent Palestinian State with East Jerusalem as its capital**.
- ◆ **Nuclear policy:** It also addresses **nuclear non-proliferation in the region**, a long-standing issue due to Iran's nuclear programme, as well as a commitment on the right to civil nuclear use, a policy which has been sought by both the **UAE and Saudi Arabia**.
- ◆ **Other points** include **addressing cyber security issues, global energy market stability, climate change and the advancement of implementing a 'circular carbon economy' and securing water security**.
- ◆ The document has come at a time when the West Asian region is engulfed in a turmoil since the beginning of the **Israel-Hamas War** in October 2023. Its launch has provoked questions about what the security plan entails and how it will be implemented, particularly with its formation coinciding with **Israel's war on Gaza** and a spate of attacks on regional **Red Sea shipping**.

### Fact Box: Gulf Cooperation Council (GCC)

- The GCC is an economic and political bloc formed in 1981, in the face of regional conflict and tensions. It includes **Kuwait, Qatar, Bahrain, Saudi Arabia, the UAE and Oman**, six countries with huge oil resources and some of the highest per capita GDPs in the world.
- Despite the agreement on greater economic and political integration there have been huge divergences on the goals of the GCC and differences on regional policy.
- There has been a new push for greater cooperation after the blockade on Qatar by Saudi Arabia, the UAE, Egypt and Bahrain ended in 2021 with the Al-Ula Agreement.

## 5. INDIA'S ONE AIRSPACE IDEA

**Context:** India is planning a major move to unify its **four Flight Information Regions (FIRs)** in **Delhi, Mumbai, Kolkata and Chennai**, into one continuous airspace in Nagpur and have harmonized **Air Traffic Management** from Nagpur which has a unique central location in the country.

### 1: Dimension- Persistent Challenges in air traffic management

- ◆ **Inefficient air traffic management** exacerbates congestion issues and compromises flight safety. India's airspace is fragmented, with multiple air traffic control

(ATC) authorities responsible for different regions, leading to coordination challenges and suboptimal routing.

- ◆ **Skies are already capacity-crunched** and are set to become even more so with the advent of new airspace users such as **electric vertical take-off and landing aircrafts (eVTOLs)**.
- ◆ **Managing increased volume of airborne vehicles** efficiently, while maintaining or even enhancing safety and avoiding congestion, represents a significant challenge.

**2: Dimension- Impact of the move**

- ◆ The single continuum **Flight Information Region (FIR)** would yield a lot of benefits in terms of safety, efficiency, user satisfaction, reduced carbon footprint and optimum manpower utilization.
- ◆ **Indian Single Sky Harmonized Air Traffic Management at Nagpur (ISHAN)** is expected to reduce separations (between flights) and have more fuel-efficient flight paths for aircraft.
- ◆ The unification aims to streamline and enhance air traffic management (ATM) operations in the region.
- ◆ If this plan is implemented, the air traffic controllers of every area control would not be required to coordinate for domestic flights flying above 25,000 ft (flights in the upper airspace) as they would all be handled by **Air traffic controllers (ATCOs)** in Nagpur.
- ◆ The ATCOs in every region or airport would then only work to guide the flights approaching or taking off from an airport until it enters the upper space which is referred to as 'Area control' in aviation parlance".

**FACT BOX**

**India's Airspace**

- India is the major air navigation service provider in the Asia-Pacific region and controls over 2.8 million square nautical miles.
- This quantum of airspace is controlled by India through four flight information regions (**Delhi, Mumbai, Kolkata, Chennai**) with a sub-FIR at Guwahati.
- India is sharing its Flight Information Regions (FIR) with 12 neighbouring countries.
- **Director General of Civil Aviation (DGCA)** is the regulatory body for Civil Aviation in India.
- The **Airports Authority of India (AAI)** is the statutory body which is responsible for creating, upgrading, maintaining and managing civil aviation infrastructure in India.
  - ▶ It also takes care of **Air Traffic Management (ATM) and Communication Navigation Surveillance (CNS) of Indian Airspace.**

**Rights over Airspace**

- **Article 1** of the **Convention on International Civil Aviation**, with regards to sovereignty of Airspace states that *'every State has complete and exclusive sovereignty over the airspace above its territory'*.
- Further, the territory of any state includes **12 nautical miles of territorial waters** off the coastline.
- Airspace which is not within any country's territorial limit is considered as **'International Airspace'**.

**6. CLIMATE CRISIS IMPACTS  
CITIZENS' RIGHT TO LIFE: SC**

**Context:** The landmark judgment by the **Supreme Court of India** sheds light on the **critical intersection between climate change and human rights**. It emphasizes the **constitutional guarantee of the right to life** and the imperative for India to prioritize **clean energy initiatives**, particularly solar power, to mitigate the adverse effects of the climate crisis.

**1: Dimension- Constitutional Right to Life and Health:**

- ◆ The **Supreme Court** underscores the impact of climate change on the fundamental right to life, stating that without a **clean and stable environment**, this right cannot be fully realized.
- ◆ **Factors** such as **air pollution, rising temperatures, and natural disasters like floods and droughts** directly affect citizens' health and well-being. The judgment highlights the need for citizens to be free from the adverse effects of climate change to uphold their constitutional rights.
- ◆ **Case Study:** The judgment references the petition to protect the **critically endangered Great Indian Bustard (GIB)**, illustrating the **tangible impact** of climate change on wildlife conservation efforts.

**2: Dimension- Impact on Tribal Rights and Equality**

- ◆ Climate change disproportionately affects **indigenous communities**, threatening their lands, forests, and cultural heritage.
- ◆ The court acknowledges that the **destruction of tribal lands and displacement** from their homes can impact the constitutional guarantee of the right to equality.
- ◆ **Case Study:** The court discusses the plight of tribals in the **Andaman and Nicobar Islands**, highlighting how their relationship with nature is intertwined with their cultural and religious practices.
  - ▶ The **right to health** (which is a part of the right to life under **Article 21**) is impacted due to

factors such as **air pollution, shifts in vector-borne diseases, rising temperatures, droughts, shortages in food supplies due to crop failure, storms and flooding.**

- ▶ The inability of underserved communities to adapt to climate change or cope with its effects violates the **right to life (Article 21)** as well as the **right to equality (Article 14)**.

### 3: Dimension- Unequal Energy Access

- ◆ Despite the potential of clean energy initiatives to address energy inequality, challenges remain in terms of infrastructure, financing, and policy frameworks.

**Women spend an average of 1.4 hours a day collecting firewood and an average four hours cooking.**

- ▶ **Unequal energy access** disproportionately affects women and girls due to their gender roles and responsibilities such as through time spent on domestic chores and unpaid care work.
- ◆ **Case Study:** The success of initiatives like the **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya)** in electrifying rural households demonstrates the effectiveness of targeted policies in expanding energy access to marginalized communities.

#### FACT BOX

##### India's Renewable Energy

- India's goal to achieve **500 GW of non-fossil-based electricity generation capacity** by 2030 aligns with its efforts to be **net zero by 2070**.
- In 2023-24, out of the total generation capacity of 9,943 MW added, **8,269 was from non-fossil fuel sources**.
- According to the **Renewable Energy Statistics 2023**, India has the 4th largest installed capacity of renewables.

##### Great Indian Bustard

- The GIB is listed as critically endangered by the International Union for Conservation of Nature.
- They are protected under the **Wildlife (Protection) Act, 1972**.

##### Constitutional Provisions recognising Environmental rights

- **Article 48A** of the Constitution provides that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
- **Clause (g) of Article 51A** stipulates that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.

- **Article 21** recognises the right to life and personal liberty while **Article 14** indicates that all persons shall have equality before law and the equal protection of laws. These Articles are important sources of the right to a clean environment and the right against the adverse effects of climate change

## 7. SC CAUTIONS AGAINST CENTRE-STATE'S DISPUTES

**Context:** A division bench of **Supreme Court** verbally observed that various state governments are directly approaching the top court seeking similar reliefs while there should be no contest between the Centre and states.

### 1: Dimension-Reason behind increasing tussle

- ◆ **Encroaching interesting areas:** Areas of governance which are essentially local in nature are being encroached upon by Union as electoral compulsions require greater connect with the people.
  - ▶ **Example:** Health being a state subject, the recent announcement by the Centre to provide free **food grains** to nearly 80 crore people is clearly part of this trend.
- ◆ **Gradual encroachment** by the Centre on the states' domain through direct funding and policy implementation, leading to challenges in service delivery and credit attribution. The Government in India is more involved directly in these state's subjects.
  - ▶ Take **education and health**, both primarily responsibility of the states and both encroached upon by the Centre.
- ◆ **Fiscal centralization:** The unequal distribution of financial resources between the Centre and the states, coupled with the Centre's increasing control over tax revenues, has fueled disputes over fiscal autonomy.
  - ▶ **Example:** Goods and Services Tax (GST), leading to tensions between the Centre and the states.
- ◆ **Policy conflicts:** Divergent political ideologies and policy priorities between the Centre and various states often result in disagreements over the implementation of national policies at the regional level.

### 2: Dimension-Required Measures

- ◆ **Minding one's work:** The Centre must maintain the **monopoly of the national agenda**. It must though let the States do their own work. The **Concurrent List** must be dismantled or at least shrunk and a new list that empowers local governments be instituted.
- ◆ **Decentralisation:** The phraseology of and the need for decentralisation, delegation and devolution have appeared repeatedly in committees and commissions including the **Rajamanar (Centre-State Relations**



**Inquiry) Committee, the Sarkaria Commission, the Administrative Reforms Commission** and the 2010 report of the **Inter-State Council** on centre-state relations.

- ◆ **Modern approach:** Indian Polity demands a modern approach to transformation-the induction of efficiency, accountability and outcome orientation

**CONSTITUTIONAL PROVISION**

- In a **federal structure** it is critical that **Union government** responds to the **needs of states** and there is complete **transparency and accountability** in the functioning of both these organs.
- However, the framers of the Constitution envisioned differences between the Centre and States owing to this **quasi-federal structure** and **dual polity**. And so they added the **original and exclusive jurisdiction of the Supreme Court** for the resolution of such issues.
- **Article 131** deals with the 'original jurisdiction' of the Supreme Court of India in any dispute that involves a 'question of law or fact on which the existence of legal right depends'.
- The **National Development Council** set up in 1952 and the **Inter-State Council** set up in 1990 under **Article 263** are the two major arrangements to resolve Centre-State disputes and enhance cooperation.

**Schedule VII of the Constitution**

- **Central List:** The Union government could legislate on items given in the Central List
- **State List:** State could legislate for items in the State List.
- **Concurrent List:** In the Concurrent List both could legislate but the Central legislation had overriding powers. Increasingly, the powers of the Centre have increased, with restriction on the state's power to frame laws.
- Under the **42nd amendment to the Constitution**, five subjects including education and forests were transferred to the Concurrent List from the State List, thereby restricting the power of the state.

**8. TELEMEDICINE IN INDIA**

**Context:** Telemedicine has emerged as a viable alternative to in-person consultations with doctors in many contexts.

**Benefits of Telemedicine**

- ◆ **Easy and time saving:** It saves patients time and expenses, which can be considerable if they are located in remote areas and/or are not well to do. In India, where 70% of the population lives in villages, a hospital visit often requires expensive long-distance travel to urban centres, which imposes its own considerable carbon footprint.

- ◆ **Lower emissions:** According to a recent study, India's healthcare sector emitted 74 million tonnes of carbon dioxide in 2014, around 3% of India's total emissions of the gas that year. Vehicular emissions are a major contributor to local pollution and global warming. Telemedicine can be of help here.

- ◆ **Filling Gap:** Most Indians live in rural areas while most doctors operate from urban locations. This leads to a gap in health care access that can be solved with telemedicine.

- ◆ **Economic impact:** It can save time and money, lower fees and premiums.

- ◆ **Making up to doctor-population ratio:** WHO recommends a doctor-population ratio of **1:1000** while the current doctor population ratio in India is only **0.62 : 1000**. The ratio is expected to remain low for a long time to come. This deficit is partly being made up by the **active telemedicine services** in various parts of the country.

**Government Initiatives for Telemedicine**

- **eSanjeevani** is Govt. of India's free telemedicine service. It is a national telemedicine service that strives to provide an **alternative to the conventional physical consultations** via digital platform.
- **AROGYASREE** is another internet-based mobile telemedicine conglomerate that integrates multiple hospitals, mobile medical specialists, and rural mobile clinics.
- **Telemedicine Practice Guidelines under the NMC Act, 2019**, regulate telemedicine in India. These guidelines outline prescription protocols and the responsibilities of registered medical practitioners during online consultations.
- **Information Technology Act, 2000**, governs data collection by teleconsultation intermediaries.

**9. INDIA'S STRUGGLE WITH AGRICULTURAL LABOR DEPENDENCY**

**Context:** The recent report highlighting **India's comparatively lower rate of transitioning its working-age population** away from farm-related work compared to its neighboring countries has brought renewed attention to the **longstanding issue of agricultural labor dependency in the country**.

**Key-highlights of the Report (the shift)**

- ◆ **Report by:** World Bank's April South Asia Development Update report.
- ◆ **Time Period:** 2000 to 2023

- ◆ **CruX:** India has managed to move a smaller share of its working-age population away from farm-related work than many of its neighbours.
- ◆ **Bangladesh, Bhutan, Sri Lanka and Nepal** managed to shift a bigger share of jobs to non-agricultural work than India.
- ◆ Only Pakistan and the Maldives show a lower shift among South Asian peers.
- ◆ The share of working-age Indians who are employed in agri-based jobs has come down over the years. This employment ratio for India was 63.9 per cent in 2000. It declined to 58.9 per cent by 2010; and further to 53.8 per cent in 2019.
- ◆ Since 2000, South Asian countries witnessed rising productivity but only marginally rising, or even declining, employment ratios.
- ◆ Employment ratios fell in **Bhutan, India, Maldives, and Nepal**, while in **Bangladesh, Pakistan, and Sri Lanka**.
- ◆ **Men's employment ratio** in India declined by 9.6 percentage points. Most South Asian countries recorded a decline.
- ◆ **Women's employment ratio** in India increased by 1.4 percentage points. It was the highest for Bangladesh at 11.6 percentage points. The increased participation of women could be driven by **rising self-employment** among them driven by economic distress.

### 1: Dimension- Why the findings are concerning?

- ◆ **Growth challenges:** The slower transition of India's working-age population from agriculture poses challenges for sustainable economic growth and inclusive development.
- ◆ **Distress:** Both self-employment and agriculture constitute fallback options for workers who have lost work and cannot afford to remain unemployed.
- ◆ **Reduced earnings:** More women serving the same market translated into increased competition and lower earnings.
- ◆ **Poor quality of jobs:** Indian agricultural labourers mostly moved to other low-paying and informal jobs such as petty retailing, small eateries, domestic help, sanitation, security staffing, and transport.
- ◆ **Low-paid employment:** The labour transfer is happening within the low-productivity informal economy. The jobs that are getting generated outside agriculture are mostly in low-paid services and construction.

### 2: Dimension- Required measures

- ◆ **Investment:** India aims to reduce agriculture's 'self-exploitation' through non-farm jobs. This requires

addressing problems with **job laws, promoting direct benefit transfer, improving infrastructure and human capital, and reforming social security and labor codes.**

- ◆ **Creating opportunities in non-agricultural sectors** to uplift rural populations from the cycle of self-exploitation in agriculture.
- ◆ **Skill development** of this workforce that is moving away from farms into other sectors is essential.
- ◆ **Gender disparities in employment** trends underscore the need for targeted interventions to empower women in the workforce and unlock their potential contribution to India's economy.

#### FACT BOX

##### Workforce Distribution

- In 2021, 43.96 percent of the workforce in India were employed in agriculture. The remaining half was split nearly evenly between manufacturing and services sector.

##### Government Initiatives to Shift Farmers to Non-Agricultural Jobs

- **Skill Development Programs:** Skill India Mission focus on providing vocational training and certification to enhance employability in diverse sectors.
- **Rural Employment Schemes:** Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)
- **Promotion of Entrepreneurship:** Startup India initiative
- **Investment in Rural Infrastructure:** Pradhan Mantri Gram Sadak Yojana (PMGSY)
- **Industry-Focused Policies:** Make in India, Digital India, and Startup India

#### UPSC PYQ

- Q. "Economic growth in the recent past has been led by increase in labour productivity." Explain this statement. Suggest the growth pattern that will lead to creation of more jobs without compromising labour productivity. (UPSC 2022)
- Q. Normally countries shift from agriculture to industry and then later to services, but India shifted directly from agriculture to services. What are the reasons for the huge growth of services vis-a-vis industry in the country? Can India become a developed country without a strong industrial base? (UPSC 2014)

## 10. GAPS IN WEALTH AND INCOME IN AN UNEQUAL INDIA

**Context:** A recent study 'Income and Wealth Inequality in India, 1922-2023: The Rise of the Billionaire Raj' by the World Inequality Lab (WIL), presents facts about 'inequality'.

### Key-highlights of the Report

- ◆ **Income inequality:** 22.6% of India's national income in 2022-23 went to the top 1%, the highest proportion in the last 100 years.
- ◆ **Wealth inequality:** The share of the top 1% in wealth was as high as 40.1% in 2022-23, also its highest level since 1961.
  - ▶ The share of wealth among the top 10% increased from 45% in 1961 to 65% in 2022-23.
  - ▶ Conversely, the share of the bottom 50% and middle 40% in wealth has declined.
- ◆ **Wealth concentration:** India's wealth inequality is not as **extreme as Brazil and South Africa**, but its wealth concentration has already increased threefold between 1961 and 2023.
- ◆ Additionally, with India's income inequality being the world's highest, higher than South Africa, Brazil and the United States of America, it will only add to wealth inequality in times to come.

### 1: Dimension- Growing inequality and Concerns

- ◆ **Negative impact on growth:** Income inequality negatively affects growth and its sustainability. Growth is critical to the reduction of poverty; the greater the inequality, the lower the impact of growth on poverty reduction
- ◆ **Inverse relationship:** There is an inverse relationship between the income share of the rich and economic growth. (IMF Study).
  - ▶ If the share of the top 20% of the population increases by 1 percentage point, GDP growth is actually 0.08 percentage points lower in the following five years, suggesting that the benefits do not trickle down.
  - ▶ Instead, a similar increase in the income share of the bottom 20% is associated with 0.38 percentage point higher growth.
- ◆ **Affected policy-making:** The super-rich affect decisions by being in and out of the corridors of power.
- ◆ **Cut on public goods:** The enhanced power of the elite could result in a more limited provision of public goods that boost productivity and growth, and which disproportionately benefit the poor.

- ◆ **Inequality dampens investment**, and hence growth, by fuelling economic and political instability.

### 2: Dimension- Policies to reduce inequality

- ◆ **Pro-poor growth:** There is need of growth strategies that generate non-farm jobs (and promote structural change). It would lead to pro-poor growth, which would also be inequality-reducing.
- ◆ **Absorption of labour:** The government needs to work for the absorption of surplus labour from agriculture, but also the rising share of the formal workforce, with access to social insurance.
- ◆ **Social security:** Employment is key for poverty reduction. But employment should come with old age pension, death/disability insurance and maternity benefits if sudden shocks are not to push informal workers into poverty.
- ◆ **Progressive taxes:** Progressive taxes on income, inheritance and property have been most effective in reducing inequality in industrialised countries. India's Union government barely captures under 8% of the workforce in income tax; it does not have an inheritance tax and has abolished its wealth tax.
- ◆ **Property taxation** (the responsibility of which lies with local governments) remains grossly inadequate and captures a minuscule portion of potential revenue.

#### UPSC PYQ

- Q. Explain intergenerational and intragenerational issues of equity from the perspective of inclusive growth and sustainable development. (150 Words, 10 Marks) (UPSC 2020)

## 11. INNOVATION IN TRADITIONAL PRACTICES OF AGRICULTURE

**Context:** In Rajasthan's **Shekhawati region**, farmers are opting for **innovations in traditional practices** and adopted new techniques to turn their land into a profitable venture amid the decline in the **groundwater level and erratic rainfall**.

### Adopted techniques:

- ◆ Solar power panel running pumps, slim polyethylene hoses for drip irrigation, uniformly spaced trees, jets shoot water mixed with fertilizer directly at the roots; climate-controlled greenhouses, rainwater harvesting techniques, establishment of climate-controlled polyhouse for growing vegetables, organic farming with the help of **vermicompost**
  - ▶ **Sundaram Verma of Danta village** has developed techniques to grow crops with less water and

conserve water in the arid regions. He was awarded the **Padma Shri in 2020** for developing '**dryland agroforestry**', a method to help tree plantation efforts.

- ◆ **Technology in Agriculture:** Sensor Data Used for Smart Farming, Climate Smart Agriculture Mechanization Using Robotics, GPS Technology for Climate-Smart Agriculture, Drones for Climate-Smart Agriculture, Precision Agriculture

### 1: Dimension- Significance for the farmers

- ◆ **Increased income:** The average income of farmers in the region, which was earlier about Rs 1 lakh per hectare in a year, has touched about Rs 8 lakh a year.
- ◆ **Increased sowing area:** The expertise at the farmland has led to significant expansion in the sowing area for crops and vegetables, higher yield, and enhanced annual income per hectare of land.

### 2: Dimension- Emerging e-Technologies in Agriculture

- ◆ **Agriculture Sensors:** These sensors can detect moisture and nitrogen levels. This information can be used to determine when to water and fertilize rather than rely on a predetermined schedule.
- ◆ **Weather Tracking:** Drones, remote sensors, and satellites gather 24/7 data on weather patterns in and around the fields. This provides farmers with vital information on temperature, rainfall, soil, humidity.
- ◆ **Satellite Imaging:** It allows for real-time crop imagery. It lets a farmer examine crops as if he or she were standing there without actually standing there.
- ◆ **Pervasive Automation:** It refers to any technology that reduces operator workload. It expands accurate and controlled growing through proper guidance to farmers about optimum planting, timely harvesting, nutrient management and pest attacks.
  - ▶ Examples include autonomous vehicles controlled by robotics.
- ◆ **Minichromosomal Technology:** Using minichromosomes, agricultural geneticists can add dozens and perhaps even hundreds of traits to a plant. In this, the plant's original chromosomes are not altered in any way.
- ◆ **Radio-frequency identification (RFID) Technology:** RFID based sensors provide information that can be associated with farming yields.
  - ▶ For example, barcode on the yields can be scanned with a smartphone in order to access information about the soil that yielded them.
- ◆ **Vertical Farming:** Vertical farming a component of urban agriculture is the practice of producing food in vertically stacked layers. Farmers in all areas can use it

to make better use of available land and to grow crops that wouldn't normally be viable in those locations.

- ◆ **Blockchain in Agriculture:** Blockchain technologies can track all types of information about plants, such as seed quality, and crop growth, and even generate a record of the journey of the plant after it leaves the farm.
- ◆ **Internet of Things (IOT):** The buzz word in precision farming lately has been IOT. In IoT-based smart farming, a system is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, etc.) and automating the irrigation system.
- ◆ **Drone Technology:** Drones can help in the analysis of soils and drainage, crop health assessment and are being used in variable rate application of liquid pesticides, fertilisers and herbicides.

#### FACT BOX

##### Agriculture Statistics

- Rajasthan is **India's largest state** with 61% arid or semi-arid climate.
- Rajasthan is **India's largest producer of mustard**, with a 48% share in national output.
- Despite being mostly arid, it is also the **country's largest producer of bajra** (pearl millet), guar (cluster beans) and coarse cereals, apart from spices.

##### Steps taken by the Government in the Direction

- **AgriStack:** AgriStack is a government initiative to build an ecosystem that facilitates the delivery of digital agriculture services, including responsible advisories and access to quality inputs.
- **Digital Agriculture Mission:** This has been initiated for 2021 -2025 by the government for projects based on new technologies like artificial intelligence, block chain, remote sensing and GIS technology, use of drones and robots etc.
- **Sub-Mission on Agricultural Mechanization (SMAM):** Under this Scheme, subsidies are provided for purchase of various types of agricultural equipment and machinery.
- **Other Digital Initiatives:** Kisan Call Centres, Kisan Suvidha App, Agri Market App, Soil Health Card (SHC) Portal, etc.

#### UPSC MAINS PYQ

- Q. How does e-Technology help farmers in production and marketing of agricultural produce? Explain it. (UPSC 2023)
- Q. What are the present challenges before crop diversification? How do emerging technologies provide an opportunity for crop diversification? (UPSC 2021)



## 12. LOW WAGES HAUNTS INDIA'S ECONOMY

**Context:** Amidst the backdrop of economic uncertainty and volatility, daily wage workers continue to face myriad challenges. From meager wages to precarious employment opportunities, the plight of daily wagers underscores the urgent need for comprehensive interventions to address their vulnerabilities.

### 1: Dimension-Factor behind low wages

- ◆ **Low capital and skills:** Since capital is scarce and

labour abundant and less productive, wages are relatively lower in India.

- ◆ **Vicious cycle:** The pervasive problem of low wages perpetuates **cycles of poverty and deprivation** among daily wage earners.
- ◆ **Persistence of informal set up:** Informal economy suffers from long working hours, low pay and difficult conditions, low job security, inadequate social security regulation and others.
- ◆ **Extreme weather events** remain a key factor as rural jobs are dependent on agriculture which is dependent on monsoon and **rabi and kharif** production.

### STARK DIFFERENCE IN INDIA'S MINIMUM WAGE

| INDIA   | AMERICA  |
|---|--|
| In India, minimum wages are not market clearing wages. They are regulatory wages to ensure that market wages do not fall below subsistence. They are expected to cover the essential current costs of accommodation, food and clothing ( <b>roti, kapada aur makaan</b> ) of a small family. It is inadequate for a <b>dignified life</b> . | In America, the minimum wage captures the market value of food, accommodation, utilities, transportation, healthcare and social security at subsistence levels for small nuclear families. |

### 2: Dimension- Impact on low wages on economy

- ◆ **Low contribution to aggregate demand:** Despite the celebration of higher economic growth, declining incomes mean that people at large do not have sufficient buying power in their hands. These households contribute substantially to economic output, making up 44-45% of **Gross Value Added (GVA)**.
- ◆ **Poor standard of living:** Labors are forced to live in poor conditions with many sharing a small room in a slum. Water is scarce and drinking water more so. Access to clean toilets is limited and disease spreads. There is lack of civic amenities like sewage. Their children are often deprived of schools and playgrounds.
- ◆ **Lack of investment in education:** The sporadic nature of employment opportunities and lack of job security not only undermines their financial stability but also impedes their ability to plan for the future and invest in skill development or education.
- ◆ **Increased vulnerability to economic shocks:** The absence of **adequate social protection** mechanisms further exacerbates their **financial insecurity**, leaving them **vulnerable to economic shocks and crises**.

### 3: Dimension-Required measures

- ◆ Efforts are needed to address the structural barriers that perpetuate the marginalization of daily wage workers.
- ◆ This includes implementing measures to ensure fair wages, improve working conditions, and expand access

to social protection schemes such as unemployment benefits and healthcare services.

#### FACT BOX

##### Gross Value Added

- Gross Value Added is the value of goods and services produced by an industry, sector, manufacturer, area or region in an economy.

##### Minimum Wage

- The **national floor level minimum wage (NFLMW)** is the minimum wage below which no state government can fix the minimum wage. It was brought into effect from 1996 by the Centre. State governments can set their own minimum wages.
- India is planning to replace its minimum wage system with a living wage by 2025 to lift millions out of poverty and ensure their well-being.

##### Government schemes/Acts for labourers

- **Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (ABPMJAY)** provides health cover.
- **Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM) Pension Scheme** provide old age protection to unorganised sector workers
- **Others:** One Nation One Ration Card Scheme under National Food Security Act, Mahatma Gandhi National Rural Employment Guarantee Act, Deen Dayal Upadhyay Gramin Kaushal Yojana, Pradhan Mantri Awas Yojana, Gareeb Kalyan Rojgar Abhiyan, Mahatma Gandhi Bunkar Bima Yojana, Deen Dayal Antyodaya Yojana, PMSVANidhi, Pradhan Mantri Kaushal Vikas Yojana etc.

- ▶ Atmanirbhar Bharat Rozgar Yojana (ABRY), Unemployment benefit under Atal Beemit Vyakti Kalyan Yojana (ABVKY), Pradhan Mantri Garib Kalyan Rojgar Abhiyan (PMGKRA), National Social Assistance Program, Deen Dayal Upadhyay Gramin Kaushalya Yojana (DDU-GKY), Pradhan Mantri Garib Kalyan Rojgar Abhiyan (PM-GKRA), Pradhan Mantri Kisan Maan-Dhan Yojana (PM KMDY), Pradhan Mantri Kisan Samman Nidhi etc.

#### UPSC PYQ

- Q. 'Despite the implementation of various programmes for eradication of poverty by the government in India, poverty is still existing'. Explain by giving reasons. (UPSC 2018)
- Q: While we found India's demographic dividend, we ignore the dropping state of employability. What are we missing while doing so? Where will the jobs that India desperately needs come from? Explain (UPSC 2014)

## 13. INDIA RESTARTS IMPORT RESTRICTIONS ON SOLAR MODULES

**Context:** The government recently **re-imposed restrictions on import of solar modules**. The move was taken to boost local manufacturing as domestic capacities are now ready to meet the demand and need to be supported.

### 1: Dimension- Need to focus on solar power generation in India

- ◆ **To meet its targets:** The **government's ambitious target of 500 GW** of installed capacity from non-fossil fuels by 2030 is the main driver to scale solar power in India.
- ◆ **To cater increasing demand for energy:** India also accounts for the fastest rate of growth for demand of electricity through 2026 among major economies.
  - ▶ This is because of strong economic activity and expanding consumption of products to mitigate extreme weather. Solar power accounted for about one-third of all energy generated from renewables between April 2023 and February 2024.
- ◆ **To tap full potential:** The country has an estimated solar power potential of 748.99 GW. Hence, the potential of solar energy is not fully tapped, so far.

### 2: Dimension- Efforts made by India

To address this over dependence, India made three significant efforts over the past five years.

- ◆ **Notification of the ALMM order (2019):** This list consists of manufacturers who "are eligible for use in Government Projects/Government assisted projects/projects under Government schemes & programmes,

including projects set up for sale of electricity to the Central and State Governments.

- ◆ **PLI Scheme:** The government proposed the **Rs 19,500 crore PLI scheme** in the Union Budget of 2022-23. This was to scale domestic manufacturing of the entire solar supply chain — from polysilicon to solar modules.
- ◆ **Custom duty:** The government also introduced a steep **40% customs duty** on PV modules and 25% on PV cells. These duties were halved as solar capacity additions slowed.

### 3: Dimension- Reason behind China's leading position as exporter

- ◆ **Cheap power supply to industries:** China was the most cost-competitive location to manufacture all components of the solar PV supply chains. This is mainly because of the lower cost of power supplied to the industry, as electricity accounts for more than 40% of production costs for polysilicon and almost 20% for ingots and wafers.
- ◆ **Recognition as strategic sector:** China's policies prioritised **solar PV as a strategic sector**, and growing domestic demand enabled economies of scale and supported continuous innovation throughout the supply chain.

### 4: Dimension- Import restriction vs import substitution

- ◆ The government's focus to increase local sourcing of solar modules has been widely reported as '**import restrictions**'.
- ◆ However, the government's decision has been premised on the estimation that measures, such as the **Production Linked Incentive (PLI) scheme**, has boosted India's domestic sector's production capacities and bettered price competitiveness to meet local demand. This is an **import substitution effort**, and not an attempt to restrict imports.

#### FACT BOX

##### India's imports

- India imported about USD 11.17 billion worth solar cells and modules in the past five years. This is worth 0.4% of India's total exports in the same period.
- China accounted for 53% of India's solar cell imports, and 63% of solar PV modules.

##### India's solar module manufacturing capacity

- As on December 2023, India's cumulative solar module manufacturing capacity has reached **64.5GW**, and solar cell manufacturing capacity totalled 5.8GW.
- **India's domestic module manufacturing capacity** is projected to surpass 150GW, and cell manufacturing capacity is expected to reach 75GW by 2026.

## 14. SURGE IN INDIA'S STEEL IMPORTS

**Context:** The Indian steel industry has expressed concern over India becoming a net importer of steel in 2023-24, saying it is a "warning signal" for India which strives to become Atmanirbhar.

### 1: Dimension- Reason behind the surge

- ◆ **Predatory imports:** India's steel industry faces threat from predatory imports. Restricting steel imports is crucial to safeguard investments and ensure robust **GDP growth**.
- ◆ **Ease of availability:** The surge in imports illustrates a broadening appetite for foreign steel products in India due to their ease of availability and wide range of specifications available across various price points.
- ◆ **Export taxes:** In 2023, following the introduction of export taxes on steel and stainless steel by the Indian government, the export share was only 6.5%.
- ◆ **Red sea crisis impact on exports:** The crisis in the **Red Sea hit Indian steel exporters** particularly hard and caused their logistics costs to explode.

### 2: Dimension- Required Measures:

- ◆ **Arrest predatory imports:** There is need for a **trade remedial action** on an urgent basis to arrest the inbound shipments.
- ◆ **Increase duty:** India needs to remove lesser duty on steel import, as it helps importers and other steel-surplus country for supporting their own steel mills, while India suffers in expanding steel capacity.

#### FACT BOX

- India has registered a **38 per cent surge in imports of finished steel** to 8.319 million tonnes (MnT) over 6.022 MnT imported during the preceding 2022-23 fiscal.
- The surge in predatory **imports from China** is a big threat to the Atmanirbharta in steel.
  - ▶ Under the **National Steel Policy**, India aims to scale up its annual steel production capacity to **300 million tonnes by 2030** to cater to its **domestic requirement**.
- **Finished steel** includes **non-alloyed offerings, alloyed ones and stainless steel**.

## 15. RISKS AT ZAPORIZHZHIA NUCLEAR POWER PLANT

**Context:** Russia and Ukraine have each accused the other of launching kamikaze drones at the Zaporizhzhia nuclear power plant.

### Background

- ◆ The nuclear plant was captured in the early stages of the two-year-long war, and despite occasional efforts to reconnect to the **Russian energy grid** its reactors have gradually been put into shutdown.
- ◆ Five out of six are in cold shutdown, where the reactors are running at a temperature below boiling point.

### 1: Dimension- Risks at Zaporizhzhia nuclear power plant after drone attack

- ◆ **Constant threat:** Fighting a war around a nuclear plant has put nuclear safety and security in constant jeopardy.
- ◆ **Direct risk from crash:** The model of containment structure used in Zaporizhzhia "exhibits vulnerabilities to the effects of an aircraft crash" and a fighter jet crashing downwards into the dome, where the **structure is thinner, could penetrate it**, causing **concrete chunks** and **aircraft engine parts** to fall inside.
- ◆ **Potential target:** External power lines essential to **cooling nuclear fuel** in the reactors are a softer potential target. Cooling fuel even in reactors in cold shutdown is necessary to prevent a nuclear meltdown.
- ◆ **Risk of explosion:** **Pressurised water** is used to transfer heat away from the reactors even when they are shut down, and pumped water is also used to cool down removed spent nuclear fuel from the reactors. Without enough water, or power to pump the water, the fuel could melt down and the **zirconium cladding** could release hydrogen, which can explode.

### 2: Dimension- Threats to dry spent fuel storage facility

- ◆ Besides the reactors, there is also a dry spent fuel storage facility at the site for **used nuclear fuel assemblies**, and spent fuel pools at each reactor site that are used to cool down the used nuclear fuel.
- ◆ **Release of radioactive isotopes:** Without water supply to the pools, the water evaporates and the temperatures increase, risking a fire that could release a number of **radioactive isotopes**.
- ◆ An emission of hydrogen from a spent fuel pool caused an explosion at reactor 4 in **Japan's Fukushima nuclear disaster** in 2011.
- ◆ **Release of radionuclides:** A meltdown of the fuel could trigger a fire or explosion that could release a **plume of radionuclides** into the air which could then spread over a large area.

#### FACT BOX: ZAPORIZHZHIA NUCLEAR POWER PLANT

- **Location:** Energodar, Ukraine
- **River:** Dnieper River

- **Located on reservoir bank:** Kakhovka reservoir
- The Zaporizhzhya Nuclear Power Plant is located near the town of Enerhodar in Zaporizhzhia Oblast, Ukraine.
- It is situated on the Dnieper River, approximately 80 kilometers (50 miles) southeast of the city of Zaporizhzhia.
- **Type:** The Plant consists of six power units, and each unit is equipped with a specific type of reactor. The reactors at Zaporizhzhya are of the **VVER (Water-Water Energetic Reactor) type**, which is a pressurized water reactor (PWR) design.
- The plant is just 500 km (300 miles) from the site of the world's worst nuclear accident, the 1986 **Chernobyl disaster**.
  - ▶ The Chernobyl accident spread **Iodine-131, Caesium-134, Strontium-90 and Caesium-137** across parts of northern **Ukraine, Belarus, Russia, northern and central Europe**.

## 16. MAPPING OF SOIL EROSION IN INDIA

**Context:** A new study has revealed a worrying trend for India's soil health. Nearly 30 per cent of the country's landmass is experiencing "minor" soil erosion, while a critical 3 per cent faces "catastrophic" topsoil loss.

### 1: Dimension- Findings and Concerns

- ◆ The biggest hotspot for soil erosion in the country is the **Brahmaputra Valley in Assam**.
- ◆ The **north-eastern state Assam** lost close to 300 square kilometres or 31 per cent of its surface soil to "**catastrophic**" erosion.
- ◆ Apart from the Brahmaputra Valley, the **lower reaches of the Himalayas** are characterised by moraine or loose soil and highly unstable slopes.
- ◆ **Topsoil** is vital for agriculture as it holds nutrients and moisture essential for plant growth. Erosion significantly reduces fertility and can lead to decreased crop yields.
- ◆ **Carbon:** Land degradation reduces the soil's ability to absorb carbon.
- ◆ **Worsened climate change:** Land degradation and climate change fuel each other.
- ◆ **Threat to food security:** Degraded land in the country is either rainfed farmland, responsible for the food security of the country, or forest land that offers the best defence against climate change.
- ◆ **Economic loss:** Lost productivity can weigh heavily on the economy.

### 2: Dimension- Factors killing soil & solution

- ◆ **Farming practices** such as tilling break up the soil and destroy its natural structure, killing many of the vital bacteria.
- ◆ **Agricultural chemicals** can alter the physiological, metabolic and biochemical behaviour of microbiota in the soil. This can disrupt the relationships between plants and microbes, decreasing nutrient bioavailability.
- ◆ **Pressures of population growth**, food insecurity and agricultural intensification are leading to widespread soil degradation. This degradation can take many forms- **degradation, erosion, acidification, salinization**
- ◆ **Others:** Burning of crop residues, land misuse and soil mismanagement and climate change
- ◆ **Solution:** Replenishment, adopting organic practice (inter-cropping, mixed cropping, practicing crop rotation, Agroforestry, Permaculture, adopting biofertilizers.

#### FACT BOX

##### Soil

- Soil is a **mixture of small rock particles/debris and organic materials/ humus** which develop on the earth surface and support growth of plants.
- A soil profile is a **vertical cross-section of the soil**, made of layers running parallel to the surface. These layers are known as **soil horizons**.
- The layers of soil can easily be identified by the soil colour and size of soil particles. The different layers of soil are:
  - ▶ Topsoil
  - ▶ Subsoil
  - ▶ Parent rock
- It could take up to 1,000 years to produce 2 to 3 centimetres of top or surface soil, which has a depth of 6 cm.

##### Government Interventions

- Pradhan Mantri Fasal Bima Yojana (PMFBY)
- Soil Health Card Scheme
- Soil Health Management Scheme
- Pradhan Mantri Krishi Sinchayee Yojna (PKSY)
- Per Drop More Crop
- India is signatory to achieving **Land Degradation Neutrality by 2030**.



# SECTION

# B

## QUICK BYTES

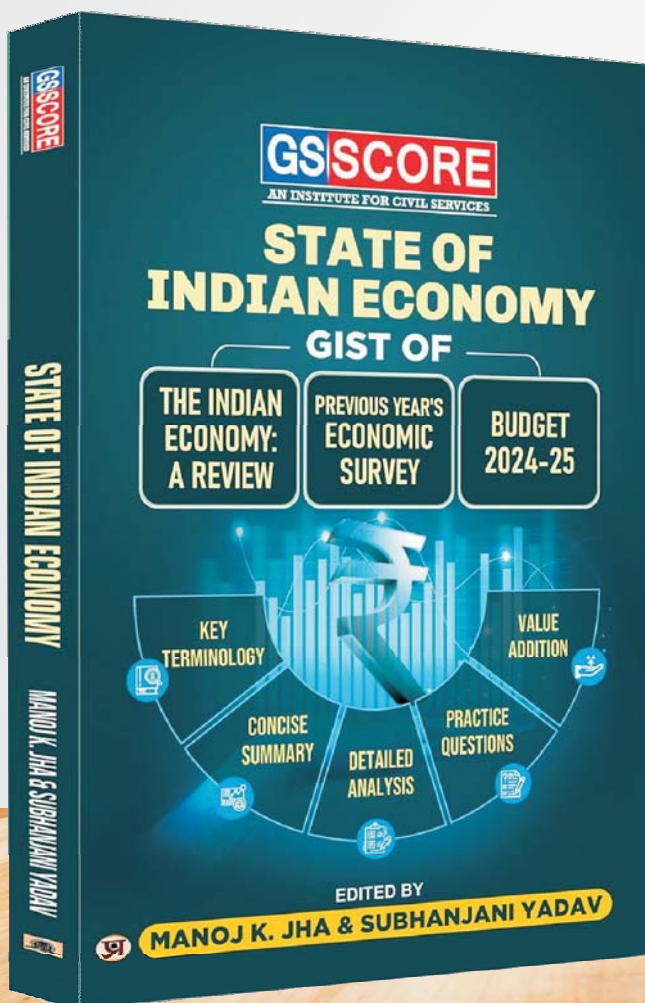
1. Total Solar Eclipse
2. Taiwan and its Earthquake Problem
3. Lesotho Highlands Water Project
4. Andaman and Nicobar Islands
5. Unified standard of time for the moon
6. India's Mineral Production
7. India abstains from UNHRC Gaza ceasefire resolution
8. Voter Verified Paper Audit Trail
9. Women candidates grew from 1957: ECI
10. Election Symbols
11. State's power to regulate industrial alcohol
12. QS World University Rankings
13. RBI Monetary Policy
14. RBI's G-sec App
15. UPI-based Cash Deposit Facility
16. India's Built-Up Area
17. Semiconductor Chip
18. Superconductivity
19. AI Regulation around the globe
20. Glycaemic Index (GI)
21. Cancer capital of the world
22. Prostate cancer
23. WHO's 2024 Global Hepatitis Report
24. PSLV Orbital Experimental Module-3 (POEM-3)
25. Rice vampireweed
26. Lavender AI
27. Higgs Boson
28. Cicada (Cicadoidea)
29. Preservation of Baobabs





AN INSTITUTE FOR CIVIL SERVICES

# STATE OF INDIAN ECONOMY



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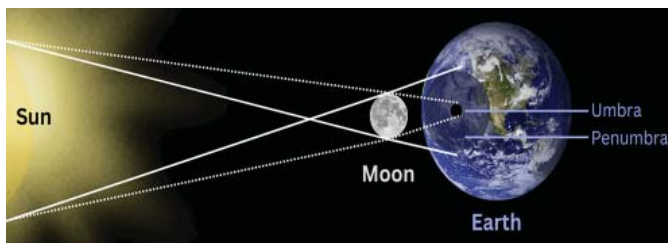


## 1. TOTAL SOLAR ECLIPSE

**Context:** The world is set to witness the **first solar eclipse of 2024** that crossed **North America**, passing over **Mexico, the United States, and Canada**.

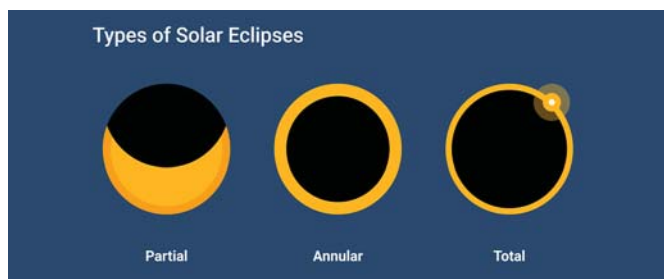
### About

- ◆ A solar eclipse occurs when the moon “eclipses” the sun.
- ◆ This means that the moon, as it orbits the Earth, comes in between the sun and the Earth, thereby blocking the sun and preventing any sunlight from reaching Earth.
- ◆ **During the eclipse, the environment undergoes dramatic changes.** Temperatures drop, wind pattern changes, stars appear, and diurnal animals may alter their behaviour in response to the sudden darkness.



There are **four types** of solar eclipses:

|                               |  |
|-------------------------------|--|
| <b>Partial solar eclipse:</b> | The moon partially covers the sun, creating a crescent shape. In this case, observers will notice a reduction in sunlight.   |
| <b>Annular solar eclipse</b>  | It occurs when the moon is too far away from the Earth to completely cover the sun's disk. This results in a ring of sunlight, or an annulus, around the dark silhouette of the moon. The unobscured and glowing ring, or “annulus,” around the sun is also popularly known as the “ring of fire.” |
| <b>Total solar eclipse:</b>   | The moon totally blocks out the sun for a few minutes, leading to a period of darkness -- and the resulting eclipse is called a <b>total solar eclipse. Solar corona can be witnessed during this.</b>   |
| <b>Hybrid solar eclipse</b>   | A hybrid solar eclipse is when the type of eclipse changes between annular and total as the moon's shadow moves across the curved surface of the Earth.  |



## 2. TAIWAN AND ITS EARTHQUAKE PROBLEM

**Context:** Taiwan was recently hit by its biggest earthquake in at least 25 years.

### Reason behind earthquakes in Taiwan

- ◆ Notably, Taiwan is prone to earthquakes as it lies along the Pacific “**Ring of Fire**” — where **90% of the world’s earthquakes take place**.
- ◆ The island and its surrounding waters have registered about 2,000 earthquakes with a magnitude of 4.0 or greater since 1980, and more than 100 earthquakes with a magnitude above 5.5.
- ◆ **Vulnerability of Ring of Fire to earthquakes:** The Ring of Fire witnesses so many earthquakes due to constant sliding past, colliding into, or moving above or below each other of the tectonic plates.
  - ▶ As the edges of these plates are quite rough, they get stuck with one another while the rest of the plate keeps moving.
- ◆ An earthquake occurs when the plate has moved far enough and the edges unstuck on one of the faults.
- ◆ Taiwan experiences earthquakes due to the interactions of two tectonic plates
  - ▶ Philippine Sea Plate
  - ▶ Eurasian Plate

### Volcano Issue

- ◆ The existence of volcanoes in the Ring of Fire is also due to the **movement of tectonic plates**.
- ◆ Many of the volcanoes have been formed through a process known as **subduction**.
- ◆ It takes place when two plates collide with each other and the heavier plate is shoved under another, creating a deep trench.

#### FACT BOX: RING OF FIRE

- The Ring of Fire is a string of hundreds of volcanoes and earthquake-sites which runs along the Pacific Ocean.
- It is a semicircle or horse shoe in shape and stretches nearly 40,250 kilometres.
- The Ring of Fire traces the meeting points of numerous tectonic plates, including the **Eurasian, North American, Juan de Fuca, Cocos, Caribbean, Nazca, Antarctic, Indian, Australian, Philippine, and other smaller plates**, which all encircle the large Pacific Plate.



### 3. LESOTHO HIGHLANDS WATER PROJECT

**Context:** The main water supply to **South Africa's economic hub**, greater Johannesburg in the Gauteng province, and to the country's breadbasket in the Free State, is scheduled to be cut off for six months.

#### What is the Lesotho Highlands Water Project?

- ◆ It is a **large-scale water supply scheme** in which water is diverted from the highlands of Lesotho to **South Africa's Free State** and the greater **Johannesburg area**.
- ◆ The project is designed to transfer over 1.27 billion cubic metres of water annually from Lesotho to South Africa, providing a vital water supply to the **Gauteng region's** cities and industries.
- ◆ Launched in 1998, it was developed in partnership with the governments of Lesotho and South Africa. It involved the construction of a series of dams, reservoirs and tunnels throughout Lesotho.
- ◆ These all deliver water to the **Vaal River system** in South Africa.
- ◆ The Lesotho Highlands Water Project is a lifeline to millions of South Africans. For example, it:
  - ▶ satisfies 60% of Gauteng's water demand
  - ▶ supplies the irrigation water for commercial farms
  - ▶ supplies water to regions with irregular rainfall patterns and frequent drought
  - ▶ plays a role in public health by delivering clean water to millions of people
  - ▶ contributes to environmental conservation
- ◆ The influx of fresh water helps reduce the acidity of the **Vaal River reservoir**, which has long been polluted by industrial activity, sewage and gold mines.

### 4. ANDAMAN AND NICOBAR ISLANDS

**Context:** With revamped airfields and jetties to additional logistics and storage facilities, habitat for troops to a robust surveillance infrastructure, the strategic **Andaman and Nicobar Islands** are in the middle of a major military infrastructure upgrade.

#### About Andaman and Nicobar Islands

- ◆ The ANI are two groups of islands—the Andaman Islands and the Nicobar Islands, covering an area of **8,249 sq km**.
- ◆ The entire island chain consists of **836 islands** including islets and rocky outcrops, of which some **38** are permanently inhabited by a population of over 430,000.
- ◆ The islands are governed as a **single Union Territory** by the Central Government of India, through the **Andaman Nicobar Administration**.
- ◆ The **capital city of Port Blair** is the seat of the Administration, headed by the Lieutenant Governor, who serves as direct link with the Central Government.
- ◆ The ANI are also home to **India's only integrated tri-service** command of the armed forces—the **Andaman and Nicobar Command** for maritime surveillance and enhancing India's strategic presence in the eastern Indian Ocean as it merges into the Pacific.

#### Need of the move

- ◆ **Monitoring Chinese activities:** India is monitoring the Chinese aided activity in the nearby **Coco Islands of Myanmar**.
  - ▶ Beijing's strategic footprint can be seen Ream national park in Cambodia, **Hambantota port** in Sri Lanka, **Gwadar** in Balochistan, **Chah Bahar** in Iran and at **Khalifa port** in UAE.
- ◆ **Strategic importance of islands:** The Andaman and Nicobar Islands are of great strategic importance as they straddle one of the busiest shipping lanes in the world and give India the reach to monitor the flow of traffic from the **South China Sea (Pacific Ocean) to the Andaman Sea (Indian Ocean)** through the **Strait of Malacca**, which is crucial for trade and oil shipments in the **Indo-Pacific**.

#### FACT BOX: COCO ISLANDS

- The Coco Islands are a part of **Yangon region of Myanmar**. It is a small, remote island in the **Bay of Bengal**.
- Great Coco is small at **11km in length**, but its location is **strategically important**.
- It is not only close to the **Strait of Malacca**, one of the **world's busiest shipping lanes**, it also lies 55km from India's Andaman and Nicobar Islands, which host **Indian navy and air force bases**.



## 5. UNIFIED STANDARD OF TIME FOR THE MOON

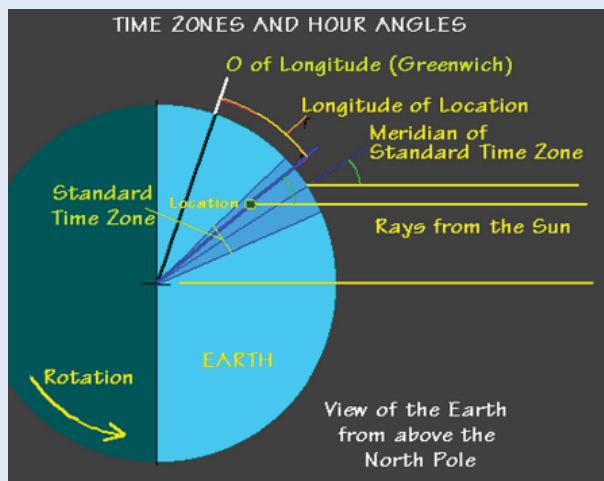
**Context:** NASA has been directed to establish a **unified standard of time** for the moon (**Coordinated Lunar Time (LTC)**) and other celestial bodies, the same way as Earth has.

### What is a time standard?

- ◆ A time standard is a specification for measuring time intervals, defining the units of time (e.g., seconds, minutes, hours) and providing a reference for timekeeping.
- ◆ Time standards are not similar to time zones, as a **time zone is a region of the Earth that has the same standard time.**
- ◆ **Need of time standard:** The need for establishing a time standard for the Moon is paramount as several countries plan to send astronauts to the lunar surface in the latter half of the 2020s.
  - ▶ The Moon requires a time standard due to factors such as **differing gravitational forces and other celestial influences**, which alter the time compared to Earth.
  - ▶ Time on the Moon moves a tad quicker — **58.7 microseconds every day** — compared to the Earth.

### WORKING OF EARTH'S TIME STANDARD

- Time Zones are a **geographical world globe division** of 15° each, starting at **Greenwich, in England**, created to help people know what time is it now in another part of the world.
- The local time within a time zone is defined by its offset (difference) from **Coordinated Universal Time (UTC)**, the **world's time standard.**



- ▶ UTC is essentially an internationally agreed upon standard for world time.

- It is tracked by a weighted average of more than **400 atomic clocks** placed in different parts of the globe.
- Atomic clocks measure time in terms of the **resonant frequencies** — the natural frequency of an object where it tends to vibrate at a higher amplitude — of atoms such as **cesium-133**.
  - ▶ **In atomic time, a second is defined** as the period in which a caesium atom vibrates 9,192,631,770 times. As the vibration rates at which atoms absorb energy are highly stable and ultra-accurate.
- UTC time changes 1 hour forward and backward corresponding to a 1-hour difference in mean solar time for every 15 degrees east or west of the prime meridian (0° longitude) in **Greenwich, London, United Kingdom.**
- The offset is expressed as either **UTC- or UTC+** and the number of hours and minutes.

## 6. INDIA'S MINERAL PRODUCTION

**Context:** The index of **mineral production** for the month of Feb 2024 was 139.6, which is 8.0% higher as compared to the level in the month of Feb 2023. The cumulative growth of this index for the 11-month period of April-Feb of FY24 over the corresponding period of the previous year was higher by 8.2%.

### Key-highlights

- ◆ Some of the non-fuel minerals showing positive growth during the month of Feb 2024 as compared to the corresponding month of the previous year are **Bauxite, Chromite, Copper Concentrate, Gold, Zinc Concentrate, Manganese Ore, Phosphorite, Diamond, Graphite (R.O.M.), Limestone, Magnesite, etc.**
- ◆ **Iron ore and Limestone** together account for about 80% of the total MCDR mineral production by value.
- ◆ In the non-ferrous metal sector, production of primary **Aluminium metal** has increased.

### Significance of the development

- ◆ India is the 2nd largest Aluminium producer, 3rd largest lime producer and 4th largest iron ore producer in the world.
- ◆ Healthy growth in production of iron ore and limestone reflect the robust demand conditions in the user industries viz. steel and cement.
- ◆ Coupled with the high growth in Aluminium, these growth trends point towards strong economic activity in user sectors such as energy, infrastructure, construction, automotive and machinery.

- ◆ With the launch of the **National Mineral Policy 2019** and the **Mines and Minerals (Development and Regulation) Amendment Act 2021**, India presents a major opportunity for investors looking to invest in the metal industry in India.
- ◆ **Important Government schemes:** Production Linked Incentives (PLI) Scheme, Make in India Campaign, Smart Cities, Rural Electrification, and a focus on building renewable energy projects under the National Electricity Policy.

## 7. INDIA ABSTAINS FROM UNHRC GAZA CEASEFIRE RESOLUTION

**Context:** India abstained in the UN Human Rights Council on a resolution that called for an **immediate ceasefire in Gaza** and also demanded that Israel immediately lift its illegal blockade on the strip.

### The Resolution

- ◆ The resolution demanded that **Israel, the occupying Power, end its occupation of the Palestinian territory occupied since 1967, including East Jerusalem.**
- ◆ It stressed that all efforts to end the Israeli-Palestinian conflict must be grounded in respect for international humanitarian law and international human rights law and relevant United Nations resolutions.
- ◆ The resolution also called for an immediate ceasefire in Gaza, for immediate emergency humanitarian access and assistance and for the urgent restoration of basic necessities to the Palestinian population in Gaza.

### FACT BOX: UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC):

- The Human Rights Council is an **inter-governmental body** within the **United Nations system** responsible for strengthening the promotion and protection of human rights around the world.
- **Formation:**
  - ▶ The Council was created by the **United Nations General Assembly in 2006**. It replaced the former United Nations Commission on Human Rights.
  - ▶ The **Office of the High Commissioner for Human Rights (OHCHR)** serves as the Secretariat of the Human Rights Council.
  - ▶ OHCHR is headquartered in **Geneva, Switzerland.**
- **Members:** It is made up of **47 United Nations Member States** which are elected by the **UN General Assembly (UNGA).**

- The Council's Membership is based on equitable geographical distribution. Seats are distributed as follows:
  - ▶ **African States:** 13 seats
  - ▶ **Asia-Pacific States:** 13 seats
  - ▶ **Latin American and Caribbean States:** 8 seats
  - ▶ **Western European and other States:** 7 seats
  - ▶ **Eastern European States:** 6 seats
- Members of the Council serve for a **period of three years** and are not eligible for immediate re-election after serving two consecutive terms.

## 8. VOTER VERIFIED PAPER AUDIT TRAIL

**Context:** Before the 18th Lok Sabha, the major concerns of discerning voters are about the **Electronic Voting Machines (EVMs)** and whether their vote is recorded as cast. This concern can be best addressed by a simple solution and that is to present **voters a proof of their vote (VVPAT slip)**, so that it becomes a second source of truth of the election process, after the **Electronic Voting Machine.**

### About Voter Verified Paper Audit Trail

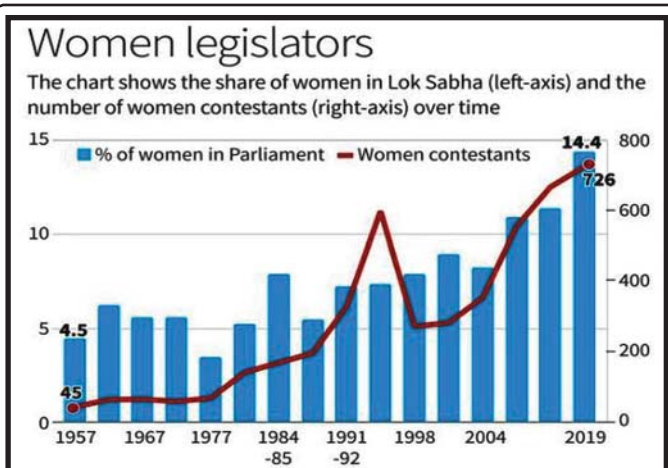
- ◆ Introduced first time in India in the 2014, Voter Verifiable Paper Audit Trail (VVPAT) is basically a **ballot-less vote verification system** connected with the EVM.
- ◆ It is a machine that prints a paper slip of the **candidate's name, serial number and the party's symbol after a voter has cast their vote.**
- ◆ To avoid **election fraud**, it displays the paper slip for seven seconds for the voters to check if their vote has been cast for their chosen candidate.
- ◆ The paper slip then drops down to a locked compartment that only the polling agent can access.
- ◆ The slips are **not handed over to the voters.** The collected slips can be used to **audit voting data stored electronically.**

## 9. WOMEN CANDIDATES GREW FROM 1957: ECI

**Context:** The number of women candidates grew 16-fold from 1957 to 2019, as per latest ECI data.

### Key-highlights of the Data

- ◆ In 1957, there were just 45 women candidates contesting the Lok Sabha election; by 2019, this figure had risen to 726.



- ◆ The percentage of women in Parliament has increased from 4.5% in 1957 to 14.4% in 2019.
- ◆ The number of **male candidates** has grown from 1,474 in 1957 to 7,322 in 2019.
- ◆ This means that the number of men contesting has multiplied by five times; for women, the growth has been 16-fold.
- ◆ In 1957, a mere 2.9% of candidates were women; in 2019, they make up around 9% of the total pool of candidates.
- ◆ However, the number of women candidates has never yet crossed 1,000.

## 10. ELECTION SYMBOLS

**Context:** The political parties have headed into election mode across the country and all candidates who are in the fray have their own symbols besides the symbol of their respective parties.

### What is election symbol?

- ◆ An **electoral or election symbol** is a standardized symbol allocated to a political party.
- ◆ **Types of Election Symbol:** As per the **Election Symbols (Reservation and Allotment) (Amendment) Order, 2017**, party symbols are either “reserved” or “free”.
  - ▶ **Reserved:** Eight national parties and 64 state parties across the country have “reserved” symbols
  - ▶ **Free:** ECI has a pool of nearly 200 “free” symbols. These symbols are allotted to the thousands of unrecognized regional parties in the country.
- ◆ They are used by the parties during their campaigning and are shown on **Electronic Voting Machines (EVMs)**, where the voter chooses the symbol and votes for the associated party.

- ◆ The symbol of a party is one of **extreme relevance** to political survival.
- ◆ For many Indian voters who do not read, the symbol is their association with the party when they exercise their franchise. Hence, importance is given to the symbol of the party.

### Election Commission’s powers:

- ◆ The **Election Symbols (Reservation and Allotment) Order, 1968** empowers the EC to recognize political parties and allot symbols.
- ◆ **EC can decide** disputes among rival groups or sections of a **recognized political party** staking claim to its name and symbol.
- ◆ The **EC is the only authority to decide issues** on a dispute or a merger under the order.
- ◆ This applies to disputes in recognized national and state parties. **However, if any of the parties is not satisfied then they can approach the courts.**

## 11. STATE’S POWER TO REGULATE INDUSTRIAL ALCOHOL

**Context:** For years, the states and the Union have been pitted on who has the legislative competence over each type of alcohol. However, in a latest update, the Supreme Court has ruled that the States’ power to legislate to regulate industrial alcohol is untrammelled and complete.

- ◆ Overlapping jurisdictions under various lists
- ◆ Entry 52 **of the Union List** empowers the central government to regulate industries that **Parliament** finds to be of “**public interest.**”
- ◆ Parliament—acting in accordance with the Union List—through **Section 18-G of the Industries (Development and Regulation) Act, 1951 (Industries Act)**, is entrusted with the power to regulate specific products related to scheduled industries to the Union government.
  - ▶ This was done to ensure that these products were being distributed fairly and sold at reasonable prices.
- ◆ Under Entry 8 **of the State List**, a state is empowered to make laws for “**Intoxicating liquors, that is to say, the production, manufacture, possession, transport, purchase and sale of intoxicating liquors.**”
- ◆ However, under **Entry 33 of the Concurrent List** both the state and Union governments can make laws on the products of any industry, even if Parliament has granted control to the Union in public interest.
- ◆ And therein lies the confusion of who has the power to regulate industrial alcohol—the state or the Union.

## FACT BOX

- **Industrial alcohol** is used as a raw material to create other products, and is not meant for human consumption.

## 12. QS WORLD UNIVERSITY RANKINGS

**Context:** Quacquarelli Symonds (QS) World University Rankings by Subject has been released recently.

### Key-highlights of the Rankings

- ◆ **Indian Institute of Management (IIM) Ahmedabad** has been ranked among the top 25 institutions globally for **business and management studies**.
- ◆ **IIM-Bangalore** and **IIM-Calcutta** have been ranked among the top 50.
- ◆ **Indian Institute of Technology (IIT) Guwahati** has secured a global ranking of 51-70 in data science, and 51-100 in petroleum engineering.
- ◆ **Jawaharlal Nehru University (JNU) in Delhi** is the **highest-ranked university in India**. JNU is in the 20th position globally for **development studies**.
- ◆ **Expanding research:** India stands as one of the world's most rapidly expanding research centres. From 2017 to 2022, its research output surged by an impressive 54 per cent.
  - ▶ In terms of volume, India is now the **world's fourth-largest producer of research**, generating 1.3 million academic papers in this period, trailing only behind China's 4.5 million, the United States' 4.4 million, and slightly less than the United Kingdom's 1.4 million.
- ◆ **Challenge for India:** Providing high-quality tertiary education in the face of exploding demand. Though this challenge was recognised by **2020's NEP (National Education Policy)**, which set the ambitious target of a 50 per cent gross enrolment ratio by 2035.

### Fact Box: QS World University Rankings

- QS World University Ranking is released by **Quacquarelli Symonds (QS)**, the London-based higher education analytics firm.
- Quacquarelli Symonds Limited subject rankings, published annually, are designed to help prospective students find the leading schools in their field of interest.
- Rankings are based on **research quality and accomplishments, academic reputation, and graduate employment**.

## 13. RBI MONETARY POLICY

**Context:** The Reserve Bank of India's Monetary Policy Committee unanimously decided to keep the key interest rates unchanged at 6.50 per cent for the seventh consecutive time. The policy stance is also maintained at **'withdrawal of accommodation'**.

### Key-highlights

- ◆ **Inflation is moving closer to targets.** Retail inflation is projected for the current year at 4.5%. The RBI has been mandated by the government to maintain retail inflation at 4% with a 2% margin on either side.
- ◆ **Core inflation** has declined steadily over the last nine months while fuel component remained in deflation for six straight months.
- ◆ **Indian economy is projected to grow 7% this financial year.**
- ◆ **Forex Reserve:** India continues to remain the largest receiver of remittances with the country's **foreign portfolio investment** seeing a significant turnaround.
- ◆ The global economy has remained resilient and global trade is expected to grow faster in 2024.

### Impact of the move

- ◆ An unchanged repo rate means the loan interest rates too are likely to remain unchanged.

### KEY-TERMS IN THE MONETARY POLICY REVIEW

|   |  |
|---|--|
| <b>Repo rate</b>                            | <ul style="list-style-type: none"> <li>• Repo rate is an interest rate at which the RBI provides liquidity under the liquidity adjustment facility (LAF) to banks against the collateral of government and other approved securities.</li> <li>• <b>Currently, the repo rate is at 6.50 percent.</b></li> </ul>  |
| <b>Standing Deposit Facility (SDF) Rate</b> | <ul style="list-style-type: none"> <li>• SDF rate is a rate at which the RBI accepts uncollateralised deposits, on an overnight basis, from banks.</li> <li>• The SDF is also a financial stability tool in addition to its role in liquidity management. The SDF rate is placed at 25 basis points below the policy repo rate.</li> <li>• <b>Currently, SDF rate is at 6.25 percent.</b></li> </ul> |



|  |  |
|--|--|
| <b>Marginal Standing Facility (MSF) Rate</b> | <ul style="list-style-type: none"> <li>The penal rate at which banks can borrow, on an overnight basis, from the central bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a predefined limit (2 per cent).</li> <li><b>MSF rate currently stands at 6.75 percent.</b></li> </ul>   |
| <b>Fine Tuning Operations</b>                | <ul style="list-style-type: none"> <li>The main liquidity operation is supported by fine-tuning operations, overnight and/or longer tenor, to tide over any unanticipated liquidity changes during the reserve maintenance period.</li> <li>In addition, the RBI conducts, if needed, longer-term variable rate repo/ reverse repo auctions of more than 14 days.</li> </ul>   |
| <b>Monetary policy stance</b>                | <ul style="list-style-type: none"> <li>There are various stances:</li> <li><b>Accommodative Stance</b>, which means the central bank is prepared to expand the money supply to boost economic growth.</li> <li><b>Neutral stance</b> suggests that the central bank can either cut rate or increase rate. This stance is typically adopted when the policy priority is equal on both inflation and growth.</li> <li><b>Hawkish stance</b> indicates that the central bank's top priority is to keep the inflation low. During such a phase, the central bank is willing to hike interest rates to curb money supply and thus reduce the demand.</li> <li><b>Calibrated tightening</b> means during the current rate cycle, a cut in the repo rate is off the table.</li> </ul> |
| <b>CPI Inflation</b>                         | <ul style="list-style-type: none"> <li>Consumer Price Index (CPI) based Inflation is a measure of changes in the price levels of goods and services purchased by households.</li> </ul>  |

**FACT BOX: MONETARY POLICY**

- Monetary policy refers to the policy of the central bank with regard to the use of monetary instruments under its control to achieve the goals specified in the Act.
- Monetary Policy Committee (MPC):** The MPC's primary responsibility is to set the repo rate, which serves as the key policy instrument for managing inflation.
- Composition:** The committee comprises six members:
  - ▶ **Three officials from the RBI:** These internal members bring expertise in monetary matters.
  - ▶ **Three external members:** Nominated by the Indian government, these experts contribute diverse perspectives.
- Tools and instruments of monetary policy:** cash reserve ratio, statutory liquidity ratio, bank rate, repo rate, reserve repo rate and open market operations.

**UPSC PYQ**

- Q. With reference to the Indian economy, consider the following (UPSC 2015)
- (1) Bank rate                      (2) Open market operations  
(3) Public debt                    (4) Public revenue
- Which of the above is/are component/ components of Monetary Policy?
- (a) 1 only                            (b) 2, 3 and 4  
(c) 1 and 2                           (d) 1, 3 and 4

**Solution: (c)**

**14. RBI'S G-SEC APP**

**Context:** The Reserve Bank of India (RBI) has announced the launch of a mobile application, the 'G-sec App', as part of its Retail Direct Scheme. This initiative aims to simplify the process of investing in government securities (G-Secs) for retail investors.

**About G-sec App**

- ◆ The G-sec App serves as a one-stop solution for retail investors looking to invest in government bonds and treasury bills.
- ◆ It provides a user-friendly interface for buying and selling securities, eliminating the complexities of traditional investment methods.

**FACT BOX:**

**Retail Direct Scheme**

- The Retail Direct Scheme was introduced in 2021 to enable individual investors to directly invest in **G-Secs** issued by the **Central and State Governments**.
- This eliminates the need for intermediaries or agents, making the investment process more accessible and transparent.

**Government securities**

- Government securities, also known as G-Secs, are **investment instruments** issued by governments to raise funds.

- They offer a **low-risk investment option** with **fixed interest rates**.
- Treasury bills are short-term securities issued for less than 12 months, while bonds are issued for longer durations.

## 15. UPI-BASED CASH DEPOSIT FACILITY

**Context:** The Reserve Bank of India announced a proposal for a new UPI-based cash deposit facility.

### About

- ◆ UPI has primarily been used for peer-to-peer transactions, bill payments, merchant transactions and other digital payments.
- ◆ Now, with the latest announcement, cash deposit at **Cash Deposit Machines (CDMs)** using UPI instead of needing an ATM/debit card will be possible.

#### FACT BOX: UPI

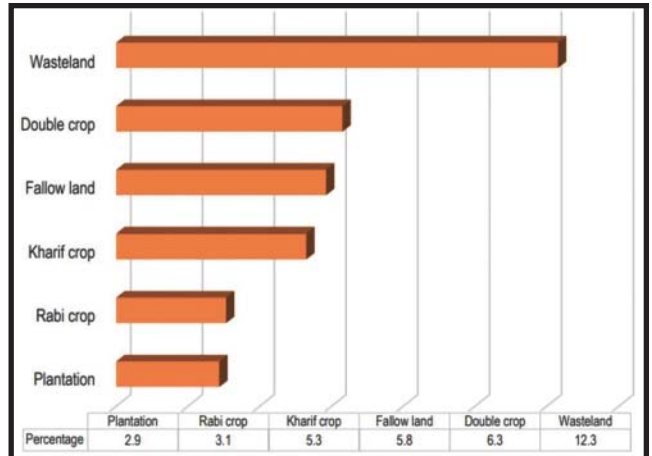
- Unified Payments Interface is a real-time payment system developed by the **National Payments Corporation of India (NPCI)**.
- It facilitates instant fund transfers between two bank accounts on a mobile platform, without requiring details of the beneficiary's bank account.

## 16. INDIA'S BUILT-UP AREA

**Context:** India's built-up area has steadily **increased over the past 17 years** from 2005-06 to 2022-23, expanding by almost 2.5 million hectares, a new analysis showed.

### Key-highlights

- ◆ **Period taken:** 2005-06 and 2022-23.
- ◆ The built-up land showed a **modest increase with an overall growth** of around **31 per cent**.
- ◆ Around 35 per cent of built up area has been added, with an average increase of around 2.4 per cent annually from **land cover**, which include wasteland and agricultural land cover.
- ◆ **Wasteland**, which includes degraded and unproductive land, contributed significantly (12.3 per cent) to built-up area expansion by 12.3.
- ◆ A substantial percentage of built-up area expansion originated from **agricultural land covers**, which includes



- ▶ 6.3 per cent of double / triple / annual crop
- ▶ 5.3 per cent of **kharif crop**
- ▶ 3.1 per cent of **rabi crop**
- ▶ 2.9 per cent of plantation
- ▶ 5.8 per cent of fallow land

#### FACT BOX: BUILT-UP AREA

- The term 'built-up area' refers to an area with buildings (roofed structures), paved surfaces (roads, parking lots), commercial and industrial sites (ports, landfills, quarries, runways) and urban green areas (parks, gardens).

## 17. SEMICONDUCTOR CHIP

**Context:** Semiconductor chip manufacturing capabilities are currently limited to very few regions in the world. Due to limited manufacturing and threat of supply chain disruptions, India has realised the importance of investing in chip manufacturing infrastructure.

### What is a semiconductor?

- ◆ Semiconductors are materials that possess properties between those of conductors (such as metals) and insulators (such as glass or plastic).
  - ▶ The most commonly used semiconductor material is **silicon (Si)**.
- ◆ The conductivity component of semiconductors can be altered by introducing impurities through a process called "**doping**." By adding specific impurities, the semiconductor's electrical properties can be controlled.
- ◆ **Application:** Microprocessors, memory chips, commodity integrated circuits, microcontrollers, transistors and others.

### How is semiconductor chip manufactured?

- ◆ A semiconductor chip is manufactured much like a **postage stamp**.

- ◆ A sheet of stamps is printed on a piece of paper and then each individual stamp is cut out.
- ◆ Similarly, an array (typically 300-400) of chips are printed on a circular piece of semiconductor (called a wafer in industry parlance).
- ◆ This is then diced to create individual chips.

**FACT BOX: RECENT GOVERNMENT INITIATIVES**

- **Semicon India Programme** was approved in 2021 for the development of semiconductors and display manufacturing ecosystems over the next six years.
- **India Semiconductor Mission (ISM)** was set up within **Digital India Corporation** to drive India's strategies for developing semiconductors and display ecosystem.
- **Plant:** The TATA group has partnered with Taiwan's Powerchip Semiconductor Manufacturing Corporation (PSMC) to set-up a **300mm wafer fabrication plant in Gujarat**
  - ▶ **Two assembly and test plants** in Gujarat and Assam have also been recently approved by the Government of India.

**18. SUPERCONDUCTIVITY**

**Context:** On April 8, 1911, Dutch physicist Heike Kamerlingh Onnes discovered the phenomena of **superconductivity**.

**What is superconductivity?**

- ◆ Superconductivity is the ability of certain materials to conduct a **direct electric current (DC)** with practically **zero resistance**.
- ◆ This capacity produces interesting and potentially useful effects. For a material to behave as a superconductor, low temperatures are required.
- ◆ **Application:** They are used in creating powerful electromagnets in MRI scanners, particle accelerators, generators, transportation, computing, electric motors, medical, power transmission, etc.

**FACT BOX:**

- Superconductivity was discovered in 1911 by **Heike Kamerlingh-Onnes**. For this discovery, the liquefaction of helium, and other achievements, he won the **1913 Nobel Prize in Physics**.
- **Five Nobel Prizes in Physics** have been awarded for research in superconductivity (1913, 1972, 1973, 1987, and 2003).

**19. AI REGULATION AROUND THE GLOBE**

**Context:** Efforts are being made at global level to formalise AI regulations.

**AI Regulation:**

- ◆ **United Nations Resolution on Artificial Intelligence:** It is the first global resolution on artificial intelligence to encourage the protection of personal data, the monitoring of AI for risks, and the safeguarding of human rights.
- ◆ **EU's AI Act:** The EU recently passed the AI Act, the foremost law establishing rules and regulations governing AI systems. With its risk-based approach, the Act categorises systems into four categories, namely unacceptable, high, limited, and minimal risks, prescribing guidelines for each. The Act prescribes an absolute ban on applications that risk citizens' rights, including manipulation of human behaviour, emotion recognition, mass surveillance etc.
- ◆ **China's AI Approach:** China focuses on prompting AI tools and innovation with safeguards against any future harm to the nation's social and economic goals. The country released, in phases, a regulatory framework addressing the following three issues —
  - ▶ content moderation
  - ▶ personal data protection
  - ▶ algorithmic governance
- ◆ **U.K.'s framework:** The UK has adopted a principled and context-based approach in its ongoing efforts to regulate AI systems. The approach requires mandatory consultations with regulatory bodies, expanding its technical know-how and expertise in better regulating complex technologies while bridging regulatory gaps, if any.

**India's position**

- ◆ **India AI mission:** A Rs. 10,300 crore allocation was approved for the India AI mission to further its AI ecosystem through enhanced public-private partnerships and promote the start-up ecosystem.
- ◆ Amongst other initiatives, the allocation would be used to deploy 10,000 **Graphic Processing Units, Large Multi-Models (LMMs)** and other AI-based research collaboration and efficient and innovative projects.

**FACT BOX**

- India currently caters to one of the largest consumer bases and labour forces for technology companies.
- India will be home to over 10,000 deep tech start-ups by 2030. In this direction,

**20. GLYCAEMIC INDEX (GI)**

**Context:** The findings of an international study suggest that consuming **low glycaemic index and low glycaemic load diets** might prevent the development of **type 2 diabetes**.

They also found a strong association between glycaemic index (GI) and the risk of type 2 diabetes among individuals with a higher **Body Mass Index (BMI)**.

### What is the glycaemic index (GI)?

- ◆ GI ranks carbohydrate-containing foods based on the blood glucose response, post-prandial or after a meal. The higher the blood sugar reading, the higher will be the GI.
- ◆ **Glycaemic load (GL)**, on the other hand, is both the quality and quantity of carbohydrate in a specific food, and is the product of the GI and the amount of carbohydrate available in a serving.
  - ▶ High GI foods: sugar and sugary foods, sugary soft drinks, white bread, potatoes, white rice
  - ▶ Low and medium GI foods: some fruit and vegetables, pulses, wholegrain foods, such as porridge oats

#### FACT BOX: DIABETES

- Diabetes is a **Non-Communicable Disease (NCD)** that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin, it produces.
- **Insulin** is a peptide hormone produced by beta cells of the pancreatic islets;
- It is considered to be the main **anabolic hormone** of the body.
- **Type 2 diabetes** is age-related; it often develops at the age of 45 and beyond.
- **Type 1 diabetes** is largely genetic in nature, while Type 2 depends on the lifestyle of the individual.

## 21. CANCER CAPITAL OF THE WORLD

**Context:** In a new report, the Health of Nation Report by Apollo Hospitals unveiled a concerning surge in **non-communicable diseases (NCDs)** across India, with the nation witnessing an alarming rise in cancer cases. India's trajectory in cancer cases, surpassing global rates, has earned it the dubious title of the "**cancer capital of the world.**"

### Key-highlights of the Report

The most common cancers in order of occurrence in India are breast cancer, cervix cancer and ovarian cancer among women.

**The median age for cancer diagnosis in India is lower than in other countries:**

- ◆ 52 years: Average age of breast cancer diagnosis in India versus 63 in the US and Europe

- ◆ 59 years: Average age of lung cancer diagnosis versus 70 years in the West
- ◆ 30%: Share of colon cancer patients aged less than 50 years

**Despite these trends, cancer screening rates in India remain very low:**

- ◆ 1.9%: Breast cancer screening in India compared to 82% in the US, 70% in the UK, and 23% in China
- ◆ 0.9%: Cervical cancer screening in India compared to 73% in the US, 70% in the UK, and 43% in China

#### FACT BOX: ABOUT CANCER

- Cancer is a disease in which **abnormal cells** divide uncontrollably and destroy body tissue.
- It can start almost anywhere in the human body, which is made up of trillions of cells.
- **Normally**, human cells grow and divide to form new cells as the body needs them. When cells grow old or become damaged, they die and new cells take their place.
- When cancer develops, this orderly process breaks down. As cells become more and more abnormal, old or damaged cells survive when they should die and new cells form when they are not needed.
- These extra cells can divide without stopping and forms **tumors**, which can spread through the **blood or the lymph system** and form **new tumors far from the original tumor**.
- **Causes of Cancer:**
  - ▶ **Biological or internal factors**, such as age, gender, inherited genetic defects and skin type
  - ▶ **Environmental exposure**, to UV radiation, and fine particulate matter
  - ▶ **Occupational risk factors**, like carcinogens such as chemicals, radioactive materials
  - ▶ **Lifestyle-related factors**

## 22. PROSTATE CANCER

**Context:** By 2040, cases of prostate cancer are likely to double worldwide to 2.9 million per year, from 1.4 million per year in 2020, according to a new analysis published in the **Lancet Commission**.

### About

- ◆ Prostate cancer is cancer that occurs in the prostate.
- ◆ Prostate cancer, which accounts for 15 per cent of all male cancers, is already a major cause of death and disability.
- ◆ It is the most common form of male cancer in more than half of the world's countries.



- ◆ The currently available prostate cancer screening is the PSA test — a blood test that measures protein levels called **prostate-specific antigen (PSA)**.

**FACT BOX: PROSTATE**

- The prostate is below the bladder (the hollow organ where urine is stored) and in front of the rectum (the last part of the intestines).
- Behind the prostate are glands called **seminal vesicles**, which make most of the fluid for semen. The **urethra**, which is the tube that carries urine and semen out of the body through the penis, goes through the center of the prostate.

### 23. WHO'S 2024 GLOBAL HEPATITIS REPORT

**Context:** India accounted for the second-highest number of cases of **hepatitis B and C** in 2022 after China, with 3.5 crore infections, according to a report by the **World Health Organisation (WHO)**.

**Key-highlights of the Report**

- ◆ **Report:** *WHO's 2024 Global Hepatitis Report*
- ◆ 254 million people lived with hepatitis B and 50 million with hepatitis C in 2022 globally.
- ◆ **India**, which was second only to China in the viral hepatitis burden, registered 2.98 crore hepatitis B cases in 2022 while the number of hepatitis C infections stood at 55 lakh.
- ◆ China registered 8.3 crore cases of hepatitis B and C, representing 27.5 per cent of the total disease burden.
- ◆ With a total of 3.5 crore cases, India accounted for 11.6 per cent of the total disease burden globally that year.

**FACT BOX: ABOUT HEPATITIS**

- Hepatitis is an **inflammation of the liver** that can cause a range of health problems and can be fatal.
- There are five main strains of the hepatitis virus, referred to as types **A, B, C, D and E**.
- While they all cause liver disease, they differ in important ways including modes of transmission, severity of the illness, geographical distribution and prevention methods.
- In particular, **types B and C lead to chronic disease** in hundreds of millions of people and together are the most common cause of liver cirrhosis, liver cancer and viral hepatitis-related deaths.
- **Symptoms:** Hepatitis symptoms include dark urine, yellowing of the eyes and skin, sickness, fatigue, fever, loss of appetite, nausea, vomiting, abdominal pain, light-coloured stools and joint pain.
- **Treatment:** There is no specific treatment for hepatitis but drugs like steroids can help, as well as medicines to treat the symptoms.

### 24. PSLV ORBITAL EXPERIMENTAL MODULE-3 (POEM-3)

**Context:** The Indian Space Research Organisation's **PSLV-C58/XPoSat mission** has practically left **zero debris** in earth's orbit. The last stage of the Polar Satellite Launch vehicle (PSLV) used in the mission was transformed into a kind of **orbital station**- called the **PSLV Orbital Experimental Module-3 (POEM-3)**, before it was left to re-enter the earth's atmosphere instead of floating in orbit once its mission was completed.

**What is POEM?**

- ◆ Developed by the **Vikram Sarabhai Space Centre (VSSC)** as an inexpensive space platform, POEM uses the spent fourth stage of a PSLV rocket as an orbital platform.
- ◆ Used for the first time in the **PSLV-C53 mission** in 2022, ISRO had POEM orbit the earth as a stabilised platform to perform in-orbit scientific experiments with various payloads.
- ◆ POEM is powered by solar panels mounted on the fuel tank of the **rocket's fourth stage** and a **lithium-ion (Li-ion) battery**.
- ◆ It has a dedicated **navigation, guidance, and control (NGC) system** to stabilise its altitude along with helium control thrusters.
- ◆ The NGC system has four **Sun sensors, a magnetometer, and gyroscopes, and talks to ISRO's NavIC satellite constellation for navigation**.
- ◆ POEM also has a telecommand system to communicate with the ground station.

### 25. RICE VAMPIREWEED

**Context:** **Rice vampireweed (*Rhaphicarpa fistulosa*)** affected more than 140,000 farm households and caused losses worth USD 82 million per year to the continent's economy, a new report showed.

**About**

- ◆ *Rhaphicarpa fistulosa* is a **facultative, parasitic weed** that grows on rice in Africa,
- ◆ It is the most problematic and widespread species among the facultative parasitic weeds in Africa.
- ◆ *R fistulosa* also affects sorghum and maize and, potentially, other cereal crops. Although infestation in other crops does not seem to be as common as in rice, the total economic losses inflicted by this weed may be higher.

- ◆ Weeds constitute **important production constraints** to rice in particular in Africa.
- ◆ As yet, *R. fistulosa* is not controlled by fertilisers. **Rice cultivars NERICA-L-40 and -31** were identified as resistant and high yielding under *R. fistulosa* infested conditions.

### New Rice for Africa (NERICA)

- The New Rice for Africa (NERICA) varieties are the first wide-scale success of crossing of the two cultivated species: *Oryza sativa*, known as 'Asian rice', and *O. glaberrima*, often called '**African rice**' and found *only in Africa*.

## 26. LAVENDER AI

**Context:** An AI program known as "**Lavender**" has been used by the **Israeli Defense Force** to identify targets in Gaza since the start of the war. Though Israel has rejected the claims.

### About

- ◆ According to the investigation, Lavender used **broad parameters** to identify **potential targets**, designating about 37,000 people for potential air strikes.
- ◆ It reportedly used **machine learning** to identify characteristics of militants and assigned people a score of 1-100, based on factors including association with suspected militants and frequently changing their phone.
- ◆ Lavender marks people — and puts them on a kill list.
- ◆ The program was developed, as per the joint investigation, by Israel Defense Forces' elite intelligence division, Unit 8200. This is similar to **America's National Security Agency or UK's GCHQ**.

## 27. HIGGS BOSON

**Context:** Nobel prize-winning physicist **Peter Higgs**, who proposed the existence of the so-called "**God particle**" that helped explain how matter formed after the Big Bang, has died at age 94.

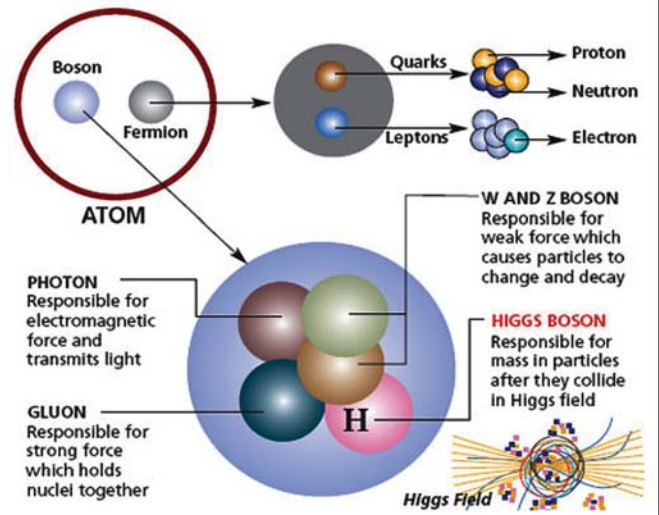
### Higgs' theory

- ◆ The Higgs boson is the **fundamental force-carrying particle of the Higgs field**, which is responsible for **granting other particles their mass**. This field was first proposed by **Peter Higgs in 1964**.
- ◆ The particle was finally discovered on July 4, 2012, by researchers at the **Large Hadron Collider (LHC)** — the **most powerful particle accelerator** in the world.

- ▶ Higgs' theory related to how **subatomic particles** that are the **building blocks of matter** get their mass.

### PARTICLE PHYSICS BASICS

*How fermions and bosons make up atoms and how they acquire mass*



- ▶ The LHC confirmed the existence of the Higgs field and the mechanism that gives rise to mass.
- ▶ This theoretical understanding is a central part of the so-called **Standard Model**, which describes the physics of how the world is constructed.
- ◆ Higgs won the **2013 Nobel Prize in Physics** for his work, alongside Francois Englert of Belgium, who independently came up with the same theory.
- ◆ Higgs' work helps solve one of the most fundamental riddles of the universe: how the **Big Bang** created something out of nothing 13.7 billion years ago.

### What is Higgs Boson?

- ◆ The Higgs boson has a mass of **125 billion electron volts** (130 times more massive than a proton).
- ◆ It is also **chargeless with zero spin** - a quantum mechanical equivalent to angular momentum. The Higgs Boson is the **only elementary particle with no spin**.
- ◆ The Higgs boson is popularly known as the "**the God Particle**".
- ◆ A boson is a "force carrier" particle that comes into play when particles interact with each other, with a boson exchanged during this interaction.
  - ▶ For example, when two electrons interact they exchange a photon-the force-carrying particle of **electromagnetic fields**.
- ◆ Because quantum field theory describes the microscopic world and the **quantum fields** that fill the universe with wave mechanics, a boson can also be described as a wave in a field.

- ◆ So a photon is a particle and a wave that arises from an excited electromagnetic field and the Higgs boson is the particle or “quantized manifestation” that arises from the Higgs field when excited. That field generates mass via its interaction with other particles and the mechanism carried by the Higgs boson called the **Brout-Englert-Higgs mechanism**.

#### Fact Box: Large Hadron Collider (LHC)

- **Location:** European particle physics laboratory **CERN, Switzerland**.
- The Large Hadron Collider (LHC) is the world’s largest and most powerful particle accelerator.
- It first started up on 10 September 2008, and remains the latest addition to **CERN’s accelerator complex**.
- The LHC consists of a **27-kilometre ring of superconducting magnets** with a number of accelerating structures to boost the energy of the particles along the way.

## 28. CICADA (CICADOIDEA)

**Context:** In a rare double-emergence of cicada broods, **Brood 13**, which emerges every 17 years, and **Brood 19**, which emerges every 13, are going to join together for the first time since 1803, in eastern United States.

#### What is a cicada?

- ◆ Cicadas are large, robust insects, with transparent wings and large compound eyes.
- ◆ They are known for their **loud chirping** and tendency to leave behind mounds of exoskeleton
- ◆ They have a distinctive corrugated exoskeletal structure on the sides of their abdomen called a **‘tymbal’**, and

it’s this organ that produces the **loud buzzing sound**.

- ◆ There are more than 3,000 species of cicada worldwide, which fall into roughly two categories:
  - ▶ **Annual cicadas**, which are spotted every year
  - ▶ **Periodical cicadas**, which spend most of their lives underground and only emerge once every decade or two.

## 29. PRESERVATION OF BAOBABS

**Context:** In a groundbreaking conservation endeavour, the *Global Society for the Preservation of Baobabs and Mangroves (GSPBM)* has initiated a mission to rejuvenate the iconic baobab trees through **seedling transplantation**.

#### About

- ◆ Baobab tree (*Adansonia digitata*) is native to the **African savannah** where the climate is extremely dry and arid.
- ◆ Ecologically, baobabs are **keystone species** in Madagascar’s unique landscapes.
- ◆ Their massive trunks and extensive root systems are vital for **storing water in arid environments**, providing a critical resource for both the trees and the surrounding ecosystem during drought periods.
- ◆ It is a **succulent**, which means that during the rainy season it absorbs and stores water.
- ◆ Baobab trees grow in **32 African countries**. They can live for up to **5,000 years**, reach up to 30 metres high and up to an enormous 50 metres in circumference.
- ◆ It has a fruit that is one of the **most nutrient-dense foods in the world**. Baobab is the only fruit in the world that dries naturally on its branch.





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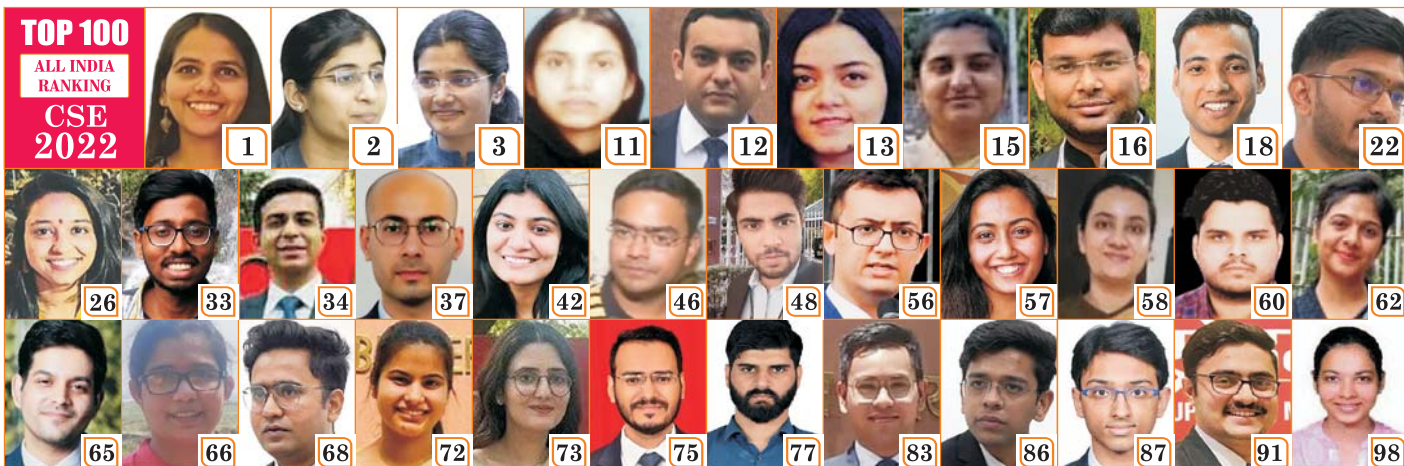
**TERMS OF THE WEEK**

| S.NO. | TERM  | ABOUT  |
|-------|---|--|
| 1     | <b>Conductor and Semiconductor</b>                    | <ul style="list-style-type: none"> <li>• <b>Conductors:</b> Materials that easily conduct electricity (i.e., materials with high electrical conductivity and low electrical resistivity)</li> <li>• <b>Semiconductors:</b> Materials with an electrical conductivity value that falls between that of a conductor and that of an insulator.</li> </ul>   |
| 2     | <b>Circular carbon economy</b>                        | <ul style="list-style-type: none"> <li>• A circular carbon economy is a framework for managing and reducing emissions. It is a closed loop system involving 4Rs: <b>reduce, reuse, recycle, and remove.</b></li> </ul>   |
| 3     | <b>Direct current (DC)</b>                            | <ul style="list-style-type: none"> <li>• Direct current (DC) is an electric current that is uni-directional, so the flow of charge is always in the same direction.</li> </ul>   |
| 4     | <b>Electronic voting machine (EVM)</b>                | <ul style="list-style-type: none"> <li>• An electronic voting machine (EVM) is a portable instrument for the purpose of conducting elections to the parliament, legislature and local bodies like panchayats and municipalities.</li> <li>• EVM is a microcontroller-based instrument designed to modernise the election procedure and there is no scope for invalid votes and total secrecy of voting data is maintained and it also facilitates quick and accurate counting</li> </ul> |
| 5     | <b>Electric vertical take-off and landing (eVTOL)</b> | <ul style="list-style-type: none"> <li>• Electric vertical take-off and landing (eVTOL) aircraft take off vertically like a helicopter. The key difference is that they are powered by <b>electric motors</b> instead of conventional combustion engines.</li> </ul>   |
| 6     | <b>Import Restriction</b>                             | <ul style="list-style-type: none"> <li>• It refers to any one of a series of tariff and no-tariff barriers imposed by a country (importing nation) to control the volume of goods coming into the country from other countries.</li> </ul>   |
| 7     | <b>Import substitution</b>                            | <ul style="list-style-type: none"> <li>• Import substitution is an economic or trade strategy focused on promoting the production of domestically produced goods over goods imported from other countries. It aims to decrease the reliance on imports, hoping to improve their own country's economic standing simultaneously.</li> </ul>   |
| 8     | <b>Non-communicable diseases (NCDs)</b>               | <ul style="list-style-type: none"> <li>• NCDs refers to a group of conditions that are not mainly caused by an acute infection, result in long-term health consequences and often create a need for long-term treatment and care. These conditions include cancers, cardiovascular disease, diabetes and chronic lung illnesses.</li> </ul>  |
| 9     | <b>National Airspace and International Airspace</b>   | <ul style="list-style-type: none"> <li>• National Airspace only composes the land and territorial waters (i.e.: beyond <b>12NM</b>). Airspace which is not within any country's territorial limit is considered as 'International Airspace'.</li> </ul>  |
| 10    | <b>Territorial Waters</b>                             | <ul style="list-style-type: none"> <li>• Territorial waters, in international law, that area of the sea immediately adjacent to the shores of a state and subject to the territorial jurisdiction of that state. Territorial sea is defined under the UNCLOS as the <b>12-nautical mile zone</b> from the baseline or low-water line along the coast.</li> </ul>   |
| 11    | <b>Two-state solution</b>                             | <ul style="list-style-type: none"> <li>• Two-state solution is fundamentally about how or whether to split the country's territory between the <b>Jewish and Arab</b> populations. It means establishing two states for the people of two communities, that is, <b>Israel</b> for the Jewish people and <b>Palestine</b> for the Palestinian people.</li> </ul>  |
| 12    | <b>Oil price cap</b>                                  | <ul style="list-style-type: none"> <li>• An oil price cap is a limit imposed on the price of oil, usually set by a government or regulatory authority. It aims to prevent excessive price increases that could lead to economic instability or hardship for consumers.</li> </ul>  |
| 13    | <b>Radioisotopes</b>                                  | <ul style="list-style-type: none"> <li>• Radioisotopes are radioactive isotopes of an element. Atoms that contain an unstable combination of neutrons and protons, or excess energy in their nucleus.</li> </ul>   |

|    |                                 |  |
|----|---------------------------------|--|
| 14 | <b>Radionuclide</b>             | <ul style="list-style-type: none"><li>• A radionuclide is an unstable element that emits high-energy ionizing radiation from the atomic nucleus.</li></ul>   |
| 15 | <b>Space junk</b>               | <ul style="list-style-type: none"><li>• Space junk refers to fragments left behind in space. Most space junk is debris from rocket-launching material and disused satellites.</li></ul>  |
| 16 | <b>Subduction</b>               | <ul style="list-style-type: none"><li>• Subduction involves the descent of the edge of one lithospheric plate beneath that of another where two such plates collide.</li></ul>   |
| 17 | <b>Seedling transplantation</b> | <ul style="list-style-type: none"><li>• Seedling transplantation is the process of transferring young seedlings from a seedbed or nursery to their final growing location in a field or garden, typically done to ensure optimal spacing and growth conditions for the plants.</li></ul> |







## SUCCESS IS A PRACTICE WE DO!

