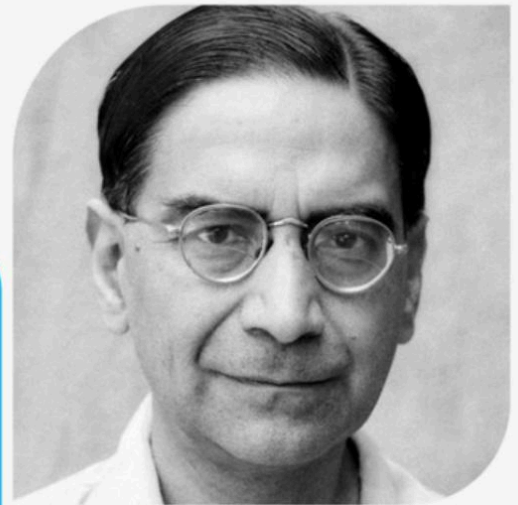


# CURRENT AFFAIRS MAGAZINE JULY, 2023

- MAHALANOBIS'S APPROACH: ADDRESSING INDIA'S BIG DATA AND AI CHALLENGES
- CHINA'S EXPORT CONTROLS ON GALLIUM AND GERMANIUM
- LIGHTNING IN INDIA
- CHILDREN AND DOMESTIC LABOUR
- CYBER CRIME



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## Mains Daily News Analysis

### GS – 1

#### 1. Mahalanobis's Approach: Addressing India's Big Data and AI Challenges

##### Why in News?

India celebrated **National Statistics Day** on June 29<sup>th</sup>, commemorating the **birthday of Prof. Prasanta Chandra Mahalanobis**, renowned as the '**Plan Man**' of India.

- As India grapples with the **challenges of Big Data and the transformative power of artificial intelligence (AI)**, reflecting on Mahalanobis's approach can offer insights into addressing these issues effectively.

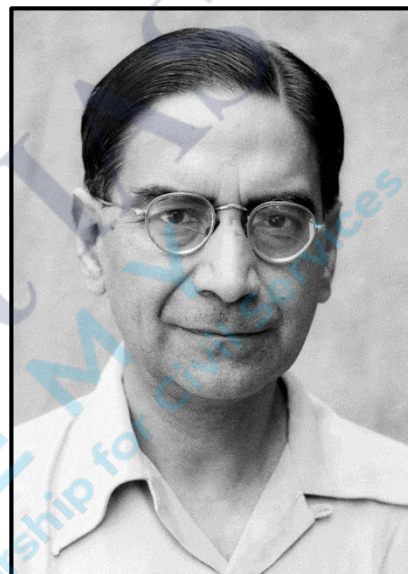
##### What are the Major Contributions of PC Mahalanobis?

###### About:

- Professor P.C. Mahalanobis, a prominent scientist and statistical pioneer, contributed significantly in the field of data collection, analysis, and planning for national development.**
- He was born in **Calcutta (now Kolkata)**. His grandfather Gurucharan was a social reformer and a **follower of Debendranath Tagore, the father of Rabindranath Tagore.**

###### Major Contributions:

- In **1931**, he founded the **Indian Statistical Institute (ISI) in Calcutta**, with the aim of promoting research and education in statistics and related disciplines.
- He also founded **Sankhya, the first Indian statistical journal, in 1933.**
- In **1955**, he was appointed as a **member of the Planning Commission of India by Prime Minister Jawaharlal Nehru.**
- He played a key role in designing India's strategy for industrialisation and economic development in the **Second Five-Year Plan (1956-61)**, also known as **Mahalanobis Plan** based on his own mathematical **model that emphasized heavy industries and capital goods.**
- Also, his involvement in the establishment and shaping of Rabindranath Tagore's **Visva Bharati University** highlights his **significant contributions beyond statistics**
- In **1968**, he was honoured with the **Padma Vibhushan.**



##### What Insights Does Mahalanobis's Approach Provide for Tackling India's Big Data and AI Challenges?

###### ➤ Regulating AI and Mahalanobis's Influence:

- As AI poses challenges such as **job displacement, spread of disinformation and other ethical concerns**, there is a global push for its regulation.
- Mahalanobis's introduction of **built-in cross-checks in his surveys, inspired by Kautilya's Arthashastra**, demonstrates his foresight in ensuring data integrity.
- Mahalanobis's **approach reminds us of the importance of rigorous data preprocessing, ensuring fairness and transparency in AI algorithms.**
- For instance, **when deploying AI in hiring processes, it is crucial to assess and mitigate biases to ensure equal opportunities for all candidates.**
- Mahalanobis's approach emphasizes the need to confront and address such challenges to build responsible and inclusive AI systems.

➤ **Integration of Multiple Data Sources:**

- Mahalanobis advocated for **integrating diverse data sources to capture a holistic view of the economy and society.**
- In the context of Big Data and AI, this implies incorporating various data streams, including **structured and unstructured data, social media feeds, satellite imagery, and sensor data.**
- Such integration can facilitate comprehensive analysis and enable innovative applications.
- For example, **in agriculture, combining meteorological data, satellite imagery, and farmer-generated data can provide valuable insights on crop health, pest outbreaks, and optimal irrigation practices.**
- This approach enables the development of AI-driven solutions like precision agriculture, improving crop yields and farmers' livelihoods.

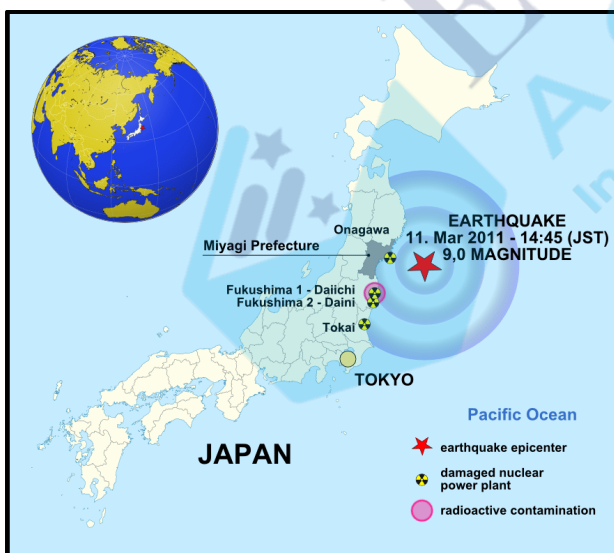
➤ **Importance of Statistical Models:**

- Mahalanobis stressed the importance of statistical models to derive meaningful inferences and predictions.
- In the era of Big Data and AI, **advanced machine learning algorithms and predictive modeling techniques** play a pivotal role in analyzing vast datasets.
- These models can be employed in various domains, such as **healthcare, finance, and urban planning.**
- For instance, **by applying predictive models to healthcare data, policymakers can identify population health trends, forecast disease outbreaks, and allocate resources effectively.**
- This approach facilitates evidence-based decision-making and proactive interventions.

## 2. Fukushima Water Issue

### Why in News?

Japan's plan to **release over 1 million tons of water, which is claimed to be treated but potentially radioactive**, from the **Fukushima nuclear power plant into the sea**, has sparked strong opposition and anxiety among neighboring countries, **particularly South Korea.**



### What is the Fukushima Water Issue?

#### About:

- The **Fukushima Daiichi Nuclear power plant** suffered a **meltdown in 2011** after a massive **earthquake and tsunami**, releasing large amounts of radioactive materials into the environment.

- No deaths were initially attributed to the incident, although around **18,000 people lost their lives as a result of the earthquake and tsunami.**
- Since then, **Japan has been storing the cooling water for nuclear fuel and rain and groundwater seeping** through the damaged reactor buildings in large tanks on site.

#### Recent Developments of the Issue:

- The water is treated using a filtering system called **Advanced Liquid Processing System (ALPS)**, which removes most of the radioactive elements **except for tritium**, a hydrogen isotope that is difficult to separate.
- Japan says **it has no space to keep storing the water, and that releasing it into the sea.**
- The **International Atomic Energy Agency (IAEA)** is assisting Japan to release the water into the sea.

**Note: Tritium is radioactive and has a half-life of about 12.5 years.**

#### Raised Concerns:

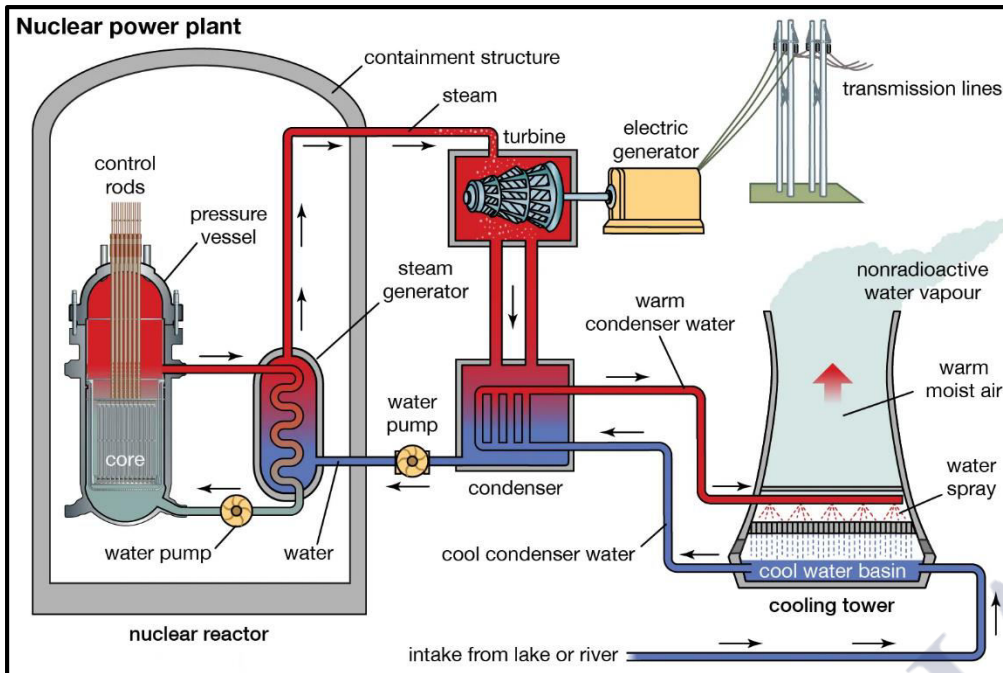
- South Korea fears that the **water release will contaminate its waters, salt and seafood, affecting its fishing industry and public health.**
- The **increased demand for salt in South Korea has led to a nearly 27% price surge**, attributed to both stockpiling and external factors like **weather and lower production.**
- China has also criticized Japan's plan, questioned its transparency and expressed concerns about the **potential impact on the marine environment and global health.**

#### What are the Other Major Nuclear Disasters of the World?

- **Chernobyl Disaster (1986):** One of the most well-known and severe nuclear disasters, the Chernobyl disaster took place in **Chernobyl Nuclear Power Plant in Ukraine.**
  - A **sudden power surge during a safety test led to a series of explosions and fires that destroyed the reactor core** and released large amounts of radioactive material into the atmosphere.
- **Three Mile Island Accident (1979):** This accident occurred in the **United States at the Three Mile Island Nuclear Generating Station in Pennsylvania.** A partial meltdown of the reactor's core resulted in the **release of radioactive gases.**
- **Kyshtym Disaster (1957):** It took place at the **Mayak Production Association in the Soviet Union (now Russia).**
  - It involved a **nuclear waste storage tank explosion**, releasing a significant amount of radioactive materials into the environment.

#### What is a Nuclear Power Plant?

- Nuclear power plants are a **type of power plant that use the process of nuclear fission in order to generate electricity.**
  - In nuclear fission, **atoms are split apart to form smaller atoms, releasing energy.**
- Fission takes place inside the reactor of a nuclear power plant. At the center of the reactor is the core, **which contains uranium fuel.**
- The **heat produced during nuclear fission in the reactor core is used to boil water into steam**, which turns the blades of a steam turbine.
  - As the turbine blades turn, they drive generators that make electricity.
- Nuclear plants cool the steam back into water in a separate structure at the power plant called a **cooling tower, or they use water from ponds, rivers, or the ocean.**
  - The cooled water is then reused to produce steam.



### International Atomic Energy Agency

- IAEA is an **intergovernmental organization** that seeks to promote the **peaceful use of nuclear energy and to inhibit its use for any military purpose, including nuclear weapons.**
- It was **established in 1957** as the world's **"Atoms for Peace"** organization within the United Nations family, and governed by its own founding treaty, the **Statute of the IAEA.**
- It **reports to both the UN General Assembly and the UN Security Council**, and is headquartered at the **UN Office at Vienna, Austria**
- In 2005, it was awarded the **Nobel Peace Prize** for their work for a safe and peaceful world.

### 3. Scheme to Support Pregnant Minor Victims of Sexual Assault

#### Why in News?

The **Ministry of Women and Child Development**, Government of India has unveiled a new scheme aimed at **providing critical care and support to pregnant minor victims of sexual assault** who lack family support.

- The scheme, with an **outlay of Rs 74.10 crore**, will offer shelter, food, legal aid, and other necessary assistance to these victims across the country.

#### What are the Major Provisions of the Scheme?

##### About:

- The scheme seeks to **assist minor girls who have been abandoned by their families due to forced pregnancies** resulting from rape or gang rape.
- It acknowledges the **physical and emotional trauma experienced by minor victims of rape and aggravated assault**, especially in cases where they become **pregnant.**

##### Eligibility Criteria and Documentation:

- **Victims below the age of 18**, who **become pregnant due to rape or assault as per the provisions of the Protection of Children from Sexual Offences (POCSO) Act, 2012**, and are either orphans or abandoned by their families, will be covered under the scheme.

- It is **not mandatory for victims to possess a copy of the First Information Report (FIR)** to avail the benefits provided by the scheme.

#### Provisions:

- It aims to provide **medical, financial, and infrastructural support** to such victims under the **Nirbhaya Fund**.
- The funds will be **utilized to set up shelters dedicated to these victims**, either as standalone shelters or designated wards within existing **child care institutions (CCIs)**.
  - In the case of wards within CCIs, **separate safe spaces** will be provided for minor rape victims to cater to their specific needs.
- The integrated support under the scheme aims to provide **immediate and non-emergency access to various services**, including **education, police assistance, healthcare, and legal support**.
- **Insurance coverage will also be provided for the minor victim** and her newborn, ensuring access to justice and rehabilitation.

#### Implementation:

- The scheme will leverage the **administrative structure of Mission Vatsalya** in collaboration with **State governments and CCIs** to actualise this support to minor victims.
- Also, **415 POCSO fast-track courts** are already established across India to **expedite justice for minor victims of rape**.

#### Need:

- According to the **National Crime Records Bureau (NCRB)** data from 2021, 51,863 cases were reported under the **POCSO Act**.
- Out of these cases, **64% were reported under sections 3 and 5 of the Act**, which **pertain to penetrative sexual assault and aggravated penetrative sexual assault**, respectively.
  - The **majority of the victims were girls, and many of them became pregnant**, exacerbating their physical and mental health concerns when disowned or abandoned by their families.

#### Note:

##### a. Nirbhaya Fund:

- The Nirbhaya Fund established in 2013, provides for a **non-lapsable corpus fund for safety and security of women**.
- It is administered by the **Department of Economic Affairs (DEA)** of the **Ministry of Finance (MoF)**.
  - **Also, the Ministry of Women and Child Development (MWCD)** is the nodal Ministry to **appraise/recommend proposals and schemes** to be funded under Nirbhaya Fund.

##### b. Mission Vatsalya:

- It is a **Centrally Sponsored Scheme launched** by the Ministry of Women and Child Development to provide a roadmap to achieve development and child protection priorities **aligned with the Sustainable Development Goals (SDGs)**.

##### c. Child Care Institutions:

- They are defined under the **Juvenile Justice (Care and Protection of Children) Act 2015** as Children Home, Open Shelter, Observation Home, Special Home, Place of Safety, Specialised Adoption Agency and a Fit Facility for providing care and protection to children who are in need of such services.

##### d. National Crime Records Bureau:

- NCRB, headquartered in New Delhi, was set-up in 1986 under the **Ministry of Home Affairs** to function as a **repository of information on crime and criminals** so as to assist the investigators in linking crime to the perpetrators.
- It was set up based on the recommendations of the **National Police Commission (1977-1981)** and the **MHA's Task Force (1985)**.
- The Bureau has been entrusted to maintain **National Database of Sexual Offenders (NDSO)** and share it with the States/UTs on regular basis.

#### What are Some Other Schemes or Initiatives for Supporting Victims of Sexual Assault?

- **Central Victim Compensation Fund (CVCF):** It provides financial assistance to victims of various crimes including rape/gang rape under **Section 357A of CrPC**.
- **One Stop Centers (OSCs):** It provide integrated services such as **medical aid, police assistance, legal aid/counselling, psycho-social counselling** and temporary shelter to women affected by violence under any circumstances.
  - **Usha Mehra Commission** recommended the establishment of a one-stop centre.
- **Mahila Police Volunteer (MPV):** It facilitates **public-police interface** at the grassroots level through women volunteers who act as a link between police and community and help women in distress.

#### 4. Protecting the Honour of National Anthem

##### Why in News?

Recently the **Executive Magistrate** in Srinagar sent 11 men to jail after detaining them for **allegedly not rising for the National Anthem** at an event where J&K Lt Governor was present.

- The order noted that “there is every likelihood that they may **commit breach of peace and disturb public tranquillity** if released”.
- They were “bound down” for good behaviour under sections **107/151 of CrPC**.

##### Note:

- In legal terms, to be “bound down” means to be **required to appear before the investigating officer or the court** on a given date.
- The **accused is bound by surety or personal guarantee** to appear before the court.

##### Who is an Executive Magistrate?

- The CrPC classifies magistrates into 2 types - Executive Magistrates and Judicial Magistrates. Section 3(4) of the CrPC enforces on good relations between the two.
- An Executive Magistrate (EM) is an **officer (or officers) of the Executive branch** who has powers under both **Indian Penal Code (IPC)** and Criminal Procedure Code (CrPC).
- The EMs are **appointed by state governments**, and they focus mainly on **maintaining law & order and performing police and administrative functions**.
  - On the other hand, **Judicial Magistrates give verdicts pronouncing punishments/ penalty/ detention and go through the evidence** in the process of investigation.
  - Also, the Judicial Magistrates are **under direct control of High Courts**.
- EMs **sometimes act as courts** when they take up functions that are judicial in nature while conducting an inquiry (**CrPC Sec.116**) in connection with maintaining peace and order (**CrPC Sec.107**).



### What are Section 107 and Section 151 of CrPC?

- **Section 107:** When an EM receives information that any person has disturbed (or is likely to disturb) the peace or public tranquillity, s/he may ask such person to **show cause why they should not be ordered to execute a bond for keeping the peace** (maximum period one year).
  - Any EM can take such an action provided either one (if not both) falls in his/her jurisdiction:
    - The place where such breach of peace is likely to occur
    - The person who is likely to disturb the peace
- **Section 151:** It provides for the **arrest to prevent the commission of cognisable offences**.
  - It authorises a police officer who comes to know of some persons planning to commit any such offences, to arrest them without a warrant or Magistrate orders.
  - However, they **cannot be held in custody for more than 24 hours** unless further orders (or any other law) provide so.

### What is the National Anthem of India?

- **About:**
  - It is one of the **national symbols** of India, composed by **Rabindranath Tagore**. The anthem **highlights India's national heritage** and demonstrates patriotism and loyalty to the country.
- **Origin:**
  - On December 27, **1911**, Tagore performed the anthem for the **first time in an INC session in Calcutta**.
  - It was again performed in **1941 by Subhash Chandra Bose** but he adopted a slightly different version from the original song, called '**Shubh Sukh Chain**'.
- **Evolution and Adoption:**
  - Tagore wrote the first anthem in Bengali '**Bharoto Bhagyo Bidhata**' which later was edited and translated as '**Jana Gana Mana**'.
  - It was adopted as the national anthem on January 24, 1950, announced by the then President **Dr Rajendra Prasad**.

### What are the Safeguards to Protect the Honour of the National Anthem?

- **Article 51 (A):**
  - It is part of the **Fundamental duties** of the citizens of India.
  - **Every Indian citizen has a responsibility** to uphold the Constitution's values and institutions, as well as the National Flag and the **National Anthem**.
- **Prevention of Insults to National Honour (PINH) Act, 1971:**
  - The Act stated that **strict punishment** will be meted out for **disrespecting the national anthem and breaking its restrictions**.
  - The accused shall be punished with **imprisonment for up to 3 years or a fine** or both.
- **National Anthem Code of Conduct:**
  - It provides that whenever the Anthem is sung or played, the **audience shall stand to attention**.
    - However, when in the course of a newsreel or documentary the Anthem is played as a part of the film, it is **not expected of the audience to stand**.
  - It also lists the occasions where the short or full versions of the National Anthem will be played.

## What are the SC's Views Regarding Honour of the National Anthem?

### a. *Bijoe Emmanuel & Ors vs State of Kerala & Ors. (1986):*

- The law around alleged disrespect to the National Anthem was laid down by the **Supreme Court (SC)** in this case.
- The SC granted protection to 3 children belonging a Christian sect, iterating that forcing them to sing the national anthem was **violative of their fundamental right to freedom of religion (Article 25)**.
  - Their parents pleaded before Kerala HC that the Jehovah's Witnesses sect of Christianity permitted worship of only Jehovah (Hebrew name for God). **Since the anthem is a prayer, they could stand up in respect, but could not sing.**
- The SC held that standing up respectfully but not singing oneself **neither prevents the singing of the National Anthem nor causes disturbance** to people assembled to sing. Hence, it **does not constitute an offence under PINH Act 1971**.

### b. *Shyam Narayan Chouksey vs Union of India (2018):*

- While hearing the same case in 2016, the SC had passed an interim order **mandating all the Indian cinema halls to play the National Anthem** before the beginning of the film and **all those present in the hall are obliged to stand up**.
- However, in its final judgement on the case in **Jan 2018, the SC modified its order** - "Playing of the National Anthem prior to the screening of feature films in cinema halls is **not mandatory, but optional or directory**".

## 5. China's Export Controls on Gallium and Germanium

### Why in News?

China has recently announced that it will **impose export controls on gallium and germanium, which are essential for semiconductor manufacturing, starting from August 1, 2023**.

- This action is seen as a response **to export controls implemented by the United States, Japan, and the Netherlands**, who express national security concerns and accuse China of military use and human rights violations.
- China denies these allegations, asserting that its export controls **aim to safeguard global industrial and supply chain stability**, without singling out any country.

### What are Gallium and Germanium?

#### ▪ Gallium:

- It is a **soft, silvery-white metal** that is liquid near room temperature.
- It is not found as a free element and is only present in small quantities in certain minerals, such as **zinc ores and bauxite**.
- Gallium is used to make **gallium arsenide**, which is a **core substrate for semiconductors**.
- It is utilized in the production of **semiconductor wafers, integrated circuits, mobile and satellite communications (in chipsets), and LEDs (in displays)**.
- Gallium also finds applications in automotive and lighting industries, as well as in **sensors for avionic, space, and defense systems**.



- **Germanium:**

- It is a **lustrous, hard, silvery-white semi-metal with a crystal structure similar to a diamond.**
- Germanium is used in **various electronic and optical applications.**
- It is commonly used in **fiber-optic cables and infrared imaging devices.**
- Germanium enhances the ability to **operate weapon systems in harsh conditions.**
- It is also used in **solar cells due to its heat resistance and higher energy conversion efficiency.**



**Note:**

- Gallium and germanium, both listed on **India's recently released critical mineral list by the Ministry of Mines**, are also included in the **European Union's list of critical raw materials**, which are recognized as crucial to Europe's economy.
  - Additionally, these elements are considered strategic resources by the United States and Japan.

#### **How does China Dominate the Global Supply of these Raw Materials?**

- China is the **world's largest producer and exporter of gallium and germanium.**
- According to the European industry body, Critical Raw Materials Alliance (CRMA), China accounted for **80% of global gallium production and 60% of global germanium production.**
- Abundant reserves of gallium and germanium in China contribute to its dominant position in the market.
- China imports gallium and germanium from countries like **Kazakhstan, Russia, and Canada to supplement its domestic supply.**
- China has a strong **industrial base for processing and refining** gallium and germanium into high-purity products.
- The country benefits from low **labor costs, favorable policies, and a large domestic market**, giving it a competitive advantage in the global supply chain.

#### **How will China's Export Controls Affect the Market?**

- **India:**
  - The Chinese export controls on gallium and germanium are expected to have a short-term impact on India and its industries.
  - India currently imports all chips, and the market is estimated to touch USD100 billion by 2025 from USD 24 billion now. Disruption in immediate supply chains may result in **increased prices and limited availability of these raw materials** in India.
  - India's chip-making plans could be affected due to the dependence on imports of gallium and germanium.

- Long-term consequences for **India's semiconductor industry** depend on alternative supply sources and domestic production capabilities.
- Strategic partnerships like the **India-U.S. Initiative on Critical and Emerging Technology (iCET)** may play a role in ensuring a reliable supply chain.
- Deloitte India suggests **exploring waste recovery from zinc and alumina production as a potential source of gallium and germanium.**
- India has an opportunity to develop domestic capabilities and diversify its supply chain by focusing on **substitutes such as indium and silicon.**
- **Global:**
  - The restrictions may lead to an increase in **prices of gallium and germanium in the global market** as supply becomes limited.
  - Countries and companies heavily dependent on Chinese supply may seek to **diversify their sources** of gallium and germanium to **reduce their vulnerability** to such export controls.
  - Export controls by China could **present opportunities for other countries or regions to increase their production** and supply of gallium and germanium, potentially creating a more diversified market.

## 6. Anthropocene Epoch

### Why in News?

Recently, the Anthropocene Working Group (AWG) has proposed that the **Anthropocene**, a new geological epoch characterized by significant human impact on Earth's systems, **began in 1950.**

- The AWG is an interdisciplinary research group dedicated to the investigation of the Anthropocene.
- If the proposal wins the necessary majority support, the **International Union of Geological Sciences** could officially ratify the new **Global boundary Stratotype Section and Point (GSSP) in August 2024.**

**Note:** The GSSP is a designated geological reference point that marks the boundary between **two geological time units.** It serves as an internationally agreed-upon standard for defining and **correlating different periods in Earth's history.** GSSPs are crucial for establishing the boundaries of epochs, ages, and other divisions within the geologic time scale.

### What is the Background?

- The starting date of Anthropocene is supported by evidence **from Crawford Lake near Toronto, Canada,** which contains traces of the **radioactive element plutonium.**
- Around the year 1950, there was a **notable increase in the concentration of plutonium particles.** This significant change serves as a **clear indication of human impact and,** consequently, provides **evidence of the Anthropocene era.**
- The research findings of Crawford Lake provided strong evidence for the AWG's hypothesis that the unprecedented increase in industrial and socioeconomic activity of the Great Acceleration around the mid-twentieth century **has caused alterations to the Earth System on a scale that terminated ~11,700 years** of largely stable **Holocene conditions** and marks the beginning of a new Earth epoch.

### What is the Anthropocene?

- The Anthropocene epoch as a term was first **coined by Nobel Prize-winning chemist Paul Crutzen** and biology **professor Eugene Stoermer in 2000** to denote the present geological time interval, in which the **Earth's ecosystem has gone through radical changes** due to human impact, especially since the onset of the **Industrial Revolution.**

- There are numerous phenomena associated with this epoch, such as **Global Warming, Sea-Level Rise, Ocean Acidification**, mass-scale soil erosion, the advent of deadly **Heat Waves**, deterioration of the biosphere and other detrimental changes in the environment.

### What is the Holocene Epoch?

- The Holocene is the **current geological epoch, which began approximately 11,700 years ago** at the end of the last major ice age.
- It is characterized by a relatively **stable and warm climate**, as well as the development of human civilization.
- The Holocene follows the **Pleistocene epoch and is part of the larger Quaternary period**.
- During the Holocene, Earth's climate experienced fluctuations, but overall, it has been a period of **relatively milder and more stable conditions compared** to the preceding ice age. The retreat of glaciers and the rise in global temperatures allowed for the expansion of forests, grasslands, and diverse ecosystems.

### What is the Geological Time Scale?

- Geologists divide the **4.6-billion-year existence of Earth into slices of time** such as Eon, Era, System/Period, Series/Epoch, and Stage/Age.
- Eons are divided into **Eras, Eras into Periods, Periods into Epochs, and Epochs into Ages**.
- Each slice corresponds to **significant happenings** - such as the break-up of continents, dramatic shifts in climate, and even the emergence of particular types of animals and plant life.

### What is the International Union of Geological Science?

- The International Union of Geological Sciences (IUGS) is a global non-governmental organization that **aims to promote and advance the Earth sciences**. It serves as the international coordinating body for professional geological research and education.
- The IUGS was founded in **1961 and is a member of the International Science Council (ISC)**.

## 7. Lightning in India

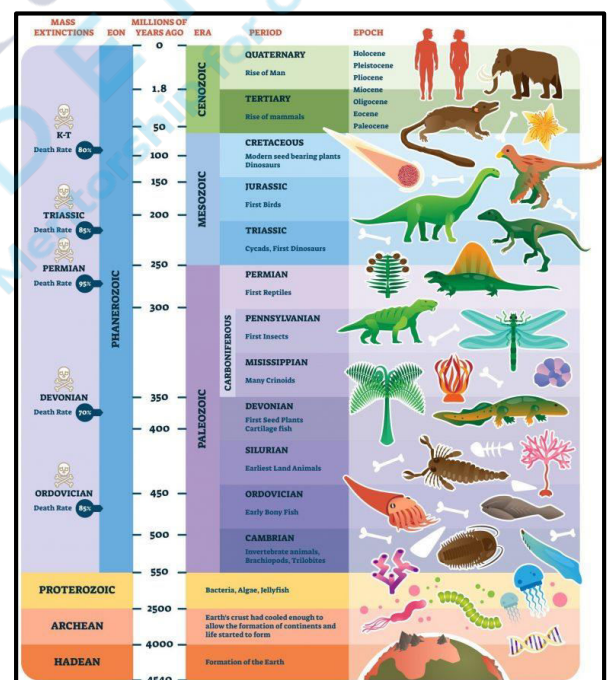
### Why in News?

**Lightning** has been a cause of concern in India, leading to a significant number of fatalities each year. As demands arise from states like **Bihar and West Bengal** to declare **lightning a natural disaster**, the Union government has taken a cautious stance.

- If approved, victims would be entitled to compensation from the **State Disaster Response Fund (SDRF)**, of which 75% is contributed by the Central government.

### Note:

At present **cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, frost and cold waves** are considered disasters that are covered under the SDRF. This does not include lightning yet.



## What is the Current Scenario of Lightening in India?

### About:

- **Lightning** is a **powerful and visible electrical phenomenon** that takes place when there is a **buildup of electrical charges within clouds and between clouds and the ground**.
  - The discharge of this electrical energy results in a **brilliant flash of light and a rapid expansion of air**, creating the characteristic thunder that accompanies lightning.
  - **Cloud-to-ground (CG)** lightning is dangerous because it can electrocute people due to its high electric voltage and current.
- India ranks among the **five countries worldwide** with an **early warning system for lightning**.
  - The system provides forecasts ranging from **five days to as close as three hours before the occurrence of lightning**.

### Lightning Fatalities: Statistics and Trends

- **National Crime Records Bureau (NCRB) Data:** In 2021, **lightning accounted for 2,880 deaths**, comprising **40% of all accidental deaths caused by "forces of nature."**
  - The trend indicates an increase in lightning-related fatalities compared to other natural events.

### Geographical Distribution in India:

- Lightning frequency is highest in northeastern states and West Bengal, Sikkim, Jharkhand, Odisha, and Bihar.
  - However, the number of lightning-related deaths is higher in central Indian states like **Madhya Pradesh, Maharashtra, Chhattisgarh, and Odisha**.
- Bihar is one of the **most vulnerable states to lightning strikes**, with a significant number of deaths reported annually.
  - In 2023, till July 6, **Bihar recorded 107 deaths due to lightning**.

### Union Government's View About Lightning:

- The **Union government opposes declaring lightning a natural disaster**. The government believes that education and awareness can help prevent lightning-related deaths effectively.

## What are the Possible Factors Behind the Increasing Trend of Lightning Strikes?

- **Climate Change: Global warming and** climate change could potentially influence atmospheric conditions, leading to an increase in thunderstorms and lightning activity.
  - As the planet's temperature rises, there may be **changes in the distribution of moisture, instability, and convective processes** that could favor more frequent lightning occurrences.
  - Kalbaisakhi is a localised thunderstorm occurrence that is **accompanied by lightning**, typically observed during the **pre-monsoon season in the Indian subcontinent**.
- **Urbanization:** The expansion of urban areas can create what is known as the **"urban heat island effect."**
  - Cities tend to be warmer than surrounding rural areas due to increased **human activity, energy consumption**, and impervious surfaces.
  - These localized heat islands may lead to the formation of more thunderstorms and, consequently, an increase in lightning strikes.

- **Land Use Changes: Deforestation**, changes in agricultural practices, and alterations of natural landscapes may disrupt local atmospheric conditions.
  - Such changes might contribute to the development of thunderstorms and, consequently, more lightning.
- **Pollution and Aerosols:** Air pollution, including aerosols and particulate matter, can affect cloud formation and electrical activity within storms.
  - **Anthropogenic emissions** might influence the frequency and intensity of thunderstorms, potentially leading to more lightning strikes.

#### Way Forward

- **Educational Campaigns:** Launch extensive educational campaigns to raise awareness about lightning safety.
  - The focus should be on educating people, **especially in rural areas**, about the dangers of lightning and the precautions they can take to stay safe.
- **Lightning Prediction and Warning Systems:** Develop and implement lightning prediction and warning systems to provide advanced notice of lightning storms. This can help people take necessary precautions and seek shelter in time.
- **Lightning-Resistant Infrastructure:** Encourage the construction of lightning-resistant infrastructure, especially in high-risk areas such as **schools, hospitals, and public buildings**.
  - It can include **installing lightning rods** on tall structures, buildings, and houses to provide a safe path for lightning to travel to the ground, reducing the risk of damage from a direct strike.
  - Also, using surge protectors for electrical equipment and devices. Lightning strikes can cause power **surges that may damage sensitive electronics. Surge protectors can divert excess voltage and protect the equipment.**
- **Training for First Responders:** Train local emergency services and first responders on **how to deal with lightning-related incidents** and provide them with necessary equipment.



## GS – 2

### 1. SCO Summit 2023

#### Why in News?

Recently, India has chaired the **Shanghai Cooperation Organization (SCO)** virtual Summit, leaders called for the formation of a “more representative” and multipolar world order in the global interest.

- During this 23<sup>rd</sup> Summit, **Iran** officially joined the SCO as the **Ninth Member Country**.
- The **theme of India's chairpersonship of SCO is 'Towards a SECURE SCO'**, which is derived from the acronym coined by the Indian PM at the 2018 SCO Qingdao Summit.
  - **It stands for:** S: Security, E: Economic development, C: Connectivity, U: Unity, R: Respect for sovereignty and territorial integrity, E: Environmental protection.

**Note:** India, which was admitted as a **full member of the SCO at the Astana Summit in 2017**, holds the rotating presidency of the grouping for the first time in 2023. The SCO grouping now comprises **China, India, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan and Uzbekistan**.

#### What are the Key Highlights of the 23rd SCO Summit?

##### ➤ **New Delhi Declaration:**

- The **New Delhi Declaration** was signed by the member nations, which states that the international community must come together to "**counter the activities of terrorist, separatist and extremist groups**, paying special attention to preventing the spread of religious intolerance, aggressive nationalism, ethnic and racial discrimination, xenophobia, ideas of fascism and chauvinism."

##### ➤ **Joint Statements:**

- The leaders adopted **two thematic joint statements** - one on cooperation in countering the radicalisation leading to separatism, extremism, and terrorism & the second one cooperation in the field of digital transformation.

##### ➤ **New Pillars of Cooperation:**

- India has created five new pillars and focus area for cooperation in the SCO, which include,

- a. Startups and Innovation
- b. Traditional Medicine
- c. Youth Empowerment
- d. Digital Inclusion
- e. Shared Buddhist Heritage

##### ➤ **India's Reservations on BRI:**

- India refused to be part of the **BRI (Belt and Road Initiative)** of the SCO members' economic strategy statement, mentioning "**interested member states**".
- India's opposition to the BRI stems from its **inclusion of projects in Pakistan-occupied Kashmir (POK)**, which India considers a violation of its sovereignty.

##### ➤ **Indian Prime Minister's Address:**

- The Indian PM highlighted the **significance of connectivity for enhancing mutual trade** and trust among SCO member states.



- However, he stressed the **need to uphold the fundamental principles of the SCO charter**, specifically respecting member **states' sovereignty and regional integrity**.

➤ **Other Perspectives:**

- The Indian PM criticized countries that employ **Cross-Border Terrorism as an instrument of their policies** and provide shelter to terrorists, urging the SCO not to hesitate in **condemning such nations and emphasized** the importance of consistency in addressing these critical issues.
- The **Chinese President**, while celebrating the **ten-year anniversary of the BRI**, mentioned his new **Global Security Initiative (GSI)**, calling for political **resolutions** to international and regional conflicts to establish a solid security shield in the region.
  - He urged SCO members to **formulate foreign policies independently** and remain vigilant against external attempts to instigate a new **Cold War or camp-based confrontation**.
- The **Russian President**, attending his first multilateral gathering since the failed rebellion by the **Wagner Group**, indirectly attributed **Ukraine's anti-Russian sentiment to external forces** supplying weapons to the country.
  - He emphasized **Russia's resilience against external pressures**, sanctions, and provocations, citing the unity of Russian political circles and society against attempted armed rebellions.

## What is Shanghai Cooperation Organization?

### About:

- SCO is a permanent **intergovernmental international organization**.
- It's a political, economic and military organization aiming to maintain peace, security and stability in the region.
- It was **created in 2001**.
- The SCO Charter was signed in 2002 and entered into force in 2003.

### Objectives:

- Strengthening **mutual trust and neighborliness** among the member states.
- Promoting effective cooperation in -politics, trade & economy, research & technology and culture.
- Enhancing ties in **education, energy, transport, tourism, environmental protection, etc.**
- Maintain and ensure **peace, security and stability** in the region.
- Establishment of a democratic, fair and rational new international political & economic order.

### Structure:

- **Heads of State Council:** The supreme SCO body which decides its internal functioning and its interaction with other States & international organisations, and considers international issues.
- **Heads of Government Council:** Approves the budget, considers and decides upon issues related to economic spheres of interaction within SCO.
- **Council of Ministers of Foreign Affairs:** Considers issues related to day-to-day activities.
- **Regional Anti-Terrorist Structure (RATS):** Established to combat terrorism, separatism and extremism.

### SCO Secretariat:

- Based in Beijing to provide informational, analytical & organizational support.

### Official language:

- The official working language of the SCO Secretariat is Russian and Chinese.

## 2. Rehabilitation Scheme for Victims of Trafficking

### Why in News?

The Ministry of Women and Child Development, Government of India, has approved a scheme that **aims to provide financial assistance to states and Union Territories to establish protection and rehabilitation homes for victims of trafficking**, particularly in **states with international borders**.

### What are the Major Provisions of the Scheme?

- **Financial Assistance for Protection and Rehabilitation Homes:** The scheme aims to provide **financial aid to states and Union Territories** in order to establish **protection and rehabilitation homes for victims of trafficking**.
  - These homes will cater to the specific needs of victims, particularly minors and young women, by providing shelter, food, clothing, counseling, primary health facilities, and other essential daily needs.
- **Strengthening Anti-Human Trafficking Units (AHTUs):** In addition to the establishment of protection and rehabilitation homes, the government has allocated funds from the **Nirbhaya Fund** to **support the strengthening of anti-human trafficking units in every district across all states and Union Territories**.
  - The funding has been extended to all states and Union Territories, including AHTUs in **Border Guarding Forces like the BSF (Border Security Force) and SSB (Sashastra Seema Bal)**.
  - Presently, there are **788 functional AHTUs, including 30 within Border Guarding Forces**, across the country.

### What is the Status of Human Trafficking in India?

#### About:

- Human trafficking is a global issue that affects numerous countries, and **India is no exception**.
- With its **large population, economic disparities, and complex social dynamics**, India has become a hotspot for various forms of human trafficking.

#### Statistics:

- According to the **National Crime Records Bureau (NCRB) data**, 2,189 cases of human trafficking were filed in 2022, involving 6,533 victims.
  - Among these victims, **4,062 were female, and 2,471 were male**. Notably, **2,877 victims were minors**.
  - While **more underage boys (1,570) were trafficked in 2021 than girls (1,307)**, the **trend was reversed when considering adult victims**, with women outnumbering men.
- Certain states have reported higher numbers of human trafficking cases, as indicated by **AHTUs**:
  - **Telangana, Maharashtra, and Assam** had the highest number of cases registered in their respective AHTUs in 2021.
  - These states, due to their geographical locations and other factors, are particularly vulnerable to **cross-border trafficking and require special attention and resources**.
  - India's neighboring countries often serve as sources for traffickers who exploit women and girls by **offering false promises of employment or a better standard of living**.

### Various Forms of Human Trafficking:

- a. **Forced Labor:** Victims are coerced or deceived into working under exploitative conditions, including industries like agriculture, construction, domestic work, and manufacturing.
- b. **Sexual Exploitation:** Individuals, particularly women and children, are trafficked for commercial sexual exploitation, including prostitution and pornography.
- c. **Child Trafficking:** Children are trafficked for various purposes, including child labor, forced begging, child marriage, adoption scams, and sexual exploitation.
- d. **Bonded Labor:** People are trapped in a cycle of debt bondage, where they are forced to work to repay a debt that often continues to increase due to exploitative practices.
- e. **Organ Trafficking:** Trafficking of organs involves the illegal trade of organs like kidneys, liver, and corneas for transplantation purposes.

### Relevant Laws in India and International Conventions:

#### ➤ Article 23 and 24 of the Constitution of India.

- **Article 23** prohibits human trafficking and begar (forced labour without payment).
- **Article 24** forbids employment of children below the age of 14 years in dangerous jobs like factories and mines.

#### ➤ Indian Penal Code (IPC) Section:

- **Section 370 and 370A of IPC** provide for comprehensive measures to counter the menace of human trafficking including trafficking of children for exploitation in any form including physical exploitation or any form of sexual exploitation, slavery, servitude, or the forced removal of organs.
- **Sections 372 and 373** dealing with selling and buying of girls for the purpose of prostitution.

#### ➤ Other Legislations:

- **The Immoral Traffic (Prevention) Act, 1956 (ITPA)** is the premier legislation for prevention of trafficking for commercial sexual exploitation.
- There are other specific legislations enacted relating to trafficking in women and children - **Prohibition of Child Marriage Act, 2006, Bonded Labour System (Abolition) Act, 1976, Child Labour (Prohibition and Regulation) Act, 1986, Transplantation of Human Organs Act, 1994,**
- **Protection of Children from Sexual offences (POCSO) Act, 2012,** is a special law to protect children from sexual abuse and exploitation.

#### ➤ International Convention:

- **United Nations Convention on Transnational Organised Crime (UNTOC)** has a Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children( India has ratified ).
- **SAARC Convention on Preventing and Combating Trafficking in Women and Children for Prostitution( India has ratified ).**

### What are the Major Causes and Impacts of Human Trafficking?

#### ▪ Causes:

- **Socioeconomic Factors: Poverty, unemployment, and lack of economic opportunities** create vulnerability, pushing individuals into desperate situations where they are more likely to be trafficked.

- **Gender Inequality and Discrimination:** Deep-rooted **gender inequalities**, discrimination, and violence against women and girls increase their susceptibility to trafficking.
  - This includes issues such as dowry-related violence, child marriage, and lack of access to education.
- **Political Instability and Conflict:** Regions affected by **political instability, armed conflict**, and displacement provide **fertile ground for trafficking**, as people are displaced and left vulnerable without protection.
- **Corruption and Organized Crime:** Widespread corruption within law **enforcement agencies, immigration authorities, and judicial systems** enables traffickers to operate with impunity, making it difficult to identify, investigate, and prosecute cases effectively.

#### Impacts:

- **Physical and Psychological Trauma:** Trafficking victims endure physical and psychological abuse, violence, and trauma.
  - They often suffer from injuries, sexually transmitted infections, malnutrition, and physical exhaustion.
  - Moreover, the psychological impact includes **anxiety, depression, post-traumatic stress disorder (PTSD)**, and a loss of trust in others.
- **Violation of Human Rights:** Human trafficking fundamentally violates the victims' **human rights**. It deprives them of their **freedom, dignity, and security**.
- **Economic Exploitation:** Trafficked individuals are subjected to harsh working conditions, long hours, and little or no pay.
  - In many cases, **victims become trapped in debt bondage**, where they are forced to work to repay an ever-increasing debt, making escape from exploitation extremely difficult.
- **Disruption of Social Fabric:** Human trafficking disrupts the social fabric of communities and families.
  - It tears apart families as individuals are forcibly separated from their loved ones. This disruption leads to **loss of social support networks, and strained relationships within communities**.

#### Way Forward

- **Strengthen Legislation and Law Enforcement:** There is a need to **enact and enforce robust anti-trafficking laws** that criminalize all forms of human trafficking and provide adequate penalties for offenders.
  - Also, there is a need to **enhance training programs for law enforcement agencies, judiciary, and border control officers** to identify and respond to trafficking cases effectively.
- **Technological Solutions:** There is a need to **develop advanced data analytics tools and artificial intelligence algorithms** to analyze big data sets, identify trafficking trends, and predict potential hotspots.
  - **Blockchain technology** can also be utilised to enhance transparency in supply chains and prevent the use of forced labor in industries prone to trafficking, such as agriculture and garment manufacturing.
- **International Collaboration:** India can facilitate international collaboration and knowledge exchange platforms to share **innovative approaches, best practices, and success stories in combating human trafficking**.
  - There is also a need to foster partnerships between **countries, NGOs, academia, and private sectors** to jointly develop and implement innovative solutions.

### 3. Internationalisation of Indian Rupee

#### Why in News?

A Reserve Bank of India-appointed working group recommended **inclusion of the rupee in the Special Drawing Rights (SDR) basket** and **recalibration of the foreign portfolio investor (FPI) regime** to accelerate the pace of **internationalisation of the rupee**.

## What is Internationalisation of Rupees?

### About:

- Internationalisation of rupees is a **process that involves increasing use of the local currency in cross-border transactions.**
- It involves **promoting the rupee for import and export trade** and then other current account transactions followed by its use in **capital account transactions.**

### Historical Context:

- In the 1950s, the Indian rupee was widely used as **legal tender** in the **United Arab Emirates, Kuwait, Bahrain, Oman, and Qatar.**
- However, the devaluation of India's currency by 1966 led to the introduction of sovereign currencies in these countries to reduce reliance on the Indian rupee.

### Benefits of Internationalisation of Rupee:

- **Appreciate Currency Value:** It will improve the demand for the rupee in international trade.
  - This can lead to **increased convenience and reduced transaction costs** for businesses and individuals dealing with India.
- **Reduced Exchange Rate Volatility:** When a currency is internationalized, its exchange rate tends to stabilize.
  - The **increased demand for the currency in global markets can help reduce volatility**, making it more predictable and reliable for international transactions.
- **Geopolitical Advantages:** Internationalizing the Rupee can enhance India's geopolitical influence.
  - It **can strengthen economic ties with other countries**, facilitate bilateral trade agreements, and promote diplomatic relations.

### Challenges:

- **Limited International Demand:**
  - The daily average share for the rupee in the **global forex** market is **only around 1.6%, while India's share of global goods trade is ~2%.**
- **Convertibility Concern:**
  - The **INR is not fully convertible**, meaning there are restrictions on its convertibility for certain purposes such as capital transactions. This **restricts its widespread use in international trade and finance.**
- **Demonetization Impact:**
  - The **demonetization** exercise in 2016, along with the recent withdrawal of the ₹2,000 note, **has affected confidence in the rupee**, particularly in neighboring countries like Bhutan and Nepal.
- **Challenges in Trade Settlement:**
  - While efforts have been made to trade with around 18 countries in rupees, transactions have remained limited.
  - **Also, negotiations with Russia to settle trade in rupees have been slow**, hampered by currency depreciation concerns and inadequate awareness among traders.

### Steps Towards Internationalization:

- In March 2023, the RBI put in place the mechanism for **rupee trade settlement with as many as 18 countries.**

- Banks from these countries have been allowed to open **Special Vostro Rupee Accounts (SVRAs)** for settling payments in Indian Rupees.
- In July 2022, the RBI issued a circular on **“International Trade Settlement in Indian Rupees”**.
- RBI enabled **external commercial borrowings** in Rupees (especially **Masala Bonds**)

### What can be Done to Pace-up Internationalization of Rupee?

- **Full Convertibility and Trade Settlement:** The Rupee should aim for full Convertibility, allowing **free movement of financial investments** between India and other countries.
  - Encouraging **Indian exporters and importers to invoice transactions in rupees** would optimize trade settlement formalities.
- **Liquid Bond Market:** RBI should focus on developing a more liquid rupee bond market, providing investment options for foreign investors and trade partners.
  - Also, **there is a need to recalibrate the foreign portfolio investor (FPI) regime** in order to enhance the speed at which the rupee is internationalized.
- **Expansion of RTGS system:** The **Real-Time Gross Settlement (RTGS) system** should be **expanded to settle international transactions**.
  - Also, providing tax incentives to foreign businesses utilizing the rupee in India would promote its use.
- **Currency Swap Agreements:** Increasing currency swap agreements, **as seen with Sri Lanka, would facilitate trade and investment transactions in rupees**.
  - Consistent and predictable currency issuance and retrieval, along with a stable exchange rate regime, are essential for maintaining confidence.
- **Inclusion in the SDR basket:** Rupee should be pitched to get included in **Special Drawing Rights (SDR), which is an international reserve asset** created by the **International Monetary Fund (IMF)** based on a basket of major currencies.
  - Also, Indian Government Bonds (IGBs) can be **included in global indices, attracting foreign investments into Indian debt markets**.
- **Lessons from China's Experience:** China's approach to internationalizing the Renminbi provides valuable insights for India:
  - **Phased Approach:** China **gradually enabled the use of the Renminbi** for current account transactions and select investment transactions before progressing towards its use as a reserve currency.
  - **Offshore Markets:** The establishment of offshore markets, such as the **Dim Sum bond and offshore RMBD bond market**, facilitated the internationalization process.

### Note:

- **Foreign Portfolio Investment (FPI):** It consists of securities and other financial assets passively held by foreign investors.
  - It is part of a **country's capital account** and is shown on its BOP.
  - It does not provide the investor with direct ownership of financial assets.
  - FPI is **more liquid, volatile and therefore riskier** than FDI.
  - It is often **referred to as “hot money”**.
  - Examples - Stocks, **bonds, mutual funds, exchange traded funds**.
- **Special Drawing Rights:**

- SDR serves as the unit of account of the IMF, but it is neither a currency nor a claim on the IMF.
- The SDR basket of currencies includes the US dollar, Euro, Japanese yen, pound sterling and the Chinese renminbi (included in 2016).

## Conclusion

The Tarapore Committee's recommendations (in 1997 and 2006), including reducing fiscal deficits, inflation rates, and banking non-performing assets, should be pursued as a primary step towards internationalisation of rupee. Also, advocating for the rupee to become an official currency in international organizations would raise its profile and acceptance.

## 4. PCA Asserts Competence in India-Pakistan Hydroelectric Projects Dispute

### Why in News?

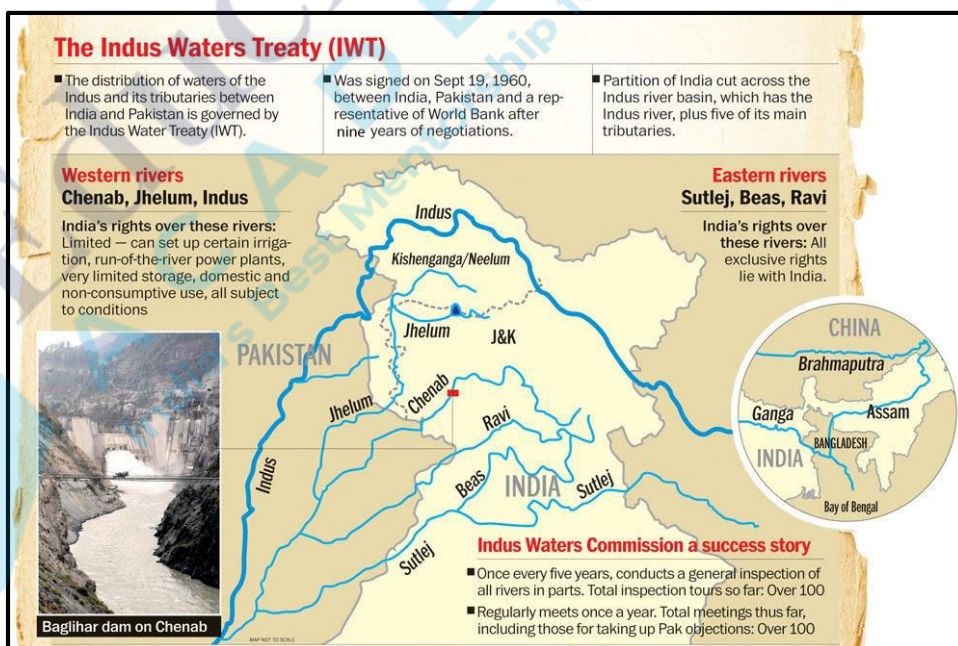
The Hague-based Permanent Court of Arbitration (PCA) recently ruled that it has the **competence to hear Pakistan's objections to India's Kishenganga and Ratle hydroelectric projects** in Jammu and Kashmir.

- India, however, rejects the constitution of the "Court of Arbitration," asserting that it goes against the provisions of the **Indus Waters Treaty (IWT)**.

### What is Indus Waters Treaty?

#### About:

- The Indus Waters Treaty is a **water-sharing agreement between India and Pakistan**.
- The treaty was brokered by the **World Bank** and signed on September 19, 1960.
- It governs the **distribution and utilization** of the waters of the **Indus River system**, which includes six rivers: **Indus, Jhelum, Chenab, Ravi, Beas, and Sutlej**.
- The treaty aims to promote **cooperation and peaceful** management of transboundary water resources between India and Pakistan.



#### Allocation of Rivers:

- Under the treaty, **three eastern rivers (Ravi, Beas, and Sutlej)** are allocated to **India** for unrestricted use.
- The **three western rivers (Indus, Jhelum, and Chenab)** are allocated to **Pakistan** for unrestricted use.
- India is allowed **limited use of the western rivers** for domestic, non-consumptive, and agricultural purposes.

#### Key Provisions:

- **Construction of Projects:**

The treaty permits **India to construct run-of-the-river hydroelectric projects** on the western rivers, subject to certain conditions.

➤ **Dispute Resolution:**

a. **Communication via Permanent Indus Commission (PIC):**

- PIC has a commissioner from each country.
- Parties inform each other about planned projects on the Indus River.
- **PIC facilitates the exchange of necessary information.**
- Aimed at **resolving differences and avoiding escalation.**

b. **Neutral Expert:**

- If the PIC fails to resolve the issue, it advances to the next level.
- **The World Bank appoints a neutral expert.**
- Expert attempts to **resolve differences.**

c. **Court of Arbitration (CoA):**

- If a neutral expert fails, the dispute goes to CoA.
- CoA resolves the dispute through **arbitration.**
- The IWT states that **Neutral Expert and CoA steps are mutually exclusive**, meaning that **only one of them can be used at a time for a given dispute.**

**What is the Hydroelectric Project Dispute Between India and Pakistan?**

➤ **Hydroelectric Projects:**

- The case involves a dispute between India and Pakistan over the **Kishenganga hydroelectric project** (on the **Kishanganga River, a tributary of the Jhelum River**), and the **Ratle hydroelectric project** (on the **Chenab River**) in Jammu and Kashmir.
- The two countries disagree over **whether the technical design features of these two hydroelectric plants** contravene the IWT.

➤ **Pakistan's Objections:**

- Pakistan objects to the hydroelectric projects, **citing violations of the IWT**, concerns about **reduced water flow, environmental impact, and differing treaty interpretations.**
- In 2016, Pakistan **retracted its request for a Neutral Expert** and proposed a **CoA** instead.
- India requested the **appointment of a Neutral Expert in 2016**, emphasizing its importance in the process, which Pakistan sought to bypass.

➤ **World Bank Intervention:**

- World Bank **paused the process due to separate requests** from India and Pakistan, urging resolution through the **PIC.**
- Pakistan refused to discuss the issue during PIC meetings, leading the World Bank to initiate actions on Neutral Expert and Court of Arbitration.
- The Treaty does not empower the World Bank to decide **whether one procedure should take precedence over the other.**
- The World Bank sought to fulfill its procedural obligations with respect to both the CoA and the Neutral Expert.

➤ **India's Opposition:**



- **India opposes the constitution of the CoA**, citing contravention of Indus Waters Treaty provisions.
- India also **questioned the jurisdiction and competence of the CoA**, stating that it was not properly constituted as per the treaty.
- India has **not appointed arbitrators or attended the court's proceedings**, emphasizing the **need for a single dispute resolution process**.

#### What is the Ruling of the Permanent Court of Arbitration?

- **Ruling:**
  - The PCA ruled that the Court of Arbitration (CoA) has the **competence to consider Pakistan's objections** to India's hydroelectric projects in Jammu and Kashmir.
  - The ruling was based on a unanimous decision, binding on both parties and without any possibility of appeal.
  - The PCA rejected **India's objections to the competence of the CoA**, as raised through its communications with the World Bank.
- **India's Response:**
  - India has been maintaining that **it will not join the Pakistan-initiated proceedings at the PCA** as the dispute is being already examined by a neutral expert under the framework of the IWT.
- **Implications:**
  - The PCA's ruling adds **complexity and uncertainty to the ongoing dispute** between India and Pakistan regarding the hydroelectric projects.
  - The ruling challenges India's position and raises questions about the **effectiveness and interpretation** of the IWT.
  - The implications of the ruling extend beyond the specific dispute, potentially impacting **bilateral relations between India and Pakistan**, particularly concerning **water-sharing and cooperation**.

#### What is Permanent Court of Arbitration?

- It was **established in 1899** and is **headquartered in The Hague, Netherlands**.
- **Purpose:** It is an **intergovernmental organization** dedicated to serve the international community in the field of dispute resolution and to facilitate arbitration and other forms of dispute resolution between States.
- It has a **three-part organizational structure** consisting of:
  - **Administrative Council** - to oversee its policies and budgets,
  - **Members of the Court** - a panel of independent potential arbitrators, and
  - **International Bureau** - its Secretariat, headed by the Secretary-General.
- **Funds:** It has a **Financial Assistance Fund** which aims at helping developing countries meet part of the costs involved in international arbitration or other means of dispute settlement offered by the PCA.

### 5. The Places of Worship Act, 1991

#### Why in News?

The **Supreme Court of India** has **adjourned the case** regarding the **validity of the Places of Worship Act of 1991**, allowing the **Centre until October 31, 2023, to clarify its stand** on the matter.

## What is the Places of Worship Act?

### About:

- It was enacted to **freeze the status of religious places of worship** as they **existed on August 15, 1947**, and prohibits the conversion of any place of worship and ensures the maintenance of their **religious character**.

### Major Provisions of the Act:

#### ➤ Prohibition of Conversion (Section 3):

- Prevents the **conversion of a place of worship**, whether in full or part, from one religious' denomination to another or within the same denomination.

#### ➤ Maintenance of Religious Character (Section 4(1)):

- Ensures that the religious identity of a **place of worship remains the same as it was on August 15, 1947**.

#### ➤ Abatement of Pending Cases (Section 4(2)):

- Declares that any ongoing legal proceedings concerning the conversion of a place of worship's religious character before August 15, 1947, **will be terminated, and no new cases can be initiated**.

#### ➤ Exceptions to the Act (Section 5):

- The Act does not apply to ancient and historical monuments, archaeological sites, and remains covered by the **Ancient Monuments and Archaeological Sites and Remains Act, 1958**.
- It also excludes cases that have **already been settled or resolved and disputes** that have been resolved by **mutual agreement or conversions** that occurred **before the Act came into effect**.
- The Act does not extend to the specific **place of worship known as Ram Janmabhoomi-Babri Masjid in Ayodhya**, including any legal proceedings associated with it.

#### ➤ Penalties (Section 6):

- Specifies penalties, including a maximum **imprisonment term of three years and fines, for violating the Act**.

### Criticism:

#### ➤ Bar on Judicial Review:

- Critics argue that the Act prevents **judicial review**, which is a **fundamental aspect of the Constitution**.
- They believe this restriction undermines the checks and balances system and limits the judiciary's role in protecting constitutional rights.

#### ➤ Arbitrary Retrospective Cutoff Date:

- The Act is criticized for using an **arbitrary date (Independence Day, 1947)** to determine the status of religious places.
- Opponents argue that this **cutoff date disregards historical injustices and denies redressal for encroachments before that date**.

#### ➤ Violation of the Right to Religion:

- Critics claim that the Act infringes upon the religious rights of Hindus, Jains, Buddhists, and Sikhs.
- They argue that it **restricts their ability to reclaim and restore their places of worship**, impeding their freedom to practice their religion.

#### ➤ Violation of Secularism:

- Opponents argue that the **Act violates the principle of secularism**, which is a core component of the Constitution, and favours one community over others
- They contend that this undermines the **equal treatment of religions under the law**.

#### ➤ **Exclusion of Ayodhya Dispute:**

- The Act is specifically criticized for excluding the land involved in the Ayodhya dispute.
- Opponents question its consistency and raise concerns about the differential treatment of religious sites.

#### **Supreme Court's Stance on the Act:**

- The Supreme Court views the Places of Worship Act as a legislative intervention that **upholds the commitment to secularism, a fundamental aspect of the Indian Constitution**.
- The Act enforces the constitutional obligation of the State to **ensure equality among all religions**. It guarantees the preservation of places of worship for every religious community.

#### **Way Forward**

- Undertake a thorough review of the Places of Worship Act to address criticisms and shortcomings.
- Ensure the Act **does not restrict judicial review**, preserving the judiciary's role in upholding constitutional rights.
- Strike a **balance between preserving religious character and respecting the rights** of different communities.
- Involve public consultation, ensure transparency, and review the exclusion of specific sites to promote fairness and consistency.

## **6. Electoral Bonds**

### **Why in News?**

A recent report by the **Association of Democratic Reforms (ADR)** an Indian **Non-governmental Organization (NGO) established in 1999 situated in New Delhi** sheds light on the significant role played by **Electoral Bonds** as the primary **source of donations for political parties in India**.

- Between **2016-17 and 2021-22**, the seven **national parties** and 24 regional parties received a **total donation of ₹9,188.35 crore** from Electoral Bonds.
  - The report analyzed donations received from **anonymous Electoral Bonds, direct corporate donations, contributions from MPs/MLAs, meetings, morchas, and collection by party units**.

### **What are the Key Highlights of the ADR Report?**

- **Analysis of Donations and Funding Sources:**
  - The highest donations from Electoral Bonds, totaling **₹3,438.8237 crore**, were received in **2019-20**, the year of the general elections.
  - The year **2021-22**, which witnessed **11 Assembly elections**, saw donations worth **₹2,664.2725 crore** through Electoral Bonds.
  - Out of the total donations of ₹16,437.635 crore received by the 31 political parties analyzed, **55.90% came from Electoral Bonds, 28.07% from the corporate sector, and 16.03% from other sources**.
- **National Parties:**
  - National parties experienced a **significant surge in Electoral Bond donations, witnessing a 743% increase between FY 2017-18 and FY 2021-22**.

- In contrast, **corporate donations** to national parties **increased by only 48%** during the same period.
- **Regional Parties and Electoral Bond Contributions:**
  - Regional parties also witnessed a substantial proportion of their donations coming from Electoral Bonds.
- **Power-Biased Donations of Electoral Bond:**
  - BJP, as the party in power, secures the **highest donation among national political parties**. More than **52% of the BJP's total donations were sourced from Electoral Bonds, amounting to ₹5,271.9751 crore**.
  - The Congress secured the second-highest Electoral Bond donations, with ₹952.2955 crore (61.54% of its total donations), followed by the Trinamool Congress with ₹767.8876 crore (93.27%).

### What are Electoral Bonds?

#### About:

- The electoral bonds system was introduced in 2017 by way of a Finance bill and it was implemented in 2018.
- They serve as a means for individuals and entities to **make donations to registered political parties** while maintaining donor anonymity.

#### Features:

- **State Bank of India (SBI)** issues the bonds in denominations of **Rs 1,000, Rs 10,000, Rs 1 lakh, Rs 10 lakh, and Rs 1 crore**.
- **Payable to the bearer on demand and interest-free**.
- Purchased by **Indian citizens or entities established in India**.
- Can be bought **individually or jointly with other individuals**.
- **Valid for 15 calendar days from the date of issue**.

#### Authorized Issuer:

- **State Bank of India (SBI)** is the authorized issuer.
- Electoral Bonds are issued through **designated SBI branches**.

#### Eligibility of Political Parties:

- Only the political parties registered under Section 29A of the **Representation of the People Act, 1951** and have **secured not less than 1% of the votes polled** in the last general election to the **House of the People** or the **Legislative Assembly**, are eligible to receive electoral bonds.

#### Purchase and Encashment:

- **Electoral Bonds can be purchased digitally or through cheques**.
- Encashment only through an authorized bank account of the political party.

#### Transparency and Accountability:

- Parties must disclose their **bank account with the Election Commission of India (ECI)**.
- Donations are made through banking channels, ensuring transparency.
- Political parties are **obligated to explain the utilization of the funds received**.

#### Benefits:

- Enhanced **transparency in political party funding**.
- **Accountability** in disclosing donation utilization.
- **Discouragement of cash transactions**.

- Preservation of **donor anonymity**.

#### **Challenges:**

- Electoral bonds are donations to political parties that hide the identity of the donors and recipients. They may compromise the **right to know**, which is part of the **right to freedom of expression under Article 19** of the **Constitution**.
- Anonymity may be compromised by government access to donor data. This implies that the **government in power can leverage this information and disrupt free and fair elections**.
- Potential for unauthorized donations violating regulations.
- Risk of crony capitalism and infusion of black money.
  - Crony Capitalism is an economic system characterized by close, mutually advantageous relationships between business leaders and government officials.
- Loopholes regarding transparency for corporate entities and donation limits.
  - As per **Companies Act 2013**, a company can make a political contribution only if its **net average profit of three preceding financial years is at 7.5%**. The removal of this clause has **raised concerns of black money in political funding through shell companies**.

#### **Way Forward**

- Implement measures to **enhance transparency** in the Electoral Bond Scheme.
- Enforce **stricter regulations for political parties to disclose** and let the **ECI examine the donation** and make observation regarding both bonds and expenditure.
- Identify and **rectify loopholes in the Electoral Bonds** to prevent potential misuse, violation of donation limits, and risks such as crony capitalism and black money infusion.
- Continuously monitor the Electoral Bond Scheme through judicial scrutiny, periodic review, and public engagement to address emerging concerns, adapt to changing landscapes, and ensure a more inclusive decision-making process.

## **7. Export Preparedness Index 2022**

### **Why in News?**

Recently, **NITI Aayog** has released the 3<sup>rd</sup> edition of **Export Preparedness Index (EPI)** for States/UTs of India for the year 2022.

- The report discusses **India's export performance amid the prevailing global trade** context in FY22, followed by an overview of the country's sector-specific export performance.

### **What is the Export Preparedness Index?**

#### **About:**

- EPI is a comprehensive tool which **measures the export preparedness of the States and UTs in India**.
- Exports are **vital for simulating economic growth** and development in a country, which necessitates understanding the factors which influence export performance.
- The index undertakes **a comprehensive analysis of States and UTs across export-related parameters** in order to identify their strengths and weaknesses.

#### **Pillars:**

- **Policy:** A comprehensive trade policy providing a strategic direction for exports and imports.

- **Business Ecosystem:** An efficient business ecosystem helping states attract investments and create an enabling infrastructure for individuals to initiate start-ups.
- **Export Ecosystem:** Assess the business environment, which is specific to exports.
- **Export Performance:** This is the only output-based parameter and examines the reach of export footprints of States and UTs.

#### **Sub Pillars:**

- The index also took into consideration **10 sub-pillars:** Export Promotion Policy; Institutional Framework; Business Environment; Infrastructure; Transport Connectivity; Export Infrastructure; Trade Support; R&D Infrastructure; Export Diversification; and Growth Orientation.
- **Features:** The EPI is a **data-driven effort to identify the core areas crucial for export promotion** at the sub-national level (states and union territories).
- It explores and highlights India's export potential by examining the different contributions made by each state and union territories.

### **What are the Key Highlights of the EPI 2022?**

#### **Performance of States:**

##### ➤ **Top Performers:**

- Tamil Nadu has topped in EPI 2022, followed by Maharashtra and Karnataka.
- Gujarat, which held the top position in **EPI 2021 (released in 2022) has been pushed to the fourth slot in EPI 2022.**
- Tamil Nadu's performance in terms of export performance indicators, including the value of exports, export concentration, and global market footprint, **contributed to its top ranking.**
- It has been a consistent **leader in sectors such as automotive, leather, textiles,** and electronic goods.

##### ➤ **Hilly/Himalayan States:**

- Uttarakhand secured the **top position among hilly/Himalayan states in the EPI 2022.** It is followed by **Himachal Pradesh, Manipur, Tripura, Sikkim, Nagaland, Meghalaya, Arunachal Pradesh,** and Mizoram.

##### ➤ **Landlocked Regions:**

- Haryana topped the **chart among the landlocked regions,** indicating its preparedness for exports.
- It was followed by **Telangana, Uttar Pradesh, Punjab, Madhya Pradesh,** and Rajasthan.

##### ➤ **Union Territories/Small States:**

- Among union territories and small states, Goa ranked first in the EPI 2022.
- Jammu and Kashmir, Delhi, Andaman and Nicobar Islands, and Ladakh secured the second, third, fourth, and fifth positions, respectively.

#### **Global Economy:**

- Global trade in 2021 showed signs of recovery from the Covid-19. Factors like increased demand for goods, fiscal policies, vaccine distribution, and easing of restrictions contributed to a **27% increase in merchandise trade** and a 16% increase in **services trade** compared to the previous year.
- The Russo-Ukrainian war in February 2022 slowed down the recovery, impacting **sectors like grain, oil, and natural gas.**

- Trade in goods saw significant growth, and services trade recovered to pre-pandemic levels by Q4 2021.

#### India's Export Trends:

- Despite global slowdown, India's **exports in 2021-22 crossed an unprecedented USD 675 Billion**, with trade in goods accounting for USD 420 billion.
- The value of merchandise exports crossed USD 400 billion in FY2022, an ambitious goal set by the government, reaching up to **USD 422 billion by March 2022**.
  - The cause of this performance was manifold. Globally, the increase in prices of commodities and rise in demand from developed countries helped increase India's merchandise exports.

#### What are the Key Learnings of the Exports Preparedness Index (EPI)?

- **Coastal states have fared the best** across all indicators with **six out of the top states** in the index coming from the coastal region of the country.
  - States like Tamil Nadu, Maharashtra, Karnataka, and Gujarat (all of them performing the best in at least one pillar).
- In terms of strengths, the policy ecosystem is **a positive story with multiple states adopting the necessary policy measures** to drive exports in their states.
  - At the district-level, 73 % of districts in the country have an export action plan and over 99 % are covered **under the 'One District One Product' scheme**.
- States have lagged in terms of transport connectivity. The absence of air connectivity hampers the **movement of goods across regions**, especially in states which are landlocked or geographically disadvantaged.
- The lower performance of the country in terms of **Research and Development (R&D) indicates the lack of attention given** to the role of innovation in exports.
- The state government has to both continue and extend its support to the **industries** which are struggling.
  - 26 states in the country have registered a **decrease in the gross value addition** of their manufacturing sector.
  - 10 states have registered a **decrease in the inflow of Foreign Direct Investment (FDI)**.
- The lack of capacity-building workshops for exporters hampers their ability to penetrate the global markets as 25 of 36 states have organized less than 10 workshops across a year.
  - For the effectiveness of existing government schemes to support states, timely approval of projects is a must.

#### What are the Recommendations of the EPI?

- **Adoption of Good Practices:** States should be encouraged to adopt good practices from their peers if they suit their needs. Learning from successful states can help lagging states improve their export performance.
- **Investment in Research and Development (R&D):** States should invest in R&D to drive product innovation, market-specific product creation, improvement in product quality, cost reduction, and efficiency improvement.
  - Establishing **dedicated research institutes with regular funding can help** states improve their exports.
- **Leveraging Geographical Indication (GI) Products:** States should **capitalize on their unique GI products** to establish a presence in the global market. Promoting and improving the manufacturing and quality of GI products can boost exports.

- **For example**, Kancheepuram Silk products can only be exported by Tamil Nadu and have no competition across the country.
- **Diversification of Export Markets:** Identifying and promoting high-growth sectors, such as information technology, pharmaceuticals, automotive, textiles, and renewable energy, can enhance India's export potential.

## 8. 25th Anniversary of the India France Strategic Partnership

### Why in News?

The **Indian Prime Minister** joined **French President** as the **Guest of Honour** at the **Bastille Day Parade**, where an **Indian tri-services** marching contingent participated. **Rafale jets** from the Indian Air Force were also part of the flypast.

- Also, joint statement titled "**25<sup>th</sup> Anniversary of the Strategic Partnership between France and India: towards a Century of Indo-French Relations**" sets the course for bilateral relations until 2047, marking significant milestones for both nations.
- The roadmap for the relationship is built upon three pillars: **partnership for security and sovereignty, partnership for the planet, and partnership for the people.**

### What are the Major Highlights of the Visit?

#### ➤ **Pillar 1: Partnership for Security and Sovereignty:**

- **Defence:** Continuation of cooperation on fighter jets and submarines, following the timely delivery of the 36 Rafale jets for the IAF and the success of the **P75 program (six Scorpene submarines).**
- **Space:** Enhancement of scientific and commercial partnership through agreements between **France's CNES and India's ISRO.**
- This includes the **joint Earth observation satellite TRISHNA**, maritime surveillance satellites in the Indian Ocean, and the protection of Indo-French satellites in orbit.
- **Civil Nuclear Energy:** Progress on the **6- European Pressurized Reactors power plant project in Jaitapur, Maharashtra** and the launch of a cooperation program on **small modular reactors and advanced modular reactors.**
- **Indo-Pacific:** Adoption of a roadmap for joint actions in the **Indo-Pacific, covering all aspects of the comprehensive strategy for the region.**
- Discussion on finalizing an Indo-French development fund for third countries, enabling **joint financing of sustainable development projects in the Indo-Pacific region.**
- **Counter-Terrorism:** Strengthening cooperation between **France's GIGN and India's National Security Guard.**
- **Critical Technology:** Strengthening cooperation on cutting-edge digital technology, including **supercomputing, cloud computing, artificial intelligence, and quantum computing.**
- Announcement of an agreement between **Atos and the Ministry of Earth Sciences of India** for the supply of **supercomputers.**
- **Civil Aviation:** Signing of technical and safety agreements in the field of **civil aviation** to support the expansion of routes between France and India and the growth of the Indian civil aviation market.

#### ➤ **Pillar 2: Partnership for the Planet and Global Issues:**

- **Plastic Pollution:** Commitment by France and India to adopt an international treaty to put an **end to plastic pollution throughout the entire life cycle of plastic products.**



- **Health:** Signing of a Letter of Intent on health and medicine to structure cooperation in **hospitals, medical research, digital technology, biotechnology**, public health, and combating micro-bacterial resistance.
  - **Blue Economy:** Launch of a partnership between **France's IFREMER and India's National Institute of Ocean Technology (NIOT)** on ocean research under the **Blue Economy and Ocean Governance roadmap**.
  - **Financing the Energy Transition:** Announcement of financing from the **French Development Agency** for India's sustainable cities program "**CITIIS 2.0**" and financing from **Proparco for the South Asia Growth Fund (SAGF III)**.
  - **Decarbonized Hydrogen:** Manufacturing electrolyzers in India, in line with the Indo-French roadmap for **decarbonized hydrogen**.
- **Pillar 3: Partnership for People:**
- **Student Mobility:** Target of welcoming **30,000 Indian students in France by 2030**.
  - Issuance of **5-year short-stay Schengen visas for Indian students** with a Master's degree from a French university.
  - **Diplomatic and Consular Network:** Opening of a **Consulate General of India in Marseille, France** and a **Bureau de France in Hyderabad, India**.
  - **Culture:** France's selection as India's partner for establishing a major new **National Museum in New Delhi**.
  - Agreement between **France Médias Monde and Prasar Bharati** for the exchange of audio-visual content and co-production of programs.
  - **Research:** Increase in funding for the **Indo-French Centre for the Promotion of Advanced Research** to support new projects.
- **Other Highlights:**
- France gifted India a **framed facsimile of a 1916 photograph** depicting a **Parisian presenting flowers to a Sikh officer**.
  - France also presented a replica of the **Charlemagne chessmen** and a series of novels by **Marcel Proust**.
  - Indian Prime Minister was honored with the **Grand Cross of the Legion of Honour**, France's highest civilian and military honor, during his visit.
  - Also, the final joint statement, did not have any reference to the pact on buying three **Scorpene submarines and joint development of a combat aircraft engine**.

### What are the Major Areas of Cooperation between India and France?

#### Background:

- France was one of the first countries with which India signed a "**strategic partnership**" after the end of the Cold War, in January 1998.
- France was also one of the very few countries to **support India's decision to test nuclear weapons in 1998**.



- **Defence Cooperation:** France has emerged as a **key defence partner for India, becoming the second largest defence supplier in 2017- 2021**.
  - **Joint Exercises: Exercise Shakti (Army), Exercise Varuna (Navy), Exercise Garuda (Air Force)**
- **Economic Cooperation:** Bilateral trade between two countries reached a new peak at **USD 13.4 billion in 2022-23**, with exports from India crossing USD 7 billion.

- France is the **11th largest foreign investor in India**, with a cumulative investment of USD 10.49 billion from **April 2000 to December 2022**.
- **Cooperation at International Forum:** France supports **India's bid for permanent membership of the United Nations Security Council** as well as its entry into the **Nuclear Suppliers Group**.
- **Climate Cooperation:** Both countries are concerned about climate change, where **India has supported France in the Paris Agreement** expressing its strong commitment to mitigating the effects of climate change.
- Both countries, as part of their joint efforts on climate change, **launched the International Solar Alliance in 2015**.

## 9. India-Sri Lanka Relations

### Why in News?

Recently, the **Tamil National Alliance (TNA)**, the largest parliamentary grouping of Tamil parties in Sri Lanka has rejected the Sri Lankan President's offer to implement the **13<sup>th</sup> Amendment of the Sri Lankan Constitution without police powers**.

- This rejection by the TNA assumes significance before the President's scheduled visit to India, as India has consistently emphasized the **"full implementation" of this legislation**, which is vital for addressing the **historic demand of Sri Lankan Tamils** for self-determination.

### What is the Background?

#### About:

- The **13<sup>th</sup> Amendment** was enacted after the **Indo-Lanka Accord of 1987**, and it remains the **only legislative guarantee** of power devolution to the provinces.
- Indo-Lanka Accord 1987 was signed by the **then Prime Minister Rajiv Gandhi and President J.R. Jayawardene**, to resolve Sri Lanka's ethnic conflict that had aggravated into a **full-fledged civil war, between the armed forces and the Liberation Tigers of Tamil Eelam**, which led the struggle for Tamils' self-determination and sought a separate state.
- The 13<sup>th</sup> Amendment, which led to the creation of **Provincial Councils**, assured a **power sharing arrangement** to enable all nine provinces in the country, including Sinhala majority areas, to self-govern.
- Subjects such as **education, health, agriculture, housing, land and police** are devolved to the provincial administrations, but because of restrictions on financial powers and overriding powers given to the President, the provincial administrations have not made much headway.
- However, successive governments in **Sri Lanka have refused to grant land and police powers** to the provinces, leading to **unresolved issues since the civil war ended 14 years ago**.

#### President's Proposal and TNA's Response:

- The Sri Lankan President presented a **comprehensive dossier to Tamil political parties**, outlining plans for truth-seeking, reconciliation, accountability, development, and power devolution.
- The proposal included implementing the **13<sup>th</sup> Amendment, except for police powers**, and empowering provincial councils through various Bills.



- However, the TNA rejected the proposal, calling it a "**hollow promise**," citing a **lack of political will** to genuinely devolve power, as provincial councils have been defuncting for five years without elections.
- The Tamil National People's Front and civil society leaders expressed **concerns to the Indian Prime Minister**, urging a federal solution due to limitations of the 13<sup>th</sup> Amendment under a unitary constitution.

## How are India's Relations with Sri Lanka?

### About:

- India and Sri Lanka are two South Asian nations situated in the **Indian Ocean** region. Geographically, Sri Lanka is located just off the southern coast of India, separated by the **Palk Strait**.
- This proximity has **played a significant role in shaping the relationship** between the two countries.
- The Indian Ocean is a **strategically important waterway** for trade and military operations, and Sri Lanka's location at the crossroads of major shipping lanes makes it a critical point of control for India.

### Relations:

- **Historical Ties:** India and Sri Lanka have a long history of cultural, religious, and trade ties dating back to ancient times.
  - There are strong cultural ties between the two countries, with many Sri Lankans tracing their heritage to India. **Buddhism**, which originated in India, is also an important religion in Sri Lanka.
- **Economic ties:** India is **Sri Lanka's third largest export destination**, after the US and UK. More than 60% of Sri Lanka's exports enjoy the benefits of the **India-Sri Lanka Free Trade Agreement**. India is also a major investor in Sri Lanka.
  - Foreign Direct Investment (FDI) from India amounted to around USD 1.7 billion over the years from 2005 to 2019.
- **Defence:** India and Sri Lanka conduct **joint Military (Mitra Shakti)** and **Naval exercise (SLINEX)**.
- **Participation in Groupings:** Sri Lanka is also a member of groupings like **BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation)** and **SAARC** in which India plays a leading role.

### Issues in India-Sri Lanka Relations:

- **Killing of Fishermen:** Killing of Indian fishermen by the Sri Lankan Navy is a lingering issue between these two nations.
  - In 2019 and 2020, a total of 284 Indian fishermen were arrested and a total of 53 Indian boats were confiscated by the Sri Lankan authorities.
- **Influence of China:** **China's rapidly growing economic footprint** (and political clout as a corollary) in Sri Lanka is straining India-Sri Lanka relations.
  - China is already the largest investor in Sri Lanka, accounting for 23.6% of the total **Foreign Direct Investment (FDI)** during 2010-2019 as against 10.4% from India.

### Way Forward

- The rejection of the President's proposal by the Tamil National Alliance and the growing concerns among Tamil political parties and civil society members underscore the ongoing challenges in implementing the **13<sup>th</sup> Amendment and devolving power in Sri Lanka**.
- India's emphasis on "full implementation" and the push for a federal solution are crucial aspects to watch as President Wickremesinghe's visit to India approaches.

## 10. Gender Parity and Women's Empowerment Gap

### Why in News?

A recent report by the **United Nations** sheds light on the **status of women's empowerment and gender parity** around the world.

- The comprehensive analysis, **jointly created by UN Women and UN Development Programme**, evaluated 114 countries based on the **Women's Empowerment Index (WEI)** and the **Global Gender Parity Index (GGPI)**.
- The findings emphasize the urgent need for comprehensive policy action to address the existing gaps and propel progress toward a more equitable and inclusive world.

### What are the Key Findings of the Report?

- **Only 1% of women globally live in countries with high women's empowerment and gender parity.**
- Leadership roles and decision-making remain predominantly **male-dominated, restricting opportunities for women.**
- On average, **women achieve only 60% of their full potential**, according to the WEI.
- **Women lag behind men by 28%** across key dimensions of human development, as measured by the GGPI.
- **None of the 114 countries** analyzed achieved **complete women's empowerment or gender parity.**
- Over **90% of women worldwide reside** in countries with **low or middle women's empowerment and low or middle performance in achieving gender parity.**
- **Gender equality challenges persist even in highly developed countries.** Among the 114 countries analyzed, over 85, including **more than half in the high or very high human development categories**, show low or moderate women's empowerment and gender parity. Economic progress alone does not ensure gender equality.
  - **India has low women's empowerment and gender parity despite moderate human development**, highlighting the need for concerted efforts to bridge the gender gap and uplift women's status.
- Gender equality alone **does not guarantee women's empowerment.** The report shows that **no country with a gender gap has achieved high women's empowerment.**
  - Additionally, about **8% of women live in countries with low empowerment but high gender parity.**

### UN Women:

- UN Women was **established in 2010 by the UN General Assembly** to accelerate progress on meeting the needs and rights of women and girls worldwide.
- **UN Women supports UN Member States** as they set global standards for achieving **gender equality and works with governments and civil society** to design and implement laws, policies, programs and services that **benefit women and girls.**
- UN Women focuses on four strategic priorities: **women's leadership and political participation, women's economic empowerment, ending violence against women, and peace, security and humanitarian action.**

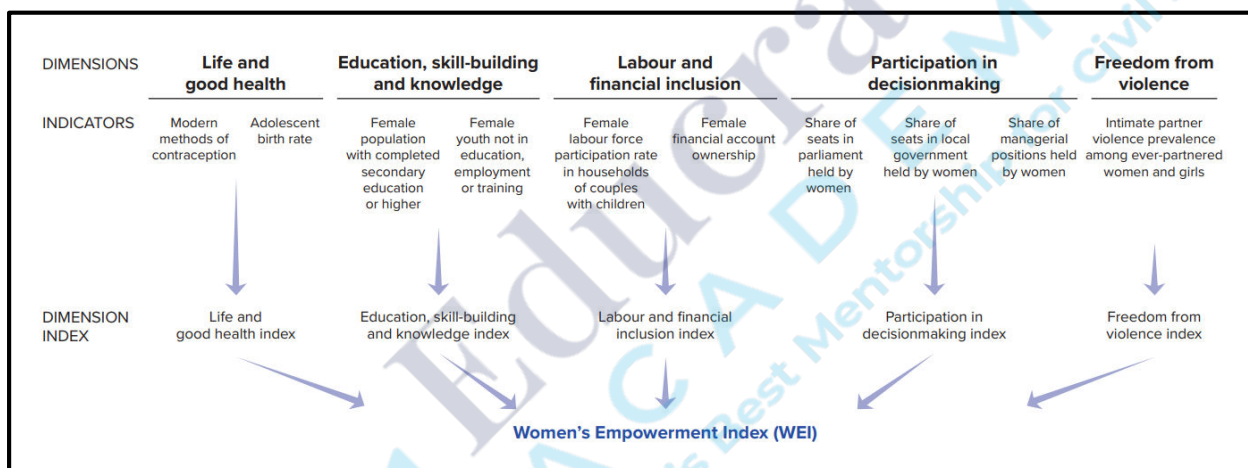
### What are the Recommendations for Comprehensive Policy Action?

- **Health Policies:** Governments should **support and promote universal access to sexual and reproductive health**, aiming for long and healthy lives for all.

- **Equality in Education:** Addressing **gaps in skills and the quality of education, particularly in fields like STEM**, will empower women and girls in the digital age.
- **Work-life Balance and Support for Families:** Policies and services addressing work-life balance, including affordable quality childcare, parental leave schemes, and flexible working arrangements, should be invested in.
- **Women's Equal Participation:** Targets and action plans should be established to achieve **gender parity in all spheres of public life**, while discriminatory laws and regulations holding women back must be eliminated.
- **Violence Against Women:** Implementing comprehensive measures focused on **prevention, changing social norms, and eliminating discriminatory laws and policies is crucial**.

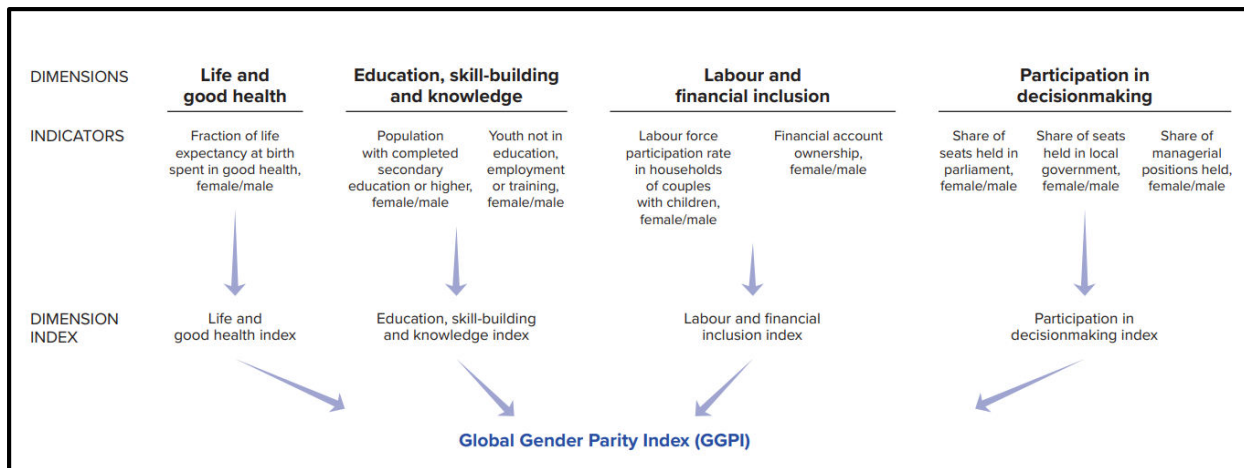
### What is the Women's Empowerment Index (WEI)?

- The WEI is a composite index developed by **UN Women and UNDP**.
- It measures women's empowerment across **five dimensions**: life and good health, education, **skill-building and knowledge**, labor and financial inclusion, participation in decision-making, and **freedom from violence**.
- The WEI captures **women's power and freedom to make choices and seize life opportunities**.
- The development of the WEI marks a significant milestone in evidence-based policymaking and serves as a baseline for monitoring the government's progress towards **Sustainable Development Goal 5 (SDG5) on gender equality and empowerment of women and girls**.



### What is the Global Gender Parity Index (GGPI)?

- The GGPI is a composite index that assesses gender disparities in key dimensions of **human development, including health, education, inclusion, and decision-making**.
- The GGPI is developed by UN Women and UNDP as part of a new global report titled '**The Path to Equality: Women's Empowerment and Gender Parity in Human Development**', which was launched in July 2023.
- The GGPI aims to capture the **status of women relative to men across different contexts and dimensions**. It also reflects the multidimensional and interrelated nature of gender equality.



### What are the Indian Initiatives to reduce Gender Gap in Social, Economic and Political Life?

#### ➤ Economic Participation and Health and Survival:

- **Beti Bachao Beti Padhao:** It ensures the protection, survival and education of the girl child.
- **Mahila Shakti Kendra:** Aims to empower rural women with opportunities for skill development and employment.
- **Rashtriya Mahila Kosh:** It is an apex micro-finance organization that provides micro-credit at concessional terms to poor women for various livelihood and income generating activities.
- **Sukanya Samridhi Yojna:** Under this scheme girls have been economically empowered by opening their bank accounts.
- **Female Entrepreneurship:** To promote female entrepreneurship, the Government has initiated Programmes like Stand-Up India and Mahila e-Haat (online marketing platform to support women entrepreneurs/ SHGs/NGOs), Entrepreneurship and Skill Development Programme (ESSDP).
- **Kasturba Gandhi Balika Vidyalaya:** They have been opened in Educationally Backward Blocks (EBBs).

#### ➤ Political Reservation: Government has reserved **33% of the seats in Panchayati Raj Institutions for women.**

- **Capacity Building of Elected Women Representatives:** It is conducted with a view to empowering women to participate effectively in the governance processes.

## 11. India and Vietnam Relations

### Why in News?

India gifted the **indigenously built in-service missile corvette INS Kirpan to Vietnam**. It reflects India's commitment to deepening defense cooperation and cementing its role as **Vietnam's 'Preferred Security Partner'** in the **Indian Ocean Region**.

### What is INS Kirpan?

- INS Kirpan is a **Khukri class missile corvette**, commissioned into the Indian Navy on **January 12, 1991**.
  - The Khukri class corvettes are equipped with **Diesel Engines** assembled in India, under license by Kirloskar Group. Around **65% of the ship contains indigenous parts**.
- It boasts a speed more than 25 knots and is equipped with various armaments, making it highly versatile in performing multiple roles, including **coastal and offshore patrol, surface warfare, coastal security**, anti-piracy, and **Humanitarian Assistance and Disaster Relief (HADR) operations**.

## What are the Areas of Cooperation Between India and Vietnam?

### About:

- India had established the **Consul General's office in Hanoi as early as 1956.**
  - Vietnam established its diplomatic mission in 1972.
- India had stood by **Vietnam in opposing US intervention in that country** at the cost of embittering Indo-US relations.
  - India was the **Chairman of the International Commission for Supervision and Control (ICSC)**, which was formed pursuant to the **Geneva Accord of 1954** to facilitate the peace process in Vietnam.
- In 1992, **India and Vietnam established extensive economic ties**, including oil exploration, agriculture and manufacturing.
- In July 2007, relations between the two countries were elevated to the level of **'Strategic Partnership'**.
- In 2016, bilateral relations were further elevated to a **"Comprehensive Strategic Partnership"**
  - **Economic Cooperation:**
    - **Mekong-Ganga Cooperation (MGC):** As members of MGC, India and Vietnam have been working to enhance ties between **India and Southeast Asian nations** and promote development cooperation.
    - **Trade and Investment:** In financial year 2021-22, bilateral trade between India and Vietnam posted a growth of 27% and reached **USD 14.14 billion.**
      - India one of the **top 8<sup>th</sup> trading partners of Vietnam.** While Vietnam is the **15<sup>th</sup> largest trading partner of India** and the fourth in Southeast Asia.
    - **Capacity Building:** India provides training programs and scholarships under the **Indian Technical and Economic Cooperation (ITEC)** to Vietnam, contributing to Vietnam's socio-economic development.
      - **Political Backing:** India and Vietnam have supported each other in various international forums and organizations, demonstrating their commitment to global cooperation.
    - Vietnam has backed **India's bid to become a permanent member of the United Nations Security Council (UNSC) and join the Asia-Pacific Economic Cooperation (APEC).**
      - **Multilateral Cooperation:**
        - India and Vietnam closely cooperate in various regional forums such as **ASEAN, East Asia Summit, Asia Europe Meeting (ASEM) besides UN and WTO.**
    - **Defense Cooperation:**
      - **High-Speed Patrol Boats:** In September 2014, India extended a **Line of Credit (LoC) of USD 100 million** to procure 12 high-speed patrol boats for the Vietnamese border guard force.
        - In 2016, an additional USD 500 million defense LoC was extended to Vietnam.
        - Also, Joint Vision Statement on **India-Vietnam defense partnership towards 2030** was signed in June 2022.
      - Vietnam-India Bilateral Army Exercise: **Ex VINBAX**
    - **Maritime Security and Cooperation:**
      - **Freedom of Navigation:** Both countries firmly support freedom of navigation and overflight, as well as **lawful commerce in national waters**, in accordance with international laws, particularly **UNCLOS.**



- **South China Sea Code of Conduct:** India and Vietnam emphasize that the **Code of Conduct on the South China Sea** should be consistent with relevant UN conventions and respect the legitimate rights and interests of nations not participating in the discussions.

### Facts About Vietnam

- **Location:** Southeast Asia, bordered by China to the north, Laos to the northwest, Cambodia to the southwest, and the South China Sea to the east and south.
- **Capital:** Hanoi
- **Largest Rivers:** The Mekong in the south and the Red in the north, end at the South China Sea.
- **Currency:** Vietnamese Dong (VND)
- **Independence:** Declared on **September 2, 1945, from French colonial rule.**
- **Historical Events:** Vietnam War (1955-1975) involving the **US and North and South Vietnam:** Reunification of North and South Vietnam in 1976.
- **Festivals:** Tet Nguyen Dan (Lunar New Year) and Vu Lan (Hungry Ghost Festival).

## 12. Cyber Crime

### Why in News?

The Indian government has taken significant steps to strengthen the mechanism for dealing with **Cybercrimes** in a comprehensive and coordinated manner.

### What is Cyber Crime?

#### About:

- Cybercrime is defined as a crime where a **computer is the object of the crime or is used as a tool** to commit an offense.
  - Cybercrimes fall under State subjects as per the **Seventh Schedule of the Constitution** of India.
- It involves illegal or unauthorized activities that **exploit technology to commit various forms of crimes.**
- Cybercrime covers a wide range of offenses and can affect individuals, organizations, and even governments.

#### Types:

- **Distributed Denial-of-Service (DDoS) Attacks:** These are used to make an **online service unavailable** and take the network down by overwhelming the site with traffic from a variety of sources.
- **Botnets:** Botnets are networks from **compromised computers that are controlled externally by remote hackers.** The remote hackers then send spam or attack other computers through these botnets.
- **Identity Theft:** This cybercrime occurs when a criminal gains access to a **user's personal information or confidential information** and then tries to tarnish reputation or seek a ransom.
- **Cyberstalking:** This kind of cybercrime involves **online harassment where the user is subjected to a plethora of online messages** and emails. Typically, cyberstalks use social media, websites, and search engines to intimidate a user and instill fear.
- **Phishing:** It is a type of **social engineering attack often** used to steal user data, including login credentials and credit card numbers. It occurs when an **attacker, masquerading as a trusted entity,** dupes a victim into opening an email, instant message, or text message.



## What are the Challenges Related to Cyber Security in India?

### ➤ Profit-Friendly Infrastructure Mindset:

- Post liberalisation, the Information Technology (IT), **electricity and telecom sector** have witnessed **large investments** by the private sector.
- Operators are not investing in protective infrastructure, **rather they are focused on the profitable infrastructure only**, because they think **investment on cyber-attack preparedness** may not generate good profits.
- All operators are focused on profits, and do not **want to invest in infrastructure that will not generate profits (i.e. protective infrastructure)**.

### ➤ Absence of Separate Procedural Code:

- There is no separate procedural code for the **investigation of cyber** or computer-related offences.

### ➤ Trans-National Nature of Cyber Attacks:

- Most cybercrimes are **trans-national in nature**. The collection of evidence from foreign territories is not only a difficult but also a tardy process.

### ➤ Expanding Digital Ecosystem:

- In the last couple of years, India has traversed on the path of digitalizing its **various economic factors** and has carved a niche for itself successfully.
- The latest technologies like **5G and Internet of Things (IoT)** will increase the coverage of the internet-connected ecosystem.
- With the advent of digitalisation, paramount consumer and citizen data will be stored in digital format and transactions are **likely to be carried out online which makes India a breeding ground** for potential hackers and cyber-criminals.

### ➤ Limited Expertise and Authority:

- Offences related to **crypto-currency** remain **under-reported** as the capacity to solve such crimes remains limited.
- Although most State cyber labs are capable of analysing hard disks and mobile phones, **they are yet to be recognized as 'Examiners of Electronic Evidence'** (by the central government). Until then, they cannot provide expert opinions on electronic data.

## What Measures Can be Taken to Tackle Cyber Crimes in India?

### ➤ Cybersecurity Awareness Campaign:

- The governments at various levels need to conduct massive cybersecurity awareness campaigns, regarding **Cyber frauds**, use strong, unique passwords, **being careful using public wi-fi, etc.**

### ➤ Cyber Insurance:

- Develop cyber insurance policies that are **tailored to the specific needs of different businesses** and industries. Customized policies will help ensure that organizations have coverage for the **most relevant cyber risks they face**.
- **Cyber insurance** provides financial coverage against losses resulting from cyber incidents and by **mitigating the financial impact** of these incidents, organizations can **recover more quickly and continue their operations**.

### ➤ Data Protection Law:

- Data is referred to as the new currency, thus is a requirement for a **stringent data protection regime** in India.
  - In this context, the **European Union's General Data Protection Regulation** and India's Personal Data Protection Bill, 2019 are steps in the right direction.
- **Collaborative Trigger Mechanism:**
- For a country like India where the **citizenry is more vulnerable** to cybercrime, there is an urgent need for a collaborative trigger mechanism.
  - This mechanism would bind all parties and enable law enforcers to act quickly and safeguard citizens and businesses from a fast-growing menace.
  - In this context, the Indian **Cyber Crime Coordination Centre will assist in centralizing cybersecurity investigations**, prioritize the development of response tools and bring together private companies to contain the menace.

### What are the Government Initiatives to Cope with Cyber Crimes in India?

- **Indian Cyber Crime Coordination Centre (I4C):** This center coordinates efforts to tackle all types of cyber-crimes across the country.
- **National Cyber Forensic Laboratory:** It provides early-stage cyber forensic assistance to Investigating Officers of all State/UT Police through both online and offline modes.
- **CyTrain Portal: A Massive Open Online Courses (MOOC)** platform for capacity building of police officers, judicial officers, and prosecutors through online courses on critical aspects of cyber-crime investigation, forensics, and prosecution.
- **National Cyber Crime Reporting Portal:** A platform where the public can report incidents of cyber-crimes, with a special focus on **crimes against women and children**.
- **Citizen Financial Cyber Fraud Reporting and Management System:** It is a **system for immediate reporting of financial frauds** and assistance in lodging online cyber complaints through a toll-free helpline.
- **Cybercrime Prevention against Women and Children (CCPWC) Scheme:** Financial assistance provided to States/UTs for **developing capabilities of Law Enforcement Agencies** in investigating cyber-crimes.
- **Joint Cyber Coordination Teams:** Constituted to enhance coordination among Law Enforcement Agencies of States/UTs, particularly in areas with multi-jurisdictional issues related to cyber-crimes.
- **Central Assistance for Modernization of Police:** Providing financial support to States/UTs for acquiring **modern weaponry, advanced communication/forensic** equipment, and cyber policing equipment.

### Conclusion

- It is of critical importance to ensure global cooperation through information sharing and strengthening joint efforts in cybersecurity research and development as most cyberattacks originate from beyond the borders.
- It is important for the corporates or the **respective government departments to find the gaps in their organisations** and address those gaps and create a layered security system, wherein security threat intelligence sharing is happening between different layers.

### 13. Forest Conservation Amendment Bill 2023

#### Why in News?

Recently, the **Forest (Conservation) Amendment Bill 2023** has been passed by the Lok Sabha, and it aims to bring significant changes to the **Forest (Conservation) Act, 1980**, which is a **crucial central statute** for the conservation of forests in India.

#### What is the Background?

- After Independence, vast areas of forest land **were designated as reserved and protected forests**.
  - However, many forested areas were left out, and areas without any standing forests were included in 'forest' lands.
- In **Godavarman case**, 1996, the **Supreme Court suspended the felling of trees** across the country, and ruled that the FC Act would apply to **all land parcels** that were either recorded as 'forest' or resembled the dictionary meaning of forest.
- In **June 2022**, the government amended the **Forest Conservation Rules** to propose a mechanism to allow developers to raise plantations "over land on which the (FC) Act is not applicable" and to swap such plots against subsequent requirements of compensatory afforestation.

#### What are the Key Provisions of the Forest (Conservation) Amendment Bill 2023?

- **Scope of the Act:**
  - The Bill broadens the scope of the Act by **inserting a Preamble**.
  - The Act's name was changed to **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980** to reflect the potential of its provisions.
- **Applicability on Various Lands:**
  - The Act, which was initially **applied to notified forest land**, was later extended to revenue forest land and lands recorded as forest in government records.
  - The amendments seek to **streamline the application of the Act to recorded forest lands**, private forest lands, plantations, etc.
- **Exemptions:**
  - The Bill proposes certain **exemptions to encourage afforestation** and plantation outside forests.
  - 0.10 ha of forest land has been proposed to provide connectivity for habitation and establishments located on the side of roads and railways, up to 10 ha of land proposed for security related infrastructure and up to 5 ha of forest land in Left Wing Extremism Affected Districts for public utility projects.
  - These exemptions include **strategic projects** related to national security within 100 km of the International Borders, **Line of Actual Control (LAC), Line of Control (LoC)** etc.
- **Provisions for Development:**
  - The Bill extends existing provisions of the **Principal Act** relating to assignment of forest land, on lease to private entities, to Government companies as well.
  - This will facilitate development projects and ensure uniformity in the implementation of the Act.
- **New Forestry Activities:**
  - The amendments add new activities such as infrastructure for frontline forest staff, ecotourism, zoo, and safari into the array of forestry activities for the conservation of forests. **Surveys and investigations in forest areas will not be considered non-forestry activities.**

- **Climate Change Mitigation and Conservation:**

- It aims to ensure that such areas **contribute to India's efforts in combating** climate change by being recognized as part of its forest conservation efforts and contribute to India's international commitments like **Net Zero Emission by 2070**

- **Empowering Local Communities:**

- The Bill encourages activities like **establishment of zoos, safaris, and ecotourism**, which will be owned by the government and set up in approved plans outside Protected Areas.
- These activities not only raise awareness about forest conservation and wildlife protection but also **create livelihood opportunities for local communities**, integrating them with overall development.

### What are the Concerns Related to the Bill?

- **Objection on Hindi Name:**

- There were objections to the **Act's new name (which is now in hindi)** on the grounds that it was "**non-inclusive**" and left out many among the "(non-Hindi speaking) population both in South India and also in the North-East.

- **Impact on Ecologically Sensitive Areas:**

- The proposed exemptions in the Bill, particularly those related to strategic projects near international borders, have raised concerns about the **potential clearance of forests in ecologically sensitive areas**, such as the Himalayan, trans-Himalayan, and northeastern regions.
  - Bill, 2023 (FCA) will **erase the rights of indigenous communities** living on India's borders.
- Without appropriate "assessment and mitigation plans," such clearances could threaten biodiversity and trigger extreme weather events.

- **Limited Applicability:**

- The Bill restricts the legislation's ambit only to areas recorded as forests on or after October 1980. This exclusion may result in leaving out significant sections of forest land and biodiversity hot spots from the Act's purview, allowing them to be potentially sold, diverted, cleared, and exploited for non-forestry purposes.

- **Concurrent List and Center-State Balance:**

- Some State governments have **argued that forest conservation falls** under the Concurrent List, which means **both the Center and States have** a role in the matter.
- They believe that the **proposed amendments could tilt the balance towards the Center** and may impact the rights and authority of the State governments in forest conservation matters.

### Way Forward

- There is a need to conduct a thorough and comprehensive assessment of the **proposed amendments and their potential impacts** on forests, biodiversity, and local communities.
- This assessment should consider ecological, social, and environmental factors and involve input from diverse stakeholders, including experts, NGOs, tribal communities, and State governments.
- Continue engaging in meaningful consultation and dialogue with all stakeholders to understand their perspectives and address their concerns. This will promote transparency, inclusivity, and better decision-making.

## 14. Children and Domestic Labour

### Why in News?

Recently, an incident came into light where a couple was accused of hiring a 10-year-old girl as a **stay-at-home help to care for their 4-year-old son and was** subjected to physical and mental abuse on several occasions.

- This incident highlights the issue of **Child Labour in Domestic Work**.

### What is Child Labor?

#### ▪ Child Domestic Labour:

- Child domestic work is a **general reference to children's work in the domestic work** sector in the home of a third party or employer.
- Child labor in domestic work refers to **situations where domestic work is performed by children below the relevant minimum** age (for light work, full-time non-hazardous work), in hazardous conditions or in a slavery-like situation.

#### ▪ Hazards of Child Domestic Work:

- The **ILO (International Labour Organization)** has identified a number of hazards to which **domestic workers are particularly vulnerable** some of the most common risks children face in domestic **service include,**
- **Long and tiring working days;** use of toxic chemicals; carrying heavy loads; handling dangerous items such as knives and hot pans; insufficient or inadequate food and accommodation etc.
- The **risks are compounded** when a child lives in the household where he or she works as a domestic worker.

#### ▪ Status of Child Labor in India:

- As per the **National Crime Records Bureau Report 2022**, in 2021, around 982 cases were registered under the **Child Labour (Prohibition and Regulation) Act, 1986**, with the **highest number of cases registered in Telangana, followed by Assam.**
- According to a study by **Campaign Against Child Labour (CACL)**, there has been a significant increase in the proportion of working **children from 28.2% to 79.6% out of the 818 children** who were surveyed, mainly because of the **Covid-19** pandemic and closure of schools.
- The states in India having highest child labour employers are – **Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, and Maharashtra.**

### Why is Child Labor in Domestic Work Prevalence in India?

#### ▪ Social and Economic Conditions of Families:

- The prevalence of child labor in domestic work in India are the social and economic conditions of families, lack of effective policies ensuring sufficient wages to adult workers, and the burden **falling on children of impoverished households to supplement family** income.
- This situation often leads to **kids being paid even less and forced to work beyond their physical** and mental capacity, resulting in a **systematic trap of slavery** in 24x7 house help employment.

#### ▪ Marginalized Communities are Easy Targets:

- Some communities and families have a **tradition of making their children work** in certain occupations, such as agriculture, carpet weaving, or domestic service. Some also believe that **education is not important** or suitable for girls.

- Tribals and Dalits who migrate to big cities from the poorer regions of India such as West Bengal, Bihar, Uttar Pradesh, and Jharkhand are the easiest targets.
- **Poor School Infrastructure:**
  - Many schools in India lack adequate facilities, teachers, and quality education. Some schools also charge fees or other expenses that are unaffordable for poor families.
  - These factors discourage parents from sending their children to school and make them drop out.
- **Unprecedented Disruption/Losses:**
  - Natural disasters, conflicts, and pandemics can disrupt the normal functioning of society and increase the vulnerability of children.
  - Some children may lose their parents, homes, or access to basic services. They may be forced to work for survival or be exploited by traffickers and other perpetrators.

### What is the Socio-Economic Impact of Child Labour?

- **Reduced Human Capital Accumulation:**
  - Child labor diminishes children's ability to accumulate skills and knowledge, affecting their future productivity and income.
- **Perpetuation of Poverty and Child Labour:**
  - Child labor lowers wages for unskilled work, contributing to the cycle of poverty and continued child labor.
- **Impaired Technological Progress and Economic Growth:**
  - Child labor hampers technological advancements and innovation, slowing down long-term economic growth and development.
- **Deprivation of Rights and Opportunities:**
  - Child labor deprives children of their rights to education, health, protection, and participation, limiting their future opportunities and social mobility.
- **Undermined Social Development and Cohesion:**
  - Child labor weakens social development and cohesion within a country, impacting stability and democracy.
- **Negative Health Impacts:**
  - Child labor exposes children to hazards, physical injuries, diseases, abuse, and exploitation, adversely affecting their physical and mental well-being, mortality rates, and life expectancy.

### What are the Government Initiatives to Curb Child Labour in India?

- **Right to Education Act (2009)**
- **Article 24:**
  - Forbids employment of children under 14 years of age in dangerous jobs like factories and mines. However, it didn't prohibit their employment in any harmless or innocent work.
- **Child Labour (Prohibition and Regulation) Act (1986):**
  - Amended in 2016 as **Child & Adolescent Labour (Prohibition and Regulation) Act, 1986, completely prohibited employment of children** below 14 years of age in all occupations and processes.

- **The Factories Act (1948)**
- **National Policy on Child Labour (1987)**
- **Pencil Portal**
- **Ratifying Conventions of the International Labour Organization:**
  - **The Minimum Age Convention (1973) - No. 138**
  - **The Worst Forms of Child Labour Convention (1999) - No. 182**

#### **Way Forward**

- The government should enact and **amend laws that prohibit and regulate child labour**, in line with international standards and conventions.
- It should also ensure that the laws are effectively implemented and enforced, by allocating adequate resources, capacity, coordination, data, accountability and political will.
- The government should provide **comprehensive social protection** and economic support to poor and vulnerable families, to prevent them from resorting to child labour as a coping mechanism.
- The government should ensure that **all children have access to free and compulsory education up to the age of 14 years**, as per the **Right to Education Act 2009 and Article 21A** of the Constitution.



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## GS – 3

### 1. PM-PRANAM Scheme and Increased FRP

#### Why in News?

**Cabinet Committee on Economic Affairs (CCEA)**, approved the **PM-PRANAM** scheme, aimed at **restoring and nurturing** Mother Earth through the use of **biofertilizers**.

- Furthermore, the **Fair and Remunerative Price (FRP)** for **sugarcane** has been increased by Rs 10 to Rs 315 per quintal for the 2023-24 season starting from October.
- Additionally, the government has extended the **urea subsidy scheme** until March 2025 with an allocation of ₹3.68 lakh crore. Alongside, a nutrient-based subsidy of ₹38,000 crore has been sanctioned for the Kharif season of 2023-24.

#### What is PM-PRANAM Scheme?

##### About:

- PM-PRANAM stands for **PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth**.
- PM-PRANAM was first announced in the **2023-24 Budget by the Union government**.
- The scheme aims to **reduce the use of chemical fertilizers** by incentivizing states to adopt alternative fertilizers.

##### Objective:

- Encourage the balanced use of fertilizers in **conjunction with biofertilizers and organic fertilizers**.
- Reduce the **subsidy burden on chemical fertilizers**, which was around Rs 2.25 lakh crores in 2022-2023.

##### Key Features of the Scheme:

##### ➤ Financing:

- The scheme will be financed by the **savings of existing fertilizer subsidies** under schemes run by the Department of Fertilizers, Ministry of Chemicals & Fertilizers.
- There will be **no separate budget for the PM-PRANAM scheme**.

##### ➤ Subsidy Savings and Grants:

- The Centre will provide **50% of the subsidy savings** to the states as a grant.
- Out of the grant, **70% can be used to create assets** related to the **technological adoption of alternative fertilizers** and production units at various levels.
- The remaining **30% can be used to reward** and encourage farmers, panchayats, and other stakeholders involved in fertilizer reduction and awareness generation.

##### ➤ Calculation of Fertilizer Reduction:

- The reduction in urea consumption by a state will be compared to its **average consumption of urea over the previous three years**.
- This calculation will determine the eligibility for subsidy savings and grants.

##### ➤ Promotion of Sustainable Agriculture:

- Encouraging the use of biofertilizers and organic fertilizers will promote sustainable agricultural practices.



- This will enhance **soil fertility**, reduce environmental pollution, and support long-term agricultural productivity.

### What is Biofertilizer?

#### About:

- It consists of a carrier **medium rich in live microorganisms**. When applied to seed, soil or living plants, it **increases soil nutrients** or makes them biologically available.
- Biofertilizers contain different types of fungi, root bacteria or other microorganisms. They form a **mutually beneficial or symbiotic relationship** with host plants as they grow in the soil.

#### Classification of Biofertilizers Based on Microorganism:

- Bacterial Biofertilizers:** Rhizobium, Azospirillum, Azotobacter, Phosphobacteria, Nostoc, etc.
- Fungal Biofertilizers:** Mycorrhiza.
- Algal Biofertilizers:** Blue Green Algae (BGA) and Azolla.
- Actinomycetes Biofertilizer:** Frankia.

### What are the Recent Changes Made in FRP for Sugarcane?

- The Cabinet has also decided that there shall **not be any deduction in the case of sugar mills where recovery is below 9.5%**. Such farmers will get Rs 291.975 per quintal for sugarcane in the ensuing sugar season instead of Rs 282.125 per quintal in the current sugar season.

### What is the FRP?

#### About:

- FRP is the **price set by the government** that sugar mills are obligated to **pay to farmers for the sugarcane procured** from them.

#### Payment and Agreement:

- Mills are legally required to pay the FRP to farmers for their cane.
- Mills can choose to sign agreements with farmers, allowing them to pay the FRP in installments.
- **Delayed payments can attract interest charges of up to 15% per annum**, and the **sugar commissioner can recover unpaid FRP by attaching properties of the mills**.

#### Governing Regulations:

- The pricing of sugarcane is governed by the statutory provisions of the Sugarcane (Control) Order, 1966 issued under the **Essential Commodities Act (ECA), 1955**.
- According to the regulations, the FRP must be paid within 14 days of cane delivery.

#### Determination and Announcement:

- The FRP is determined based on the recommendations of the **Commission for Agricultural Costs and Prices (CACP)**.
- The CACP announces the FRP.

#### Factors Considered:

- The FRP takes into account various factors, including the cost of sugarcane production, returns from alternative crops, trends in agricultural commodity prices, availability of sugar to consumers, selling price of sugar, sugar recovery from cane, and income margins for cane growers.

### What is Sugarcane?

- **Temperature:** Between 21-27°C with hot and humid climate.
- **Rainfall:** Around 75-100 cm.
- **Soil Type:** Deep rich loamy soil.
- **Top Sugarcane Producing States:** Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Bihar.
- India is the **second largest producer** of sugarcane after Brazil.
- It can be grown on all varieties of soils ranging from **sandy loam to clay loam** given these soils should be well drained.
- It needs manual labour from sowing to harvesting.
- It is the main source of **sugar, gur (jaggery), khandsari and molasses.**
- Scheme for Extending Financial Assistance to Sugar Undertakings (SEFASU) and **National Policy on Biofuels** are two of the government initiatives to support sugarcane production and the sugar industry.

## 2. India Joins Artemis Accords

### Why in News?

Recently, India's Prime Minister announced **India's decision to join the Artemis Accords** during the visit to the United States.

- **National Aeronautics and Space Administration (NASA) and Indian Space Research Organisation (ISRO) will collaborate** to send Indian astronauts, trained at the Johnson Space Center in Houston, Texas, to the **International Space Station (ISS) in 2024.**

### What are Artemis Accords?

- **About:**
- **Artemis Accords** are established by the **U.S. State Department and NASA with seven other founding members: Australia, Canada, Italy, Japan, Luxembourg, the United Arab Emirates, and the United Kingdom** in 2020 for setting common principles to govern civil exploration and use of outer space, the moon, Mars, comets, and asteroids, for peaceful purposes.
- It builds upon the foundation of the **Outer Space Treaty of 1967.**
  - The Outer Space Treaty, a **multilateral pact under the United Nations**, serves as the foundation for international space law.
  - The treaty emphasizes space as a **shared resource for humanity, prohibits national appropriation, and encourages the peaceful use of space.**
- **Signatory Countries:**



➤ India became the **27<sup>th</sup>** country to sign the nonbinding Artemis Accords.

#### Commitments under the Accords:

- **Peaceful Purposes:** The signatories will implement memorandum of understanding (MOUs) between governments or agencies to **conduct space activities for peaceful purposes in accordance with international law.**
- **Common Infrastructure:** Signatories recognize the importance of common exploration infrastructure to enhance scientific discovery and commercial utilization.
- **Registration and Data Sharing:** Relevant space objects are registered, and scientific **data is openly shared in a timely manner. Private sectors are exempt unless acting on behalf of a signatory.**
- **Preservation of Heritage:** Signatories are **expected to preserve historic landing sites**, artifacts, and evidence of activity on celestial bodies.
- **Utilization of Space Resources:** Utilization of space resources should **support safe and sustainable activities and not interfere with other signatories' activities.** Information on location and nature must be shared to prevent interference.
- **Mitigation of Debris:** Signatories plan for the **safe disposal of spacecraft** and limit the generation of harmful debris.

#### What are the Main Missions under the Artemis Program?

- **Artemis-I: Unmanned Mission to the Moon**
  - The Artemis program began with the launch of the **spacecraft named "Orion"** on the **Space Launch System (SLS)** from NASA's Kennedy Space Center on **November 16, 2022.**
  - The **SLS, a super heavy-lift launch vehicle**, carried Orion on a single mission directly to the moon.
- **Artemis-II: Crewed Lunar Flyby Mission:**
  - Scheduled for 2024, **Artemis-II will mark the first crewed mission under the Artemis program.**
  - **Four astronauts will be aboard the SLS** as it performs multiple maneuvers on an expanding orbit around Earth.
    - The mission will also **involve a lunar flyby and return to Earth.**
- **Artemis-III: Human Return to the Moon:**

- Set for 2025, **Artemis-III will mark a significant milestone in human space exploration** as astronauts return to the moon.
- This mission will go beyond the lunar flyby of Artemis-II, allowing astronauts to **land on the lunar surface and study the moon more extensively.**
- Also, the **establishment of a Lunar Gateway station is planned for 2029.** This station will serve as a docking point for astronauts and facilitate scientific research and experiments.

#### What are the Benefits and Challenges for India Related to the Accord?

##### ➤ Benefits:

- India's participation in the **Artemis Accords facilitates access to advanced training,** technological advancements, and scientific opportunities.
- India can leverage the Artemis programme to advance its own lunar exploration goals, such as the **Chandrayaan-3 mission.**
- Collaborating with NASA would enhance **India's capabilities for the Gaganyaan human mission and future ambitious space missions.**
- Also, India's **cost-effective missions and innovative approach will benefit the Artemis program,** promoting mutual advancements in space exploration.

##### ➤ Challenges:

- The **possibility of being seen as aligning with the U.S. against other major space powers,** such as **China and Russia,** who have their own plans for lunar exploration.
- The **uncertainty over the legal status and implications of the Artemis Accords,** especially regarding the **provision that allows for unregulated mining on the moon and other celestial bodies.**
- The need to balance its commitments under the Artemis Accords with its obligations under **other existing or emerging multilateral frameworks or treaties on outer space.**

### 3. Antimicrobial Resistance and One Health

#### Why in News?

Recently, four major multilateral agencies - **Food and Agriculture Organization (FAO), UN Environment Programme (UNEP), World Health Organization (WHO), and World Organisation for Animal Health (WOAH),** announced the launch of a priority research agenda to address the critical issue of **antimicrobial resistance (AMR).**

- The research agenda is based on the **One Health approach.**

#### What are the Major Focus Areas of the Research Agenda?

##### Major Objectives:

- To find out **drivers and pathways of AMR transmission** across different sectors and environment.
- To assess and evaluate the impact of AMR on various aspects of health, economy and society.
- To focus on **innovation and development of new or improved diagnostics,** therapeutics or vaccines to combat infections caused by resistant microorganisms.

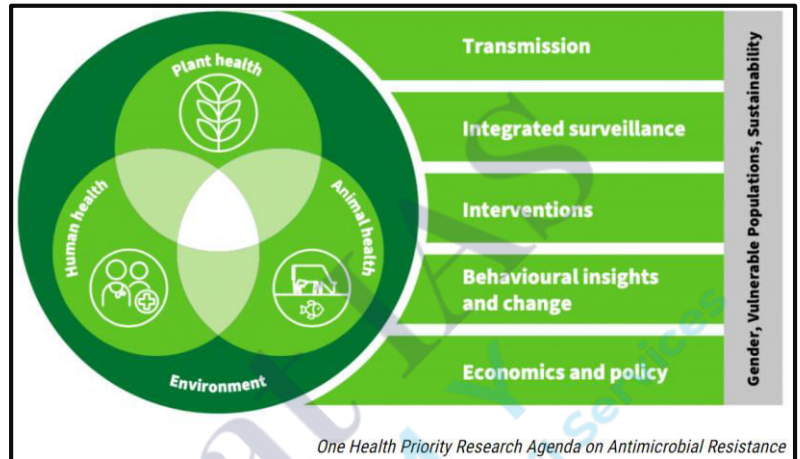
##### Cross Cutting Themes:

- The research agenda identifies **3 cross-cutting themes** that need to be considered in **One Health AMR research, namely gender, vulnerable populations and sustainability.**

- **Gender influences** how **people access and use antimicrobials**, how they are exposed to and affected by AMR, and **how they participate in and benefit from AMR research**.
- **Vulnerable populations** refer to groups of people **who are at higher risk of exposure to or infection by resistant microorganisms** due to various factors such as age, poverty, malnutrition, displacement, marginalization or lack of access to quality healthcare.
- **Sustainability** implies balancing the environmental, economic and social dimensions of development while ensuring human rights and well-being.
  - It also requires taking into account the **intergenerational equity and justice implications of AMR**.

### What Measures can be Taken to Address Antimicrobial Resistance?

- **Enhanced Surveillance and Monitoring:** Establish robust systems for monitoring and tracking the emergence and spread of resistant organisms.
  - This includes **tracking patterns of resistance, collecting data on antibiotic usage**, and sharing information internationally to identify hotspots and take timely actions.
- **Rational Use of Antibiotics:** Promote **responsible use of antibiotics in human and animal health**, ensuring they are prescribed and used only when necessary.
  - **Encourage healthcare providers to follow appropriate guidelines** for antibiotic prescription and educate the public about the risks of unnecessary antibiotic use.
- **Infection Prevention and Control:** Implement effective infection prevention and control practices in healthcare settings (**hand hygiene, proper sanitation, and adherence to standard precautions**).
  - **Preventing infections reduces the need for antibiotics**, consequently preventing AMR.
- **Vaccination Programs:** Strengthen vaccination programs to prevent the occurrence of infectious diseases and reduce the need for antibiotic treatment.



### What is 'One Health' Approach?

#### About:

- **'One Health' is an integrated, unifying approach to balance and optimize the health of people, animals and the environment.**
  - It is particularly important to prevent, predict, detect, and respond to global health threats.
- The One Health approach is particularly relevant for food and water safety, nutrition, the control of **zoonoses** (diseases that can spread between animals and humans, such as **flu, rabies and Rift Valley fever**), **pollution management, and combatting antimicrobial resistance**.

#### Recognition:

- In **May 2021**, The **One Health High-Level Expert Panel (OHHLEP)** was formed to advise **FAO, UNEP, WHO and WOA** on One Health issues.
- This includes recommendations for research on emerging disease threats, and the development of a long-term global plan of action to avert outbreaks of diseases like **H5N1 avian influenza, Zika and Ebola**.

## 4. Battery Electric Vehicles in India

### Why in News?

As India strives to achieve its **net-zero emissions target**, **battery electric vehicles (BEVs)** have emerged as a centerpiece of the **government's push for sustainable mobility**.

- However, while countries like Norway and China have seen success with BEVs, India faces unique challenges due to its specific conditions.

### What are Battery Electric Vehicles?

#### About:

- Battery Electric Vehicles (BEVs) are a type of electric vehicle that runs solely on **electric power stored in high-capacity batteries**.
- They do not have an **internal combustion engine (ICE)** and **produce zero tailpipe emissions**.
- BEVs use electric motors to drive the wheels, providing **instant torque** and smooth acceleration.

#### Battery Technology:

- BEVs rely on advanced battery technology, **primarily Lithium-ion (Li-ion) batteries**.
- Li-ion batteries offer **high energy density, longer range**, and improved performance.

#### Charging Infrastructure:

- BEVs require a network of charging stations for recharging their batteries. Charging infrastructure includes various types of chargers:
  - **Level 1 (household outlets)**
  - **Level 2 (dedicated charging stations)**
  - **Level 3 (DC fast chargers).**
- Public charging stations, workplaces, and residential buildings play a crucial role in expanding the charging infrastructure.

### FOUR TYPES OF EVs

**HEVs:** Conventional hybrid electric vehicles (such as variants of the Toyota Hyryder Hybrid or Honda City e:HEV in India) combine a conventional ICE system with an electric propulsion system, resulting in a hybrid drivetrain that substantially lowers fuel usage. The onboard battery in a conventional hybrid is charged when the IC engine is powering the drivetrain.



**PHEVs:** Plug-in hybrid vehicles (such as the Chevrolet Volt) also have a hybrid drivetrain that uses both an ICE and electric power for motive power, backed by rechargeable batteries that can be, in this case, plugged into a power source.

**BEVs:** Vehicles like the Tata Nexon in India, or the Nissan Leaf and Tesla Model S, have no ICE or fuel tank, and run on a fully electric drivetrain powered by rechargeable batteries.

**FCVs:** Fuel cell vehicles (such as Toyota's Mirai and Honda's Clarity) use hydrogen to power an onboard electric motor. FCVs combine hydrogen and oxygen to produce electricity, which runs the motor, and the only residue of the chemical process is water. Since they're powered entirely by electricity, FCVs are considered EVs – but unlike BEVs, their range and refuelling processes are comparable to conventional cars and trucks.

### What are the Problems with Battery Electric Vehicles?

- **Charging Network:**

- Currently, **India has a limited number of public charging stations**, requiring a tailored strategy that accommodates the dominant presence of two- and three-wheelers.
  - Only about 2,000 public charging stations are currently operational across the country.
  - There exists a lack of **standardization and interoperability among chargers and vehicles**.
- **Electricity Source:**
- The majority of **India's electricity is still generated from coal-fired thermal plants**, impacting the environmental benefits of EVs.
  - Unless the power generation mix changes significantly, India would be using fossil fuel generation to power EVs.
- **Value Chain Dependency:**
- The demand for Li-ion batteries from India is projected to grow at a **CAGR of ~30% by volume up to 2030**; more than **50,000 tonnes of lithium requirement for the country** to manufacture EV batteries alone.
  - However, more than **90% of the global Li production is concentrated in Chile, Argentina, and Bolivia (and Australia and China)** and other key inputs such as **cobalt and nickel are mined in the Congo and Indonesia**. As a result, **India would be almost entirely dependent on imports from a small pool of countries** to cater to its demand.
- **High Initial Cost of Owning an Electric Vehicle:**
- EVs remain **expensive compared to Internal Combustion Engine (ICE) vehicles**. Costly batteries contribute to the overall high price.
  - Limited **availability and affordability of EV models in the mass market segment** makes the transition to EVs even more difficult.
- **Lack of Awareness and Consumer Preference:**
- **Consumer preference for ICE vehicles** based on brand loyalty, resale value, and comfort and **limited knowledge of potential buyers** regarding EV benefits and features further adds to the problem.
  - Cultural factors also influence **social acceptance and perception of EVs**.
- **Other Challenges:**
- **Shortage of skilled workers and technicians for EV servicing and repair**.
  - Increasing **electricity demand and grid stability concerns**.
  - Surge in 2 and 3-wheeler EVs but same can't be said for 4-wheeler EVs.

#### What are the Possible Alternative Technologies to BEVs?

- **Hybrid Vehicles:**
- Hybrids offer improved **fuel efficiency** without requiring extensive charging infrastructure.
  - They can serve as an **intermediate step towards 'all-electric' vehicles and help establish the battery ecosystem**.
- **Ethanol & Flex Fuel:**
- **Flex fuel vehicles** can run on various fuel types, including **ethanol, reducing reliance on fossil fuels**.
- **Fuel Cell Electric Vehicles (FCEVs) & Hydrogen ICE:**
- FCEVs run on hydrogen fuel cells, which **produce electricity and water as the only by-products** offering a **clean and efficient alternative to BEVs**.

- **Hydrogen ICE vehicles** use **hydrogen as a fuel in ICEs** offering a simpler and **cheaper alternative to BEVs**.
  - However, both FCEVs and Hydrogen ICEs have their own shortcomings in terms of infrastructure and zero-emissions.
- **Synthetic Fuels:**
- Porsche is developing **synthetic fuels that make ICEs CO<sub>2</sub>-neutral**, potentially extending the life of ICE vehicles.
  - These fuels, produced from carbon dioxide and hydrogen using renewable energy, could have broader applications.

#### What are Some Government Initiatives to Promote EV adoption?

- **Faster Adoption and Manufacturing of Electric Vehicles (FAME)scheme II**
- **National Electric Mobility Mission Plan (NEMMP)**
- **National Mission on Transformative Mobility and Battery Storage**
- **Go Electric campaign**
- **Production Linked Incentive (PLI) scheme:**
  - Incentives for the manufacturing of EVs and components
- **Ministry of Power's Revised Guidelines on Charging Infrastructure:**
  - At least one charging station to be present in a grid of 3 km and at every 25 kms on both sides of the highways.
- **Amendment to Model Building Bye-laws, 2016 (MBBL):**
  - Mandatory to set aside 20% of the parking space for EV charging facilities in residential and commercial buildings.
- India's support to the global **EV30@30 campaign**

#### Way Forward

- Collaborate with **public and private stakeholders** to rapidly **expand the charging network**, ensuring adequate coverage across urban, semi-urban, and rural areas.
- Prioritize the **establishment of standardized and interoperable charging infrastructure** to enhance convenience and **address range anxiety**.
- Launch **comprehensive awareness campaigns to educate consumers** about the benefits of BEVs, including **lower operating costs, reduced environmental impact**, and governmental incentives.
- Encourage R&D efforts to **diversify the dependency on Li-ion batteries** by exploring alternative battery chemistries, while investing in domestic battery manufacturing capabilities.

## 5. 50th Meeting of GST Council

### Why in News?

At its 50th meeting, the **Goods and Services Tax (GST) Council** made changes to tax rates on various items and resolved the **tax treatment for online gaming, casinos, and horse racing**.

- The Council decided to levy a **uniform 28% tax on the full face value of bets placed for online gaming, casinos and horse-racing**.



## What are the Major Highlights of the Meet?

- **Changes in Tax Rates:** The GST Council made the following revisions to the tax rates:
  - **Uncooked or Unfried Snack pellets and Fish Soluble Paste:** The tax rate was reduced from **18% to 5%**.
  - **Imitation Zari Threads or Yarn:** The tax rate was reduced from 12% to 5%.
  - **Food and Beverages Consumed Inside Cinema Halls:** The tax rate was set at **5% without input tax credits**, as opposed to the previous **18% on cinema services**.
- **Tax Treatment of Online Gaming, Casinos, and Horse Racing:**
  - Regardless of whether they involve skill, chance, or a combination thereof (or neither), bets and wagers made on online gaming, casinos, and horse racing activities **will now attract a 28% GST levy**.
  - The GST laws will be amended to explicitly include online gaming within the tax framework.
- **Exemption from GST:**
  - GST Council exempts **cancer-related drugs, medicines for rare diseases**, and food products for special medical purposes from **GST**
- **Establishment of GST Appellate Tribunals:**
  - The Council examined proposals from states to establish **50 Benches of the GST Appellate Tribunals in the country**.
  - The initial Benches will be set up in state capitals and locations where High Courts have Benches.
- **Concerns Raised on GST Network and PMLA:**
  - Some states expressed criticism regarding the recent decision to bring the **GST Network (GSTN) under the purview of the Prevention of Money Laundering Act (PMLA)**, administered by the **Enforcement Directorate (ED)**.
  - Tamil Nadu, in particular, argued that this inclusion contradicts the interests of taxpayers and the objective of decriminalizing GST offenses.
  - The Revenue Secretary assured the Council that it was in line with the requirements of the **Financial Action Task Force**.
  - It was clarified that the **ED will neither receive nor provide information from the GSTN**, and the notification is aimed at **empowering tax authorities to combat tax evasion and money laundering**.

## What is GST Council?

### About:

- The GST Council is a **constitutional body** responsible for making recommendations on issues related to the **implementation of the Goods and Services Tax (GST) in India**.
- As per **Article 279A (1)** of the amended Constitution, the GST Council was constituted by the **President**.

**Note:** GST is a **value-added tax system** that is levied on the **supply of goods and services in India**. It is a comprehensive indirect tax that was introduced in India on 1st July 2017, through the **101st Constitution Amendment Act, 2016**, with the slogan of **'One Nation One Tax'**.

### ➤ **Members:**

- The members of the Council include the **Union Finance Minister (chairperson)**, the **Union Minister of State (Finance) from the Centre**.
- Each state can nominate a **minister in-charge of finance or taxation or any other minister** as a member.

### ➤ **Functions:**

- Under **Article 279A (4)**, the Council makes recommendations to the Union and the States on important issues related to GST, like the **goods and services that may be subjected or exempted from GST**, model GST Laws, principles that govern place of supply, **threshold limits, GST rates including the floor rates with bands**, special rates for raising additional resources during natural calamities/disasters, **special provisions for certain States**, etc.

## 6. Chandrayaan-3

### Why in News?

With the launch of **Chandrayaan-3**, the **Indian Space Research Organisation (ISRO)** is embarking to achieve a successful soft landing on the moon.

- India aims to become the fourth country in the world to achieve this feat, joining the ranks of the **United States, Russia, and China**.

### What is Chandrayaan-3 Mission?

#### About:

- Chandrayaan-3 is **India's third lunar mission and second attempt at achieving a soft landing on the moon's surface**.
- The mission took off from the **Satish Dhawan Space Center (SDSC) in Sriharikota on July 14, 2023, at 2:35 pm**.
- It consists of an **indigenous Lander module (LM), Propulsion module (PM) and a Rover** with an objective of developing and demonstrating new technologies required for Inter planetary missions.

#### Mission Objectives of Chandrayaan-3:

- To demonstrate Safe and Soft Landing on Lunar Surface
- To demonstrate Rover roving on the moon and
- To conduct in-situ scientific experiments.

#### Features:

- The **lander (Vikram) and rover payloads (Pragyan) of Chandrayaan-3 remain the same as the Chandrayaan-2 mission**.
- The scientific payloads on the lander aim to study various aspects of the lunar environment. These payloads include studying **lunar quakes, thermal properties of the lunar surface, changes in plasma near the surface, and accurately measuring the distance between Earth and the moon**.
- The propulsion module of Chandrayaan-3 features a new experiment called **Spectro-polarimetry of Habitable Planet Earth (SHAPE)**.
  - SHAPE aims to search for smaller planets with potential habitability by analyzing reflected light.

#### Changes and Improvements in Chandrayaan-3:

- The landing area has been expanded, providing flexibility to land safely within a larger designated area.
- The **lander has been equipped with more fuel to enable longer-distance travel** to the landing site or alternate locations.
- The Chandrayaan-3 Lander has **solar panels on four sides**, instead of **only two in Chandrayaan-2**.
- High-resolution images from the Chandrayaan-2 orbiter are used to determine the **landing location, and physical modifications** have been made to enhance stability and sturdiness.
- Additional navigational and guidance instruments are on board Chandrayaan-3 to continuously monitor the Lander's speed and make the necessary corrections.



- This includes an instrument called **Laser Doppler Velocimeter**, which will fire laser beams to the lunar surface to calculate the Lander's speed.

#### Launch and Timeline:

- The **LVM3 M4 launcher** has been successfully utilized to launch Chandrayaan-3
  - Around 16 minutes after the LVM-3 lifted off, the spacecraft separated from the rocket. **It entered into an elliptical parking orbit (EPO).**
- Chandrayaan-3's journey is estimated to take approximately **42 days**, with a landing scheduled for **August 23, 2023 at the lunar dawn**.
- The lander and the rover will have a **mission life of one lunar day (about 14 Earth days)** as they work on solar energy.
  - The **landing site for Chandrayaan-3 is near the lunar south pole.**

#### What is the Importance of Landing Near the Lunar South Pole?

- Historically, spacecraft missions to the Moon have primarily **targeted the equatorial region due to its favorable terrain and operating conditions**.
  - However, the lunar south pole presents a vastly different and more challenging terrain compared to the equatorial region.
- **Sunlight is scarce in certain polar regions**, resulting in perpetually dark areas where temperatures can reach to **-230 degrees Celsius**.
  - This lack of sunlight and extreme cold pose difficulties for instrument operation and sustainability.
- The lunar south pole offers **extreme and contrasting conditions that pose challenges for humans** but it make them potential repositories of valuable information about the early Solar System.
  - It is crucial to explore this region which could impact future **deep space exploration**.



## What is India's Other Chandrayaan Missions?

### ➤ Chandrayaan-1:

- India's lunar exploration missions began with **Chandrayaan-1 in 2008**, which aimed to create a **three-dimensional atlas of the moon** and conduct mineralogical mapping.
- Launch Vehicle: **PSLV – C11**.
- Chandrayaan-1 made significant discoveries, including the **detection of water and hydroxyl on the lunar surface**.

### ➤ Chandrayaan-2: Partial Success and Discoveries:

- Chandrayaan-2 consisted of an **Orbiter, Lander, and Rover**, with the goal of exploring the lunar south pole.
- Launch Vehicle: **GSLV MkIII-M1**
- Although the **lander and rover crashed on the moon's surface, the Orbiter successfully collected data** and found signatures of water at all latitudes.

## Types of Moon Missions:

- **Flybys:** These missions involve **spacecraft passing near the moon without entering its orbit**, allowing for observations from a distance.
  - Examples include **Pioneer 3 and 4 by the United States and Luna 3 by the USSR**.
- **Orbiters:** These spacecraft enter lunar orbit to conduct prolonged studies of the moon's surface and atmosphere.
  - **Chandrayaan-1 and 46 other missions** have utilized orbiters.
- **Impact Missions:** Extensions of orbiter missions, impact missions involve **instruments making an uncontrolled landing on the lunar surface**, providing valuable data before being destroyed.
  - **Chandrayaan-1's Moon Impact Probe (MIP)** followed this approach.
- **Landers:** These missions aim for a soft landing on the moon's surface, allowing for **close-quarter observations**.
  - **Luna 9 by the USSR** was the first successful landing on the moon in 1966.
- **Rovers:** Rovers are specialized payloads that **detach from landers and move independently on the lunar surface**.
  - They gather **valuable data** and overcome the limitations of stationary landers. **Chandrayaan-2's rover was called Pragyan** (same name is retained for Chandrayaan-3 as well).
- **Human Missions:** These missions involve the landing of astronauts on the moon's surface.
  - Only NASA has achieved this feat, with **six successful landings between 1969 and 1972**.
  - **NASA's Artemis III, planned for 2025**, will mark humanity's return to the moon.

## 7. Roadmap of Solar Energy for Universal Energy Access

### Why in News?

Recently, the **Ministry of New and Renewable Energy (MNRE)**, in partnership with the **International Solar Alliance**, unveiled the report on '**Roadmap of Solar Energy for Universal Energy Access**' developed under **India's G20 presidency in 2023** showcases how **solar energy can play a key role in achieving electricity access** and providing socio-economic benefits globally.

- The roadmap is unveiled during the **4<sup>th</sup> G20 Energy Transition Working Group** held in Goa. It focuses on achieving **Universal Energy Access by 2030** and highlighted the crucial role of **solar mini grids** in driving **sustainable energy solutions**.

#### What are the Key Highlights of the Report?

- The roadmap emphasizes solar energy as a **key solution to achieve Universal Energy Access by 2030**.
- It identifies around **59% (396 million people)** of the unelectrified population best suited for electrification through **solar-based mini-grids**.
- Approximately **30% of the unelectrified population (203 million people)** can be electrified through **grid extensions**, and the remaining **11% of the unelectrified population (77 million people)** through **Decentralized Renewable Energy solutions**.
- A total investment of **around USD 192 billion** is required to accomplish the electrification goals, distributed among solar-based mini-grids, solar-based decentralized renewable energy solutions, and grid extensions.
- **Viability gap funding of around 50% (USD 48.5 billion)** is needed to support mini-grid deployment.
- The roadmap underscores the importance of addressing challenges related to **policies, regulations, and financial risks** for successful and sustainable scaling up of solar energy solutions.
- It highlights the need for **technical and financial expertise, skill development, and awareness creation** in energy access-deficit regions to drive electrification initiatives.
- The report advocates for **increased investments, ecosystem development, and optimal resource utilization** to accelerate universal energy access.
- Integration of solar **PV-based cooking solutions with electrification** initiatives is emphasized as a way to enhance energy access in remote and underdeveloped areas.

#### What is Solar Mini-grids?

##### About:

- Solar mini-grids are **small-scale electricity generation and distribution systems** that use **solar photovoltaic (PV) technology** to generate electricity and store it in batteries.
- They are typically designed to provide electricity to **communities or areas that either need to be connected to the main power grid** or experience frequent power outages.

##### Importance:

- Around **9% of the global population still lacks access to electricity**, with Sub-Saharan Africa and rural areas being the most affected.
  - Solar mini-grids can play a crucial role in addressing this challenge by providing reliable and affordable electricity to these communities.
- Moreover, **over 1.9 billion people worldwide lack access to clean cooking**, and solar mini-grids can also power electric stoves or other cooking appliances, providing clean cooking solutions.

##### Benefits of Solar Mini-grids:

- **Reliability:** Solar energy, with the aid of energy storage systems, offers a reliable source of electricity that remains resilient even **during natural disasters or power outages**.
- **Sustainability:** Solar energy is a clean and renewable energy source, which helps reduce greenhouse gas emissions and mitigate climate change.

- **Scalability:** Solar mini-grids can be scaled up or down depending on the energy demand of the community, making them a flexible option for energy access.
- **Solar Mini-grids Affordability:**
  - Solar energy is a cost-effective alternative to diesel generators in remote regions or islands, where expensive fuel transportation can lead to electricity costs as high as **Rs. 36 per unit**.
  - Harnessing **solar power offers a sustainable and economically viable solution** to reduce electricity expenses in these areas.
  - Deployment of decentralized solar is **supported through Feed-in Tariffs and tariff** restructuring for grid-connected capacity.
  - Expected reduction in battery costs with large-scale procurement further boosts the development of solar mini-grids.

### What are the Challenges in the Deployment of Solar Energy for Universal Energy Access?

- Lack of **enabling policies and regulations** that can support the deployment of solar energy for universal energy access.
- Challenges in equipment manufacturing, on-ground execution, and maintenance need to be addressed for sustained affordability.
- Accumulation of dust on solar panels reduces their output by up to 30 percent in a month, necessitating regular cleaning.
  - Current water-based cleaning methods use about 10 billion gallons annually, but waterless methods are labor-intensive and cause scratching.
- **High financial risks in underdeveloped regions** increase project costs for developers, widening the gap between consumer affordability and supplier viability.
- Need for **more technical and financial expertise** to implement and maintain solar mini-grids.

### What is the International Solar Alliance (ISA)?

#### About:

- Co-founded by India and France during 2015 during the **UN Climate Change Conference**, the **ISA** is an action-oriented, member-driven, collaborative platform for increased deployment of **solar energy** technologies.
- Its basic motive is to facilitate energy access, ensure energy security, and drive energy transition in its member countries.
- ISA is the nodal agency for implementing **One Sun One World One Grid (OSOWOG)**, which seeks to transfer solar power generated in one region to feed the electricity demands of others.

#### Headquarters:

- The Headquarters is in India with its **Interim Secretariat** being set up in Gurugram.

#### Member Nations:

- A total of 109 countries have signed the ISA Framework Agreement and 90 have ratified it.
- All member states of the **United Nations** are eligible to join the ISA.

#### Observer Status to International Solar Alliance:

- The **United Nations General Assembly (UNGA)** has granted Observer Status to the International Solar Alliance (ISA).

- It will help provide for regular and well-defined cooperation between the Alliance and the United Nations that would benefit global energy growth and development.

#### **SDG 7:**

- Sustainable Development Goal 7 (SDG7) calls for “affordable, reliable, sustainable and modern energy for all” by 2030. Its three core targets are the foundation for our work: By 2030:

#### **What are the Government Schemes to Enhance Solar Energy Production in India?**

- International Solar Alliance
- National Solar Mission
- Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)
- One Sun, One World, One Grid (OSOWOG)
- Solar Park Scheme
- Rooftop Solar Scheme

#### **Way Forward**

- Assisting access-deficit countries in developing enabling policy and regulatory frameworks.
- Facilitating private-sector participation in energy access projects.
- Integration of solar PV-based cooking solutions with electrification initiatives.
- Incentives and subsidies to attract investments. Exploring innovative financing models like green bonds.
- Hybridization with wind or biomass energy enhances mini-grid reliability and lowers power equipment costs.

### **8. Credit Guarantee Scheme for Livestock Sector**

#### **Why in News?**

The Ministry of Fisheries, Animal Husbandry and Dairying has launched **the first ever “Credit Guarantee Scheme”** under Animal Husbandry Infrastructure Development Fund (AHIDF) to facilitate collateral-free credit for MSMEs in the **livestock sector**.

#### **What are the Key Features of the Credit Guarantee Scheme?**

##### **▪ Objective:**

- **Strengthen credit delivery system** and facilitate smooth flow of credit to **Micro, Small & Medium Enterprises (MSMEs)** engaged in the Livestock sector.
- **Increase access to finance** for un-served and under-served livestock sector, with a focus on first-generation entrepreneurs and underprivileged sections of society.

##### **▪ Credit Guarantee Fund Trust:**

- **A Credit Guarantee Fund Trust** of Rs. 750.00 crores have been established to provide credit guarantee coverage up to 25% of the credit facilities extended to eligible MSMEs by lending institutions.

##### **▪ Interest Subvention:**

- The scheme offers an **interest subvention of 3%** on loans obtained from Scheduled Banks or **National Cooperative Development Corporation (NCDC)**.

- Borrowers can avail up to 90% of the total project cost as a loan.

### What is Animal Husbandry Infrastructure Development Fund?

- The AHIDF has been set up as **MSMEs and Private companies also need to be promoted and incentivized** for their involvement in processing and value addition infrastructure.
- The AHIDF is a **Central Sector Scheme** under the **Prime Minister's Atma Nirbhar Bharat Abhiyan stimulus package** of Rs.15000 crores for incentivizing investments in:
  - Dairy processing and value addition infrastructure.
  - Meat processing and value addition infrastructure.
  - Animal Feed Plant.
  - Breed Improvement technology and Breed Multiplication Farm.
  - Animal Waste to Wealth Management (Agri Waste Management).
  - Setting up of Veterinary Vaccine and Drugs Manufacturing facilities.
- Individual entrepreneurs, private companies, MSMEs, **Farmers Producers Organizations (FPOs)**, and Section 8 companies are encouraged to invest in the Livestock sector through this fund.

## 9. Ethanol

### Why in News?

Recently, the Indian Prime Minister announced at the **G20 Energy Ministers'** meeting that India has rolled out **20% ethanol-blended petrol in 2023** and aims to cover the entire **country by 2025**.

- India's ethanol production has **diversified from cane molasses to various feedstocks** like rice, maize, and other grains.
- This move is part of India's commitment to reducing dependence on **fossil fuels** and promoting **sustainable energy solutions**.

### What is Ethanol?

#### About:

- Ethanol, also known as **ethyl alcohol**, is a **biofuel** produced from various sources such as **sugarcane**, corn, rice, wheat, and biomass.
- The production process involves the **fermentation of sugars by yeasts** or via **petrochemical processes such as ethylene hydration**.
- **Ethanol is 99.9% pure alcohol** that can be **blended with petrol** to create a cleaner fuel alternative.
- Apart from being a fuel additive, ethanol production yields valuable byproducts like **Distillers' Dried Grain with Solubles**, and **Potash from Incineration Boiler Ash** that find applications across various industries.

#### Byproducts of Ethanol Production:

- **Distillers' Dried Grain with Solubles (DDGS):**
  - DDGS is a byproduct of **grain-based ethanol production**.
  - It is the residue left after the **starch in grains is fermented and ethanol is extracted**.
  - DDGS is a valuable **animal feed with high protein content** and is used to supplement livestock diets.
- **Potash from Incineration Boiler Ash:**



- The ash remaining after Ethanol Production in the boiler contains up to **28% potash**.
- This ash is a rich source of potash and **can be utilized as a fertilizer**.

### Applications of Ethanol as Fuel:

- Ethanol is used as a renewable and sustainable biofuel alternative to gasoline in the transportation sector.
- It can be blended with petrol in various proportions, such as **E10 (10% ethanol, 90% petrol)** and **E20 (20% ethanol, 80% petrol)**.
- The Indian government has implemented the **Ethanol Blending Programme** to promote the use of ethanol as a renewable fuel.
  - The program aims to **blend ethanol with petrol to reduce the country's dependence on imported crude oil**, cut carbon emissions, and boost farmers' incomes.
- Ethanol blends help reduce **greenhouse gas emissions** and air pollutants, contributing to cleaner air and mitigating **climate change**.

### How has India Diversified its Feedstocks?

#### ➤ Feedstock Diversification:

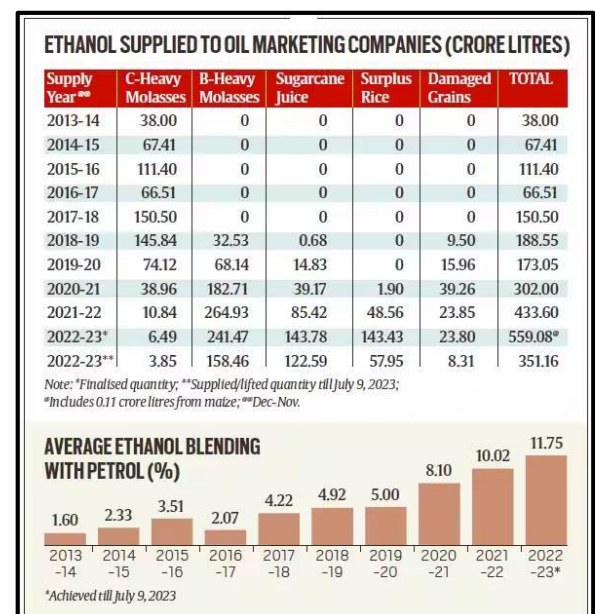
- Ethanol production in India was mainly **based on 'C-heavy' molasses**, with a **sugar content of 40-45%**, yielding **220–225 liters of ethanol per tonne**.
- India explored **direct sugarcane juice for ethanol production**, increasing yield and efficiency.
- The country diversified its feedstocks by **including rice, damaged grains, maize, jowar, bajra, and millets**.
- Ethanol yields from **grains are higher compared to molasses**, with rice producing **450-480 liters and other grains 380-460 liters per tonne**.
- Sugar mills diversified to use rice, damaged grains, maize, and millet as feedstocks.
- Leading sugar companies **installed distilleries that can operate on multiple feedstocks throughout the year**.
- The government's **differential pricing policy** played a crucial role in **incentivizing the use of alternative feedstocks**. By fixing higher prices for ethanol produced from certain feedstocks, mills were **compensated for reduced sugar production**.
  - From 2018-19, the Indian government **began fixing higher prices for ethanol produced from B-heavy molasses and whole sugarcane juice/syrup**.

#### Challenges:

- Grains yield **more ethanol but require longer processing**. The starch in the grain has to **first be converted into sucrose and simpler sugars** (glucose and fructose), before their fermentation into ethanol by using yeast (**saccharomyces cerevisiae**). Molasses already contain sucrose, glucose, and fructose.
- Quality variability of feedstocks affecting production.
- Environmental concerns related to non-traditional feedstocks.

#### Benefits:

- Diversification of feedstocks will **minimize supply fluctuations and price volatility on account of any one crop**.



- The incorporation of new feedstocks for ethanol production can create **new demand for grains**.

#### Types of Molasses:

- **A Molasses (First Molasses):** An intermediate **by-product from initial sugar crystal extraction, containing 80-85% dry matter (DM)**. Should be inverted to prevent crystallization if stored.
- **B Molasses (Second Molasses):** Similar DM content as A molasses but with **less sugar and no spontaneous crystallization**.
- **C Molasses (Final Molasses, Blackstrap Molasses, Treacle):** The end by-product of sugar processing, containing **significant amounts of sucrose (about 32 to 42%)**. It does not crystallize and is used as a commercial feed ingredient in liquid or dried form.

#### What are the Government Initiatives to Promote Ethanol Blending in India?

- National Policy on Biofuels 2018
- E100 Pilot project
- Pradhan Mantri JI-VAN Yojana 2019
- Repurpose Used Cooking Oil (RUCO)

## 10. Steel Slag Road Technology

### Why in News?

The innovative **Steel Slag Road technology** developed by the **Central Road Research Institute (CRRI), New Delhi** in collaboration with the **Ministry of Steel** and major steel manufacturing companies is making significant strides towards the **'Waste to Wealth' mission**.

- This technology is revolutionizing road construction and addressing the environmental challenges of steel slag waste.

### What is Steel Slag Road Technology?

#### About:

- Steel slag road technology is a novel method of using steel slag, the **waste generated during steel production**, to build **more robust and more durable roads**.
- The technology involves **processing the steel slag to remove impurities and metal content** and then using it as an **aggregate for road base or sub-base layers**.
- The processed steel slag has **high strength, hardness, abrasion resistance, skid resistance, and drainage capacity**, making it suitable for road construction.
- It facilitates the **large-scale utilization of waste steel slag** generated by steel plants, effectively managing the approximately **19 million tonnes of steel slag produced in India**.



#### Advantages:

- **Eco-friendly Waste Utilization:**
  - By using waste steel slag in road construction, the technology offers an **eco-friendly approach to managing industrial waste**.

- This reduces the burden on **landfills and minimizes the environmental impact** associated with steel slag disposal.

#### ➤ **Cost-effective and Durable:**

- Steel slag roads have proven to be **cost-effective**, as they are approximately **30% cheaper to construct compared to conventional paving methods**.
- Furthermore, these roads exhibit **exceptional durability and resist weather changes** resulting in significantly reduced maintenance costs.

#### ➤ **Reduced Reliance on Natural Resources:**

- Traditional road construction heavily relies on **natural ballast and aggregates**, depleting precious natural resources.
- The Steel Slag Road technology eliminates the need for natural materials, helping **conserve valuable resources and preserve natural ecosystems**.

#### ➤ **Addressing the Steel Slag Waste Challenge:**

- **India is the world's second-largest steel-producing country**, generating around **19 million tonnes of steel slag as solid waste**. This figure is projected to increase to a **staggering 60 million tonnes by 2030**, with each tonne of steel production **resulting in about 200 kg of steel slag waste**.
- The lack of efficient disposal methods has led to the accumulation of huge slag piles around steel plants, contributing to water, air, and land pollution.

#### **Successful Implementations:**

##### ➤ **Surat's Technological Marvel:**

- The first road constructed using the Steel Slag Road technology in Surat, Gujarat, has garnered recognition for its technological excellence.

##### ➤ **Border Roads Organization's Contribution:**

- The technology's success extended to the **India-China border**, where the **Border Roads Organization**, along with CRRI and Tata Steel, constructed a **steel slag road in Arunachal Pradesh**.
- This project demonstrated the technology's **suitability for challenging terrains and critical national infrastructure**.

#### **Promoting Nationwide Adoption:**

- The success of the Steel Slag Road technology has attracted the attention of various government agencies and ministries.
  - In collaboration with the **Ministry of Science and Technology and the Ministry of Road Transport and Highways**, the Ministry of Steel is actively working to promote the widespread usage of this technology across the country.
  - By fostering collaborative efforts, India aims to lead the way in sustainable road infrastructure development and achieve its **'Waste to Wealth' mission**.

#### **Waste to Wealth Mission**

- This mission will identify, develop, and deploy technologies to treat waste to generate energy, recycle materials, and extract worth.
- The Waste to Wealth Mission is **one of the nine national missions** of the **Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC)**.
- The mission will **assist and augment the Swachh Bharat and Smart Cities projects to create circular economic models** that are financially viable for waste management to streamline waste handling in the country.

## GS – 4

### 1. Buddha's Relevance to the Modern Youth

#### Why in News?

The **President of India**, urged the **youth to draw inspiration from the teachings of Lord Buddha**, on the occasion of **Dharma Chakra Pravartana Divas** (3<sup>rd</sup> July 2023).

- The President reflected on how **Lord Buddha's first sermon on Asadha Purnima** planted the **seeds of the middle path of the Dhamma**.

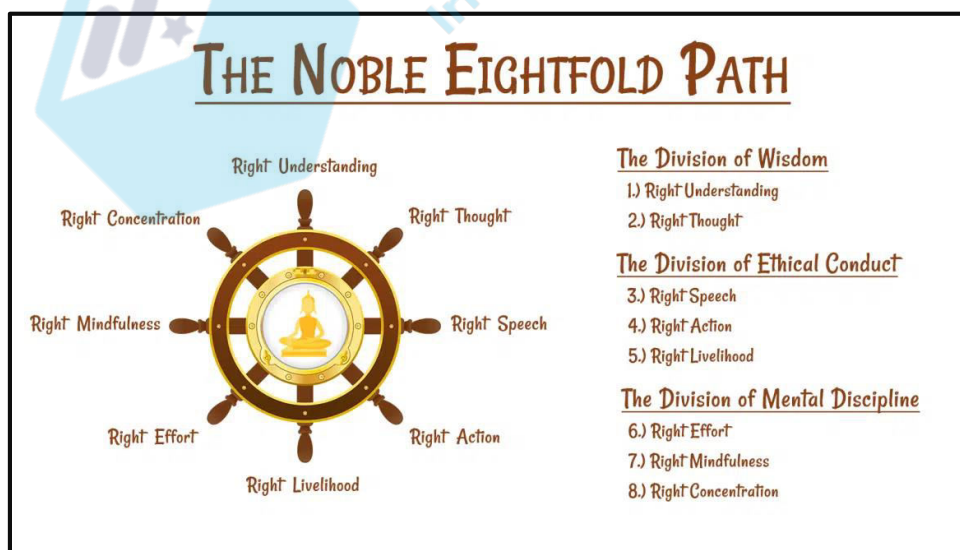
#### Lord Buddha

##### About:

- Lord Buddha (Siddhartha Gautam) was **born into royal family of Sakya clan who ruled from Kapilvastu, in Lumbini** located in the **Terai plains of southern Nepal**.
- At the age of **29**, Gautama left home and rejected his life of riches and embraced a lifestyle of asceticism, or extreme self-discipline.
- After **49 consecutive days of meditation**, Gautama attained **Bodhi (enlightenment) under a pipal tree at Bodhgaya**, a village in Bihar.
- Buddha gave his first sermon in the **village of Sarnath, near Varanasi in Uttar Pradesh on Asadha Purnima**. This event is known as **Dharma Chakra Pravartana (turning of the wheel of law)**.
  - The day is also observed as **Guru Poornima by both Buddhists and Hindus** as a day to mark reverence to their Gurus.

##### Major Teachings of Lord Buddha:

- **The Three Marks of Existence:** These are the characteristics of all phenomena that one should understand and accept. They are **impermanence (anicca), unsatisfactoriness (dukkha), and non-self (anatta)**.
- **The Four Noble Truths:** These are the truths about the nature of suffering, its cause, its cessation, and the path to its cessation. The cause of suffering is **ignorance, attachment, and aversion**.
  - The cessation of suffering is possible by following the Noble Eightfold Path:



- **The Four Sublime States:** These are the positive mental qualities that one should cultivate and radiate to all beings. They are **loving-kindness (metta), compassion (karuna), sympathetic joy (mudita), and equanimity (upekkha)**.
  - By developing these states, one can foster **harmony, empathy, altruism, and peace**.
- **The Five Precepts:** These are the basic ethical principles that Buddha laid down for his lay followers.
  - They are: **to abstain from killing, stealing, sexual misconduct, lying and intoxication**.
  - They help us to avoid harming ourselves and others, to respect life and property, to **maintain purity and honesty and to preserve clarity and awareness**.

### How can Youth Draw Inspiration from Buddha to Navigate Life's Challenges?

- **Mindfulness as a Foundation:** One of the central tenets of Buddha's teachings is the practice of mindfulness.
  - Mindfulness encourages individuals to **cultivate a deep awareness of the present moment**, fostering an enhanced understanding of their thoughts, emotions, and actions.
  - In a world saturated with distractions, **young people can draw inspiration from Buddha's emphasis on being fully present and engaged**.
  - By practicing mindfulness, **youth can learn to manage stress, improve focus and concentration**, and nurture a greater sense of self-awareness, leading to improved mental well-being and personal growth.
- **Impermanence and Non-Attachment:** Buddha's teachings emphasize the **impermanence (the state or fact of lasting for only a limited period of time)** of all phenomena and the futility of attachment.
  - In a materialistic **society driven by instant gratification**, youth can find **solace and inspiration in the understanding that everything is transient**.
  - By recognizing the impermanence of **both joy and suffering**, **young individuals can cultivate a mindset that is adaptable, resilient, and open to change**.
  - Learning to let go of attachment to outcomes, possessions, and even relationships can free the youth from unnecessary suffering and allow them to embrace life with greater equanimity.
- **Compassion and Empathy:** In a world **where divisions and conflicts persist**, **young people can find inspiration in Buddha's teachings** on loving-kindness and compassion.
  - By cultivating empathy, youth can develop a **deeper understanding of others' struggles**, fostering a sense of unity and connection.
- **Self-Discovery and Inner Transformation:** Young people, **often grappling with questions of identity and purpose**, can draw inspiration from Buddha's teachings on self-exploration.
  - By engaging in introspection and self-reflection, youth can gain insights into their **true nature, passions, and aspirations**.
- **Engaging in Social and Environmental Responsibility:** Buddha's teachings emphasize the **interconnectedness of all beings and advocate for responsible action**.
  - The youth can actively engage in **social and environmental responsibility by working towards equality, justice, and sustainable practices**.
  - They can participate in community initiatives, advocate for marginalized groups, and **champion environmental conservation**.
  - By embodying these teachings, they contribute to building a **more equitable, harmonious, and environmentally conscious society**.

## 2. Controlled Human Infection Studies and Ethical Concerns

### Why in News?

The **Indian Council of Medical Research's (ICMR)** Bioethics Unit has drafted a consensus policy statement addressing the ethical aspects of **Controlled Human Infection Studies (CHIS)**, opening the door for its potential implementation in India.

### What is Controlled Human Infection Studies and Related Ethical Concerns?

#### About:

- CHIS is a research model that **intentionally exposes healthy volunteers to pathogens** under controlled conditions.
- It has been utilized in various countries to study **diseases such as malaria, typhoid, and dengue**.

**Benefits of CHIS Implementation:** ICMR recognizes that CHIS has the potential to provide numerous benefits for medical research and public health:

- **Insights into Disease Pathogenesis:** CHIS can offer unique insights into **how diseases develop and progress**, leading to a deeper understanding of infectious diseases.
- **Accelerated Medical Interventions:** By allowing researchers to study disease progression more rapidly, **CHIS can expedite the development of new treatments and vaccines**.
- **Cost-effective and Efficient Outcomes:** CHIS requires **smaller sample sizes compared to large clinical trials**, making it a more cost-effective research model.
- **Contributions to Public Health Response:** Findings from CHIS can inform public health responses, healthcare decision-making, and policy development.
  - Understanding disease dynamics through CHIS can enhance **preparedness for future pandemics**.
- **Community Empowerment:** Involving communities in CHIS research can empower them to **take ownership of their health** and participate actively in healthcare initiatives.

#### Ethical Challenges:

- **Deliberate Harm and Participant Protection:** Exposing healthy volunteers to pathogens raises concerns about potential harm to participants.
- **Inducement and Compensation:** Determining appropriate compensation for participants in CHIS can be challenging.
  - Offering too much compensation might **unduly induce people to participate**, potentially compromising informed consent.
  - Conversely, offering inadequate compensation **might exploit vulnerable individuals**.
- **Third-party Risk:** The risk of disease transmission to third parties beyond the research participants is a concern.
- **Justice and Fairness:** There is a concern that CHIS may disproportionately involve participants from **low-income or marginalized communities**.

#### Way Forward

- **Ethical Considerations:** The first step is to establish an **independent ethics committee to evaluate the CHIS protocols thoroughly**.

- The committee should consist of experts in relevant fields, including medical ethics, infectious diseases, and legal representatives, to ensure that participant safety and rights are protected throughout the process.
- **Informed Consent and Withdrawal:** Volunteers should be fully informed about the risks involved in participating in CHIS.
  - Informed consent should be obtained, and **participants should have the right to withdraw at any time without penalty.**
- **Risk Minimization and Medical support:** Measures should be in place to minimize the risk to participants.
  - This includes **close medical monitoring during the trial** and access to appropriate medical care and treatment if any participant becomes ill.



## Prelims Booster – The Hindu & Indian Express

1<sup>st</sup> July

**1) India-US Deal for Semiconductor Unit:** Recently, US-based Company – **Micron Technology**, has signed a **Memorandum of Understanding (MoU)** with the state government of **Gujarat** to establish a **Semiconductor Unit worth Rs 22,500 crore near Ahmedabad.**

**Challenges Regarding Semiconductor Manufacturing in India:**

- A semiconductor fabrication facility (or fab) can cost **multiples of a billion dollars to set up even on a relatively small scale** and lagging by a generation or two behind the latest in technology.
- Semiconductors and display manufacturing is a **very complex and technology-intensive sector** involving **huge capital investments, high risk, long gestation and payback periods**, and rapid changes in technology, which require significant and sustained investments.
- The level of fiscal support currently **envisioned is minuscule when one considers the scale** of investments typically required to set up manufacturing capacities in the various sub-sectors of the semiconductor industry.
- India has a decent chip design talent but it never built-up chip fab capacity. The **ISRO and the DRDO have their respective fab foundries** but they are primarily for their own requirements and are also not as sophisticated as the latest in the world.
- Chip fabs are also very **thirsty units requiring millions of liters of clean water, an extremely stable power supply, a lot of land and a highly skilled workforce.**

**2) Madras HC: Merit over Caste in Temple Priest Appointments:** The Madras High Court has recently made a significant ruling that highlights the **importance of meritocracy and equality in the appointment of temple priests.**

**SC Judgements regarding Temple Priest. Appointments:**

- **Seshammal & others vs. State of Tamil Nadu (1972):** The SC held that the appointment of an Archaka (temple priest) is a **secular function**, and the **performance of religious service by the priests is an integral part of the religion.**
- **Adithayan vs. Travancore Devaswom Board (2002):** The SC rejected the customary claim that **only Brahmins (in this case Malayala Brahmins)** can perform rituals in temples.

**3) Indian Startup Ecosystem:** According to “slowdown in **India’s startup ecosystem**” report, new additions in

the coveted **unicorn list declined sharply in 2023**, indicating a slowdown in the Indian startup ecosystem.

**Challenges Faced by Indian Startups:**

- Indian startups encounter **difficulties in securing adequate funding** for their ventures. **Limited access to capital inhibits their growth potential and hampers innovation.** Startups face challenges in attracting investors and obtaining venture capital due to various factors such as **risk aversion, uncertain market conditions, and lack of investor confidence.**
- Many startups face challenges in **generating sustainable revenues.** They often struggle to **find viable business models**, monetize their products or services, and achieve profitability. Limited market reach, competition from established players, and insufficient customer acquisition pose additional hurdles.
- The absence of a **robust infrastructure ecosystem** can impede the growth of startups
- Startups in India face **regulatory hurdles and complex tax structures.**

3<sup>rd</sup> July

**1) PM-PRANAM Scheme and Increased FRP: Cabinet Committee on Economic Affairs (CCEA),** approved the **PM-PRANAM scheme**, aimed at **restoring and nurturing Mother Earth** through the use of **bio-fertilizers.**

- PM-PRANAM stands for **PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth.**
- **Objective:** Encourage the balanced use of fertilizers in **conjunction with bio-fertilizers and organic fertilizers.**
- **Financing:** The scheme will be financed by the **savings of existing fertilizer subsidies** under schemes run by the **Department of Fertilizers, Ministry of Chemicals & Fertilizers.**
- The Centre will provide **50% of the subsidy savings** to the states as a grant. Out of the grant, **70% can be used to create assets** related to the **technological adoption of alternative fertilizers** and production units at various levels. The remaining **30% can be used to reward** and encourage farmers, panchayats, and other stakeholders involved in fertilizer reduction and awareness generation.
- The reduction in urea consumption by a state will be compared to its **average consumption of urea over the previous three years.**



- Encouraging the **use of bio-fertilizers and organic fertilizers** will promote sustainable agricultural practices.

**2) Mahalanobis's Approach:** Addressing India's Big Data and AI Challenges: **India celebrated National Statistics Day on June 29th**, commemorating the **birthday of Prof. Prasanta Chandra Mahalanobis**, renowned as the **'Plan Man' of India**.

- As AI poses challenges such as **job displacement, spread of disinformation and other ethical concerns**, there is a global push for its regulation. Mahalanobis's introduction of **built-in cross-checks in his surveys, inspired by Kautilya's Arthashastra**, demonstrates his foresight in ensuring data integrity.
- Mahalanobis advocated for **integrating diverse data sources to capture a holistic view of the economy and society**.
- Mahalanobis stressed the importance of statistical models to derive meaningful inferences and predictions. In the era of Big Data and AI, **advanced machine learning algorithms and predictive modeling techniques** play a pivotal role in analyzing vast datasets.

**3) Feminist Approach to International Relations:** After **World War 2**, the changing global order witnessed the **rise of non-state actors, ethnic tensions, and the Cold War**. This necessitated alternative approaches to International Relations (IR), including the **Feminist Perspective** that **views the international arena through a gendered lens**.

**Contribution of different Feminist theories to the Understanding of Existing Challenges in IR:**

- **Liberal Feminist:** While liberal feminist theory does not fundamentally challenge the traditional ideas of IR, it questions the content. Liberal feminists look on the role of the **gender gap in global politics and the disproportionate effect of war** on women in the form of **sexual violence and trafficking**.
- **Constructivist Feminist:** Constructivist feminist theory looks at how **gendered identities play a role in global politics**. It looks at gender as the **core component which influences structures and personal relationships**.
- **Feminist Post Structuralist:** A **feminist post structuralist approach** talks about **binary linguistic oppositions in IR like order/anarchy, developed/underdeveloped, national/international etc.**, which perpetuate and **seek to empower the masculine over the feminine**.

- **Postcolonial Feminist:** It seeks to challenge the **assumption of universality of women's experience** across regions and cultures.

**4<sup>th</sup> July**

**1) Fukushima Water Issue:** Japan's plan to **release over 1 million tons of water, which is claimed to be treated but potentially radioactive**, from the **Fukushima nuclear power plant into the sea**, has sparked strong opposition and anxiety among neighboring countries, **particularly South Korea**.

- The **Fukushima Daiichi Nuclear power plant** suffered a **meltdown in 2011** after a massive **earthquake and tsunami**, releasing large amounts of radioactive materials into the environment. Since then, **Japan has been storing the cooling water for nuclear fuel and rain and groundwater seeping** through the damaged reactor buildings in large tanks on site.
- The water is treated using a filtering system called **Advanced Liquid Processing System (ALPS)**, which removes most of the radioactive elements **except for tritium**, a hydrogen isotope that is difficult to separate. Japan says **it has no space to keep storing the water, and that releasing it into the sea**.
- South Korea fears that the **water release will contaminate its waters, salt and seafood, affecting its fishing industry and public health**.

**2) India- Philippines Ties:** Recently, **5<sup>th</sup> meeting of the Joint Commission on Bilateral Cooperation was convened**, between Indian External Affairs Minister and his Philippines counterpart.

- **India and the Philippines are two democratic countries in the Indo-Pacific region that share common approach towards the Indo-Pacific, emphasizing the importance of a free, open, and stable region**.
- India and the Philippines formally established diplomatic relations on **26 November 1949**, shortly after both countries gained independence. (**Philippines in 1946 and India in 1947**).
- India is currently the **Philippines' fifteenth largest trading partner**, with trade worth approximately **USD 3 billion in the 2022**.
- **India and the Philippines have a growing defense and security partnership**. One of the most significant developments in defence cooperation between India and the Philippines is the **BrahMos missile deal**, which is expected to be finalized soon.

**3) Open Market Sale Scheme for Wheat and Rice:** Recently, in response to the **Food Corporation of India's (FCI)** imposition of quantity restrictions and

denial of states' participation in the **Open Market Sale Scheme (OMSS)**, states have been exploring alternative methods to procure **wheat and rice**

- The OMSS is a program implemented by the FCI to facilitate the **sale of surplus food grains, primarily wheat, and rice, from the central pool** in the open market

**Purpose and Objectives:**

- Enhance **food grain supply during lean seasons**.
- **Moderate open market prices** and control **inflation**.
- Ensure **food security** and availability of grains in deficit regions.
- Facilitate the **sale of surplus food grains** from the central pool.

**Implementation and Process:** Conduct e-auctions by the FCI for traders, bulk consumers, and retail chains to purchase specified quantities of food grains at pre-determined prices.

### 5<sup>th</sup> July

**1) India Joins Artemis Accords:** Recently, India's Prime Minister announced **India's decision to join the Artemis Accords** during the visit to the United States.

- **Artemis Accords** are established by the **U.S. State Department and NASA with seven other founding members: Australia, Canada, Italy, Japan, Luxembourg, the United Arab Emirates, and the United Kingdom** in 2020 for setting common principles to govern civil exploration and use of outer space, the moon, Mars, comets, and asteroids, for peaceful purposes.
- India became the **27<sup>th</sup> country to sign the nonbinding Artemis Accords**.
- The signatories will implement memorandum of understanding (MOUs) between governments or agencies to **conduct space activities for peaceful purposes in accordance with international law**.
- **Signatories recognize the importance of common exploration infrastructure** to enhance scientific discovery and commercial utilization.
- Relevant space objects are registered, and scientific **data is openly shared in a timely manner**. **Private sectors are exempt unless acting on behalf of a signatory**.

**2) Deep Sea Mining:** The **International Seabed Authority (ISA)** is preparing to allow **Deep Sea Mining** in the International Seabed, including mining for minerals needed for **Green Energy**.

- Deep sea mining involves **removing mineral deposits and metals from the ocean's seabed**.
- There are **three types of such mining**,

- Taking **deposit-rich polymetallic nodules** off the ocean floor.
- Mining massive seafloor **sulfide deposits**.
- **Stripping cobalt crusts** from rock.
- These nodules, deposits and crusts contain materials, such as **nickel, rare earths, cobalt** and more, that are **needed for batteries and other materials used in tapping Renewable Energy** and also for everyday technology like cellphones and computers.

**3) India-Africa Partnership: Achievements, Challenges, and Roadmap 2030:** Recently, the 20-member **Africa Expert Group (AEG)**, established by the **Vivekananda International Foundation**, presented a Report titled '**India-Africa Partnership: Achievements, Challenges and Roadmap 2030**'.

**Recommendations to Strengthen India- Africa Ties:**

- Restore periodic leaders' summits through the **India-Africa Forum Summit**.
- Increase the number of defence attachés in Africa and **expand dialogue on defence issues**.
- Promote **India-Africa trade** through the creation of an **Africa Growth Fund (AGF)** to enhance access to finance.
- Facilitate greater interaction between **Indian and African universities, think tanks, civil society, and media organizations**.
- Establish a **National Centre for African Studies**.
- Establish a special mechanism for implementing the 'Roadmap 2030' through collaboration between the **MEA and the National Security Council Secretariat**.

### 6<sup>th</sup> July

**1) SCO Summit 2023:** Recently, India has chaired the **Shanghai Cooperation Organization (SCO)** virtual Summit, leaders called for the **formation of a "more representative" and multipolar world order** in the global interest

**Key Highlights:**

- The **New Delhi Declaration** was signed by the member nations, which states that the international community must come together to **"counter the activities of terrorist, separatist and extremist groups**, paying special attention to preventing the spread of **religious intolerance, aggressive nationalism, ethnic and racial discrimination, xenophobia, ideas of fascism and chauvinism."**
- The leaders adopted **two thematic joint statements— one on cooperation in countering the radicalization** leading to separatism, extremism, and terrorism & the **second one cooperation in the field of digital transformation**.

- **India has created five new pillars and focus area for cooperation in the SCO, which include,**
  - Start-ups and Innovation.
  - Traditional Medicine.
  - Youth Empowerment.
  - Digital Inclusion.
  - Shared Buddhist Heritage.
- India refused to be part of the **BRI (Belt and Road Initiative)** of the SCO members' economic strategy statement, mentioning **"interested member states"**.
- The Indian PM highlighted the **significance of connectivity for enhancing mutual trade** and trust among SCO member states.
- The Indian PM criticized countries that employ **Cross-Border Terrorism as an instrument of their policies** and provide shelter to terrorists, urging the SCO not to hesitate in **condemning such nations and emphasized** the importance of consistency in addressing these critical issues.

**2) Scheme to Support Pregnant Minor Victims of Sexual Assault:** The Ministry of Women and Child Development, Government of India has unveiled a new scheme aimed at **providing critical care and support to pregnant minor victims of sexual assault** who lack family support.

- The scheme seeks to **assist minor girls who have been abandoned by their families due to forced pregnancies** resulting from rape or gang rape.
- **Victims below the age of 18, who become pregnant due to rape or assault as per the provisions of the Protection of Children from Sexual Offences (POCSO) Act, 2012,** and are either orphans or abandoned by their families, will be covered under the scheme.
- It aims to provide **medical, financial, and infrastructural support** to such victims under the **Nirbhaya Fund**.
- The funds will be **utilized to set up shelters dedicated to these victims**, either as standalone shelters or designated wards within existing **child care institutions (CCIs)**.
- The scheme will leverage the **administrative structure of Mission Vatsalya** in collaboration with **State governments and CCIs** to actualize this support to minor victims.
- According to the **National Crime Records Bureau (NCRB)** data from 2021, 51,863 cases were reported under the **POCSO Act**.

**7<sup>th</sup> July**

**1) Rehabilitation Scheme for Victims of Trafficking:** The Ministry of Women and Child Development, Government of India, has approved a scheme that **aims to provide financial assistance to states and Union Territories to establish protection**

**and rehabilitation homes for victims of trafficking,** particularly in **states with international borders**.

- **Human trafficking is a global issue** that affects numerous countries, and **India is no exception**.
- According to the **National Crime Records Bureau (NCRB)** data, 2,189 cases of human trafficking were filed in 2022, involving 6,533 victims.
- **Various Forms of Human Trafficking:**
  - Forced Labour.
  - Sexual Exploitation.
  - Child Trafficking.
  - Bonded Labour.
  - Organ Trafficking.
- **Article 23** prohibits **human trafficking and beggar** (forced labour without payment).
- **Article 24** forbids **employment of children below the age of 14 years** in dangerous jobs like factories and mines.
- **Section 370 and 370A of IPC** provide for comprehensive measures to counter the menace of human trafficking including trafficking of children for exploitation in any form including **physical exploitation or any form of sexual exploitation, slavery, servitude, or the forced removal of organs**.
- **The Immoral Traffic (Prevention) Act, 1956 (ITPA)** is the premier legislation for prevention of trafficking for commercial sexual exploitation.
- **United Nations Convention on Transnational Organised Crime (UNTOC)** has a Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children (India has ratified).

**2) Anaemia and Maternal Health:** Recently, a study published in The Lancet Journal, titled- **Maternal anaemia and the risk of postpartum haemorrhage: a cohort analysis of data from the WOMAN-2 trials,** has found that there is a strong link between **Anaemia and Postpartum Hemorrhage (PPH)**.

- Mean estimated blood loss was **301 mL for women with moderate anaemia** and **340 mL for women with severe anaemia**. Severe anaemia is associated with seven times higher odds of death or near miss compared to moderate anaemia.
- Worldwide, over half a billion **women of reproductive age are anemic**.
- Lower haemoglobin values are associated with **increased blood loss** and clinical PPH.

**3) Governor's Powers in Dismissing a Minister:** The recent decision of dismissal and suspension of a Minister in Tamil Nadu by the **Governor** has sparked a **Constitutional Controversy**. The Governor reversed his decision later and suspended the dismissal order.

- **Under Article 164 of the Constitution**, the Chief Minister is **appointed by the Governor without any advice** from anyone. But he appoints the individual Ministers only **on the advice of the Chief Minister**.
- From **Section 51(1) and 51(5) of the Government of India Act, 1935**, which governed the colonial rule, the Governor had absolute discretion to choose and dismiss Ministers.
- Since independence, the power to choose or dismiss a **Minister lies with the Chief Minister**, who represents the will of the people.
- The inclusion of the **“pleasure of the Governor” in Article 164** of the Constitution refers only to the **formal act of issuing dismissal orders** upon the advice of the Chief Minister.

### 8<sup>th</sup> July

#### 1) Infrastructure Developments Around Pangong Tso:

Three years after the violent **clash between Indian and Chinese forces in Galwan**, there is significant infrastructure development taking place in the **India-China border region**.

- **China’s Infrastructure Efforts:** Construction of a **bridge across the Pangong Tso**, connecting the north and south banks, is in progress.
- **India’s Infrastructure Projects:**
  - India is building a black-topped road on the **north bank of the Pangong Tso, towards Finger 4**.
  - **Border Roads Organisation (BRO)** is nearing completion of key infrastructure projects such as the **Sela, Nechipu, and Sela-Chhabrela tunnels**, enhancing all-weather connectivity along the LAC. The **Sela Tunnel Road project** will be the **world’s longest bi-lane tunnel** at altitude above 13,000 ft.
  - Construction work on an alternate axis to the critical **Darbuk-Skyok-Daulat Beg Oldie road** is advancing through the Saser La.
  - The **Vibrant Villages Programme**, a **Centrally sponsored scheme**, was announced in the **Union Budget 2022-23**.

**2) Time Dilation in Early Universe:** A recent study has utilized **observations of Quasars**, intense black holes to demonstrate time dilation in the early universe.

- The continual expansion of the universe accounts for the **slower passage of time in the past** compared to the present. The time **passed approximately one-fifth** as quickly as it does today. The observations stretch back to about 12.3 billion years ago, when the universe was roughly a tenth its present age.
- Scientists had previously documented time dilation dating back around 7 billion years based

on **observations of supernovas, stellar explosions**. By studying these explosions from the past, they found that events unfolded **more slowly from the perspective of our present time** due to the known time it takes for today’s supernovas to brighten and fade.

#### 3) Government Taps Private Sector to Run Staff Email Service:

Recently, the Ministry of Electronics and Information Technology (MeitY) has approved **bids from six companies – Larsen & Toubro, Infosys, Softline, Zoho, Raitel, and Rediffmail** in response to an RFP (request for proposal) floated in March 2023 for the selection of a **Master System Integrator (MSI)** for providing email cloud solutions for the Government.

#### Benefits of Private Sector Involvement in Government Email Services:

- The government recognized the **expertise and resources** offered by the private sector in managing communication systems effectively.
- The government aims to **enhance the efficiency and productivity** of its internal communication processes by involving private companies while ensuring a **robust cybersecurity mechanism and cloud security**.
- The move aligns with the **government’s agenda of digital transformation** and modernizing its communication systems.
- Partnering with private companies allows the government to **leverage scalable solutions** that can accommodate its **large workforce and evolving needs**.
- The government emphasizes hosting email services within India’s boundaries for **data sovereignty and enhanced security**. The use of AI models and prompt notification of cyber-attacks contribute to strengthening security measures.

### 10<sup>th</sup> July

**1) Internationalisation of the Indian Rupee:** A Reserve Bank of India-appointed working group recommended the **inclusion of the rupee in the Special Drawing Rights (SDR) basket** and **recalibration of the foreign portfolio investor (FPI) regime** to accelerate the pace of **internationalisation of the rupee**. **internationalisation of rupees is a process that involves increasing the use of the local currency in cross-border transactions**.

- In the 1950s, the Indian rupee was widely used as **legal tender** in the **United Arab Emirates, Kuwait, Bahrain, Oman, and Qatar**. However, the devaluation of India’s currency by 1966 led to the introduction of sovereign currencies in these countries to reduce reliance on the Indian rupee.
  - **Benefits of Internationalisation of Rupee:**

- It will **improve the demand for the rupee** in international trade.
- When a currency is internationalized, its exchange rate tends to stabilize.
- Internationalizing the Rupee can **enhance India's geopolitical influence**.
- **Challenges:**
  - The daily average share for the rupee in the **global forex** market is **only around 1.6%**, while **India's share of global goods trade is ~2%**.
  - The **INR is not fully convertible**, meaning there are restrictions on its convertibility for certain purposes such as capital transactions. This **restricts its widespread use in international trade and finance**.
  - The **demonetization** exercise in 2016, along with the recent withdrawal of the ₹2,000 note, **has affected confidence in the rupee**, particularly in neighbouring countries like **Bhutan and Nepal**.
  - While efforts have been made to trade with around 18 countries in rupees, transactions have remained limited.
- In March 2023, the RBI put in place the mechanism for **rupee trade settlement with as many as 18 countries**. Banks from these countries have been allowed to open **Special Vostro Rupee Accounts (SVRAs)** for settling payments in Indian Rupees.

**2) Whole-Genome Sequencing in Newborns:** Recently, the use of rapid **whole-genome sequencing (WGS)** in newborns, including healthy newborns, has emerged as a revolutionary approach to diagnosing and treating **genetic diseases**.

- All organisms have a unique **genetic code, or genome**, that is composed of **nucleotide bases- Adenine (A), Thymine (T), Cytosine (C) and Guanine (G)**.
- **Whole genome sequencing** is a laboratory procedure that **determines the order of bases in the genome of an organism in one process**.
- **Importance of Sequencing Newborn Genomes:**
  - Rapid, precise diagnosis of rare genetic diseases **not detected by standard screenings**.
  - Detection of **treatable conditions, enabling early intervention or gene-based therapies**.
  - Insight into **future health risks, facilitating informed choices and preventive measures**.
  - The revelation of ancestry, traits, and carrier status for personal and social value.

**11<sup>th</sup> July**

**1) Taiwan Expands Presence in India with TECC in Mumbai:** Recently, Taiwan has announced plans to open its third representative **Taipei Economic and**

**Cultural Centre (TECC)**, in India, specifically in **Mumbai**.

**India-Taiwan Relations:**

- India and Taiwan **do not have formal diplomatic relations** but **since 1995**, both sides have maintained representative offices in each other's capitals that **function as de facto embassies**. India has **backed the "one-China policy"**.
- Trade ties amounted to **USD 7.5 billion in 2019**, up from USD 1 billion in 2000.
- India and Taiwan in **2018 signed a bilateral investment agreement**.
- Both sides have also expanded **educational exchanges** after a mutual degree recognition agreement in higher education was signed in **2010**.

**Opportunities:**

- **Taiwan's expertise in R&D** and entrepreneurship can complement **India's talent pool and digital economy**, fostering collaboration in **emerging technologies**.
- Taiwan and India share a vision of a **free, open, and inclusive Indo-Pacific region**, providing avenues for cooperation on **maritime security, counter terrorism, and disaster management**.

**Challenges:**

- India finds it difficult to realize the full potential of its bilateral relationship with Taiwan, as India is adhered to One China policy.
- Taiwan's increased investments have occurred in the face of **cultural challenges, bureaucratic hurdles, and pressure on India from domestic producers**.

**2) PCA Asserts Competence in India-Pakistan Hydroelectric Projects Dispute:** The Hague-based **Permanent Court of Arbitration (PCA)** recently ruled that it has the **competence to hear Pakistan's objections to India's Kishenganga and Ratle hydroelectric projects** in Jammu and Kashmir. India, however, rejects the constitution of the **"Court of Arbitration,"** asserting that it goes against the provisions of the **Indus Waters Treaty (IWT)**.

**Indus Waters Treaty:**

- The Indus Waters Treaty is a **water-sharing agreement** between **India and Pakistan**.
- The treaty was brokered by the **World Bank** and signed on **September 19, 1960**.
- Under the treaty, **three eastern rivers (Ravi, Beas, and Sutlej)** are allocated to **India** for unrestricted use, while the **3 western rivers are allocated to Pakistan**.

- The treaty permits **India to construct run-of-the-river hydroelectric projects** on the western rivers, subject to certain conditions.
- **Dispute Resolution:**
  - **Communication via Permanent Indus Commission (PIC)** – PIC has a commissioner from each country. Parties inform each other about planned projects on the Indus River.
  - **Neutral Expert:** If the PIC fails to resolve the issue, it advances to **World Bank-appointed neutral expert.**
  - **Court of Arbitration (CoA):** Next is CoA. The IWT states that **Neutral Expert and CoA steps are mutually exclusive**, meaning that **only one of them can be used at a time for a given dispute.**

**3) Protecting the Honour of National Anthem:** Recently the **Executive Magistrate** in Srinagar sent 11 men to jail after detaining them for **allegedly not rising for the National Anthem** at an event where J&K Lt Governor was present.

**SC's Views Regarding Honour of the National Anthem:**

- ***Bijoe Emmanuel & Ors vs State of Kerala & Ors. (1986):*** The law around alleged disrespect to the National Anthem was laid down by the Supreme Court (SC) in this case. The SC held that standing up respectfully but not singing oneself **neither prevents the singing of the National Anthem nor causes disturbance** to people assembled to sing. Hence, it **does not constitute an offence under Prevention of Insults to National Honour Act 1971.**
- ***Shyam Narayan Chouksey vs Union of India (2018):*** The SC held that – “Playing of the National Anthem prior to the screening of feature films in cinema halls is not mandatory, but optional or directory”.

**12<sup>th</sup> July**

**1) European Sky Shield Initiative (ESSI):** Austria and Switzerland joined ESSI.

- ESSI aims to create a **European air and missile defence system** through common acquisition of air defence equipment and missiles **by European nations to strengthen NATO's Integrated Air and Missile Defence.**
- Initiative was **last year spearheaded by Germany** after Russia invaded Ukraine
- **Number of ESSI members** has gone up to **19 including Belgium, Bulgaria, Czech Republic, Norway, Slovakia, UK.**

**2) Project 75 (India) – P75 (I) – submarine program:** Spain's Navantia and Larsen & Toubro to bid for P75 (I) submarine program.

- **P75 (I)**, succeeds P75, is part of **30-year submarine building plan** that ends in 2030
- P75 (I) **requires** Indian bidder to **tie up with a foreign collaborator.**
- It envisages **construction of six conventional submarines** with better sensors and weapons and **Air Independent Propulsion System (AIP).**
- It will provide boost to **indigenous design and construction capability** of submarines, in addition to bringing in **latest submarine design and technologies.**

**3) New Wheat variety:** Punjab Agricultural University developed a new **wheat variety called PBW RS1**, with RS being short for resistant starch.

- PBW RS1 with **high amylose starch content**, is known to **reduce risks of type-2 diabetes and cardiovascular diseases.**
- Items made from it **won't cause an immediate and rapid rise in glucose levels.**
- High amylose and resistant starch, instead, ensure that glucose is released more slowly into bloodstream.
- **Being slower to digest also increases a feeling of satiety** thus helping in dealing with obesity
- However, **average grain yield from this yield is recorded lower** than the average yield.

**4) Marine Heatwave in the Bay of Bengal:** Marine heatwaves are **prolonged periods of anomalously high sea surface temperature.**

It may result in:

- **Meteorological implications:** a warmer-than-normal Bay of Bengal likely contributes to current **extreme rainfall especially over northwest India.**
- **Affecting marine biodiversity:** 85% of the corals in the Gulf of Mannar near the Tamil Nadu coast got bleached after the marine heatwave in 2020.
- **Socio economic impact** on coastal communities.

**5) Palamau Tiger Reserve (PTR):** Four **soft-release centers for Cheetals** are under construction in **Jharkhand's PTR.**

**About PTR:**

- **Location:** Located in the western part of the **Chotanagpur plateau.**
- It forms **part of Betla National Park and Palamau Wildlife Sanctuary.**
- It **falls under the Indo-Malayan realm.**
- **Rivers:** North Koyal, Auranga and Burha.
- **Flora:** Moist and dry peninsular Sal, Aegle, Dry Bamboo Brake etc.
- **Fauna:** Tigers, leopards, wolves, wild dogs etc.

**6) Beas river:** Beas River swells due to heavy rains.

**About Beas (Vipasa) River:**

- **States:** Passes through **Himachal Pradesh and Punjab**.
- **Origin:** Rohtang pass, from where it flows through the Kullu valley towards south.
- **Major tributaries:** Bain, Banganga, Banner, Chakki, Gaj, Harla, Mamuni, Parvati, Patlikuhlal, Sainj etc.
- **Converge with Sutlej** at Harike.

### 13<sup>th</sup> July

**1) Places of Worship (Special Provisions) Act, 1991:** The Supreme Court has asked the Centre to clarify its stand on the act by **October 2023**.

- The Act **prohibited the conversion of any place of worship** and provided for the maintenance of its religious character of any place of worship as existed on **the 15th of August 1947**.
- **Exemptions:**
  - Archaeological sites covered by the **Ancient Monuments and Archaeological Sites and Remains Act, of 1958**.
  - **Ayodhya Land dispute was also exempted**.

**2) North Atlantic Treaty Organisation:** Turkey is opposing Sweden's bid to join the grouping.

- **HQ:** Brussels, Belgium.
- **Genesis:** NATO was **established in 1949** by the Washington Treaty.
- **Objective and Functions:**
  - Established as a **military alliance**, against the then USSR in the European region;
  - Works on **Collective defence principle**;
  - Derives its authority from **Article 51 of the UN charter**.
- **Significance of NATO:**
  - **Promotes democratic values and encourages cooperation** between member countries;
  - Played a crucial role in **crisis management** in the region;
  - Helped to **maintain peace and stability in the region** among member countries.
- **Membership:**
  - A willing country to join the grouping is admitted after being uniformly agreed by all the members;
  - Currently, it has **31 members and Finland was the last country to join**.

**3) De-Dollarisation: Bangladesh and India launched the trade transaction in rupees**, a step towards de-dollarization.

- De-Dollarisation **refers to countries reducing their reliance on the US dollar**, and advancing trade and economics. reserves in their currency or alternate resources.
- It will **strengthen regional currency and trade**.

- Also, both countries will gradually adopt the **Bangladeshi currency 'Taka' for trade**.
- The exchange rate will be **fixed in line with market demand and banks involved** in the process.

**4) Central Bank Digital Currency (CBDC):** Reserve Bank of India (RBI) will implement **interoperability between central bank digital currency (CBDC) and United Payments Interface (UPI)**.

- In 2022, RBI launched CBDC, known as **the Digital Rupee (e₹)** which has generally components **based on block-chain technology (public ledger)**.
- It is being issued in the same denominations as **paper currency and coins**.
- It is being **distributed through financial intermediaries, i.e., the banks**.
- Users will be able to **transact with e₹- R through a digital wallet offered by the banks**.

**5) Samarth (Scheme For Capacity Building In the Textile Sector):** Recently, the empanelment of 43 new implementing partners and an additional target of training around 75,000 beneficiaries have been done under the scheme.

- It is a **demand-driven and placement-oriented umbrella skilling programme** of the Ministry of Textiles.
- The implementation period of the scheme is **extended up to March 2024**.
  - **Objectives:**
    - To provide a **demand-driven, placement-oriented skilling programme**.
    - To **promote skilling and skill up-gradation** in the traditional sectors.
    - A centralized web-based Management Information System (MIS) has been placed.

### 14<sup>th</sup> July

**1) Association of World Election Bodies (A-WEB):** Meeting of the Executive Board of A-WEB held.

- A-WEB, **established in 2013, is the world's largest international organization in the field of election management**.
- It currently comprises **119 Election Management Bodies (EMBs) from 110 countries**.
- Election Commission of India was **A-WEB Chair for the 2019-22 term** and is presently a **member of its Executive Board for 2022-24**.
- An India A-WEB Centre has been **established in New Delhi** for sharing the best practices and training and capacity building of officials of A-WEB members.

**2) Muslim World League (MWL):** PM held talks with the **Secretary General of MWL**.

- MWL is an **international NGO headquartered in Makkah**, with members from all Islamic countries and sects.
- It aims to **present true Islam and its tolerant principles, provide humanitarian aid**, realize the message of Islam and ward off movements calling for extremism, violence and exclusion etc.
- **MWL is a member of UNESCO and UNICEF** and an Observer in consultative status with the UN Economic and Social Council (ECOSOC).
- Secretariat General is the executive wing of the organization

**3) Indian Institute of Corporate Affairs (IICA):** IICA is an **autonomous institution, under the Ministry of Corporate Affairs (MCA)**, focusing on niche areas of corporate affairs as a premier institution in the country.

- IICA was registered as a society in 2008 under the **Societies Registration Act, of 1860**.
- **IICA Society is headed by the Minister of Corporate Affairs**, who is the Ex-officio President of IICA Society.
- It **provides policy advocacy, research and capacity-building support to the Government**, Corporates and other stakeholders to drive corporate growth, reforms and regulations.

**4) AuditOnline:** Action Taken Report (ATR) Module of AuditOnline was launched.

- AuditOnline is an **open-source application**, developed as a part of the Panchayat Enterprise Suite under the **e-panchayat Mission Mode Project (MMP)**, initiated by the Ministry of Panchayati Raj (MoPR).
- Under Digital India Programme, **MoPR is implementing e-Panchayat MMP to transform the functioning of Panchayati Raj Institutions (PRIs)**.
- Under this, **eGramSwaraj**, a **simplified work-based accounting application**, was also launched.
- It **facilitates internal & external audits** of Government departments/PRIs.

**5) State Disaster Response Funds (SDRF):** Ministry of Finance released the amount to SDRF.

- **SDRF is constituted in each State under Disaster Management Act, 2005** for responses to notified disasters.
- **Central Government contributes 75% to the SDRF in general States and 90% in North-East and the Himalayan States**.
- Annual Central contribution is released in two equal instalments as per Finance Commission's recommendation.
- **SDRF is used only for expenditure for providing immediate relief** to victims of notified calamities like **cyclones, droughts, earthquakes, fires, floods,**

**tsunamis, hailstorms, landslides, avalanches, cloud bursts, pest attacks and frost & cold waves.**

**15<sup>th</sup> July**

**1) Right to Silence:** Supreme Court said that all accused have a right to silence and investigators cannot force them to speak up or admit guilt.

- **Right to silence emanates from Article 20(3)**, which states that no one can be compelled to be a witness against himself.
- **Protection limited only to criminal proceedings.**
- Right is not available to a person who is being interrogated **under Customs Act, 1962, or Foreign Exchange Management Act, 1999**, since person is not "accused of an offence" and isn't entitled to a lawyer.
- **In Nandini Satpathy v. P.L. Dani case, SC** stated that compelling a person to answer a question within limits of the police station may result in violation of Article 20(3).

**2) National Asset Reconstruction Company Ltd (NARCL):** Government has renewed its federal guarantee to NARCL, making it easier for entity to acquire bad loans from lenders.

- NARCL has been incorporated under **Companies Act and registered with RBI as an Asset Reconstruction Company** under Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002.
- NARCL has been set up by banks to aggregate and consolidate stressed assets for their subsequent resolution.
- **Public Sector Banks maintains 51% ownership in NARCL**

**3) Kaas Plateau:** New study of sediments from a seasonal lake in Kaas Plateau has indicated a major shift in Indian Summer Monsoons.

- Kaas plateau or pathar, also known as **valley of flower, is located in Satara District, Maharashtra**. It falls in biosphere of Western Ghats.
- Its **name is derived from Kaasa tree**, botanically known as *Elaeocarpus glandulosus* (rudraksha family).
- It is made of **igneous rocks**.
- This **plateau is inscribed in UNESCO World Natural Heritage Site** lists under the name of Western Ghats.

**4) Operation Southern Readiness – 2023:** It is an annual multinational exercise (**India, USA, Italy, UK, Seychelles**, etc) conducted by Combined Maritime Forces.

**5) Siachen glacier:** First Geological Survey of India expedition to the Siachen glacier was done in **1958**.



- Siachen glacier is located in the **eastern Karakoram Range in Himalayas**.
- It is **2<sup>nd</sup> longest nonpolar glacier in world**, after **Fedchenko Glacier in Tajikistan**.
- **Nubra Valley acts as the gateway** to strategically important **Siachen Glacier and Karakoram Pass**.
- **Siachen glacier is the world's highest battlefield**.

**6) Moderate Resolution Imaging Spectro-radiometer (MODIS):** Tropical waters have **turned green in colour due to climate change**, observation is based on analysis of data generated from the MODIS aboard Aqua satellite.

- MODIS is an instrument that collects remotely sensed data used by scientists for **monitoring, modelling, and assessing the effects of natural processes and human actions on the Earth's surface**.
- **Carried on two NASA Earth Observing System (EOS) satellites**, MODIS acquires morning (EOS-Terra) and afternoon (EOS-Aqua) views almost daily.
- MODIS takes measurements in seven visible wavelengths.

**17<sup>th</sup> July**

**1) Agriculture Infra Fund Scheme (AIF):** Ministry of Agriculture & Farmers Welfare launched the **BHARAT Campaign for banks under AIF**.

- **AIF is a financing facility launched in 2020** for the creation of **post-harvest management infrastructure and community farm assets**.
- The duration of the scheme is from **FY2020 to FY2029 (10 years)**.
- Under it, Rs. 1 Lakh Crore will be provided by banks and financial institutions as loans with interest subvention of 3% per annum.
- Eligible beneficiaries include **farmers, FPOs, PACS, Marketing Cooperative Societies, SHGs**, etc.

**2) Genetic Engineering Appraisal Committee (GEAC):** Anti- Genetically-Modified Organism (GMO) activists have alleged that GEAC is taking decisions without considering State's position.

- **GEAC is the apex biotech regulatory body in India under the Ministry of Environment, Forests & Climate Change (MoEFCC)**.
- It has been notified under the **Environmental Protection Act, of 1986**.
- GEAC is a body **responsible for the appraisal of proposals relating to the "release" of GM organisms and products** (ordinarily considered hazardous) into the environment.

**3) Mission Organic Value Chain Development for North Eastern Region (MOVCODNER):** The MOVCODNER

scheme was launched by the **Ministry of Agriculture & Farmers Welfare during 2015-16**.

- It is a **Sub-Mission under National Mission for Sustainable Agriculture (NMSA)**.
- It **aims to develop end-to-end organic value chains** in the North Eastern States.
- It helped in bringing 1.73 lakh ha area under organic farming benefiting 1.89 lakh farmers.

**Mission components:**

- Clusters development and **formation of Farmer Producer Organizations/Companies**.
- Support for extension services, input facilitation, training handholding and certification at the production stage.
- **Financial assistance for setting up integrated processing units**

**4) Namda Art:** Namda Art is said to have begun in the 16<sup>th</sup> century when Mughal Emperor Akbar wanted to get a covering for his horses to protect them from the cold.

- It is believed that a **Sufi saint named Shah-e-Hamdan introduced Kashmiris to the Namda art**.
- The distinct feature is that **wool is felted and not woven**.
- Namda works are used in the form of **carpets, rugs, floor mats** etc.

**5) Nathula Pass:** Nathu La, one of the **highest motorable roads in the world**, is a mountain pass in Himalayan peaks that **co-joins Sikkim and China**.

- Situated on the **Indo-Tibetan border 14450 ft. above sea level**.
- Located on Old Silk Route, **Nathu La Pass connects Sikkim to China's Tibet Autonomous Region**.
- Indians require a **Protected Area Permit (PAP)** to visit Nathula Pass.
- Border trade via Nathula was reopened in 2006, 44 years after it was closed since the Indo-China war in 1962.

**6) Maputo Protocol:** 2023 marks the 20<sup>th</sup> anniversary of the Protocol to the African Charter on Rights of Women in Africa (Maputo Protocol).

- Maputo Protocol was **adopted by African Union (AU)**.
- It covers a wide range of issues, including the **political, economic, social, and cultural rights of women**.
- **It guarantees women's rights to dignity, equality, and non-discrimination**, as well as emphasizes their right to participate in decision-making processes at all levels.
- **44 countries out of 55 AU member states have ratified the protocol**.

18<sup>th</sup> July

**1) Standing Committee on Statistics (SCoS):** Ministry of Statistics and Programme Implementation (MoSPI) has replaced the **Standing Committee on Economic Statistics (SCES) with SCoS.**

- SCoS will have a broader mandate to review the framework and results of all surveys conducted under the National Statistical Office.
- It has **10 official members and four non-official members** who are eminent academics.
- Its terms of reference **include finalisation of survey results and better use of administrative data.** Apart from survey design improvements, **SCoS will identify data gaps and strategies to plug them.**
- National Statistical Commission will have ultimate authority to approve the publication of survey results.

**2) PM Mega Integrated Textile Sector and Apparel (PM MITRA) Parks:** PM MITRA Textile Park has been **launched in Maharashtra's Amravati.**

- PM MITRA Parks are **aimed at creating world-class industrial infrastructure** that would attract large-scale investment **including Foreign Direct Investment (FDI) and encourage innovation and job creation within the sector.**
- It is **inspired by the 5F vision i.e., Farm to Fibre to Factory to Fashion to Foreign.**
- It **reduces logistics costs** by housing the entire value chain at one location.
- Special Purpose Vehicles owned by the Centre and State Government jointly to be set up for each park which will oversee the implementation of project.

**3) Sand and Dust Storms (SDS):** UN has observed the **first-ever International Day of Combatting SDS on 12<sup>th</sup> July 2023** to increase cooperation to manage and mitigate the effects of SDS.

- **SDS occurs when strong winds meet bare or dry soil,** lifting large amounts of sand and dust into the atmosphere.
- Around 2 million tonnes of sand and dust enter the atmosphere annually.
- Primary hotspots are the **Sahara Desert, the Middle East, the Taklamakan Desert in northwest China, southwest Asia,** etc.
- **SDS can cause crop damage, affecting food security;** inhalation of fine particles carried by these storms can lead to respiratory issues, allergies etc.

**4) Mekong Ganga Cooperation (MGC):** At the 12<sup>th</sup> MGC meeting, India and its partner countries decide to establish **Mekong Ganga Cooperation Business Council** to expand exchanges in agriculture & water resource management

- MGC initiative **comprising six countries – India, Cambodia, Myanmar, Thailand, Laos and Vietnam** – was launched in 2000.
- It aims to boost cooperation in a range of areas including **connectivity, education, tourism and culture.**

**5) Nomadic Elephant – 2023:** It is a joint military exercise between **India-Mongolia.**

**6) Intercontinental Ballistic Missile (ICBM):** North Korea has tested Hwasong-18 ICBM. Hwasong-18 uses solid propellants that allow it to fire faster and accelerate more quickly at lift-off.

- **ICBMs are ballistic missiles that have a range of over 5,500 km** and have nuclear weapons delivery technology.
- Presently, in addition to **North Korea, Russia, the U.S., France, the UK, China, India, and Israel have documented land-based ICBMs.**
- **Agni-5 is the ICBM of India.** It was developed under Integrated Guided Missile Development Programme.

19<sup>th</sup> July

**1) Advance Authorisation Scheme:** Directorate General of Foreign Trade (DGFT) implements Advance Authorisation Scheme under the Foreign Trade Policy.

- **Advance Authorisation Scheme allows duty free import of inputs,** which are physically incorporated in an export product.
- In addition to any inputs, **packaging material, fuel, oil, catalyst which is consumed/utilized in the process of production of export product, is also allowed.**
- Advance Authorization covers manufacturer exporters or merchant exporters tied to supporting manufacturer(s).

**2) IEA Oil 2023 – Supply and demand dynamics to 2028:** Report was launched by International Energy Agency (IEA).

**Key Highlights**

- **Global oil demand is set to slow down,** almost coming to a halt by 2028 due to **shift towards cleaner energy technologies.**
- Use of oil for transport is set to decline after 2026 as **expansion of electric vehicles, growth of biofuels and improving fuel economy reduce consumption.**
- Around three-quarters of 2022-28 increase will come from Asia, with India surpassing China as the main source of growth by 2027.

**3) Gambusia affinis (G affinis):** Andhra Pradesh released Gambusia fish into state's water bodies to combat **mosquito-borne diseases like malaria and dengue.**

- *Gambusia affinis* is **native to south-eastern United States**.
- Fish, also known as mosquito-fish, is widely used as a **biological agent for controlling mosquito larvae**.
- Multiple countries, including **India** have listed ***Gambusia* as invasive species**.
- **Fish has a high breeding capacity**.
- They are known to eat the eggs of competing fishes and frog tadpoles.

**4) Steel slag:** Steel slag, a by-product of steel making, is produced during separation of molten steel from impurities in steel-making furnaces.

- **Benefits of using steel slag in road making:** Construction cost is almost **30% less, less thicker, more durable and lower carbon footprint** than roads built from natural aggregates.
- **Other applications:** Agricultural sector due to its ability to correct soil acidity, as silicate fertilizer that is capable of providing silicon to plants, in manufacturing cement, to treat acidic water.

**5) Cicada:** A 'foreign' cicada that is commonly found in South India has assumed an Indian identity.

- **Insect species Purana cheeveeda** (after its Malayalam name Cheeveedu) **used to be mistaken for Purana tigrina, a species that was first described in Malaysia in 1850**.
- Cicadas are **insects of Hemiptera family** (a group of sound-producing insects).
- Two types of cicadas commonly exist: **annual cicadas and periodical cicadas**.
- Cicadas can provide some environmental benefits including **valuable food source for birds, aerate lawns and improve water filtration into the ground, add nutrients to the soil**.

**6) Anticyclone:** European heatwaves are being caused by an anticyclone named **Cerberus**.

- Areas of sinking air (diverges at the surface) which result in high pressure are called anticyclones.
- **In an anticyclone, winds move out from a high-pressure area with wind direction clockwise in northern hemisphere, anti-clockwise in the southern hemisphere**.
- **High pressure systems have small pressure gradients** (i.e. the air pressure doesn't change rapidly).
- This means that the winds are gentle. As the air sinks, it warms up, leading to warm and dry weather.

**20<sup>th</sup> July**

**1) Public Accounts Committee (PAC):** PAC of Karnataka State legislature has accused the government for irregularities in handling COVID- pandemic.

- PAC is **the oldest Parliamentary Committee and was first constituted in 1921** in wake of Montague-Chelmsford Reforms.
- It is **one of the three Financial Parliamentary committees**, the other two are **Estimates Committee and Committee on Public Undertakings**.
- **It consists of 22 Members** – 15 Members from Lok Sabha and 7 Members from Rajya Sabha.
- **It is constituted by Parliament each year for scrutinizing Appropriation Accounts of Government and reports of CAG of India thereon**.

**2) Section 27A of Narcotic Drugs and Psychotropic Substances (NDPS) Act:** The Govt said that it wants to keep **Section 27A of NDPS Act open for interpretation and challenge later in court**.

- **Section 27A of NDPS Act 1985 prescribes the punishment for financing illicit traffic and harboring offenders**
- NDPS Act was passed to prohibit manufacture, cultivation, possession, sale, purchase, transport, storage, or consumption of drugs without permission from appropriate authorities.
- **All the offenses under NDPS Act are cognizable and non-bailable**.

**3) Sovereign Green Bonds (SGrBs):** Pension Fund Regulatory and Development Authority (PFRDA) will allow pension funds to invest in SGrBs.

- **SGrBs were announced in the Union Budget 2022-23** and framework for SGrBs was issued by Ministry of Finance in 2022.
- **Green bonds are bonds issued by any sovereign entity**, inter-governmental groups or alliances and corporates with the **aim that the proceeds of the bonds are utilised for projects classified as environmentally sustainable**.
- Investors in these bonds do not bear project related risks.

**4) Universal Postal Union (UPU):** UPU has agreed to evaluate Unified Payments Interface (UPI) for **cross border remittances using global postal network**.

- **UPU (HQ: Bern, Switzerland) was established in 1874**. UPU is a specialized agency of UN with **192 member countries including India**.
- Any non-member country of United Nations may become a UPU member provided that its request is approved by at least two-thirds of the member countries of the UPU.
- **UPU aim is to establish international regulations for postal services** and to promote cooperation in postal matters.

**5) Henley Passport Index:** Index lists the world's passports according to the number of destinations their holders can access without a prior visa.

- It is released by **Henley & Partners, a global leader in residence and citizenship planning.**
- **Key findings**
  - **Singapore has replaced Japan for having the world's most powerful passport**, allowing visa-free entry to 192 global destinations.
  - **India ranked at 80<sup>th</sup>**, allowing **visa-free travel to 57 destinations.**
  - Indian passport holders need a visa to enter 177 destinations across the world.

**6) Bura Chapori Wildlife Sanctuary:** Violence erupted in **Bura Chapori Wildlife Sanctuary**, leaving 1 woman dead and 6 others, including 3 forest guards, injured.

- Bura Chapori Wildlife Sanctuary is geographically located on **south bank of Brahmaputra in Sonitpur district of Assam.**
- It is a **part of Laokhowa wildlife sanctuary** (centrally located Protected Area of Assam) and is a notified buffer of the Kaziranga Tiger reserve.
- It **comprises of a mosaic of wet alluvial grassland, riparian and semi-evergreen forests dotted by wetland and river systems.**
- **Fauna:** Great Indian one-horned rhinoceros, Tiger, Leopard, Bengal Florican, Black-necked Stork, Whistling Duck etc.

## 21<sup>st</sup> July

**1) EU's new Foreign Subsidies Regulation (FSR):** European Union's FSR allows European Commission (EC) to investigate and impose remedies if subsidies received from non-EU countries distort competition in the EU internal market.

- India's exports to the EU and Production Linked Incentive (PLI) scheme could attract a higher degree of scrutiny under the FSR regime.
- **EU is one of India's largest export markets**, where in FY23 India's total exports were worth nearly \$75 billion.

**2) Minimum Income Guarantee (MIG): Rajasthan introduced the Minimum Guaranteed Income Bill, 2023**, which effectively seeks to cover the entire adult population of the state with guaranteed wages/pensions.

- **Bill has three broad categories:** right to minimum guaranteed income, right to guaranteed employment, and right to guaranteed social security pension.
- **MIG is a guarantee:** an income floor beneath which no one should fall.
- **MIG constitutes a policy response to the new social risks of poverty and social exclusion** by

securing subsistence while maintaining incentives to work.

**3) Competition (Amendment) Act 2023:** Centre has implemented a key provision of the Act **that vests the power of appointment of Director General (Investigation) in the Competition Commission of India (CCI).**

- So far, the power to appoint DG was vested in Central Government.
- **Key Features of Competition (Amendment) Act:**
  - Broadened scope of **anti-competitive agreements;**
  - Reduction in the time limit for review of Mergers and acquisitions from 210 to 150 days;
  - **Introduction of Settlement & Commitment framework** for a faster market correction.

**4) Invest India:** New Managing Director & CEO of Invest India has been appointed.

- It is the **National Investment Promotion and Facilitation Agency** that helps investors looking for investment opportunities and options in India.
- It was **formed under Section 25 of the Companies Act 1956.**
- It is set up as a **joint venture company between Industry Associations (17% each of FICCI, CII & NASSCOM) and the remaining 49% of Central and several State Governments.**
- Essentially, Invest India is a private company, unlike India Brand Equity Foundation, a Trust established by the Department of Commerce to create the brand India.

**5) Srivilliputhur Megamalai Tiger Reserve (SMTR):** A forest fire has started in SMTR.

- **SMTR is the fifth tiger reserve in Tamil Nadu.**
- **Other 4 are:** Mudumalai, Anamalai, Sathyamangalam and Kalakkad Mundanthurai.
- Spread across the Western Ghats, **SMTR was formed by combining Srivilliputhur Grizzled Giant Squirrel Sanctuary and Megamalai Wildlife Sanctuary.**
- It is playing a **key role in the revival of the Vaigai River.**
- **Forest type:** It has grassland forests, semi-evergreen forests, dry deciduous forests etc.
- **Other Species:** Nilgiri Tahr, elephant, Lion-Tailed Macaque, etc.

## 22<sup>nd</sup> July

**1) Rule 176 and Rule 267:** While the govt agreed to a short discussion on the first day of the Monsoon Session of Parliament, the Opposition insisted that the Prime Minister make a suo motu statement followed by a discussion, suspending all business under Rule 267.

- According to the Rules of Procedure and Conduct of Business in the Council of States.
- **Under Rule 267, a Rajya Sabha MP has the special power to suspend the pre-decided agenda of the House, with the approval of the Chairman.**
- **Rule 176 allows for a short-duration discussion, not exceeding two-and-a-half hours, on a particular issue.**

**2) Cinematograph (Amendment) Bill 2023:** The Government introduced the **Cinematograph (Amendment) Bill, 2023 in Rajya Sabha which aims to tackle film piracy.**

- It seeks to **amend the Cinematograph Act 1952.**
- Cinematograph Act, of 1952 was enacted to make provision for the certification of cinematograph films.
- **The bill classifies films on the basis of age group, instead of the current practice of 'U', 'A', and 'UA'.**
- It **seeks to bring about uniformity in the categorization of films** and content across platforms.
- The bill considers **the act of piracy as an offence legally** and will include even transmitting pirated content punishable.

**3) Solar Technology Application Resource Centre [STAR C] Initiative:** India is recently considering expanding International Solar Alliance's STAR-C initiative to Pacific Island countries. About Solar Technology Application Resource Centre [STAR C] Initiative.

- It is a **project to build STAR centres that will act as hubs of technology, knowledge, and expertise on solar energy.**
- **The International Solar Alliance (ISA) and the United Nations Industrial Development Organization (UNIDO),** with funding from the Government of France, are implementing the project.
- It performs the following four primary functions: **Capacity Building, Testing, Innovation and Knowledge Management.**

**4) Heat Index: IMD has recently launched Heat Index** on an experimental basis to provide general guidance for the regions within India, where apparent temperatures are on the higher side causing discomfort to the poor.

- It will **provide information about the impact of humidity on the high temperatures,** as an indication of human discomfort.
- **Colour codes for Heat Index: Green:** Experimental Heat Index (EHI) <35 °C; **Yellow:** EHI between 36-45 °C; **Orange:** EHI between 46-55 °C and **Red:** EHI between >55 °C.

**5) India Climate Energy Dashboard (ICED) 3.0:** NITI Aayog released the ICED 3.0.

**About ICED:**

- One-stop platform for near real-time data on the **energy sector, climate, and related economic datasets based on government-published sources.**
- **Developed as a user-friendly platform,** it enables users to freely access and analyse datasets using an analytical engine.
- Facilitates insights and enhances understanding about the energy and climate sectors while identifying the key challenges.
- **Immensely useful in monitoring the progress of India's clean energy transition journey.**

**24<sup>th</sup> July**

**1) National Flag:** National Flag Adoption Day is celebrated on **July 22, to commemorate the Constituent Assembly's adoption of Tricolour in 1947.**

- Flag Code of India (FCI) 2002 allows citizens to **hoist the Indian flag over their homes, offices and factories on any day.**
- Tricolour can be of nine standard dimensions including **6300 x 4200, 900 x 600, etc. (all sizes in mm).**
- It should be **rectangular in shape and the length-to-width ratio should always be 3:2.**
- **The use of polyester, apart from cotton, wool, silk and khadi is allowed for making hand-spun, hand-woven and machine-made flags.**

**2) Logistics Data Bank (LDB) Project:** Department for Promotion of Industries and Internal Trade (DPIIT) reviewed measures taken by Port Authorities to improve LDB.

- LDB project **aims to make India's logistics sector more efficient through the use of Information Technology.**
- It is a **joint effort of India and Japan** conceived during the planning of the **Delhi-Mumbai Industrial Corridor Project.**
- It is implemented by **NICDC Logistics Data Services (NLDS),** a joint venture between India and Japanese IT major NEC Corporation.
- LDB handles **100% of India's EXIM container volume.**
- It was also **leveraged to develop a Unified Logistics Interface Platform (ULIP).**

**3) Amrit Bharat Station Scheme:** 1309 Railway Stations have been identified under Amrit Bharat Station Scheme for their development.

- The scheme **was launched by the Ministry of Railways to modernize railway stations.**

- It envisages the development of stations on a continuous basis with a long-term approach.
- It involves the preparation of Master Plans and their implementation in phases to improve the amenities at the stations.
- It aims to create Roof Plazas and city centres at the station.
- It aims to club different grades/types of waiting halls and provide good cafeteria/retail facilities.

**4) Electronic Cigarettes (e-cigarettes):** Ministry of Health and Family Welfare launched an online portal for reporting violations under the Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act (PECA).

- All forms of **Electronic Nicotine Delivery Systems including e-cigarettes are prohibited under PECA.**
- **E-cigarettes are battery-operated systems** that heat a substance (liquid or solid), which contains **nicotine** and often flavours, to create an aerosol for inhalation.
- E-cigarette aerosols have harmful substances such as **nicotine, cancer-causing chemicals, heavy metals such as nickel, tin and lead**, and chemicals causing lung diseases such as diacetyl.

**5) Degree Days (DD):** Degree days are measures of how cold or warm a location is and is used to assess the energy needed to keep people comfortable.

- A DD compares the mean outdoor temperatures recorded for a location to a standard temperature.
- The more extreme the outside temperature, the higher the number of DD and the higher the requirement of energy for space heating or cooling.
- A Cooling DD quantifies the energy requirement for cooling while a Heating DD quantifies the energy requirement for heating.

**25<sup>th</sup> July**

**1) Global Biofuels Alliance (GBA):** An event on consultations and recommendations for GBA was organized.

- GBA, one of the priorities under India's G20 Presidency, is aimed at **facilitating cooperation and intensifying the use of sustainable biofuels**, including in the transportation sector.
- It will place emphasis on **facilitating global biofuels trade, development of policy lesson-sharing and provision of technical support for national biofuels programs worldwide**

**2) African Union:** India has proposed to make the African Union a permanent member of the G-20.

**About African Union:**

- **HQ:** Addis Ababa, Ethiopia.
- **Origin:** Officially launched in 2002 as a successor to the Organisation of African Unity.
- **Membership: 55 member states** that makeup countries of the African Continent.
- **Objective:**
  - To promote unity and solidarity of African States;
  - To coordinate and intensify their cooperation;
  - To defend their sovereignty, their territorial integrity and independence.

**3) District Mineral Foundation (DMF):** Comptroller and Auditor General of India reported under-utilization of DMF funds in Chhattisgarh.

- DMF is a trust, set up as a **non-profit body in all mining-affected districts.**
- It is established under the **Mines and Minerals (Development and Regulation) Amendment Act, of 2015.**
- **Mining companies are required to contribute to DMFs between 10 and 30% of the royalty**, in addition to the royalty paid to state governments.
- At least 60% of the fund needs to be used for high-priority works such as drinking water health, education etc

**4) Cannabis:** Cannabis Research Project of CSIR-IIIM Jammu is a first-of-its-kind project to put the substance of abuse for the good of mankind.

- Cannabis-based products come from the **dried flowering tops, leaves, stems, and seeds of Cannabis sativa (hemp) plant.**
- It contains compounds that make it useful as a medicinal drug. It can have **euphoric, pain-relieving, and psychoactive effects, among others.**
- The major psychoactive constituent in cannabis is **Δ-9 tetrahydrocannabinol (THC).**
- **Cannabis is by far the most widely cultivated, trafficked and abused illicit drug.**

**26<sup>th</sup> July**

**1) Zero FIR (First Information Report):** A major challenge that has emerged for the Manipuri police now is the hundreds of zero FIRs being registered across police stations in the northeastern state and the stalled investigation in these cases.

- **Zero FIR can be filed in any Police Station by the victim**, irrespective of their residence or place of occurrence of crime, and then transfers to the relevant police station for further investigation.
- **Purpose: Provide speedy redressal to victims** so that timely action can be taken after the filing of FIR.

- **The concept of Zero FIR was introduced on the recommendation of the Justice Verma Committee.**
- No serial number is assigned to the case, instead, the **FIR is given the number '0' and hence the name.**
- Term FIR is not defined in any law but in police regulations/rules, information recorded under **Section 154 of CrPC is known as FIR.**

**2) Friends of BRICS Meeting:** India's National Security Advisor has participated in the Friends of BRICS Meeting in Johannesburg, South Africa.

- **BRICS comprises Brazil, Russia, India, China and South Africa.**
- In addition to BRICS, Friends of BRICS countries have participated in meetings. **These are Belarus, Burundi, Iran, UAE, Saudi Arabia, Egypt, Kazakhstan and Cuba.**
- The objective of the Friends of BRICS initiative is to **promote the interaction of BRICS with close allies and enhance its influence.**
- India emphasized rising cyber risks with the advent of disruptive technologies such as **Artificial Intelligence (AI), Big Data and the Internet of Things.**

**3) National Statistical Organisation (NSO):** Dr Pronab Sen's panel appointed by the government to review the methodology of NSO.

- **Ministry:** Ministry of Statistics and Programme Implementation.
- Functions:**
  - **Acts as the nodal agency for the planned development** of the statistical system in the country. Prepares national accounts as well as publishes annual estimates of national products.
  - **Compiles and releases the Index of Industrial Production**, and conducts the Annual Survey of Industries.
  - Conducts **periodic all-India Economic Censuses.**
  - Maintains liaison with international statistical organizations, such as **the United Nations Statistical Division, the Economic and Social Commission for Asia and the Pacific (ESCAP), etc.**

**4) Income Tax Day (24<sup>th</sup> July):** On 24<sup>th</sup> July 1860 Sir James Wilson introduced income tax for the first time in India.

- It is **observed to spread awareness around the importance of taxes** and encourage more and more people to pay taxes for the development of the nation.
- On the side-line of celebration, the **Ministry of Finance directed the Income-Tax Department to prioritize transparency, objectivity, and taxpayer-friendliness** to increase the tax base.

- Net Direct Tax Collections have increased by 160.17 from FY. 2013-14 to F.Y. 2022-23.

**27<sup>th</sup> July**

**1) DNA Technology (Use and Application) Regulation Bill 2019 withdrawn:** The Bill provided for the regulation of the use of DNA technology for establishing the identity of certain persons.

- **DNA refers to deoxyribonucleic acid**, it is the carrier of genetic information.
- **A key concern regarding the bill:**
  - DNA testing is currently being done on an **extremely limited scale in India.**
  - The standards of the laboratories collecting DNAs are not monitored or regulated.
  - **DNA information can be very intrusive that can be liable for misuse.**
  - The possibility of this law being used for **racial profiling.**

**2) Women reservation in ULBs in Nagaland:** Supreme Court asked both the centre and Nagaland government reasons for the non-implementation of women's quota in urban local body (ULB) polls.

- Earlier, in **2006, the Nagaland Municipal Act of 2001 was amended to provide for the reservation of women** in line with the 74th constitutional amendment in 1992.
- **Challenges in the implementation of women's quota:**
  - **Opposition from Naga tribal bodies** against women's quota in ULBs on grounds of infringement of special rights guaranteed by Article 371(A).
  - **Patriarchal socio-cultural traditions and customary laws of Naga tribes** restrict decision-making by women.

**3) Communities added to Schedule Tribe:** Rajya Sabha passed a Bill to amend the Constitution (Schedule Tribes) Order, 1950 for the **inclusion of certain communities in the list of Schedule Tribes of Chhattisgarh.**

- **Communities added:** Dhanuhar, Dhanuwar, Kisan, Saundra, Saonra, and Binjhia and three Devanagari versions of the Pando community.
- **According to Article 342:**
  - The President may with respect to any State/UT and where it is a State after consultation with the Governor, may notify the STs in relation to that State/UT.
  - The Parliament may by law include or exclude from the list of STs specified in a notification issued.

**4) Trade settlement Cycle:** SEBI has said that it is working on the real-time settlement of transactions in India's stock exchanges i.e. 'T+0' settlement cycle.

- After implementation, '**T+0**' cycle will provide an **instant transfer of money to investors who sell shares**.
- 'Settlement' is a two-way process that involves the transfer of funds and securities on a settlement date.
- **Currently, the Indian Stock market follows 'T+1' cycle** (since January 2023) which means that **trade settlements happen within a day, or 24 hours of actual transaction**.
- **Benefits:** Bring operational efficiency, ease for stock market participants etc.

**28<sup>th</sup> July**

**1) Registration of Births and Deaths (Amendment) Bill, 2023:** The Bill amends the Registration of Births and Deaths Act, 1969.

- **Need:** To **keep pace with societal change and technological advancements** and to make it more citizen-friendly.
- **Key highlights:**
  - Provides for the **appointment of a Registrar-General**, India for issuing general directions for registration of births and deaths.
  - Provisions for **digital registration and electronic delivery of certificates of births and deaths**.
  - Create a **National and State level database of registered births and deaths** which would help in updating other databases.
  - Facilitates **registration process of adopted, orphan, abandoned, surrendered, surrogate children and children to a single parent or unwed mother**.
  - Enhance the penalties.

**2) National Coal Index (NCI):** The NCI has declined 238.3 points in May 2022 to 157.7 in May 2023.

- The decline indicates a strong supply of coal in the market, with sufficient availability to meet the growing demands.
- **About NCI:**
  - Released by the **Ministry of Coal every month**.
  - Combines coal prices from all sales channels, including notified prices, auction prices and import prices.
  - **The base year is FY 2017-18**.
  - It serves as a **reliable indicator of market dynamics**, providing valuable insights into coal price fluctuations.

**3) Citizen Financial Cyber Fraud Reporting and Management System (CFCFRMS):** According to the

Ministry of Home Affairs (MHA), Rs 570 crore have been saved using CFCFRMS.

- **CFCFRMS was operationalised in 2022 as a national helpline to report all sorts of financial frauds** and immediately prevent the stealing of funds by cheats.
- It has been made operational **by Indian Cyber Crime Coordination Centre (I4C), under MHA**, to integrate Law Enforcement Agencies and Banks and Financial Intermediaries.
- **It leverages new-age technologies for sharing online fraud-related information** and taking action in almost real-time.

**4) Intergovernmental Panel on Climate Change (IPCC):** Jim Skea (UK) was elected as the new chair of the IPCC.

- It is an **intergovernmental organization created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP)**.
- **Objective:** To provide governments at all levels with scientific information that they can use to develop climate policies.
- **IPCC is the UN body for assessing the science related to climate change**.
- **Membership:** 195 members.
- Prepares Assessment Reports, special reports, and methodology reports assessing the state of knowledge of climate change.
- However, it does not engage in scientific research.
- **In 2007, the IPCC was awarded the Nobel Peace Prize**.

**29<sup>th</sup> July**

**1) Jan Vishwas (Amendment of Provisions) Bill, 2023:** It was passed by the Lok Sabha.

**Features:**

- A total of **183 provisions** are being proposed to be decriminalized in 42 Central Acts;
- Pragmatic revision of fines and penalties commensurate to the offence committed;
- **Establishment of Adjudicating Officers and Appellate Authorities;**

**Benefits:**

- Ensures that the degree and nature of punishment are commensurate with the severity of the offence.
- **Boost to ease of living and ease of doing business.**
- **Reduces undue pressure on the justice system** and helps in a more efficient and effective justice dispensation.

**2) Quick Impact Projects (QIPs):** India, and Laos signed an **MoU for the implementation of various Quick**



**Impact Projects in the fields of education, health, water facility and IT.**

- QIPs are small-scale, low-cost projects funded by UN peacekeeping missions.
- QIPs are mainly implemented through local actors including local authorities, non-governmental and grassroots organisations.

**3) Global Climate Litigation Report: 2023 Status Review:** The report was published by the UNEP.

- The report provides an overview of key climate litigation cases from the past two years (2020-22 period).
- **It highlights that climate change litigations have more than doubled since 2017.**
- Climate change litigation includes cases that raise material issues of law or fact relating to climate change mitigation, adaptation or the science of climate change.

**4) Telecom Regulatory Authority of India Repealing Regulations, 2023:** TRAI releases Telecom Regulatory Authority of India Repealing Regulations, 2023.

- **It repeals the Regulation on Quality of Service of Dial-Up and Leased Line Internet Access Service, 2001.**
- Its objective was to **ensure customer satisfaction** by laying down norms of network performance.
- These regulations were issued when the dial-up service was the only service available for accessing low-speed internet.
- With the passage of time, **telecommunication networks, both wireline as well as wireless, have evolved to offer high-speed internet services.**
- This has made the 2001 regulations irrelevant.

**31<sup>st</sup> July**

**1) Offer For Sale (OFS):** OFS of Rail Vikas Nigam Limited was oversubscribed.

- **OFS is a process where promoters or owners of a listed company sell their shares to the general public.**
- Shares can be obtained by **foreign institutional investors, retail investors and companies.**

**2) Free Movement Regime (FMR):** FMR is a mutually agreed arrangement between two countries that allows tribes living along the border on either side to travel up to 16 km inside the other country without a visa.

- **It was implemented in 2018 as part of India's Act East policy.**
- The border between India and Myanmar spans four states **Mizoram, Manipur, Nagaland, and Arunachal Pradesh.**

**3) Parkachik Glacier:** A study shows that Parkachik Glacier in Ladakh is likely to have three lakes of different dimensions due to rapid ice melt.

- The main reasons for the rapid melting of glaciers **are global warming and increasing temperatures, and a lower altitude than other glaciers in the Zaskar region.**
- Parkachik Glacier is located in the Suru sub-basin of the Upper Indus River, Zaskar Himalaya.
- **Suru River valley is a part of the southern Zaskar Ranges** in the western Himalayas.

**4) Sahyadri Mountain Ranges:** A recent study has highlighted the negative influence of changing land use in the Sahyadri plateau and on its endemic creatures.

**About Sahyadri mountain ranges:**

- The **Western Ghats of Maharashtra are locally known as the Sahyadri ranges.**
- River Krishna rises near Mahabaleshwar in Sahyadri.
- **Kalsubai is the highest peak in Maharashtra** (located in Ahmednagar district).
- Kaas Plateau also known as the Maharashtra Valley of Flowers is situated in the Sahyadri range of the Western Ghats.

## Prelims Booster – Press Information Bureau (PIB)

2<sup>nd</sup> July

**1. INS Shivaji:** It is an **Indian Naval station placed in Lonavala, Maharashtra**. It homes to the Naval College of Engineering which trains officers of the Indian Navy and the Indian Coast Guard. **Indian Navy already operates a primary damage manipulation simulator Akshat at INS Shivaji to train its officers and sailors on damage management on a warship at sea.** Indian Navy's Nuclear, Biological and Chemical Defence School and Center for Marine Engineering Technology also are based here. **INS Shivaji had its humble beginning as a replacement for the 'Stokers' Training School' at HMIS Dalhousie, in Naval Dockyard, Bombay.** Commissioned with the aid of the then Governor of Bombay, Sir John Colville, as HMIS Shivaji on 15 February 1945, it has **become INS Shivaji on 26 January 1950.**

**2. Nallamala Forest:** It is one of the largest stretches of undisturbed forest in South India, apart from the Western Ghats. **It is spread over five districts in the Indian states of Andhra Pradesh and Telangana. It is located in Nallamala Hills,** which is a part of the Eastern Ghats. **It lies south of the Krishna River.** The forest has a good tiger population, and a **part of the forest belongs to the Nagarjunsagar-Srisailem Tiger Reserve, the largest tiger reserve in the country.** It has a warm to hot climate throughout the year, with summer especially hot and winters mostly cool and dry. It gets most of its rain during the South West monsoon.

**Vegetation:** Tropical dry deciduous.

**3. Diversity for Restoration (D4R) tool:** It is **developed with information on 237 socio-economically important native trees from the Western Ghats.** It is **devised by Bioversity International.** The team from **Ashoka Trust for Research in Ecology and the Environment (ATREE), with the help of Bioversity**

**International,** modified it to promote restoration programmes in India. The tool helps the user in identifying species that match their restoration objectives. It further helps identify species that can resist local stresses and adapt to evolving environmental conditions. **The tool has information about 100 plant functional traits that have been considered to offer the best possible solution.** The tool informs the user whether the tree species offers timber, fruit, manure or other commercial benefits. It also informs if the tree is resilient to physiological stresses such as extreme high or low temperatures, salinity or acidity tolerance in the soil among others. The tool could also identify windbreakers. **This tool is already being used in countries such as Malaysia, Ethiopia, Columbia, Peru, Burkina Faso, Cameroon etc.**

**4. Octopus nursery:** The newly found nursery is almost two miles below the surface of the Pacific Ocean. This **nursery belongs to the genus of Muusoctopus and doesn't have ink sacs** – an organ found in most cephalopods. It is a **marine mollusc and a member of the class Cephalopoda,** more commonly called cephalopods. A ring of eight equally-long arms surrounds the head. They use their arms to “walk” on the seafloor. They have three functioning hearts. Their blood is copper-based which is more efficient at transporting oxygen at low temperatures and makes their blood blue in colour. **They are solitary creatures excellent at camouflaging and concealing themselves** They are about 90 per cent muscle, and because they lack bones, they can fit through very small spaces. **Their skin contains cells called chromatophores that allow the octopus to change colour and pattern.** They are found in every ocean of the world.

3<sup>rd</sup> July

**1. Swami Vivekananda:** Swami Vivekananda (1863 – 1902), born Narendranath Datta, was a Hindu monk and one of the most celebrated spiritual leaders of

India. **He was the foremost disciple of Sri Ramakrishna Paramhansa and a world spokesperson for Vedanta.** He was hailed as a **Dhyana Siddha**, a meditation expert, by his guru Ramakrishna Paramhansa. **He attempted to combine Indian spirituality with Western material progress**, maintaining that the two supplemented and complemented one another. **He believed that the path to self-purification is through helping others.** He encouraged people to engage in selfless service and to work towards the betterment of society. Through his teachings on the four Yogas, the harmony of religions, divinity of the soul, and serving humanity as God, Vivekananda gave spiritual aspirants paths to that realization. **Vivekananda represented Hinduism at the 1893 World's Parliament of Religions convened during the World's Columbian Exposition in Chicago.** After his first visit to the West, Swami Vivekananda went back to India and **founded the Ramakrishna Order at Belur outside of Kolkata in 1897.**

**2. Sagar Nidhi:** Ocean Research Vessel (ORV) **Sagar Nidhi is a multidisciplinary vessel operated by the National Institute of Ocean Technology, Ministry of Earth Sciences.** It was built in 2007 by Fincantieri, Italy. **It is India's third research vessel after Sagar Purvi and Sagar Paschimi. It is 104 metres long and 18 metres wide.**

It is powered by fully automatic diesel-electric propulsion. **It is designed with blue-water capability with ranges of up to 10,000 nautical miles (19,000 km)** for voyages lasting up to 45 days. It is equipped to launch submersible capsules capable of taking scientists to a depth of six km below sea level. **The vessel is capable of carrying out geo-scientific, meteorological and oceanographic research. The vessel would be used for launching tsunami monitoring systems and remotely operable vehicles, for identifying mines and gas hydrates.** It would provide a cutting-edge reference point for the study of marine theatres of operation, including tropical and polar environments.

**3. Colombo Security Conclave:** The **Colombo Security Conclave was formed in 2011 as a trilateral maritime security grouping of India, Sri Lanka and the Maldives.** The roadmap of activities was later expanded, with **Mauritius joining as the fourth member and Bangladesh & Seychelles participating as observer countries.** The Conclave underlines regional cooperation and shared security objectives concerning all littoral nations in the Indian Ocean Region (IOR). **It aims to make maritime security, marine pollution response and maritime search & rescue priorities for the region.**

**4. Ashadha Purnima:** The day is also celebrated as Guru Purnima and it falls every year on the full moon day of the month of Ashadha as per the Indian lunar calendar. **The day is also celebrated as Esala Poya in Sri Lanka and Asanha Bucha in Thailand.** The day is remembered for the **first teaching of Gautam Budha after attaining Enlightenment to the first five ascetic disciples (pancavargiya) at 'Deer Park',** Risipatana Mrigadaya in the present day Sarnath, near Varanasi. This day is also aptly observed as Guru Purnima by both Buddhists and Hindus as a day to mark reverence to their gurus. This day also marks the beginning of the rainy season retreat for the Monks and Nuns also starts with this day.

#### 4<sup>th</sup> July

**1. SWAMIH Fund:** The Special Window for Affordable and Mid-Income Housing (SWAMIH) Investment Fund I is a **social impact fund specifically formed for completing stressed and stalled residential projects.** **The Fund is sponsored by the Ministry of Finance, Government of India.** It is managed by SBICAP Ventures Ltd., a State Bank Group company. **It has one of the largest domestic real estate private equity teams focused only on funding and monitoring the completion of stressed housing projects.** It is a Category-II AIF (Alternate Investment Fund) debt fund registered with the Securities and Exchange Board of India.

**Eligibility:** Real estate projects must be registered under the Real Estate (Regulation and Development) Act (RERA) 201. **The project must be classified as a non-performing asset (NPA) or be under insolvency proceedings.** The project should have been declared as a “stalled” or “delayed” project by a competent authority. The fund is available only for projects that fall under the affordable and mid-income housing categories.

**2. Bharat 6G Alliance:** It is a collaborative platform that **aims to achieve universal and affordable connectivity, promote indigenous technology, and establish India as a global leader in the telecom sector.** This platform consists of public and private companies, academia, research institutions, and standards development organizations, and aims to lead the development and deployment of 6G technology in India. It will forge coalitions and synergies with other 6G Global Alliances, fostering international collaboration and knowledge exchange.

**Aim:** To bring together Indian startups, companies, and the manufacturing ecosystem to establish consortia that drive the design, development and deployment of 6G technologies in India. **One of the key goals of B6GA is to facilitate market access for Indian telecom technology products and services,** enabling the country to emerge as a global leader in 6G technology.

**Funding for 6G technology projects:** To support the advancement of 6G technology, the government has allocated a grant of 240.51 crores through the Telecom Technology Development Fund scheme.

**3. Telecom Technology Development Fund: It was launched in 2022.** Under this 5% of annual collections from the Universal Service Obligation Fund (USOF) will be available for the TTDF Scheme for funding research & development of technologies, products, and services. **The scheme is envisaged to bridge the digital divide by developing and manufacturing state-of-the-art technologies** and forming synergies among

academia, start-ups, research institutes, and the industry to build and develop the telecom ecosystem.

**4. eSARAS App:** It is an e-commerce mobile app that will be used as a more effective platform for marketing the products made by women of self-help groups. **It is an initiative conceptualized by the DAY-NRLM, Ministry of Rural Development (MoRD), towards the marketing of the best, authentic handicrafts and hand-loom.** This initiative promotes the spirit of Vocal for Local even further with easier marketing of products prepared by SHGs

Along with that eSARAS Fulfilment Centre was also inaugurated. **These centres will be managed by the Foundation for Development of Rural Value Chains (FDRVC – a Not for Profit Company constituted jointly by the Ministry of Rural Development and Tata Trust).** This centre will be used for processing, packaging and shipping of products that customers purchase through the eSARAS Portal and eSARAS mobile App. It will handle the logistics required to bring an online order to a customer’s doorstep.

5<sup>th</sup> July

**1. Gramodyog Vikas Yojana:** It is one of the two components of Khadi Gramodyog Vikas Yojana which aims to promote and develop the village industries through common facilities, technological modernization, training etc. It includes the activities carried out under different village industries.

**Components:** Research & Development and Product Innovation, Capacity Building, Marketing & Publicity.

**KVIC:** It is a **statutory body established under the Khadi and Village Industries Commission Act, of 1956.** The KVIC is charged with the planning, promotion, organisation and implementation of programmes for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary.

**Nodal Ministry:** Ministry of Micro, Small and Medium Enterprises.

**2. World Investment Report 2023:** The United Nations Conference on Trade and Development (UNCTAD) published its World Investment Report 2023. **India and ASEAN were the most buoyant recipients of Foreign direct investment (FDI), with increases of 10 and 5%, respectively.** FDI inflows were higher in developing countries compared with those in developed economies. **China, the second largest FDI host country in the world, saw a 5% increase. FDI in the Gulf region declined, but the number of project announcements increased by two-thirds.**

Inflows in many smaller developing countries were stagnant, and FDI to the least developed countries (LDCs) declined. **Much of the growth in international investment in renewable energy has been concentrated in developed countries.** The investment gap across all sectors of the Sustainable Development Goals has increased to more than \$4 trillion per year from \$2.5 trillion in 2015. **The largest gaps are in energy, water and transport infrastructure.**

**3. Bhashini Platform:** Digital India BHASHINI, is India's Artificial Intelligence (AI)-led language translation platform. It seeks to enable easy access to the internet and digital services in Indian languages, including voice-based access, and help the creation of content in Indian languages. **It aims to make Artificial Intelligence and Natural Language Processing (NLP) resources available in the public domain to be used by — Indian MSMEs, startups and individual innovators.** This will help developers to offer all Indians easy access to the internet and digital services in their native languages. **This online platform also has a separate 'Bhasadaan' section which allows individuals to contribute to multiple crowdsourcing initiatives,** and it is also accessible via respective Android and iOS apps.

**4. Brahmos Missile:** It is a supersonic cruise missile. **It is a joint venture between the Defence Research and Development Organisation (DRDO) of India and NPOM of Russia.** It is named after the rivers **Brahmaputra and Moskva.** It is a two-stage missile with a solid propellant engine in the first stage and a

liquid ramjet in the second. The system has been designed with two variants for Anti-Ship and Land-Attack roles. **Brahmos is one of the fastest cruise missiles currently operationally deployed with the speed of Mach 2.8,** which is nearly 3 times more than the speed of sound. It has a launch weight of 2,200-3,000 kg. It operates on the "Fire and Forgets" principle, adopting varieties of flights on its way to the target.

**BrahMos is equipped with stealth technology designed to make it less visible to radar and other detection methods.** It has an inertial navigation system (INS) for use against ship targets, and an INS/Global Positioning System for use against land targets.

6<sup>th</sup> July

**1. GST Council: Article 279A** of the Indian Constitution gives power to the President of India to constitute a **joint forum of the Centre and States called the GST Council, consisting of the – Union Finance Minister(Chairperson),** The Union Minister of State in charge of Revenue of finance, The Minister-in-charge of finance or taxation or any other Minister nominated by each State Government. **The GST Council is an apex committee to modify, reconciles or make recommendations to the Union and the States on GST,** like the goods and services that may be subjected to or exempted from GST, model GST laws, etc. **Decisions in the GST Council are taken by a majority of not less than three-fourths of the weighted votes cast.** Centre has one-third weightage of the total votes cast and all the states taken together have two-thirds of the weightage of the total votes cast. All decisions taken by the GST Council have been arrived at through consensus.

**2. Global Peace Index:** It is released annually by the **Institute for Economics and Peace (IEP).** The 2023 Global Peace Index (GPI) ranked 163 independent states and territories according to their level of peacefulness. **It measures the state of peace across three domains:Societal safety and security; Ongoing**

### **domestic and international conflict; Militarization.**

The average level of global peacefulness deteriorated by 0.42 per cent. **Iceland is the most peaceful country in the world – a title it has held since 2008.** It is accompanied at the top by Denmark, Ireland, New Zealand, and Austria. Conversely, **Afghanistan is the least peaceful country in the world for the eighth consecutive year.** It is followed by Yemen, Syria, South Sudan, and the Democratic Republic of the Congo. **India has occupied the 126th spot in the rankings, two higher than its previous position.** The report stated that India experienced an improvement of 3.5 per cent in overall peacefulness over the past year, owing to improvements in violent crime, neighbouring countries' relations, and political instability.

**3. Annapurthi:** GrainATM, Annapurthi, is an automated multi-commodity dispensing solution that provides fast, clean, and precise access to commodities (rice, wheat, grains) to beneficiaries, post biometric authentication. **It is developed by World Food Programme (WFP) in India. GrainATM ensures 24x7 access to full entitlements for people entitled to monthly subsidized grains through India's Public Distribution System.** It does away with the possibility of spillage, waste and short-weighing. Annapurthi dispenses one or two-grain commodities, up to 50 kilograms, in five minutes, with an error rate of 0.01 per cent. The entire solution, including the volume of the storage unit, is modular or easily assembled and can be put together depending on the amount of space available. **To ensure food security with efficient energy access, the machine has been designed to consume only 0.6 Watts per hour.** It can also be attached to solar panels, inverter batteries and elevators for automatic refilling.

**4. JIMEX 2023:** .The Indian Navy is hosting the bilateral Japan-India Maritime Exercise 2023. This edition marks the **11th anniversary of JIMEX, since its inception in 2012.** This exercise will witness the participation of INS Delhi, INSKamorta, fleet tanker INS Shakti, a

submarine, maritime patrol aircraft P8I and Dornier, ship-borne helicopters and fighter aircraft.

**Other Exercises:** Malabar: India and Japan with the United States and Australia participate in the naval war gaming exercise named Malabar, SHINYUU Maitri (Air Force), Dharma Guardian (Military Exercise)

### **7<sup>th</sup> July**

**1. Performance Grading Index:** The Union Ministry of Education released a report on Performance Grading Index 2.0 for States/UTs for the year 2021-22. **It was first released for the year 2017-18 and so far it has been released up to the year 2020-21.** It assesses the performance of the school education system at the State/UT level by creating an index for comprehensive analysis. The aim is to propel States & UTs towards undertaking multi-pronged interventions that will bring about the much-desired optimal education outcomes covering all dimensions. **The PGI 2.0 structure comprises 1000 points across 73 indicators grouped into 2 categories viz., Outcomes, Governance Management (GM).** These categories are further divided into 6 domains, Learning Outcomes (LO), Access (A), Infrastructure & Facilities (IF), Equity (E), Governance Process (GP) & Teacher's Education and Training (TE&T). PGI 2.0 for 2021-22 classified the States/UTs into ten grades viz., the highest achievable Grade is Daksh, which is for State/UT scoring more than 940 points out of a total of 1000 points. **The lowest grade is Akanshi-3 which is for a score up to 460.**

### **2. Udhampur-Srinagar-Baramulla Rail Link (USBRL)**

**Project:** The USBRL Project involves the construction of a railway line from Udhampur to Baramulla joining the Kashmir valley with the Indian Railways.

**Aim:** To connect Kashmir to the rest of the country and give a push to development in the Valley. **The Project was declared a "National Project" in 2002.** The alignment of USBRL involves the construction of a large number of Tunnels and Bridges in highly rugged and mountainous terrain with the most difficult and

complex Himalayan geology. **This Project involves 38 Tunnels, the longest Tunnel (T-49) having a length of 12.75 Km and is the country's longest transportation tunnel.** These bridges include the iconic Chenab Bridge which will be the highest railway bridge in the world. **Indian railway's first cable-stayed bridge is also being constructed on Anji Khad.**

**3. NeSDA Portal:** NeSDA framework, launched in August 2018 was conceptualized with an overall objective to measure the depth and effectiveness of existing e-Governance service delivery mechanisms. **This framework is based on the Online Service Index (OSI) of the UN eGovernment Survey. The framework covers six sectors, Finance, Labour & Employment, Education, Local Government & Utilities, Social Welfare (including Agriculture & Health) and Environment (including Fire) sectors.** The Department of Administrative Reforms and Public Grievances undertakes the NeSDA study biennially. This study assesses States, Union Territories (UTs), and focuses Central Ministries on the effectiveness of e-Governance service delivery. NeSDA helps the respective governments improve their delivery of citizen-centric services and shares best practices across the country for all States, UTs and Central Ministries to emulate.

**4. EXERCISE – SALVEX:** Indian Navy – US Navy have been participating in joint Salvage and EOD exercises since 2005. **It is the Seventh edition of SALVEX.** The exercise saw participation from both the navies which included the ships – INS Nireekshak and USNS Salvor in addition to Specialist Diving and EOD teams.

**Other exercises between India and US:**

**Malabar Exercise:** It is a quadrilateral naval exercise of India, USA, Japan and Australia

**Exercise Tiger Triumph:** It is a humanitarian Assistance and Disaster Relief exercise.

**Yudh Abhyas:** It is a joint military exercise.

8<sup>th</sup> July

**1. Farmers Distress Index:** The Central Research Institute for Dryland Agriculture (CRIDA), an institution under the Indian Council of Agricultural Research (ICAR) started working on a kind of early warning system called 'farmers distress index. **The main aim behind creating such an index is to minimise agrarian distress in the form of crop loss/failure and income shock.** The first step will be to look for the incidents of farmers' distress like localised cases of issues with debt repayment, death by suicide, pest attacks, drought, floods, and migration, among others. **The index will have values from 0-1. A value between 0-0.5 will indicate 'low distress', 0.5-0.7 will indicate 'moderate' distress and above 0.7 will indicate 'severe' distress.** If the index is severe, it will identify which component, among the seven, is more severe and contributes maximum to farmers' distress. After completion of the ongoing work, CRIDA will be handing over the index to the central government and it will be made available to different state governments, agriculture departments, rural development departments, and agriculture universities.

**2. Atal Innovation Mission:** Atal Innovation Mission (AIM) in collaboration with Bayer launched a unique industry visit initiative under Atal Tinkering labs at Bayer's manufacturing facility in Vapi, Gujarat. **It is the Government of India's flagship initiative to promote a culture of innovation and entrepreneurship in the country and was set up in 2016.**

**Objective:** To create and promote an ecosystem of innovation and entrepreneurship across the country at school, university, research institutions, MSME and industry levels. All the initiatives of AIM are currently monitored and managed systematically using real-time MIS systems and dynamic dashboards.

**Implementing Agency:** NITI Aayog. AIM has multiple programs to encourage and support innovation in the country. **Some of the components of AIM:** Atal Tinkering Labs, Atal Incubation Centres, Atal New India

Challenge, Mentor of Change Program, Atal Community Innovation Centre and Atal Research & Innovation for Small Enterprises (ARISE).

### 3. Global Survey on Digital and Sustainable Trade

**Facilitation:** The United Nations Economic and Social Commission for Asia Pacific (UNESCAP) released Global Survey on Digital and Sustainable Trade Facilitation. It is conducted every two years by UNESCAP. The 2023 survey covered more than 140 economies and evaluated 60 trade facilitation measures. It has recognized India's exceptional progress across various sub-indicators, with the country achieving a perfect score of 100% in four key areas: **Transparency, Formalities, Institutional Arrangement and Cooperation, and Paperless Trade.** India has witnessed a substantial improvement in the score for the "Women in Trade Facilitation" component from 66.7% in 2021 to 77.8% in 2023. **India is now the best-performing country amongst all the countries of the South Asia region.** The overall score of India has been greater than many developed countries including Canada, France, the UK, Germany etc.

### 4. United Nations Economic and Social Commission for Asia Pacific (UNESCAP):

It is the most inclusive intergovernmental platform in the Asia-Pacific region which was established in 1947. **It consists of 53 members and 9 associate members. India is also a member of this organization.**

**Headquarters: Bangkok, Thailand.** It works to overcome some of the region's greatest challenges by providing results-oriented projects, technical assistance, and capacity building to member States.

10<sup>th</sup> July

#### 1. 50th GST Meeting and its Outcome:

- Levy 28% GST on online gaming, horse racing, and casinos on full value: **The GST council agreed that there should be no distinction between 'game of skill and game of chance.'**
- The council announced that the GST on restaurants inside Cineplex attracted 5% GST against 18% earlier. Before the change, movie tickets below Rs

100 were taxed at 12%, while those above the threshold attracted 18% GST.

- **Further, the meeting also decided to exempt GST on import of cancer drug Dinutuximab, and Food for Special Medical Purposes (FSMP)** used in the treatment of rare diseases. Currently, the drug attracts a 12% integrated GST.
- Clarity on the taxation of Multi Utility Vehicles (MUV) was provided. The Council has agreed to the recommendation to levy a 22% compensation cess for MUV, but Sedan has not been included in the list.
- **Council to set up an appellate tribunal.**

**2. Biofuels:** Biofuel is a fuel that is produced over a short time span from biomass, rather than by the very slow natural processes involved in the formation of fossil fuels, such as oil.

- **First generation–1G biofuels are produced from consumable food items** containing starch (rice and wheat) and sugar (beets and sugarcane) for bio-alcohols, or vegetable oils for biodiesel. However, **the yields of 1G biofuels are low and can have negative impacts on food security.**
- **Second generation–2G biofuels are mainly obtained from non-food feedstocks** such as forest/industry/agricultural wastes and waste or used vegetable oils.
- **Third-generation –3G biofuels, known as 'algae fuel',** are derived from algae in the form of both, biodiesel and bio-alcohols. Although **the yield of 3G biofuels is approximately 10 times higher than 2G biofuels,** producing adequate algal biomass and scaling up extraction techniques are as yet unresolved challenges.
- **Fourth generation –** Like the third generation, **4G biofuels are made using non-arable land.** However, unlike the third, they do not need the destruction of biomass. This class of biofuels includes electro fuels and photo-biological solar fuels.

**3. Urban 20 (U20) Summit:** It is a **city diplomacy initiative launched on December 12, 2017, at the One Planet Summit in Paris.** It provides a platform for cities from G20 countries to facilitate discussions on various important issues of urban development including **climate change, social inclusion, sustainable mobility, and affordable housing, and propose collective solutions.** C40 Cities (C40) and United Cities and Local Governments (UCLG) convene the U20 under the



leadership of a Chair city that rotates annually, based in the G20 host country. **This year it was chaired by the City of Ahmedabad.**

**4. Edar Project:** The Integrated Road Accident Database (Irad) / e-Detailed Accident Report (Edar) Project is an initiative of the Ministry of Road Transport and Highways (MoRTH), Government of India and is funded by World Bank. **The project aims to develop an Integrated Road Accident Database (Irad), to enrich the accident databases from every part of the country.** The project would generate various types of insights by analysing the collected road accident data across the country through the implementation of data analytics techniques.

**11<sup>th</sup> July**

**1. Global Multidimensional Poverty Index:** The Global Multidimensional Poverty Index (MPI) report highlighted that a total of 415 million people moved out of poverty in India within just 15 years from 2005/2006 to 2019/2021. **It said that 25 countries, including India, successfully halved their global MPI values within 15 years, showing that rapid progress is attainable.**

The report noted that deprivation in all indicators declined in India. The poorest States and groups, including children and people in disadvantaged caste groups, had the fastest absolute progress. **In India, those people who are multidimensionally poor and deprived under the nutrition indicator have declined.**

Children under the age of 18 account for half of MPI-poor people (566 million). The poverty rate among children is 27.7%, while among adults, it is 13.4%. Countries halved their MPI in periods as short as four to 12 years.

**2. Schengen Visa:** As per new data released, **India became the second country with the highest rejection rate for the Schengen Visa last year.** It is an **official document mandatory for some non-Europeans to travel to all the 27 countries which are part of the**

**Schengen area.** Once granted, this visa allows the traveller to cross the borders of the other member-states without going through identity checks at the border. This type of visa is issued by one of the Schengen States and allows you to visit any of the Schengen countries for a duration of up to 90 days in total within 180 days.

**3. Schengen Area:** The Schengen Area, or Schengen Countries Zone, is a **group of 27 European nations that have abolished their internal borders, for the free and unrestricted movement of people.** **Members of this area include 23 of the 27 EU member states** (except for Bulgaria, Cyprus, Ireland and Romania) and **all members of the European Free Trade Association** (Iceland, Liechtenstein, Norway and Switzerland). Switzerland, Iceland, and Norway are not in the EU but are inside of the Schengen Area. Being part of this area means that countries: do not carry out checks at their internal borders, except in cases of specific threats; carry out harmonized controls at their external borders, based on clearly defined criteria.

**4. Senior Citizen Savings Scheme (SCSS):** SCSS was launched with the **main aim of providing senior citizens in India a regular income after they attain the age of 60 years old.** Indian citizens above the age of 60 years. **Retirees in the age bracket of 55-60 years who have opted for a Voluntary Retirement Scheme (VRS) or Superannuation.** Retired defence personnel above 50 years and below 60 years of age. **It has a maturity period of five years.** But, a depositor can extend one's maturity period for another three years. Individuals are allowed to operate more than one account by themselves or open a joint account with their spouse.

**Eligible investors can make a lump sum deposit-**

- Minimum Deposit– Rs. 1,000 (and in multiples thereof).
- Maximum Deposit– Rs. 30 Lakh.

**Under SCSS, the interest amount is paid to the account holders quarterly.** After one year of opening the account, premature withdrawal is allowed.

Deposits in SCSS qualify for deduction u/s 80-C of the Income Tax Act.

### 12<sup>th</sup> July

**1. SAGAR SAMPARK:** It is an indigenous Differential Global Navigation Satellite System (DGNSS). **The Differential Global Navigation Satellite System is a terrestrial-based enhancement system that corrects the errors and inaccuracies in the Global Navigation Satellite System (GNSS) allowing for more accurate positioning information.**

It is now able to transmit corrections of GPS and GLONASS. **Sagar Sampark at six locations will assist the Director General of Lighthouses and Lightships (DGLL) to provide radio aids to ships for marine navigation.** The system will provide accurate information to the ships for safe navigation and will reduce the risk of collisions, groundings, and accidents in the port and harbour areas. This will lead to the safe and efficient movement of vessels. **It will significantly improve the accuracy of GPS positioning and reduces errors caused by atmospheric interferences, satellite clock drift, and other factors.** The error correction accuracy has been improved from 5 to 10 meters to less than 5 meters for 100 Nautical Miles (NM) from Indian coastlines.

**2. Moderate Resolution Imaging Spectroradiometer (MODIS):** Recently, scientists have analyzed data generated from the Moderate Resolution Imaging Spectroradiometer and said that **climate change has altered the colour of 56 per cent of the world's oceans.**

**It is a key instrument aboard the Terra (originally known as EOS AM-1) and Aqua (originally known as EOS PM-1) and Aqua (originally known as EOS PM-1) satellites.** Terra's orbit around the Earth is timed so that it passes from north to south across the equator in the morning, while Aqua passes south to north over the equator in the afternoon. **Terra MODIS and Aqua MODIS are viewing the entire Earth's surface every 1 to 2 days, acquiring data in 36 spectral bands, or groups of wavelengths.** These data will improve our

understanding of global dynamics and processes occurring on the land, in the oceans, and in the lower atmosphere. It is playing a vital role in the development of validated, global, interactive Earth system models able to predict global change accurately enough to assist policymakers in making sound decisions concerning the protection of our environment.

**2. International Biology Olympiad:** It is a biological Olympiad for pre-university students under the age of 20, and is one of the most well-known International Science Olympiads. **The first IBO was held in Czechoslovakia in 1990, and it has since been held annually.** The competition has gradually expanded to include more than 75 participating countries across five continents. All participating countries send the four winners of their National Biology Olympiad to the IBO, usually accompanied by two adults who are members of the international jury, for the duration of the competition. To select these top four life science contestants for this international competition, all member countries host Biology Olympiad competitions in typically 3-5 consecutively more difficult national competition rounds. As a consequence, this leads to a trickle-down effect, engaging more than 1 million students worldwide in life science each year. Every year it is organised by a different country.

**India organized this Olympiad in 2008**

### 13<sup>th</sup> July

**1. G20 Conference on Crime and Security:** The inaugural session of the G20 conference on 'Crime and Security in the age of NFTs, AI and Metaverse', was held in Gurugram, India. **This summit is a new and unique initiative of the G-20 Presidency and is the first conference on cyber security in the G-20.** The metaverse is a concept of a virtual shared space where users can interact with each other and digital objects in a seemingly real way. **NFTs are digital assets that can be used to represent unique items, such as virtual real estate, in-game items and collectables, on a blockchain.**

**2. National Policy for Rare Diseases 2021:** It aims to lower the high cost of treatment for rare diseases with an increased focus on indigenous research. It offers financial support for one-time treatment of up to Rs. 20 lakhs, introduces a crowd-funding mechanism, creates a registry of rare diseases and provides for early detection.

**The rare diseases have been identified and categorized into 3 groups namely:**

**Group 1:** Disorders amenable to one-time curative treatment.

**Group-2:** Diseases requiring long-term/lifelong treatment having a relatively lower cost of treatment and benefit have been documented in the literature and annual or more frequent surveillance is required.

**Group 3:** – Diseases for which definitive treatment is available but challenges are to make optimal patient selection for benefit, very high cost and lifelong therapy.

**Centres of Excellence:** The Centres of Excellence would be provided with a one-time grant to a maximum of Rs. 5 crores each for infrastructure development for screening, tests, and treatment.

**3. NATO Summit 2023:** The 2023 NATO summit took place from **11–12 July 2023, in Vilnius, the capital of Lithuania. The 2022 summit was held in Madrid, Spain.** The participating leaders discussed the ongoing Russian invasion of Ukraine as well as Ukraine and Sweden's prospective memberships in NATO.

**Key outcomes:**

- NATO leaders launched a new forum for deepening ties with Ukraine, known as **the NATO-Ukraine Council.**
- A joint declaration issued by the G-7, issued during the summit, lays the groundwork for each nation to negotiate agreements to help Ukraine bolster its military over the long term.
- No clear path for Ukraine's membership in NATO.
- **Turkey withdrew its objections to Sweden joining the alliance.** This paves the way for Sweden to join the alliance as the new entries must be approved by all existing members.

- **NATO formally invited Sweden and Finland to join the military alliance at the Madrid summit held in 2022. However, Turkey had raised objections regarding the membership of Sweden and Finland in NATO.**

**14<sup>th</sup> July**

**1. BHARAT campaign:** Ministry of Agriculture & Farmers Welfare launched a new campaign for banks under the Agriculture Infrastructure Fund titled **BHARAT (Banks Heralding Accelerated Rural & Agriculture Transformation).** It is a one-month-long Campaign with a target of Rs 7200 crore. **It aims to get active involvement and support of members of commercial Banks in the public and private sector, Regional Rural Banks, Small Finance Banks, NBFCs and select cooperative Banks in promoting the Scheme of the Agriculture Infrastructure Fund.**

**Agriculture Infrastructure Fund:** It is a **Central Sector Scheme that was launched in 2020.** The scheme shall provide a medium – long-term debt financing facility for investment in viable projects for post-harvest management Infrastructure and community farming assets through interest subvention and financial support. **The duration of the Scheme shall be from FY2020 to FY2032 (10 years).** All loans under this financing facility will have an interest subvention of 3% per annum up to a limit of Rs. 2 crores. This subvention will be available for a maximum period of seven years. Further, **credit guarantee coverage will be available for eligible borrowers from this financing facility under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme** for a loan up to Rs. 2 crores. The fee for this coverage will be paid by the Government.

In the case of FPOs, the credit guarantee may be availed from the facility created under the FPO promotion scheme of the Department of Agriculture, Cooperation & Farmers Welfare (DACFW). The moratorium for repayment under this financing facility may vary subject to a minimum of 6 months and a maximum of 2 years.

**2. Bard Chatbot:** It is an **Artificial Intelligence (AI) chatbot developed by Alphabet, the parent company of Google**. It is an example of generative AI that can respond to questions in a human-like way. **Users can interact with the Bard chatbot in 40 languages, including nine Indian languages.** Users can change the tone and style of Bard's responses to either simple, long, short, professional or casual. They can pin or rename conversations, export code to more places and use images in prompts.

**3. Amrit Bharat Station Scheme (ABSS):** It envisages the development of stations on a continuous basis with a long-term vision. Plans and consequent budgets will only be approved on the basis of factors such as footfall and inputs from stakeholders. Zonal railways have been given the responsibility of selecting stations, which will then be approved by a committee of senior railway officials.

**Facilities Planned under Amrit Bharat Station Scheme:** Provision for Roof Plaza to be created in future. **Free Wi-Fi, space for 5G mobile towers. Smooth access by widening roads, removal of unwanted structures, properly designed signages, dedicated pedestrian pathways, well-planned parking areas, improved lighting etc.** Attempts shall be made to club different grades/types of waiting halls and provide good cafeteria/retail facilities as far as possible. Better furniture will be installed in waiting rooms, platforms, restrooms and offices. High-level platforms (760-840 millimeters) shall be provided at all categories of stations. Special amenities for the disabled as per guidelines issued by the Railway Board from time to time.

15<sup>th</sup> July

**1. AT1 bonds:** These are a type of **unsecured, perpetual bonds** that banks issue to improve their core capital base. **The money raised through these bonds is kept aside as a shock absorber by the bank.** They have a call option, which can be used by the banks to buy these bonds back from investors. These bonds were

created in the wake of the 2008 financial crisis to absorb the losses. **These bonds are also called contingent convertible bonds or CoCos.**

**These bonds are also mandatory under Basel-III norms.** The banks must maintain capital at a minimum ratio of 11.5 per cent of their risk-weighted loans. Of this, 9.5 per cent needs to be in Tier-1 capital. AT1 bonds fall under this type of capital. **These bonds are long-term and do not carry any maturity date.** Because of a higher risk, they offer a higher yield. **Regulation: In India, AT-1 bonds are regulated by the Reserve Bank of India (RBI).**

**2. Association of World Election Bodies (A-WEB):** The Chief Election Commissioner of India led a three-member Election Commission of India (ECI) delegation to Cartagena, Colombia to attend the 11th meeting of the Executive Board of the Association of World Election Bodies (A-WEB). **It is the largest association of Election Management Bodies (EMBs) worldwide. It was founded in October 2013 in Seoul, Republic of Korea.** The theme of the 2023 meeting: "A global view on the challenges of regional elections 2023". The shared vision among its members of achieving sustainable democracy around the world through the strengthening of the processes of election management in member countries. **It consists of 119 EMBs as Members & 20 Regional Associations/Organisations as Associate Members. India is a member of this association and is represented by the Election Commission of India (ECI).** ECI took over as Chairperson for the 2019-22 term and is presently a member of its Executive Board for 2022-24 in its capacity as immediate former Chair of A-WEB. **In India, A-WEB Centre has been established in New Delhi for documentation and research for sharing the best practices and training and capacity building of officials of A-WEB members.**

**3. PM's Visit to France Key outcomes:**

- The PM was conferred with the highest honour of the nation, **the Grand Cross of the Legion of Honour, by French President Emmanuel Macron.**

- Launched a 25-year vision roadmap-The joint statement – “25th Anniversary of the Strategic Partnership between France and India: towards a Century of Indo-French Relations” – sets the course for the France-India bilateral relationship in all areas till 2047.
- **The year 2047 will mark: 100 years of India’s Independence, 100 years of diplomatic relations between our two countries, and the 50th year of the Indo-French strategic partnership.**
- In 2018, India and France agreed on a ‘Joint Strategic Vision of India-France Cooperation in the Indian Ocean Region’.
- India and France will work to set up the **Indo-French Health Campus for the Indo-Pacific.**
- Joint Commitment to Eliminate Single-Use Plastic Products.
- **Development finance:** It would mean 100 million Euros for City Investments to Innovate, Integrate and Sustain 2.0 (CITIIS 2.0) and 50 million USD for climate projects and women’s empowerment in micro-finance.

17<sup>th</sup> July

**1. India-Myanmar-Thailand Trilateral Highway:** It is a significant regional connectivity project that **aims to establish a road link between India, Myanmar, and Thailand.** The highway will span a distance of approximately **1,360 kilometres (845 miles), starting from Moreh in Manipur, India, and passing through Myanmar before reaching Mae Sot in Thailand.** It was first proposed by former Prime Minister Atal Behari Vajpayee and was approved at a ministerial-level meeting between India, Myanmar and Thailand in April 2002. **The India-Myanmar Friendship Road forms the first segment of the IMT Highway. It runs from the border at Tamu/Moreh to Kalemyo and Kalewa .**On the Indian side, the project is being implemented by the Ministry of External Affairs (MEA) with the cooperation of its counterparts in Myanmar and Thailand and budgetary allocation from the Ministry of Finance.

**2. Exercise Nomadic Elephant:** It is the **15th edition of a bilateral joint military exercise.** It is an annual training event with Mongolia which is conducted alternatively in Mongolia and India. The primary theme

of the exercise will **focus on counter-terrorism operations in mountainous terrain under a United Nations mandate.** The scope of this exercise involves a Platoon level Field Training Exercise (FTX).

**3. Asia-Pacific Economic Cooperation (APEC):** It is a **forum of 21 Asia-Pacific economies established in 1989.** Australia; Brunei Darussalam; Canada; Chile; People’s Republic of China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; the Philippines; the Russian Federation; Singapore; Chinese Taipei; Thailand; the United States of America; Vietnam are the members. **It seeks to promote free trade and economic cooperation throughout the Asia-Pacific region.** The **APEC Secretariat, headquartered in Singapore,** provides advisory and logistic services as well as research and analysis. **APEC decisions are reached by consensus, and commitments are made on a voluntary basis.**

**4. Production Linked Incentive Scheme 2.0:** The scheme proposes a financial incentive to boost domestic manufacturing and attract large investments in the value chain. **The target segments under PLI 2.0 Scheme shall include Laptops, Tablets, All-in-One PCs and Servers and Ultra Small Form Factor.** Companies, both global and domestic, that meet the eligibility criteria specified in the PLI 2.0 Scheme guidelines will receive support for manufacturing goods in India within the specified target segment. The classification of applicants into the Hybrid (Global/Domestic) category will be determined by whether the company is domestic or global.

A comprehensive ranking of all applicants will be maintained based on the eligibility criteria outlined in the scheme guidelines. Subsequently, the selection of applicants in each category—global, hybrid, and domestic—will be based on their ranking and overall PLI projection, subject to the availability of the budget. **The incentives provided under the PLI 2.0 Scheme will be applicable for a period of 6 years.** For the

calculation of net incremental sales of manufactured goods, **the base year will be the financial year 2022-23**. The incentive granted to each company will be based on the net incremental sales of manufactured goods in the target segment, compared to the base year. The maximum incentive amounts will be capped at INR 45 billion for global companies, INR 22.50 billion for hybrid (global/domestic) companies, and INR 5 billion for domestic companies.

### 18<sup>th</sup> July

**1. BIMSTEC:** It is a regional organization comprising seven Member States lying in the littoral and adjacent areas of the Bay of Bengal, constituting a contiguous regional unity. **It came into being on 6 June 1997 through the Bangkok Declaration.** It constitutes seven Member States: five deriving from South Asia, including Bangladesh, Bhutan, India, Nepal, and Sri Lanka, and two from Southeast Asia, including Myanmar and Thailand. **The permanent Secretariat of BIMSTEC is operational since September 2014 in Dhaka.** There are 14 priority areas 1) Counterterrorism and transnational crime, 2) Transport & Communication, 3) Tourism, 4) Environment and Disaster Management, 5) Trade and Investment, 6) Cultural Cooperation, 7) Energy, 8) Agriculture, 9) Poverty Alleviation, 10) Technology, 11) Fisheries, 12) Public Health, 13) People-to-People contact 14) Climate Change. **India is the Lead Country in four areas, viz Counter-Terrorism and Transnational Crime, Transport & Communication, Tourism, and Environment and Disaster Management.**

**2. Veer Savarkar International Airport:** Also known as **Port Blair Airport**, is a customs airport located 2 km south of Port Blair. It is **the main airport of the Andaman and Nicobar Islands of India.** It is named after the Indian freedom fighter Vinayak Damodar Savarkar. It is a **civil airport, and its facilities are shared with the Indian Navy.** The terminal is managed by the Airports Authority of India, while the traffic is handled by the Indian Navy.

**3. Veer Savarkar:** Born in 1883 near Nasik in Maharashtra, **Vinayak Damodar Savarkar was popularly called Veer Savarkar.** He was the first to acknowledge the mutiny of 1857 as the first struggle for Independence and wrote the book 'The History of the War of Indian Independence'. **He was a passionate promoter of Hindutva** since childhood. He was sentenced to 50 years in the cellular jail of Andamans, also known as Kala Pani, for revolting against the Morley-Minto reforms (Indian Councils Act 1909) in 1911. After his release from jail, he worked on the abolishment of untouchability in Ratnagiri. **Serving as the president of the Hindu Mahasabha political party, he opposed the Quit India movement in 1942.** He founded the organizations **Abhinav Bharat Society and Free India Society.** He was a critic of the Indian National Congress and its acceptance of India's partition. He was also a critic of Mahatma Gandhi and called him a 'hypocrite'.

**4. 'National Multidimensional Poverty Index:** According to the 'National Multidimensional Poverty Index: A Progress Review 2023, India has registered a significant decline of 9.89 percentage points in the number of multi-dimensionally poor, from 24.85% in 2015-16 to 14.96% in 2019-2021. **It claims that about 13.5 crore people came out of multidimensional poverty during the period, assessed by identifying.** It said that rural areas witnessed the fastest decline in poverty from 32.59% to 19.28%, primarily due to a decrease in the number of multi-dimensionally poor in States such as Bihar, Uttar Pradesh, Madhya Pradesh, Odisha, and Rajasthan. Delhi, Kerala, Goa and Tamil Nadu have the least number of people facing multidimensional poverty. Along with the Union Territories. Bihar, Jharkhand, Meghalaya, Uttar Pradesh and Madhya Pradesh top the chart where the percentage of the total population who are multi-dimensionally poor is high. Multidimensional poverty in urban areas, during the same period, saw a decrease from 8.65% to 5.27%. **Uttar Pradesh registered the largest decline in the**

number of poor with 3.43 crore people escaping multidimensional poverty.

19<sup>th</sup> July

**1. Universal Postal Union (UPU):** It is a United Nations specialized agency and the postal sector's primary forum for international cooperation. It was established by the Treaty of Bern of 1874. UPU is the second oldest international organization worldwide. It is to ensure universal access to postal services.

**Headquarters:** Bern, Switzerland. It coordinates postal policies among member nations in addition to the worldwide postal system. It sets the rules for international mail exchanges and makes recommendations to stimulate growth in mail, parcel and financial services volumes and improve the quality of service for customers. It helps to ensure a truly universal network of up-to-date products and services. It fulfils an advisory, mediating and liaison role and provides technical assistance where needed. Any member country of the United Nations may become a member of the UPU. Any non-member country of the United Nations may become a UPU member, provided that its request is approved by at least two-thirds of the member countries of the UPU. **The UPU now has 192 member countries.**

**2. Bharat Bill Payment System (BBPS):** BBPS is an integrated bill payment system or a platform that acts as a connection between various billers and users. It is a one-stop ecosystem for payment of all bills providing an interoperable and accessible "Anytime Anywhere" Bill payment service to all customers across India with certainty, reliability and safety of transactions. It offers customers the convenience of payment by cataloguing various utility providers under one platform. It acts as a central reference for a customer who wants to make different payments — whether utility bills, loan repayments, FasTag recharge, and so on. Bharat BillPay transactions can be initiated through multiple payment channels like Internet, Internet Banking, Mobile, Mobile-Banking, Mobile

Wallets Bank Branch, Agents and Business Correspondents etc. **BBPS was conceptualised by the Reserve Bank of India in 2013 and is a product of the National Payments Council of India (NPCI).**

**3. DPT3 Vaccine:** The DPT vaccine is a class of combination vaccines against three infectious diseases in humans: diphtheria, pertussis (whooping cough), and tetanus. The vaccine components include diphtheria and tetanus toxoids and either killed whole cells of the bacterium that causes pertussis or pertussis antigens. **The primary dose of DPT is provided as part of the pentavalent vaccine and 2 booster doses are given at 16 -24 months and 5-6 years, respectively.**

**Diphtheria:** It is an infectious disease caused by **Corynebacterium diphtheria, a bacterium.**

**Vulnerable groups:** Diphtheria particularly affects children aged 1 to 5 years. In temperate climates, diphtheria tends to occur during the colder months.

**Tetanus:** It is an infection caused by bacteria called **Clostridium tetani.** When these bacteria enter the body, they produce a toxin that causes painful muscle contractions.

Tetanus bacteria are more likely to infect certain breaks in the skin. It does not spread from person to person.

**Pertussis:** It is also known as whooping cough. It is a very contagious respiratory illness caused by a type of bacteria called Bordetella pertussis. Whooping cough bacteria attach to the cilia (tiny, hair-like extensions) that line part of the upper respiratory system. The bacteria release toxins (poisons), which damage the cilia and cause airways to swell. It can spread easily from person to person through the air.

20<sup>th</sup> July

**1. Henley Passport Index 2023:** The Henley Passport Index is the original, authoritative ranking of all the world's passports according to the number of destinations their holders can access without a prior visa. **It is published by Henley & Partners, a global**

**citizenship** and residence advisory firm, in partnership with the International Air Transport Association (IATA). **The index includes 199 different passports and 227 different travel destinations.** The index is based on exclusive data from the International Air Transport Association (IATA) and enhanced by Henley & Partners' research team. **Singapore has topped the passport rankings with visa-free access to 192 global destinations.** With visa-free access to 190 destinations, three European countries – Germany, Italy and Spain – share the second rank on the list. **With 101, 102 and 103 ranks respectively, Syria, Iraq and Afghanistan are the world's weakest passports.** Pakistan is on the 100th spot. **India has climbed seven places to 80th rank from 87 last year.**

**2. Bhoomi Samman Awards: The 9 state Secretaries and 68 District Collectors were presented with "Bhoomi Samman awards** who have excelled in achieving saturation of the core components of the Digital India Land Records Modernization Programme (DILRMP). It aims to acknowledge and encourage outstanding performance in the implementation of the Digital India Land Records Modernization Programme (DILRMP). **Madhya Pradesh has secured the first position in the field of Digital India Land Records modernization in the country.** 15 districts of Madhya Pradesh have been awarded Platinum Grading for 100 per cent achievement in all the components of the Digital India Land Records Management Programme. **It is a fine example of Centre-State cooperative federalism based on trust and partnership,** as the grading system is largely based on reports and inputs of the States/UTs in the core components of computerization and digitization of land records.

**3. Credit Guarantee Scheme:** The Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry and Dairying is implementing the Credit Guarantee Scheme under the Animal Husbandry Infrastructure Development Fund (AHIDF) to strengthen the credit delivery system and facilitate the smooth flow of credit to the Micro, Small & Medium

Enterprise (MSMEs) engaged in Livestock sector without hassles of collateral security. For operationalizing the scheme, DAHD has established a Credit Guarantee Fund Trust of Rs. 750.00 crores, which will provide credit guarantee coverage for up to 25% of the credit facilities extended to the MSMEs by eligible lending institutions. **It facilitates access to finance for the un-served and under-served livestock sector, making availability of financial assistance from lenders to mainly first-generation entrepreneurs and underprivileged sections of society, who lack collateral security for supporting their ventures.**

**4. Sovereign Green Bonds:** The Government of India is expected to issue sovereign green bonds in the second half of the current financial year as part of the overall market borrowing programme. **These are bonds issued by any sovereign entity, inter-governmental groups or alliances and corporates.**

**Aim:** The proceeds of the bonds are utilised for projects classified as **environmentally sustainable.** These are issued with longer maturity periods.

In India, the framework for the sovereign green bond was issued by the government on November 9, 2022.

**21<sup>st</sup> July**

**1. Airbus A400M:** It is a **European-built military transport aircraft.** The aircraft is manufactured by Airbus Defence and Space, a division of the European aerospace and defence firm Airbus. It combines the capability to carry strategic loads with the ability to deliver even into tactical locations with small and unprepared airstrips. **It can carry large cargo, vehicles, troops, and paratroopers or be configured for medical evacuation (MEDEVAC) missions.** A powerful turboprop engine that gives the A400M the ability to operate from short, unimproved airfields. It can carry up to 116 fully equipped troops or 66 stretchers and 25 medical attendants. The cargo hold can take nine standard military pallets. The aircraft is equipped with in-flight refuelling capabilities. **The aircraft's independent navigation system comprises an inertial**



**reference system (IRS) integrated with a global positioning system (GPS).** It features an advanced glass cockpit with modern avionics and control systems.

**2. ONDC Academy:** It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) initiative to create a facilitative model to help small retailers take advantage of digital commerce. **It was launched by ONDC in collaboration with NSE Academy Ltd, a subsidiary of the National Stock Exchange.** It is not an application, platform, intermediary, or software but a set of specifications designed to foster open, unbundled, and interoperable open networks. **The academy is a repository of educational and informative textual and video content programmes in multiple Indian languages.** It will provide a curated learning experience providing guidance and best practices for a successful e-commerce journey. It would also enable certification issued by NSE Academy to individuals completing an assessment developed by the institute.

**3. Aeolus Wind Satellite:** Aeolus is a satellite mission launched by the European Space Agency (ESA) to study Earth's winds and their influence on the planet's climate and weather patterns. **The primary goal of the Aeolus mission is to measure global wind profiles from space.** It aims to provide accurate and comprehensive data on wind patterns in the Earth's atmosphere to improve weather forecasting, understand climate dynamics, and enhance our knowledge of the Earth's atmospheric circulation. **It is the first satellite mission to acquire profiles of Earth's wind on a global scale. Aeolus is equipped with a single instrument called the Atmospheric Laser Doppler Instrument (ALADIN).** ALADIN is a Doppler wind lidar, which stands for Light Detection and Ranging, that will measure the winds sweeping around the planet.

**4. Logistics Data Bank Project:** This project was launched in 2016 at the Jawaharlal Nehru Port,

**Mumbai.** The project was launched to make India's logistics sector more efficient through the use of Information Technology. **It is being implemented through a Special Purpose Vehicle called Delhi Mumbai Industrial Corridor Development Corporation Logistics Data Services Ltd. (DLDSL) –** which is jointly (50:50) owned by the Delhi Mumbai Industrial Corridor (DMIC) Trust and Japanese IT services major NEC Corporation. Every container is attached to a Radio Frequency Identification Tag (RFID) tag and then tracked through RFID readers – which aids importers and exporters in tracking their goods in transit. This has, in turn, cut the overall lead time of container movement as well as reduced transaction costs that consignees and shippers incur. The project covers "the entire movement (of containers) through rail or road till the Inland Container Depot and Container Freight Station.

**Nodal Ministry:** Ministry of Commerce and Industry.

22<sup>nd</sup> July

**1. STAR-C Initiative:** India is considering expanding its Solar Technology and Application Resource Centres (STAR -C) initiative to a number of Pacific Island countries. **The programme aims to boost solar power ecosystems in the poorest countries. The initiative is run by the International Solar Alliance in partnership with the United Nations Industrial Development Organisation (UNIDO).** It aims to create a strong network of institutional capacities within ISA member states to enhance quality infrastructure for the uptake of solar energy products and services. The project is also funded by France.

**Programme's objectives:** Building solar workforces, standardizing products, setting up infrastructure, and raising awareness among policymakers in developing countries. Through this initiative, **India aims to enhance the institutional capacities of International Solar Alliance member states and contribute to the development of quality infrastructure for solar energy uptake.**

**2. Cinematograph (Amendment) Bill 2023:** It seeks to amend the Cinematograph Act 1952. It has provisions for **harsher punishment for film piracy and the introduction of new-age categories for classifying films**. It has provisions to **classify films on the basis of age group instead of the current practice of rating them** "U" (unrestricted public exhibition), "A" (restricted to adult audiences), and "UA" (unrestricted public exhibition subject to parental guidance for children below the age of 12). **The amendments seek to add new classifications – 'UA-7+', 'UA-13+', and 'UA-16+' in place for 12 years**. It also seeks to bring about uniformity in the categorisation of films and content across platforms. The Bill holds stricter punishment for those responsible for piracy. This includes three years of imprisonment and a Rs 10 lakh penalty for those engaged in piracy. Once the Bill is released, the act of piracy will be considered an offence legally and will include even transmitting pirated content punishable.

**3. Cinematograph Act 1952:** It was enacted by the Parliament to ensure that films are exhibited in accordance with the limits of tolerance of Indian society. It **establishes the Central Board of Film Certification (CBFC, popularly known as the censor board) appointed by the Central Government to sanction and certify films**.

The Board scrutinizes the film in its entirety and based on the contemporary standard of Indian society following the procedure laid down under the Act. The board can either make a speaking order of rejection or grant the certificate, which shall be valid for ten years.

The Act also authorizes the police to conduct search and seizure if the film is being exhibited in contravention of any of the provisions of the Act.

**4. Expected Credit Loss (ECL) regime:** Private sector lender ICICI Bank recently said the bank is ready to move to an expected credit loss (ECL) framework for provisioning. **Under this practice, a bank is required to estimate expected credit losses based on forward-**

**looking estimations rather than wait for credit losses to be actually incurred before making corresponding loss provisions.** As per the proposed framework, banks will need to classify financial assets (primarily loans) as Stage 1, 2, or 3, depending on their credit risk profile, with Stage 2 and 3 loans having higher provisions based on the historical credit loss patterns observed by banks. This will be in contrast to the existing approach of incurred loss provisioning, whereby step-up provisions are made based on the time the account has remained in the NPA category.

24<sup>th</sup> July

**1. India Climate Energy Dashboard (ICED) 3.0:** NITI Aayog recently launched India Climate Energy Dashboard (ICED) 3.0. **It is the country's one-stop platform for near real-time data on the energy sector, climate, and related economic datasets based on government-published sources.** It was developed by NITI Aayog in collaboration with the energy and climate think-tank Vasudha Foundation. **Developed as a user-friendly platform, ICED 3.0 enables users to freely access and analyses datasets using an analytical engine.** It will facilitate insights and enhance understanding of the energy and climate sectors while identifying the key challenges.

The Portal will draw insights from the available data parameters and hence immensely useful in monitoring the progress of India's clean energy transition journey. **This dashboard offers more than 500 parameters, over 2000 infographics, and a number of interactive visualizations, allowing users to gain a holistic understanding of India's energy sector.** Besides energy and climate, the dashboard also offers information on economy and demography for comparative study and its combined analysis along with the energy and climate issues.

**2. National Tele Mental Health Programme:** Tele Mental Health Assistance and Networking Across States (Tele MANAS) has been launched in October

2022. It aims to provide free tele-mental health services all over the country round the clock, particularly catering to people in remote or under-served areas. There are 42 active Tele Manas cells across 31 states and Union Territories. The service is accessible through toll-free numbers with options to choose preferred languages (20 languages included till now).

**Tele-MANAS will be organised in a two-tier system:**

**Tier 1:** It comprises state Tele-MANAS cells which include trained counsellors and mental health specialists.

**Tier 2:** It will comprise specialists at District Mental Health Programme (DMHP)/Medical College resources for physical consultation and/or e-Sanjeevani for audio-visual consultation.

**Services offered by Tele MANAS:** Tele counselling by trained counsellors, Tele Consultation by Mental Health professionals when required, and Referral Services to other Mental Health Establishments such as Medical Colleges, District Mental Health Program (DMHP) services and speciality institutes.

**3. Fragile X Syndrome:** It is an inherited genetic disease passed down from parents to children that causes intellectual and developmental disabilities. It is also known as Martin-Bell syndrome. It is the most common hereditary cause of mental disability in boys.

It affects 1 in 4,000 boys. It's less common in girls, affecting about 1 in every 8,000. Boys usually have more severe symptoms than girls. People with FXS usually experience a range of developmental and learning problems. The disease is a chronic or lifelong condition. Only some people with FXS are able to live independently. The peculiar quality of this disease is that if it is inherited by the father, then it will only affect the daughter, but if it is inherited by the mother, then it can affect both genders. It is caused by a defect in the FMR1 gene located on the X chromosome. The defect, or mutation, on the FMR1 gene, prevents the gene from properly making a protein called the fragile X mental retardation 1 protein. This protein plays a role

in the functioning of the nervous system. The exact function of the protein is not fully understood. A lack or shortage of this protein causes the symptoms characteristic of FXS. It cannot be cured.

### 25<sup>th</sup> July

**1. DART Mission:** NASA's DART mission was a spacecraft designed to test a method of deflecting an asteroid for planetary defence, using the "kinetic impactor" technique (in simplest terms means smashing a thing into another thing). DART was the first-ever space mission to demonstrate asteroid deflection by kinetic impactor. The target of the spacecraft was a 160-meter-wide asteroid known as Dimorphos, which is a moonlet in orbit around the larger asteroid, Didymos. It was launched in November 2021. DART spacecraft successfully collided with Dimorphos on 26 September 2022, altering the asteroid's orbit by 33 minutes. It is the first-time humanity intentionally changed the motion of a celestial object in space.

**2. African Union (AU):** The African Union is a continental body consisting of the 55 member states that make up the countries of the African Continent. It was officially launched in 2002 and replaced its predecessor, the Organization of African Unity (OAU), which was founded in 1963.

**Primary Objective:** To promote unity, cooperation, and development among African nations while advancing the continent's interests on the global stage. It aims to strengthen political, economic, and social integration among African countries, with a vision of achieving an integrated, prosperous, and peaceful Africa.

**Headquarters:** Addis Ababa, Ethiopia.

**Assembly:** It is the highest decision-making body, consisting of the heads of state and government of member countries.

**Executive Council:** Made up of foreign affairs ministers, handles policy matters and makes recommendations to the Assembly.

**AU Commission:** Headquartered in Addis Ababa, is the **administrative arm responsible for implementing the decisions of the Assembly and the Executive Council.**

**The Peace and Security Council:** Responsible for maintaining peace and security on the continent. The AU structure promotes the participation of African citizens and civil society through the Pan-African Parliament and the Economic, Social & Cultural Council (ECOSOCC).

**3. Sendai Framework 2015-2030:** The Sendai Framework works hand in hand with the other 2030 Agenda agreements, including The Paris Agreement on Climate Change, The Addis Ababa Action Agenda on Financing for Development, the New Urban Agenda, and ultimately the SDGs. **It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR).** It advocates for the substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries. **The state has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector, and other stakeholders.**

**4. Tiangong space station:** Tiangong (Chinese for “Heavenly Palace”) is a modular space station constructed by the China National Space Administration (CNSA). It is **the first space station built by China.** Tiangong is currently in low Earth orbit (LEO), and it is expected to be operational until 2028. **It is a three-module space station. The core module Tianhe launched in April 2021, followed by the Wentian and Mengtian experiment modules in 2022.** The station is about the size of the International Space Station (ISS), and it can accommodate up to three astronauts. China is only the third country to have put both astronauts

into space and to build a space station, after the Soviet Union (now Russia) and the US.

## 26<sup>th</sup> July

**1. Kargil Vijay Diwas:** It is celebrated on July 26 every year. **The day commemorates the victory of the Indian armed forces in the Kargil War fought against Pakistan.** The day is observed to pay tribute to and honour the bravery and sacrifice of the soldiers in the war of 1999.

**The year 2023 marks the 24th anniversary of Kargil Vijay Diwas.**

**Kargil War:** It was fought between India and Pakistan at the Line of Control (LoC) in the Kargil district of Jammu and Kashmir. **The Kargil War was an unexpected intrusion by Pakistani forces into Indian territory.** They occupied key vantage points in the Kargil region, leading to intense military engagement. **The Indian Army fought bravely and recaptured the famous ‘Tiger Hill’ and other important posts around under ‘Operation Vijay’ by evicting the Pakistani troops in the 1999 Kargil War.** It lasted for approximately three months. It was **the first ever war to be broadcasted live on TV channels in India.** The war came to an end on July 26, 1999, when India successfully pushed back the Pakistani forces from the occupied positions. As per official figures, around 500 Indian soldiers laid down their lives while at least 1,000 Pakistani troops were also killed. It was the last war that happened between India and Pakistan.

**2. International Day for the Conservation of the Mangrove Ecosystem:** International Day for the Conservation of the Mangrove Ecosystem is celebrated every year on July 26. **It is celebrated every year on July 26. This International Day was adopted by the General Conference of the UN Educational, Scientific and Cultural Organization (UNESCO) in 2015.**

**Purpose:** To raise awareness of the importance of mangrove ecosystems as “a unique, special and

vulnerable ecosystem” and to promote solutions for their sustainable management, conservation and uses.

**3. UNESCO’s Asia Pacific Cultural Heritage award:** Recently, the heritage Byculla Railway station which has been restored to its original glory, received the UNESCO award. **The UNESCO Asia-Pacific Awards for Cultural Heritage Conservation is supported by a partnership between UNESCO and Ng Teng Fong Charitable Foundation since 2021.** UNESCO introduced the new category, ‘Special Recognition for Sustainable Development’, in 2020, together with an updated set of Awards Criteria. It is to **acknowledge the role and contribution of cultural heritage to sustainable development within the broader framework of the UN 2030 Agenda.** Since 2000, UNESCO Asia-Pacific Awards for Cultural Heritage Conservation have been recognizing the achievement of the private sector and public-private initiatives in successfully conserving or restoring structures, places and properties of heritage value in the region.

**4. Pradhan Mantri Jan Arogya Yojana:** Out of 27,000 hospitals empanelled for PM-JAY since its 2018 launch, only 18,783 remain active, the latest health ministry data showed. It is the **world’s largest health insurance/ assurance scheme fully financed by the government.** The households included are based on the deprivation and occupational criteria of the Socio-Economic Caste Census 2011 for rural and urban areas respectively. It provides a cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization across public and private empanelled hospitals in India. It **provides cashless access to health care services for the beneficiary.** There is no restriction on family size, age or gender. The benefits of the scheme are portable across the country i.e.; a beneficiary can visit any empanelled public or private hospital in India to avail of cashless treatment. **The scheme is being implemented by the National Health Authority.**

29<sup>th</sup> July

**1. Gobardhan portal:** It serves as a centralized repository for assessing investment and participation in the Biogas/CBG (Compressed Biogas) sector at a pan-India level. **To streamline the process of setting up CBG/Biogas plants in the country.** It allows any government, cooperative or private entity operating or intending to set up a Biogas/CBG/Bio-CNG plant in India to obtain a registration number by enrolling in the portal.

**GOBARdhan Scheme: Galvanizing Organic Bio-Agro Resources Dhan is a crucial umbrella initiative of the Government of India.** The government launched it in 2018 as a national priority project under the Swachh Bharat Mission Grameen-Phase II program. To generate wealth and energy by converting cattle dung, agricultural residue, and other organic waste into Biogas, CBG and bio-fertilizers. It adopts a whole-of-government approach and aims to convert waste into wealth, thereby promoting a circular economy.

**Nodal Ministry:** The Department of Drinking Water and Sanitation, Ministry of Jal Shakti.

**2. Digital Payment Index:** It has been constructed by the RBI to measure the extent of digitization of payments across the country. It is based on multiple parameters and reflects the expansion of various digital payment modes accurately. It is a **first-of-its kind index to measure the spread of digital payments across the country.** It contains five broad parameters that measure the deepening and penetration of digital payments in the country over different time periods. **Payment Enablers with a weight of 25%** (Internet, mobile, Aadhaar, bank accounts, participants, merchants). **Payment Infrastructure – Demand-side factors weight 10%** (Debit and credit cards, PPIs, Customers registered in mobile and internet banking, FASTags), **Payment Infrastructure – Supply-side factors weight 15%** (Bank branches, BCs, ATMs, PoS Terminals, QR Codes, Intermediaries), **Payment Performance – weight 45%** (Digital payment volumes, value, unique users, paper clearing, currency in circulation, cash withdrawals) and **Consumer**

**Centricity weight – 5%** (awareness and education, declines, complaints, frauds, system downtime). **The base period of the index is March 2018.** The index has been published on a semi-annual basis from March 2021 onwards with a lag of 4 months.

**3. Multi-state Co-operative Societies:** These are societies that have operations in more than one state. For example, a farmer-producers organization (FPO) which procures grains from farmers from multiple States. **The Multi-State Co-operative Societies Act 2002 provides for the formation and functioning of multi-state co-operatives.** According to the Supreme Court of India, Part IXB – The Co-operative Societies (also inserted by the 97th Amendment), will only be applicable to multi-state co-operative societies, as states have the jurisdiction to legislate over state co-operative societies.

**4. World Cities Culture Forum:** Bengaluru has become the first Indian city to become part of the World Cities Culture Forum (WCCF). **It was founded in 2012 by Justine Simons OBE, London's Deputy Mayor for Culture & the Creative Industries.** It is a global network of cities that share research and intelligence, and explore the role of culture in future prosperity. The network currently has 40 cities spanning six continents. **Bengaluru being the latest addition is set to join the league of cities like New York, London, Paris, Tokyo and Dubai among others.** World cities culture summit hosted on a rotating basis by city partners, an unprecedented gathering of city leaders sharing ideas and knowledge about culture's role in public policy in a world city context

**31<sup>st</sup> July**

**1. National Digital Nagrik Forum:** It is an **online platform that aims to advance the rights of traders and consumers and other sections of society, and shape policy to boost the digital trade economy.** Objective is to shape policy discourse around digital

economy trade in India with a view to contributing to the Government of India's vision of creating a trillion-dollar digital economy while maintaining an open, safe, trusted and accountable internet ecosystem. **It will focus on five core themes.** The **first pillar consists of consumer protection and online safety with a core focus on efficient grievance redress.** The pitfalls of digital cartelization and how a level-playing field is necessary to discourage discriminatory and anti-competitive practices in the online world are part of the second pillar. **Third, the potential of Indian digital technologies to not only transform retail and industrial trade but also boost employment and expand the investment footprint.** **Fourth, a first principles-based taxation policy that encourages certainty and productivity,** especially for sectors with high growth potential, while preventing illegal activities such as tax evasion and money laundering. **Finally, the forum will study emerging technologies, such as block-chain and artificial intelligence,** to assess their impact on retail trade and, at the same time, safeguard consumers' interests.

**2. ULLAS Initiative:** The Understanding Lifelong Learning for All in Society (ULLAS) initiative is **poised to revolutionize education and literacy across the nation.** It is done by fostering a learning ecosystem that reaches every individual, bridging the gaps in basic literacy and critical life skills. **It imparts basic education, digital and financial literacy and critical life skills to citizens aged 15 and above who lost on the opportunity to go to school.** It is being implemented through volunteerism. It will **serve as a digital gateway for learners to engage in diverse learning resources through the DIKSHA portal of NCERT.** The ULLAS app can be used for registration of learners and volunteers either through self-registration or by surveyors.

**3. National Cooperative Consumers Federation of India (NCCF):** It was established on 16th October 1965 to function as the apex body of consumer cooperatives in the country. It is an organization to

promote consumer cooperative movement in the country, aspires to facilitate the voluntary formation and democratic functioning of cooperatives, based on self-reliance and mutual aid for overall economic betterment and financial autonomy.

**It is registered under the Multi-State Co-operative Societies Act, 2002. NCCF functions under the Ministry of Consumer Affairs, Food and Public Distribution.**

**Headquarters:** New Delhi. The management of NCCF vests in the Board of Directors. The ultimate authority of NCCF vests in the hands of the General Body. Board of Directors exercises all the powers of NCCF except those reserved for General Body.

**4. Derivative:** A derivative is a contract between two parties which derives its value/price from an underlying asset. **The commonly used assets are stocks, bonds, currencies, commodities and market indices.** These instruments allow investors and traders to speculate on the price movements of the underlying asset without owning it directly. The value of the underlying assets keeps changing according to market conditions. **The basic principle behind entering into derivative contracts is to earn profits by speculating on the value of the underlying asset in future.** Derivatives serve various purposes, including hedging against risks, providing leverage, and facilitating price discovery



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## PLACES IN NEWS

### 1. Mozambique (Capital: Maputo)

- INS Sunayna visited **Beira, Mozambique**.
- The Cabo Delgado gasfield in Mozambique, in which **Indian energy majors (ONGC Videsh, BPCL, Oil India Ltd)** hold 30% stake, is expected to resume production
- **Political boundaries**
  - **Location:** South-eastern coast of Africa, bordering the Mozambique Channel in the Indian Ocean in west.
  - **Border countries:** Malawi, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe.
  - Shares maritime borders with **Comoros, Madagascar, and Mayotte Island (France)**.
- **Geographical features:**
  - **Climate:** Varies from sub-tropical to tropical (south to north).
  - **Major rivers:** Zambezi river, Limpopo river, Ruvuma river etc.
  - **Major lakes:** Lake Malawi (Nyasa), Cahora Bassa etc.
  - **Highest Point location:** Monte Binga



### 2. Israel (Capital: Jerusalem)

- Israeli forces hit the city of **Jenin (city in West Bank) with drone strikes**.
- **Political Boundaries**
  - It shares border with **Jordan, Syria, Lebanon, and Egypt**.
- **Geographical features**
  - Snowy mountains in the north and the hot desert (Negev Desert) in the south.
  - **Lowest point:** The Dead Sea (also the lowest point on Earth's surface).
  - **Highest point:** Mount Hermon
  - **Major river:** Jordan

### 3. Sudan (Capital: Khartoum)

- Heavy fighting raged across Khartoum.
- **Political Boundaries**
  - Situated in **north-eastern Africa, Sudan shares its border with Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia & Eritrea**.
  - **South Sudan was bifurcated from it in 2011**.
  - Sudan shares its maritime border with Saudi Arabia in Red Sea.
- **Geographical Features:**
  - **Highest Peak:** Deriba Caldera (Jabel marra Mountain).
  - **Major River:** Nile River (White Nile and Blue Nile merge in Khartoum).
  - **Major lakes:** Kundi, Abyad and Turdat el-Rahad

### 4. Solomon Islands (Capital: Honiara)

- Recently China and Solomon Islands signed diplomatic agreements.
- **Political Boundaries**

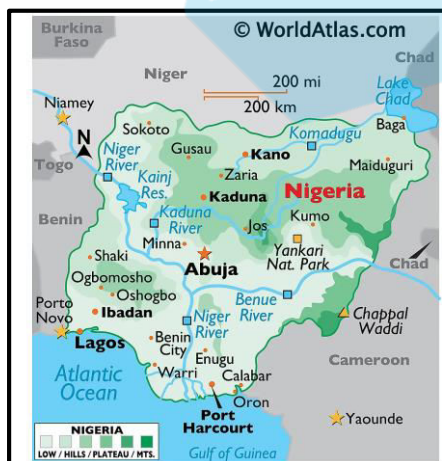


- Solomon Islands are an **archipelagic state comprising of volcanic islands** and coral atolls in Melanesia, located in southwest Pacific Ocean.
- **It has no direct neighbour.**
- It is part of volcanic arc extending from extending from Papua New Guinea to Vanuatu.
- **Geographical Features**
  - Climate is **tropical ocean.**
  - **Highest Point:** Mount Popomanaseu



## 5. Nigeria (Capital: Abuja)

- Nigeria has declared a State of Emergency over Food Security.
- **Political Boundaries**
  - Located on western coast of Africa.
  - Bordered by **Niger (north), Chad and Cameroon (east), Gulf of Guinea of Atlantic Ocean (south), and Benin (west).**
  - Africa's most populous country.
- **Geographical features**
  - **Major rivers:** Niger, Benue etc.
  - **Highest peak:** Chappal Waddi.
  - Much of Nigeria is covered with **plains and savannas.**
  - Often called as **Giant of Africa.**



## 6. Democratic Republic of Congo (Capital: Kinshasa)

- DR Congo has signed \$1.9 billion mining deal with UAE.
- A recent spike in cholera cases raised concerns
- **Political Boundaries**
  - Located in **central Africa.**
  - Bounded by **Central African Republic and South Sudan (north); Uganda, Rwanda, Burundi, and Tanzania (east); Zambia (southeast); and Angola (southwest).**
- **Geographical features**
  - **Major River:** Congo River (formerly Zaire River).
  - **Highest mountain:** Mount Stanley.
  - **Resources:** Diamonds, cobalt, and copper.



## 7. East Sea (Sea of Japan)

- China and Russia will start joint air and sea drill (Northern/Interaction-2023) in Sea of Japan i.e., East Sea.
- **Political Boundaries**
  - Marginal sea of western Pacific Ocean.
  - Bounded by **Japan and Sakhalin Island (east) and Russia and Korea on Asian mainland (west).**
- **Geographical features**
  - **Major deep-water basins:** Japan Basin, Yamato Basin, and Tsushima Basin.
  - **Islands:** Ulleungdo, Rebun, Rishiri, Okushiri, Sado, Moneron, Ōshima.



- **Territorial border:** Surrounded by Andorra, France, Portugal, Gibraltar (overseas territory of UK), Morocco (Ceuta and Melilla)
- **Maritime border:** Surrounded by Atlantic Ocean and Mediterranean Sea
- **Geographical features:**
  - **Islands:** Includes two archipelagos, the Balearic Islands in the Mediterranean Sea, and the Canary Islands in the Atlantic Ocean.
  - **Highest point:** Pico de Teide (Tenerife) on Canary Islands
  - **Rivers:** Tagus (Tajo, Tejo), Ebro etc

## 8. Argentina (Capital: Buenos Aires)

- Argentina signs letter of intent with Hindustan Aeronautics Limited (HAL) to buy helicopters
- India and Argentina have agreed to bilateral exchange of young researchers and Start-ups, particularly in Biotechnology and Agriculture field
- **Political boundaries:**
  - The country is bounded by **Chile to the south and west, Bolivia and Paraguay to the north, and Brazil, Uruguay, and the Atlantic Ocean to the east.**
- **Geographical features**
  - **Terrains:** Rich plains of the Pampas in the northern half, flat to rolling plateau of Patagonia in the south, rugged Andes along the western border
  - **Highest point:** Cerro Aconcagua
  - **Major rivers:** Parana, Paraguay, etc.



## 9. Spain (Madrid)

- Wildfire raged on the Canary Island of La Palma, Spain
- **Political Boundaries**
  - **Location:** Located in the south-western part of Europe in the Iberian Peninsula



## 10. Chad (Capital: N'djamena)

- Chad hosts the **largest number of refugees in west and central Africa.**
- **Political Boundaries**
  - **Landlocked country** in north-central Africa.
  - Bounded by **Libya (north), Sudan (east), Central African Republic (south), and Cameroon, Nigeria, and Niger (west).**
- **Geographical features**
  - **Highest Peak:** Mount Koussi (Emi Koussi). It is an extinct volcano.
  - **Major Rivers:** Chari and Logone.
  - **Major Lakes:** Lake Chad (located at junction of Nigeria, Niger, Chad and Cameroon).
  - **Semi-desert country,** rich in gold and uranium.



### 11. Greece (Capital: Athens)

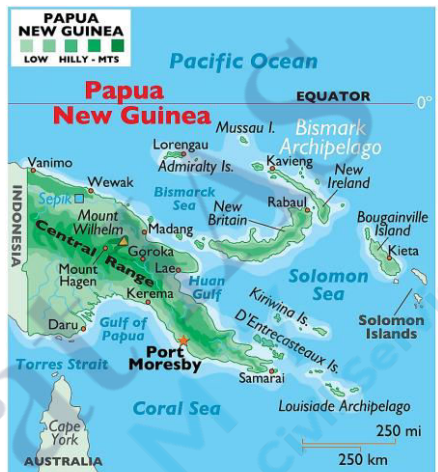
- Greece islands (Rhodes and Corfu) are bracing for at least another 48 hours of wildfire.
- **Political Boundaries**
  - Southernmost of countries of **Balkan Peninsula**.
  - **Major water bodies:** Aegean Sea (east), Mediterranean Sea (south), and Ionian Sea (west).
  - **Land borders:** Albania, Bulgaria, Turkey (east), Republic of Macedonia.
  - **Maritime borders:** Cyprus, Egypt, Italy and Libya.
- **Geographical features**
  - **Highest Peak:** Mount Olympus.
  - **Major Rivers:** Haliacmon, Aliakmonas etc.
  - **Climate Type:** Mediterranean climate.



### 12. Papua New Guinea (Capital: Port Moresby)

- US Secretary of Defence said the **US was not seeking a permanent base in Papua New Guinea**.
- **Political Boundaries**
  - **Island country in southwestern Pacific Ocean,** just south of the equator.

- **Land border:** Indonesia (west).
- **Maritime borders:** Australia (south) and Solomon Islands (south-east).
- It encompasses eastern half of New Guinea (world's second largest island).
- **Geographical features**
  - **Major islands:** New Britain, Bougainville and Buka (part of Solomon Islands chain) etc.
  - **Highest Point:** Mount Wilhelm.
  - **Terrain:** Mostly mountains with coastal lowlands.



### 13. Malaysia (Capital: Kuala Lumpur)

- 10<sup>th</sup> meeting of Sub Committee on **Military Cooperation between India & Malaysia held in New Delhi**.
- **Political Boundaries**
  - Country of Southeast Asia, lying just north of Equator.
  - Bordered by **Thailand** (north), **Singapore** (south), **Indonesia** (southwest) and **Brunei**.
  - Malaysia consists of two non-contiguous regions: **Peninsular Malaysia** (West Malaysia) located in Malay Peninsula, and **East Malaysia** (Malaysia Timur), which is on island of Borneo.
- **Geographical features**
  - **Major Rivers:** Pahang, Sarawak, Rajang, Kinabatangan.
  - **Highest Point:** Gunung Kinabalu (4100 m).



- It can be an important base for refuelling and operational turnaround as India aims to increase its military-to-military engagement, deepening interoperability in region



#### 14. Cocos Islands

- Indian Navy aircraft visited Cocos Islands.
- **Cocos islands are external territory of Australia in the eastern Indian Ocean** and is close to strategic maritime choke points.
- **Location:** North-west of Perth in western Australia.
- It comprises two coral atolls made up of 27 smaller islands.



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## EDUFACTS

### 6<sup>th</sup> July

- 1) **3<sup>rd</sup> and 4<sup>th</sup> July 2023:** hottest 2 days on Earth ever
- 2) Average age of **Indian citizens** is **29 years**.

### 7<sup>th</sup> July

- 1) Between 2016-2022, **60% of Internet shutdowns** across the world took place in India.
- 2) India will need at least **20 lakh deep tech engineers** by **2030** for **semiconductor and electronic industry**.

### 12<sup>th</sup> July

- 1) GST council to impose **28% tax** on **online gaming firms**.
- 2) Over 7000 people relocated as **Yamuna water level touches 10 year high**.
- 3) The current Lok Sabha has **43% MPs** with **criminal cases** against them.
- 4) 415 million people came out of poverty in India in 15 years.

### 14<sup>th</sup> July

- 1) **UN report:** 2.4 billion people did not have consistent access to food between 2021-2022.
- 2) India has achieved a **renewable energy capacity** of **173 GW** so far.
- 3) Over 70000 people affected by floods in Himachal Pradesh alone.

### 19<sup>th</sup> July

- 1) India represents **11% of global road accident fatalities**.
- 2) India reports a record **93% DPT immunization coverage** in 2022: **WHO**.

## Practice MCQs on Current Affairs- July 2023

### 1) Consider the following statements with respect to Global Forest Watch (GFW)

1. GFW is an open-source web application to monitor global forests in near real-time.
2. The GFW works under the aegis of the United Nations Environmental Programme (UNEP).
3. Brazil and the Democratic Republic of Congo are the two countries with the most tropical forest cover in the world.

#### How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

#### Ans B

- Global Forest Watch (GFW) is an **online platform** that **provides data and tools for monitoring forests**. It allows anyone to access near real-time information about where and how forests are changing around the world.
- Global Forest Watch (GFW) was **created by the World Resources Institute (WRI)**
- Tropical areas lost 4.1 million hectares of forest cover in 2022 which produced 2.7 billion tonnes of carbon dioxide emissions.
- **Brazil and the Democratic Republic of Congo are the two countries with the most tropical forest cover** and both registered losses of this resource in 2022.
- The total global tree cover loss in 2022 declined by 10%.

### 2) Consider the following statements regarding the Current Account Deficit (CAD).

1. Both government and private payments are included in the calculation of CAD.
2. When the current account deficit is lower, more foreign exchange reserves are needed to finance the gap.
3. CAD is always bad for the country and its economy as it drains the country's forex reserves.

#### How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

#### Ans A

- A current account deficit is not always detrimental to a nation's economy—external debt may be used to finance lucrative investments. **Both government and private payments are included in the calculation of CAD.**
- When the current account deficit is lower, less money is needed to finance the gap. It is **also treated as a sign of the resilience of the economy.**

### 3) Consider the following statements regarding the United Nations Global Compact (UNGC):

1. It is the largest corporate sustainability initiative in the world.
2. Launched in 2000, UNGC is the largest corporate sustainability initiative in the world.
3. Any company may join the compact if it commits to upholding the UNGC principles, which are legally binding.

#### How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None of the above

#### Ans B

- Derived from core United Nations conventions and declarations, the **Ten Principles of the UN Global Compact are recognized and endorsed in numerous intergovernmental resolutions and outcome documents, including General Assembly resolutions.**
- Companies that join the compact are expected to integrate these principles into their corporate strategies, culture, and day-to-day operations.
- Companies are also expected to **advocate the principles publicly and communicate with stakeholders on progress toward meeting the principles.**
- Any company that commits to upholding the principles may join the compact, which is not legally binding and is purely voluntary.

### 4) With reference to the ordinance-making power of the President, consider the following statements:

1. The President can only promulgate an Ordinance when either of the two Houses of Parliament is not in session.

2. These Ordinances have the same effect as an Act of Parliament.
3. It may be used to amend a tax law, but it can never amend the Constitution.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans C**

**5) Aspartame, recently in the news, is related to what?**

- (a) A robotic fish capable of studying underwater life
- (b) A local rebellion in Tunisia
- (c) An artificial sweetener used in drinks
- (d) A method of taming wild animals

**Ans C**

- Aspartame is one of the **world's most common artificial sweeteners**.
- It is being widely used in diet soft drinks, sugar-free chewing gum, sugar-free ice cream, sugar-free breakfast cereals, etc.
- According to the US Food and Drug Administration (FDA), **aspartame is about 200 times sweeter than table sugar**.
- Due to recent studies linking Aspartame to cancer, **WHO is likely to label aspartame as "possibly carcinogenic to humans"**

**6) Consider the following statements with respect to the Euclid telescope**

1. The telescope will focus on gleaning more information on dark energy and dark matter.
2. The telescope was launched by NASA.

**Which of the following statement(s) is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans A**

- The Euclid mission hopes to understand the evolution of the Universe by looking at the light emitted from galaxies 10 billion years ago.
- It was **launched by the European Space Agency from Cape Canaveral in Florida**.

- **Euclid is a cosmology survey mission**, optimised to determine the properties of dark energy and dark matter on universal scales.
- The telescope will also focus on **gleaning more information on dark energy and dark matter**.

**7) Which of the following statements is correct regarding the PM-PRANAM scheme?**

- (a) Goal of achieving Sustainable Development Goals related to TB by 2025.
- (b) Connecting school students and scientists to extend students' classroom learning with that of research laboratory-based learning.
- (c) It is aimed at saving the soil and promoting sustainable, balanced use of fertilizers.
- (d) Skill development scheme for youth of 14 - 35 years age group.

**Ans C**

The **PM-PRANAM scheme was aimed at saving the soil and promoting sustainable, balanced use of fertilizers** and it involved the participation of State governments. The Centre would incentivise those States that would adopt alternative fertilizers with the subsidy that was saved by reducing the use of chemical fertilizers

**8) Consider the following statements regarding Ashadha Purnima:**

1. It is observed as Guru Purnima by both Buddhists and Hindus as a day to mark reverence to their gurus.
2. This day also marks the beginning of the rainy season retreat for the Monks and Nuns.
3. The day is remembered for the first teaching of Gautam Buddha after attaining Enlightenment to the first five ascetic disciples.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans C**

**9) Consider the following statements concerning the Energy Transition Index 2023**

1. The index is released by the International Energy Agency (IEA).
2. For the first time, India ranked in the top 10 of the Energy transition index.
3. India it is the only major economy with energy transition momentum accelerating across all dimensions.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans A**

- **India ranked 67th on Energy Transition Index** which is topped by Sweden.
- The index is **released by the World Economic Forum** in collaboration with Accenture.
- India it is the only major economy with energy transition momentum accelerating across all dimensions.

**10) Ol Chiki script, which was recently seen in the news is used to write which of the following language?**

- (a) Santhali
- (b) Bodo
- (c) Manipuri
- (d) None of the Above

**Ans A**

- Recently, the Prime Minister of India for saluting the immortal tribal revolutionaries on Hul Diwas used the Ol Chiki script of the Santhali language.
- It was **created in 1925 by Raghunath Murmu** (1905-1982), a writer and teacher from what is Mayurbhanj State (now part of Odisha) in India as a way to write Santali a Munda language.
- **Ol Chiki is also known as Ol Cemet', Ol Ciki, Ol or the Santali alphabet.**
- It was **created as a way to promote Santali culture.**

**11) Consider the following statements regarding the Buffer Stock Management in India.**

1. Buffer stock refers to a reserve of a commodity that is used to offset price fluctuations and unforeseen emergencies.
2. At present, buffer stock is maintained only for rice and wheat.
3. The Cabinet Committee on Economic Affairs fixes buffer norms every year.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

Buffer stock refers to a **reserve of a commodity that is used to offset price fluctuations and unforeseen emergencies.** It is generally maintained for essential

commodities and necessities like food grains. The **concept of buffer stock was first introduced during the 4th Five Year Plan (1969-74) Buffer stock is maintained for pulses also.** The Cabinet Committee on Economic Affairs fixes buffer norms in every year.

**12) With reference to Swami Vivekananda, consider the following statements:**

1. He was the foremost disciple of Sri Ramakrishna Paramhansa.
2. He attempted to combine Indian spirituality with Western material progress.
3. Vivekananda represented Hinduism at the 1893 World's Parliament of Religions.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans C**

- He was the **foremost disciple of Sri Ramakrishna Paramhansa** and a world spokesperson for Vedanta.
- **He attempted to combine Indian spirituality with Western material progress**, maintaining that the two supplemented and complemented one another.
- He believed that the path to self-purification is through helping others. He encouraged people to engage in selfless service and to work towards the betterment of society.
- Through his teachings on the four yogas, the **harmony of religions, the divinity of the soul, and serving humanity as God, Vivekananda gave spiritual aspirants paths to that realization.**

**13) Consider the following pairs related to Buddha's teachings**

<b>Buddha's teachings</b>	<b>Meaning</b>
Pragya	– Wisdom
Sheel	– Concentration
Samadhi	– Ethical Conduct

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans A**



The Buddha's teachings were transmitted orally by his disciples during his lifetime he established the

#### **Buddhist monastic order (sangha)**

1. **Sheel** means Ethical Conduct or virtue.
2. **Samadhi** means concentration.
3. **Pragya** means wisdom.

#### **14) With reference to the SWAMIH Fund, consider the following statements:**

1. It is a social impact fund specifically formed for completing stressed and stalled residential projects.
2. The fund is sponsored by the Union Ministry of Housing and Urban Affairs.
3. The fund is available only for projects that fall under the affordable and mid-income housing categories.

#### **How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

#### **Ans B**

- The Special Window for Affordable and Mid-Income Housing (SWAMIH) Investment Fund I is a **social impact fund specifically formed for completing stressed and stalled residential projects**. The Fund is sponsored by the Ministry of Finance, Government of India.

#### **Eligibility criteria for funding**

- Real estate project must be registered under the Real Estate (Regulation and Development) Act (RERA) 2016.
- **The project must be classified as a non-performing asset (NPA)** or be under insolvency proceedings.
- The **project should have been declared as a "stalled" or "delayed" project** by a competent authority.
- The fund is available only for projects that fall under the affordable and mid-income housing categories.

#### **15) Yago and Zoe, sometimes seen in the news recently, refer to?**

- (a) Typhoons of North America
- (b) Heatwaves of Europe
- (c) Linguistic scripts of South American tribes
- (d) Cold winds of Africa

#### **Ans B**

- **Yago and Zoe** are recent heatwaves in Seville, Spain of Europe.
- **Seville is among the first cities in the world to name and rank heatwaves.**
- India has no such naming system for heatwaves, although it does suffer massively from heatwaves.

#### **16) Consider the following statements.**

1. Ambergris is a waxy substance that originates from the digestive system of protected sperm whales.
2. Sperm whales are a protected species under the Wildlife Protection Act, 1972.
3. Ambergris is a tradable commodity in India with regulations under the provisions of the Wildlife Protection Act, 1972.

#### **How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

#### **Ans B**

- Ambergris, which means grey amber in French, is a **waxy substance that originates from the digestive system of protected sperm whales.**
- Traditionally, it is used to produce perfumes which have notes of musk. While there are records of it being used to flavour food, alcoholic beverages and tobacco in some cultures in the past, it is rarely used for these purposes presently.
- **In the Indian context, sperm whales are a protected species under Schedule 2 of the Wildlife Protection Act** and possession or trade of any of its by-products, including Ambergris and its byproducts, is illegal under provisions of the Wildlife Protection Act, 1972

#### **17) Consider the following statements with respect to Chidambaram Nataraja Temple**

1. The temple was constructed during the 10th Century when Chidambaram used to be the capital of the Chola dynasty.
2. A unique feature of this temple is the gold image of Lord Nataraja.
3. The temple is built in the Dravidian style of temple architecture.

#### **How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

### Ans C

- The ancient Sabhanayagar temple, also known as the **Nataraja temple, is in Chidambaram in the Cuddalore district of Tamil Nadu.**
- The administration of the temple has been a **contentious subject between the Podhu Dikshitaras (administrators-cum-priests) and the State government.**
- It enjoyed the patronage of different rulers including Simha Varman of the Pallava dynasty, Aditya I of the Chola dynasty, Krishnadevaraya of the Vijayanagara Empire, and Nayaka kings.

**18) Which one of the following is the best description of 'Bhashini', that was in the news recently?**

- (a) It is a genetically modified rice variety.
- (b) It is a sonar technology to calculate depth of oceans.
- (c) It is an Artificial Intelligence (AI)-led language translation platform.
- (d) It is a traditional folk dance

### Ans C

- Digital India BHASHINI, is **India's Artificial Intelligence (AI)-led language translation platform.**
- It seeks to enable easy access to the internet and digital services in Indian languages, **including voice-based access, and help the creation of content in Indian languages.**
- This will help developers to offer all Indians easy access to the internet and digital services in their native languages.

**19) Consider the following statements with respect to Zo People**

1. The Chins of Myanmar, the Mizos of Mizoram and the Kukis of Bangladesh are collectively called the Zo people.
2. The Zomi tribes are an indigenous community living along the frontier of India and Burma are a sub-group of the Zo people.

**How many of the statements given above are incorrect?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

### Ans D

- Zo peoples are **a group of tribes that live in Myanmar, India and Bangladesh** along with many sub-tribes and clans such as **the Chin, Kuki, Mizo,**

**Lushei, Zomi, Paitei, Hmar, Ralte, Pawi, Lai, Mara, Gangte, Thadou, etc.**

- They speak a group of **Tibeto-Burman languages.**
- The Chin Hills or Indo-Chin hill ranges are home to a large number of tribes that come under the Zo umbrella.
- The tribes are believed to **have migrated from China through Tibet to settle in Myanmar.**
- The Kuki-Zomi of Manipur share the history and memories of the violent Mizo nationalist movement of the 1960s.
- Most displaced Zo people who have arrived in Mizoram from Manipur are now in the districts of **Aizawl, Kolasib and Serchhip.**
- Zo reunification movement is unlikely to succeed because it is politically implausible to carve out areas from **Manipur, Tripura, and Bangladesh to integrate with Mizoram.**

**20) Kanwar Yatra, recently seen in the news, is related to which one of the following deities?**

- (a) Shiva
- (b) Buddha
- (c) Indra
- (d) Brahma

### Ans A

- It is an **annual Hindu pilgrimage observed every year by Lord Shiva devotees.**
- It **usually starts in the month of July or August, commonly known as the month of Sawan,** according to the Hindu calendar.

**What happens at Kanwar Yatra?**

- The yatra derives its name from the **word 'kanwar', meaning a bamboo pole to which containers of holy water are tied at opposite ends.**
- Millions of devotees called **Kanwariyas or kriyas travel to pilgrimage places like Haridwar, Gaumukh, Gangotri in Uttarakhand, Sultanganj in Bihar, Prayagraj, Ayodhya and Varanasi in Uttar Pradesh,** and return by carrying Ganga water in kanwars to seek the blessings of Shiva.
- The water is then offered to Shiva temples, including the **13 Jyotirlingas across India. The ritual is known as Jal Abhishek.**

**21) Dark Patterns, sometimes seen in the news recently, refers to?**

- (a) It is a pattern found in the dark matter
- (b) It is an unfair trade practice that manipulates user choices
- (c) It is a pattern witnessed after wildfire in forests

(d) It is a skin pigmentation disorder in African countries

#### Ans B

- A dark pattern of unfair trade practice that is **intentionally crafted to manipulate or deceive users into making certain choices or taking specific actions that may not be in their best interest.**
- It is a deceptive practice employed to influence user behaviour in a way that benefits the company, especially E-commerce implementation it.
- **There are no specific regulations to regulate dark patterns.**

**22) Consider the following statements regarding rights issues:**

1. It is an invitation to existing shareholders to purchase additional new shares in the company.
2. It is issued to raise extra capital to meet its current financial obligations.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

#### Ans C

- A rights issue is an invitation to existing shareholders to purchase additional new shares in the company.
- **This type of issue gives existing shareholders securities called rights.**
- **With the rights, the shareholder can purchase new shares at a discount to the market price on a stated future date.**
- The company is giving shareholders a chance to increase their exposure to the stock at a discount price.
- Until the date at which the new shares can be purchased, shareholders may trade the rights on the market the same way that they would trade ordinary shares.
- The rights issued to a shareholder have value, thus compensating current shareholders for the future dilution of their existing shares' value.

**23) Which of the following is/are the benefits of Internationalisation of the Rupee?**

1. Inclusion of the rupee in the SDR basket
2. Reduce the need for holding forex reserves
3. Mitigates the currency risk for Indian businesses

4. Improves the bargaining power of Indian businesses

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

#### Ans C

- Internationalisation of the Rupee is a process that **involves increasing the use of the rupee in cross-border transactions.**
- It **involves promoting the rupee for import and export trade** and then other current account transactions, followed by its use in capital account transactions.
- Internationalization of the rupee will not directly help in including the Indian rupee in IMF's SDR.

**24) Consider the following statements.**

1. International Seabed Authority is the United Nations specialised agency that regulates the world's ocean floor.
2. Deep sea mining involves mining massive seafloor sulphide deposits and stripping cobalt crusts from rock.
3. Currently, countries manage their own maritime territory and exclusive economic zones, while the high seas and the international ocean floor are governed by the United Nations Convention on the Law of the Seas.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

#### Ans B

- **The International Seabed Authority — the United Nations body that regulates the world's ocean floor** — is preparing to resume negotiations that could open the international seabed for mining, including for materials critical for the green energy transition.
- **Deep-sea mining involves removing mineral deposits and metals from the ocean's seabed.** There are three types of such mining: **taking deposit-rich polymetallic nodules off the ocean floor, mining massive seafloor sulphide deposits and stripping cobalt crusts from rock.**

- Countries manage their own maritime territory and exclusive economic zones, while the high seas and the international ocean floor are governed by the United Nations Convention on the Law of the Seas. It is considered to apply to states regardless of whether or not they have signed or ratified it.

**25) Ubinas volcano, recently in news, is located in which of the following nations:**

- Peru
- Indonesia
- Japan
- USA

**Ans A**

- Ubinas is a **stratovolcano located in the Central Volcanic Zone of the Andes.**
- It is **one of the most active volcanoes in Peru**, with more than 26 eruptive episodes recorded in the last 500 years.

**26) Consider the following statements regarding loan write-off.**

1. Writing off a loan essentially means it will no longer be counted as an asset, by the bank.
2. The amount written off does not reduce the bank's tax liability.
3. After the write-off, banks are not supposed to continue their efforts to recover the loan.

**Which of the above statements is/are correct?**

- 1, 2
- 1 only
- 1, 3
- 1, 2, 3

**Ans B**

- Writing off a loan essentially **means it will no longer be counted as an asset.** By writing off loans, **a bank can reduce the level of non-performing assets (NPAs) on its books.** An additional benefit is that the amount so written off reduces the bank's tax liability.
- After the write-off, banks are supposed to continue their efforts to recover the loan using various options. They have to make provisioning as well. The tax liability will also come down as the written-off amount is reduced from the profit.
- **However, the chances of recovery from written-off loans are very low.**

**27) Consider the following statements with respect to National Water Mission.**

1. It aims to conserve water, minimize wastage and ensure equitable distribution of water within and across the states.
2. National Water Mission is a part of the National Action Plan on Climate Change.
3. The mission envisages increasing the water use efficiency by 20%.

**How many of the statements given above are correct?**

- Only one
- Only two
- All Three
- None

**Ans C**

**The 5 identified goals of the Mission are:**

- Comprehensive water database in the public domain.
- Assessment of impact of climate change on water resource.
- **Promotion of citizen and state action for water conservation**, augmentation and preservation and focused attention to vulnerable areas including over-exploited areas.
- **Increasing water use efficiency by 20%.**
- Promotion of basin-level integrated water resources management.

**28) SCORES Platform recently seen in the news is related to which of the following:**

- web-based centralized grievance redressal system of SEBI
- platform to evaluate the performance of the state in the education sector
- ISRO's platform to monitor the movement of Chandrayaan 3
- BCCI data analytics to monitor the performance of various sportsperson

**Ans A**

- SCORES is a **web-based centralized grievance redressal system of SEBI** that was launched in June 2011.
- **SCORES enables investors to lodge and follow up on their complaints and track the status of redressal of such complaints** online from the above website from anywhere.
- This enables the market intermediaries and listed companies to receive complaints online from investors, redress such complaints and report redressal online.

**29) Consider the following statements with respect to 2023 IMO Greenhouse Gas Strategy.**

1. The strategy aims to reduce Green House Gas (GHG) emissions from international shipping by at least 20% by 2030.
2. The strategy pushes the use of biofuel and bio-blends in the shipping industry.
3. The strategy was not backed by India as it imposes more restrictions on developing countries.
4. Maritime shipping is responsible for 3% of global anthropogenic GHG emissions.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Ans C**

- According to Strategy, **near-zero emission technologies, fuels and energy sources should “represent at least 5% of the energy used by international shipping by 2030.**
- This Strategy was backed aggressively by India.

**30) Consider the following statements regarding the Indian grey hornbill:**

1. It is a common hornbill mainly found only in India.
2. It is categorized as Least concern species under the IUCN Red List.

**Which of the statements given above is/are correct?**

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans B**

- It is a common hornbill found on the Indian subcontinent.
- It is **commonly sighted in pairs.**
- **These birds are known to be arboreal**, i.e. spend most of their time on tall trees, but may descend for food and to collect mud pellets for nesting.
- They **play an essential role in the ecosystem** as prime dispersers of seeds.
- **Distribution:** Indian subcontinent; found from north-east Pakistan and south Nepal east to north-west Bangladesh and south throughout most of India except in Assam.

**31) Which of the following excavation sites are linked to the Sangam Age?**

1. Keeladi
2. Sisupalgarh
3. Sivagalai
4. Adichanallur

**Choose the correct code.**

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3 and 4

**Ans C**

- **Sangam Age:** Recently Tamil Nadu Archaeology Department excavated a few items in Porpanaikottai in Tamil Nadu's Pudukottai district
- **The Sangam Age is a period that is dated from 300 BCE to 300 CE.**  
The recent excavated items on the site include:
  - A **gold stud**, which might be probably used as a nose stud.
  - A **bone point**, with pointed ends on both sides and carvings, was probably used for weaving.
  - Red round-shaped carnelian bead is evidence of domestic trade and
  - A **Sangam-age fort** with a three-course brick structure.

**32) Consider the following statements regarding Quadcopters:**

1. It is an Unmanned Aerial Vehicle (UAV) with four rotors, each with a motor and propeller.
2. The main principle behind the flight of a quadcopter is Newton's First Law of motion

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans A**

- It is an **unmanned aerial vehicle (UAV) or drone with four rotors**, each with a motor and propeller.
- A quadcopter can be manually controlled or can be autonomous.
- **It's also called a quadrotor helicopter or quadrotor.**
- It belongs to a more general class of aerial vehicles called multicopter or multirotor.
- **The main principle behind the flight of a quadcopter is Newton's Third Law of motion**, which states that for every action there's an equal and opposite reaction.

- **A quadcopter's propellers push air downwards.** This causes an opposite reaction called thrust which pushes the quadcopter upwards against gravity.

**33) Consider the following statements.**

1. The Glasgow Pact marked the first time a U.N. climate agreement mentioned the goal of reducing fossil fuel use.
2. The Kyoto Protocol is the successor to the Paris Agreement that aims to limit the rise in the average global surface temperature.
3. The Conference of the Parties (COP) is the supreme body of the United Nations Framework Convention on Climate Change (UNFCCC), made up of representatives from each country that signed the Paris Agreement.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

**PARIS AGREEMENT:** Successor to the Kyoto Protocol, the international climate treaty that expired in 2020. Agreed in December 2015, the Paris Agreement aims to limit the rise in the average global surface temperature. To do this, countries that signed the accord set national pledges to reduce humanity's effect on the climate that are meant to become more ambitious over time.

**34) ESKAPE, sometimes seen in the news recently, refers to which of the following?**

- (a) Group of Bacteria resistant to antibiotics
- (b) The mission of NASA to study dark energy
- (c) UN Mission to prevent child trafficking
- (d) AI tool to build humanoids

**Ans A**

- ESKAPE pathogens are a group of bacteria that are **highly resistant to antibiotics.**
- **ESKAPE pose a massive global health threat** because they can quickly evolve traits that allow them to evade immune systems and available treatments.
- **ESKAPE are the leading cause of nosocomial infections** throughout the world.
- Nosocomial infections are infections acquired during the process of receiving health care that were not present during the time of admission.

**35) Consider the following tributaries of the Yamuna River:**

1. Chambal
2. Hindon
3. Betwa

**How many of the above are right-bank tributaries of the Yamuna River?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- Yamuna River (also known as Jumna), is the **major tributary of the Ganges River.**
- **Origin:** It rises in the high Himalayas, in the Yamunotri Glacier, at a height of 4,421 meters.
- **The 1,376 km long Yamuna flows solely through India, crossing three States: Uttarakhand, Uttar Pradesh and Haryana.**
- Near Dehradun, the capital city of Uttarakhand, the Yamuna is joined by its biggest tributary, the Tons River.
- **The Chambal River is Yamuna's biggest tributary on the right.**
- Other important tributaries of the Yamuna include the **Hindon, Sarda and Giri River on the right and Betwa and Sindh on the left.**

**36) With reference to a Shelf Cloud, consider the following statements:**

1. It generally forms along the leading edge of thunderstorms.
2. It is a type of low-lying, vertical cloud formation characterized by a clearly defined line of solid clouds.
3. It appears as a broad arc across the sky that can sometimes appear to be rotating horizontally.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- A "shelf cloud" or "Arcus cloud" generally forms along the leading edge of thunderstorms.
- It is a **type of low-lying, horizontal cloud formation characterized by a clearly defined line of solid clouds.**
- It is **known for its distinctive wedge-shaped formation.** They usually appear as a broad arc

across the sky that can sometimes appear to be rotating horizontally.

• **Formation:**

- Shelf clouds form **when cold and dense air is forced into a warmer air mass by wind.**
- This rush of cold air often occurs in a **thunderstorm's downdraught**, where cold air rushes towards the ground before spreading out to create a gust front.
- **Shelf clouds produced by thunderstorms are always preceded by a rush of dry and cold air** ahead of the cloud, with rain arriving after the shelf cloud has passed overhead.

**37) Consider the following statements with respect to Article 226.**

1. Article 226 empowers the High Courts to issue writs for the enforcement of the Fundamental Rights and ordinary legal rights.
2. Under Article 266, High Courts are empowered to issue directions to the Union Government to invoke Article 355.
3. High courts may refuse to exercise its writ jurisdiction since Article 226 is discretionary.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

- **A High Court does not have the power to issue directions to the Union Government to invoke Article 355.**
- **High courts under Article 226** can declare a law unconstitutional and invalid on the ground of contravention of any of the Fundamental Rights.

**38) Consider the following statements regarding the Amazon rainforest.**

1. The Amazon rainforest covers an area twice the size of India.
2. Two-thirds of the Amazon rainforest is located in Brazil.
3. El Niño typically brings more rain and lowers the temperature of the Amazon rainforest.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

With El Niño looming, which **typically brings less rain and higher temperatures to the Amazon.** The Amazon rainforest covers an area twice the size of India and holds tremendous stores of carbon, serving as a crucial buffer against climate change. **Two-thirds of it is located in Brazil.**

**39) Consider the following statements with respect to the Ozone layer and Water vapour.**

- **Statement - I:** The increase in water vapour in the stratosphere can be mitigated by reducing greenhouse gas emissions.
- **Statement - II:** Greenhouse gases trap heat in the atmosphere, which can lead to an increase in water vapour in the stratosphere.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement I is correct but Statement II is incorrect
- (d) Statement I is incorrect but Statement II is correct

**Ans A**

**40) Kui Language is primarily spoken in which one of the following Indian States?**

- (a) Assam
- (b) Manipur
- (c) Odisha
- (d) Bihar

**Ans C**

- Kui (also known as Kandh, Khondi, Khond, Khondo), is a **South-Eastern Dravidian language spoken by the Kandha community.**
- It is **primarily spoken in the state of Odisha.**
- It is closely related to other languages in the Dravidian family, such as **Gondi and Kuvi.** It was also referred to as the Kuinga language during the historical period.

**41) With reference to the Senior Citizen Savings Scheme (SCSS), consider the following statements:**

1. Indian citizens above the age of 60 years are eligible for SCSS.
2. It has a maturity period of five years which cannot be extended.
3. Individuals are allowed to operate more than one account by themselves under SCSS.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- **Maturity:** It has a **maturity period of five years.** But,
- a depositor can extend one's maturity period for another three years.
- **Number of accounts:** Individuals are allowed to operate more than one account by themselves or open a joint account with their spouse.
- **Deposit Limits:** Eligible investors can make a lump sum deposit
  - **Minimum Deposit**– Rs. 1,000 (and in multiples thereof)
  - **Maximum Deposit**– Rs. 30 Lakh.
- **Interest Payment:** Under SCSS, the interest amount is paid to the account holders quarterly.
- **Premature withdrawal:** After one year of opening the account, premature withdrawal is allowed.

**42) Consider the following statements with respect to the Scheme for minor rape survivors.**

1. The scheme seeks to assist minor girls who have been abandoned by their families due to forced pregnancies resulting from rape.
2. The funding is allocated from the Sexual Assault Victim Assistance Fund.
3. It is not mandatory for victims to possess a First Information Report (FIR) to avail of the benefits provided by the scheme.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

- Ministry of Women and Child Development recently **announced Scheme for minor rape survivors to support minor rape survivor.**
- **The scheme aims to provide integrated support and assistance to girl child victims under one roof** and facilitate immediate, emergency and non-emergency access to a range of services, including:
  - Access to education,
  - Police assistance, and health care,
  - **Maternity, neo-natal and infant care** and
  - Psychological and legal support.

- The scheme would operate under the **aegis of the Nirbhaya Fund.**
- The scheme provides insurance cover for the minor girl victim and her newborn under one roof to enable access to justice and rehabilitation.

**43) Consider the following statements.**

1. The Ayushman Bharat Digital Mission (ABDM) aims to create a seamless online platform that will enable interoperability within the digital healthcare ecosystem.
2. The National Health Authority (NHA) is the implementing agency for the Ayushman Bharat Digital Mission.
3. It will bridge the existing gap among different stakeholders of the Healthcare ecosystem through digital highways.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans C**

**44) With reference to the Global Multidimensional Poverty Index, consider the following statements:**

1. It was developed by the United Nations Development Programme and the Oxford Poverty and Human Development Initiative.
2. It considers the standard of living as one of the parameters to assess poverty.

**Which of the statements given above is/are correct?**

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- In India, those people who are multi-dimensionally poor and deprived under the nutrition indicator have declined.
- **Children under the age of 18 account for half of MPI-poor people** (566 million).
- The poverty rate among children is 27.7%, while among adults, it is 13.4%.
- Countries halved their MPI in periods as short as four to 12 years.

**45) Consider the following statements with respect to Productivity Growth in India's Manufacturing Sector.**

1. Productivity measures output per unit of input, such as labour, capital or any other resource.



2. Employment in India's manufacturing sector has been on the rise since 2016.
3. Western and Central Indian states have higher average productivity in manufacturing relative to Southern and Eastern states.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

Employment in India's manufacturing sector has fallen from over 51 million in 2016 to less than 36 million in 2023 even as the country's working-age population continued to grow by millions every year.

**46) Consider the following statements regarding Phosphate rocks:**

1. It is a sedimentary rock formed millions of years ago by the accumulation of organic matter on the ocean floor.
2. India has the world's largest deposits of these rocks.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans A**

- **Phosphate rocks are majorly produced only in two States in India, namely Rajasthan and Madhya Pradesh.**
- Rock phosphate is the key raw material for DAP and NPK fertilizers. Currently, **India is 90% dependent on imports of this raw material.**
- Most of the phosphate rock mined throughout the world is used to produce phosphate fertilizer. It is also used as an animal feed supplement.

**47) Consider the following pairs:**

<b>Exercises</b>	–	<b>Participants</b>
JIMEX 23 navy	–	Indian and Japanese
SALVEX 23	–	US and Indian Navy
SOUTHERN READINESS 23 Navy	–	Maldives and Indian

**How many of the pairs given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three

(d) None

**Ans B**

- The exercise **Op Southern Readiness 2023 was conducted by Combined Maritime Forces (CMF).**
- It was aimed at strengthening multilateral ties and enhancing cooperation through the CMF exercise.
- Participating Navies include the **USA, Italy, the UK, Seychelles Defence Forces & Marine Police** and member nations of EUNAVFOR (European Union Naval Force).
- **INS SUNAYNA also participated in the exercise.**

**48) Consider the following statements regarding the Community Forest Resource (CFR) area.**

1. The community forest resource area is the common forest land that has been traditionally protected and conserved for sustainable use by a particular community.
2. The community forest resource area may include revenue forest, deemed forest, sanctuary and national parks.
3. Community forest resource areas can also be used for pastoral purposes.

**Which of the above statements is/are correct?**

- (a) 1, 3
- (b) 1, 2
- (c) 1 only
- (d) 1, 2, 3

**Ans C**

**49) Consider the following statements with respect to Zhuque-2.**

1. It is the world's first hydrogen-based space rocket.
2. It uses methane as the fuel and liquid oxygen (LOX) as the oxidizer.
3. It was launched by the National Aeronautics and Space Administration (NASA).

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans A**

- Recently, **China launched the World's first methane-fuelled space rocket, Zhuque-2**
- Zhuque-2 is the world's first methane-liquid rocket launched by Land Space, a private Chinese company.
- **Zhuque-2 is also known by different names such as Y-2 and ZQ-2.**

- It operates based on the same principles as traditional launch vehicles but differs in terms of propellant choice and certain design considerations.
- **Methane is a hydrocarbon fuel** that can be produced from various sources, including natural gas.
- Methane offers several advantages as a **rocket fuel, such as high energy density, good combustion characteristics, and availability.**

**50) With reference to Parkinson's Disease, consider the following statements:**

1. It is a progressive neurological disorder that affects the nervous system.
2. No blood laboratory or radiological tests are available to diagnose Parkinson's disease.
3. Women are more likely to be affected by Parkinson's than men.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- It is a **progressive neurological disorder** that affects the nervous system and the parts of the body controlled by the nerves.
- It is a condition in which a patient holds limited or no control over his movements and body balance.
- It occurs and progresses with ageing, but in rare cases, it is also witnessed among children and teenagers as well.
- It has no cure.
- Many studies have suggested that **men are more likely to be affected by Parkinson's than women.**

**51) Consider the following statements regarding Windfall Tax:**

1. It is a higher tax levied by the government on specific industries that experience a sharp increase in revenue.
2. It serves as a supplementary revenue stream for the government.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- When the government notices a sudden increase in an industry's revenue, it imposes this tax.
- However, these revenues cannot be linked to anything the company actively pursued, such as its business strategy or expansion.
- Consequently, a **Windfall Tax is imposed on an industry's profits when it experiences a sharp increase in revenue due to unrelated external events.**

**52) Consider the following statements with respect to Namda Art:**

1. Namda is a traditional carpet made of sheep wool.
2. The art form belongs to Jammu and Kashmir.
3. The declined art form is revived through project Namda under the Pradhan Mantri Vishwakarma Kaushal Samman Scheme.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

- The Namda craft of Kashmir is being successfully revived under **Skill India's Pilot Project as part of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**
- Namda art is a rug made of sheep wool through the felting technique.
- **Namda is a type of traditional Kashmiri felted carpet** that is created using sheep wool and has colourful hand embroidery.
- **Namada is said to have begun in the 16th century during Mughal Emperor Akbar.**
- It has been **practised by the Pinjara and Mansuri communities and Sama Muslims in Kachchh.**
- Due to the low availability of raw materials, lack of skilled manpower and marketing techniques, the export of this craft has declined almost 100 %.
- The Namda project seeks to revive and preserve the rich heritage associated with the Namda craft.
- **The project is a public-private partnership (PPP) model in the field of skill development,** as it is being implemented in collaboration with local industry partners.

**53) Which of the following steps can help to internationalise the rupee?**

1. The rupee must be made more freely convertible.
2. RBI should pursue a more liquid rupee bond market.

3. Indian exporters and importers should be encouraged to invoice their transactions in rupee.
4. India signing Currency swap agreements with other countries.
5. Tax incentives to foreign businesses to utilise the rupee in operations in India.

How many of the above statements are correct?

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

Ans D

54) With reference to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), consider the following statements:

1. It succeeded the Trans-Pacific Partnership (TPP) after the United States withdrew from the TPP.
2. All the countries of CPTPP are members of the Asia-Pacific Economic Cooperation (APEC).
3. India is a member of CPTPP.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Ans B

- It is a **free trade agreement (FTA) between 11 nations:** Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.
- It was **signed in March 2018.**

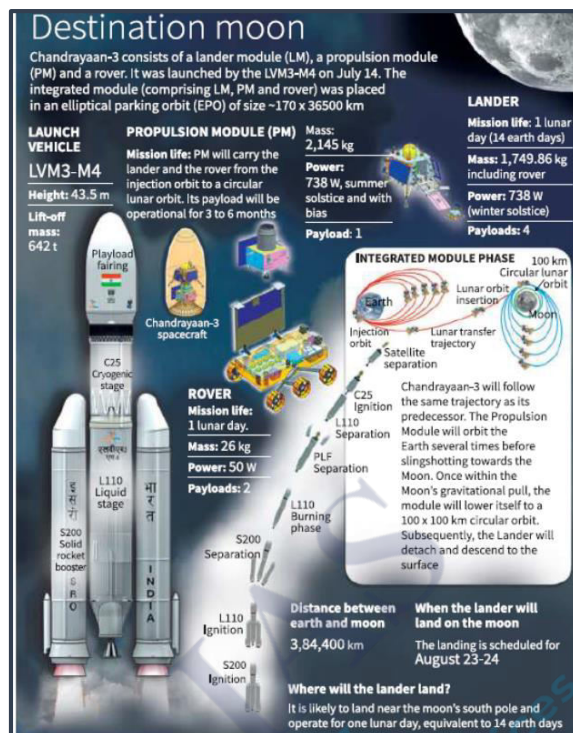
55) Consider the following statements with respect to Chandrayaan-3:

1. It is launched using the Polar Satellite Launch Vehicle (PSLV).
2. The success of the mission will make India the first country to soft-land near the lunar South Pole.
3. Like Chandrayaan-2, Chandrayaan-3 also uses the Gravity Assist flyby technique.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Ans B



56) Consider the following statements with respect to the State Disaster Response Fund (SDRF):

1. SDRF is a statutory body constituted under the Disaster Management Act, of 2005.
2. It is audited by the Comptroller and Auditor General of India (CAG).
3. Lightning is notified as a natural disaster under SDRF.

How many of the statements given above are incorrect?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Ans A

- The State Disaster Response Fund (SDRF), **constituted under Section 48 (1) (a) of the Disaster Management Act, 2005**, is the primary fund available to State Governments for responses to notified disasters.
- **SDRF is audited by the Comptroller and Auditor General of India (CAG).**
- **A State Government may use up to 10 % of the funds available under the SDRF to provide immediate relief to the victims of natural disasters** that they consider to be 'disasters' within the local context in the State.
- **Natural Disasters notified under SDRF:** Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, frost and cold waves.

- **Lightning is not a notified natural disaster under SDRF.**

**57) Which of the following indices are used in measuring the National Multidimensional Poverty Index, 2023?**

1. School Attendance
2. Cooking Fuel
3. Maternal Health
4. Child And adolescent Mortality

**Choose the correct code.**

- (a) 1 and 3 only
- (b) 2 and 4 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

**Ans D**

- Recently NITI Aayog released **the National Multidimensional Poverty Index, 2023 to assess the status of poverty level in India across states**
- According to the index, India has registered a significant decline of 9.89% points in the number of multidimensional poor, from 24.85% in 2015-16 to 14.96% in 2019-2021.
- **13.5 Crore people came out of multidimensional poverty between 2015-16 and 2019-21.**

**58) The Chandrayaan-3 mission aims to achieve which of the following?**

1. Measure the thermal properties of the lunar regolith near the polar region.
2. Understand the dynamics of the moon.
3. Study the chemical and mineralogical composition of the lunar surface.
4. Measure the elemental composition of the lunar soil and rocks around the landing site.
5. Study Earth from lunar orbit.

**How many of the above statements are correct?**

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

**Ans D**

**59) Consider the following statements with respect to the Kodava community.**

1. Kodavas are indigenous people of the Kodagu region in Karnataka.
2. Kodava Takke, the language of Kodavas is a common language in South India.

3. The Kailpodh festival is associated with the Kodava community.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

- Kodava Takke, the language of Kodavas is classified as **endangered by UNESCO.**
- The Kodavas have a **long-standing martial tradition** and are known for their valour and bravery.
- Kodavas want a seat in both the Karnataka Assembly and in Parliament similar to Sangha virtual constituency.
- **Sangha virtual constituency:** Sangha Assembly constituency is one of the constituencies in the 32-member Assembly of Sikkim.
- The Sangha constituency doesn't exist on the map.
- **This seat is reserved for the Buddhist monastic community of Sikkim** who are Buddhist monks and nuns.

**60) Consider the following statements with respect to the Export Preparedness Index (EPI) 2022.**

1. The index assesses the readiness of the states in terms of their export.
2. The report was released by the Ministry of Commerce and Industry.
3. Karnataka and Tamil Nadu have the highest number of GI products being exported.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- The index is aimed at assessing the readiness of the states in terms of their export potential and performance.
- **Export Preparedness Index 2022 is released by NITI Aayog.**
- **Tamil Nadu has topped the index** which is followed by Maharashtra, Karnataka, Gujarat, Andhra Pradesh, Odisha, West Bengal and Kerala.

**61) Which of the following scenarios does not violate the right to live with dignity?**

- (a) Experience of discrimination and harassment based on gender
- (b) Inability to access affordable healthcare services
- (c) Employment opportunities and fair wages
- (d) Lack of access to clean water and sanitation facilities

**Ans C**

**Explanation:**

**Employment opportunities and fair wages do not violate the right to live with dignity**, as they are essential components that support a person's livelihood and economic well-being.

**62) Consider the following States:**

1. Andhra Pradesh
2. Karnataka
3. Gujarat
4. Bihar

**How many of the above are major tomato-producing States?**

- (a) Only two States
- (b) All four States
- (c) Only three States
- (d) Only one State

**Ans B**

**Explanation:**

The major tomato producing States are **Andhra Pradesh, MP, Karnataka, Gujarat, Odisha, West Bengal, Maharashtra, Chhattisgarh, Bihar, Telangana, UP, Haryana and Tamil Nadu.**

**63) Which of the following statements about Make in India is correct?**

- (a) Make in India is a government scheme to encourage outsourcing of manufacturing to other countries.
- (b) Make in India focuses solely on attracting foreign direct investment and discourages domestic investment.
- (c) Make in India is an initiative to promote domestic manufacturing and boost job creation in India.
- (d) Make in India is a program aimed at promoting imports and reducing reliance on domestic industries.

**Ans C**

**Make in India aims to promote domestic manufacturing & attract investments.** It encourages FDI, not outsourcing, to boost job creation & exports.

**64) The Black Sea Grain Initiative is an agreement among which of the following countries/Organisations?**

- (a) Ukraine, Russia, China, and Turkey
- (b) Ukraine, Russia, Turkey, and the United States
- (c) Ukraine, Russia, Turkey, and the European Union
- (d) Ukraine, Russia, Turkey, and the United Nations

**Ans D**

The Black Sea Grain Initiative was **launched by Ukraine, Russia, Turkey, and the United Nations.** It aims to facilitate the export of grain from Ukraine through the Black Sea.

**65) Consider the following statements regarding the Henley Passport Index:**

1. It ranks passports based on the number of countries their holders can access without a prior visa.
2. In 2023, India's ranking on the Passport Index declined to 80th place.
3. According to the index, Singapore is currently the most powerful passport in the world.

**How many of the statements given above is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

**In 2023, India's ranking on the Passport Index improved to 80th place.** Singapore is currently the most powerful passport in the world, allowing visa-free access to 192 travel destinations.

**66) Consider the following statements regarding the Directorate General of Foreign Trade (DGFT):**

1. It is an attached office under the Ministry of Commerce and Industry, Government of India.
2. DGFT is responsible for formulating and implementing foreign trade policies and regulations.

3. DGFT issues the Importer Exporter Code (IEC) to individuals and businesses engaged in foreign trade.

**How many of the statements given above are correct?**

- (a) None  
(b) All three  
(c) Only one  
(d) Only two

**Ans B**

DGFT, under the Ministry of Commerce and Industry, formulates and implements trade policies. It issues IEC to individuals and businesses for foreign trade.

**67) Match the following National Parks in India with their respective location states:**

National Park	Location
1. Bandipur National Park	A. Madhya Pradesh
2. Ranthambore National Park	B. Rajasthan
3. Kuno National Park	C. Karnataka
4. Keibul Lamjao National Park	D. Manipur

**Select the correct match from the options below:**

- (a) 1-A, 2-B, 3-C, 4-D  
(b) 1-B, 2-C, 3-A, 4-D  
(c) 1-B, 2-A, 3-D, 4-C  
(d) 1-C, 2-B, 3-A, 4-D

**Ans D**

Bandipur National Park- Karnataka. Ranthambore National Park- Rajasthan. Kuno National Park- Madhya Pradesh. Keibul Lamjao National Park- Manipur.

**68) Which of the following statements is correct regarding the Kerch Strait?**

- (a) The Kerch Strait connects the Black Sea to the Sea of Azov and separates Russia's Taman Peninsula from the Kerch Peninsula of Crimea.  
(b) The Kerch Strait links the Caspian Sea to the Sea of Azov and forms the border between Russia and Ukraine.  
(c) The Kerch Strait is located between Russia's Sakhalin Island and Japan's Hokkaido Island in the Pacific Ocean.  
(d) The Kerch Strait is an artificial waterway that connects the Red Sea to the Mediterranean Sea.

**Ans A**

The Kerch Strait is a narrow waterway that connects the Black Sea to the Sea of Azov and separates Russia's Taman Peninsula from the Kerch Peninsula of Crimea.

**69) Consider the following statements:**

**Statement-I:** The relatively greater contribution of private sector research in many countries is because of sustained government support to universities and research institutions.

**Statement-II:** This support has encouraged individuals to build companies and institutions that saw value in investing in research and development.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement I and Statement II are correct and Statement II is the correct explanation for Statement I.  
(b) Both Statement I and Statement II are correct and Statement II is not the correct explanation for Statement I.  
(c) Statement I is correct but Statement II is incorrect.  
(d) Statement I is incorrect but Statement II is correct.

**Ans A**

**Both statements are correct.** Statement II explains why sustained government support for universities and research institutions leads to greater private-sector research.

**70) Which of the following statements about the Competition Commission of India (CCI) is correct?**

- (a) CCI has five members, including a chairperson and four members.  
(b) CCI aims to regulate the banking and financial sector in India.  
(c) It provides opinions on competition issues referred by statutory authorities and conducts public awareness programs.  
(d) It is a constitutional body established by the Indian Constitution.

**Ans C**

CCI enforces competition laws to ensure fair competition, offers opinions on referred issues by statutory authorities, and conducts advocacy and awareness programs.

**71) Consider the following statements with respect to the 'Panel of Vice-Chairpersons'**

1. The Speaker nominates from amongst the members a panel of vice-chairpersons
2. They can preside over the House in the absence and vacancy of the presiding officer

Select the correct statement(s)

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans D

Statement Analysis:

Statement 1	Statement 2
Incorrect	Incorrect
Under the Rules of Rajya Sabha, the Chairman nominates from amongst the members a panel of vice-chairpersons. He/she has the same powers as the Chairman when presiding. He/she holds office until a new panel of vice-chairpersons is nominated.	Any one of them can preside over the House in the absence of the Chairman or the Deputy Chairman. It must be emphasised here that a member of the panel of vice chairpersons cannot preside over the House when the office of the Chairman or the Deputy Chairman is vacant.

Context – The Rajya Sabha Chairman reconstituted the panel of vice chairpersons of the Parliament's Upper House with half of them being women.

72) With reference to 'Heat Index', consider the following statements

1. It provides information about the impact of humidity on the high temperatures
2. The Index is divided into five colour-coded categories
3. It has been launched by the India Meteorological Department (IMD)

How many of the statement(s) given above are correct

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Ans B

Statement Analysis:

Statement 1	Statement 2	Statement 3
Correct	Incorrect	Correct

Statement 1	Statement 2	Statement 3
Heat Index provides information about the impact of humidity on high temperatures and thus provides a feel-like temperature for human beings which can be used as an indication of human discomfort. It provides guidance towards additional care to be taken by people to reduce discomfort.	Colour codes used for the Experimental Heat Index are as follows: Green: Experimental heat Index less than 35 degrees C Yellow: Experimental heat Index in the range 36-45 degrees C Orange: Experimental heat Index in the range 46-55 degrees C Red: Experimental heat Index greater than 55 degrees C	India Meteorological Department (IMD) has recently launched the Heat Index on an experimental basis. Heat Index is implemented on an experimental basis only across the entire country including the State of Andhra Pradesh.

Context – Union Minister of Earth Sciences informed that the India Meteorological Department (IMD) has launched the Heat Index on an experimental basis

73) Consider the following statements

- Statement 1 – mRNA vaccines work by introducing a piece of mRNA that corresponds to a viral protein
- Statement 2 – The role of mRNA is to carry protein information from the RNA in a cell's nucleus to the cell's cytoplasm (watery interior)

Which one of the following is correct in respect of the above statements?

- (a) Both Statement I and Statement II are correct and Statement II is the correct explanation for Statement I
- (b) Both Statement I and Statement II are correct and Statement II is not the correct explanation for Statement I
- (c) Statement I is correct but statement II is incorrect
- (d) Statement -I is incorrect but Statement -II is correct

Ans C

Statement Analysis:

Statement 1	Statement 2
Correct	Incorrect
mRNA vaccines work by introducing a piece of mRNA that corresponds to a viral protein, usually a small piece of a protein found on the virus's outer membrane. By using this	The role of mRNA is to carry protein information from the DNA in a cell's nucleus to the cell's cytoplasm (watery interior), where the protein-making machinery reads the mRNA sequence

mRNA, cells can produce and translates each three-the viral protein. As part of a normal immune response, the immune system recognizes that the protein is foreign and produces specialized proteins called antibodies. base codon into its corresponding amino acid in a growing protein chain. So, mRNA is a form of nucleic acid that helps the human genome, which is coded in DNA, to be read by the cellular machinery.

**Context – Researchers have recently developed an mRNA-based vaccine that can effectively target and stimulate protective immune cell responses against the malaria-causing parasite Plasmodium**

**74) Consider the following statements with respect to the 'Credit Guarantee Scheme'**

1. The objective of the scheme is to encourage lenders to not focus on the viability of projects and to provide credit facilities
2. It provides a loan of up to 75 per cent of the total project cost from any Scheduled Bank, National Cooperative Development Corporation (NCDC)
3. First-generation entrepreneurs and underprivileged individuals are eligible under this scheme

**How many of the statement(s) given above are correct**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans A**

**Statement Analysis:**

Statement 1	Statement 2	Statement 3
<b>Incorrect</b>	<b>Incorrect</b>	<b>Correct</b>
The main objective of the scheme is to encourage lenders to focus on the viability of projects and provide credit facilities based on the primary security of the assets being financed. <b>It aims to strengthen the credit delivery system and ensure smooth access to finance for</b>	The scheme provides interest subvention of three per cent and a loan of up to 90 per cent of the total project cost from any Scheduled Bank, National Cooperative Development Corporation (NCDC).	The intergovernmental body guides the preparation of periodic global assessments of the status and trends of genetic resources and biodiversity for food and agriculture. It also develops global plans of action, codes of conduct or other policy instruments and monitors their implementation.

entrepreneurs engaged in the Livestock sector.		
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**Context – The Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry, and Dairying (DAHD) has introduced the 'Credit Guarantee Scheme' under the Animal Husbandry Infrastructure Development Fund (AHIDF).**

**75) Rule 267 of the Rajya Sabha which was seen in the news pertains to**

- (a) Breach of privilege
- (b) Suspension of normal business
- (c) Point of order
- (d) Special mention

**Ans B**

According to the Rules of Procedure and Conduct of Business in the Council of States (Rajya Sabha), **Rule 267 relates to the suspension of rules.** It says, "Any member may, with the consent of the Chairman, move that any rule may be suspended in its application to a motion related to the business listed before the Council of that day, **Simply put, under Rule 267, Rajya Sabha MPs can submit a written notice to suspend all listed business in the House and discuss an issue of importance that the country is facing.** A motion under Rule 267 indicates that a matter was serious enough for the House to suspend its normal business to take it up. **Context – Opposition parties in Rajya Sabha recently gave notices under Rule 267 to discuss the Manipur matter.**

**76) Consider the following statements, with reference to Degree Days (DD):**

**Statement 1 – Degree days are measures of how cold or warm a location is and are used to assess the energy needed to keep people comfortable.**  
**Statement 2 – The more extreme the outside temperature, the lower the number of DD and the lower the requirement of energy for space heating or cooling.**

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement I and Statement II are correct and Statement II is the correct explanation for Statement I.
- (b) Both Statement I and Statement II are correct and Statement II is not the correct explanation for Statement I.
- (c) Statement I is correct but statement II is incorrect.
- (d) Statement -I is incorrect but Statement -II is correct.

**Ans C**



- Degree days are **measures of how cold or warm a location is and are used to assess the energy needed to keep people comfortable**. A DD compares the mean outdoor temperatures recorded for a location to a standard temperature. **Hence, statement 1 is correct.**
- **The more extreme the outside temperature, the higher the number of DD and the higher the requirement of energy for space heating or cooling**. A Cooling DD quantifies the energy requirement for cooling while a Heating DD quantifies the energy requirement for heating. **Hence, statement 2 is incorrect.**

77) Bedaquiline, recently seen in the news is used to treat which of the following disease?

- Cancer
- Tuberculosis
- Malaria
- Hepatitis

**Ans B**

Recently, Johnson & Johnson's patent on bedaquiline, **a key drug for drug-resistant tuberculosis (DR-TB) treatment, expired on July 18**. Bedaquiline is a **cornerstone drug for drug-resistant tuberculosis (DR-TB) treatment**. Bedaquiline is used in combination with other medicines to treat tuberculosis patients when the first line of treatment fails to kill the bacteria. **Hence, option (b) is correct.**

78) Consider the following statements, with reference to the Prohibition of Electronic Cigarettes Act (PECA):

- E-cigarettes are battery-operated systems that heat a substance (liquid or solid), which contains nicotine and often flavours, to create an aerosol for inhalation.
- PECA prohibits the production, manufacture, import, export, transport, sale, distribution and advertisement of e-cigarettes in India.

**Which of the above statements is/are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Ans C**

- E-cigarettes are **battery-operated systems that heat a substance (liquid or solid), which contains nicotine and often flavours, to create an aerosol for inhalation**. E-cigarette aerosols have harmful substances such as **nicotine, cancer-causing chemicals, heavy metals such as nickel, tin and lead, and chemicals causing lung diseases such as diacetyl**. An electronic cigarette is a battery-

operated device that emits a vaporized solution to inhale. These devices have various names, including **e-cigarettes, e-hookahs, vaporizer cigarettes, vapes, and vape pens**. **Hence, statement 1 is correct.**

- **Ministry of Health and Family Welfare launched an online portal** for reporting violations under the Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act (PECA). **All forms of Electronic Nicotine Delivery Systems including e-cigarettes are prohibited under PECA**. **Hence, statement 2 is correct.**

79) Consider the following statements regarding Waterspout:

- Waterspouts are usually formed on the sea surface only.
- It is seen mostly in the Polar region.
- Tornadic waterspouts have the same characteristics as a land tornado.

**How many of the above statements is/are correct?**

- Only one
- Only two
- All three
- None

**Ans B**

- A waterspout is a column or funnel of ferociously whirling air that typically forms over the surface of the sea. **It resembles a tornado. Hence, statement 1 is correct.**
- Most often, tropical and subtropical regions are where waterspouts develop. But on rare occasions, regions like Antarctica, Australia, New Zealand, and the Middle East also record these. **Hence, statement 2 is incorrect.**
- **Tornadoes that originate over water or migrate from land to water are referred to as tornadoes with waterspouts**. They have many traits with a land tornado. They are linked to violent thunderstorms and frequently come with strong winds, rough seas, significant hail, and perilous lightning. **Hence, statement 3 is correct.**

80) Consider the following countries:

- Kazakhstan
- Turkmenistan
- Iraq
- Uzbekistan

**How many of the countries given above border the Caspian Sea?**

- Only one
- Only two
- Only three

(d) All four

**Ans B**

- According to a group of worldwide academics, the **world's most significant freshwater sources, including Lake Titicaca in South America and the Caspian Sea between Europe and Asia**, have been losing water at a cumulative rate of roughly 22 gigatonnes per year for almost three decades.
- Russia, Kazakhstan, Turkmenistan, Iran and Azerbaijan are the five nations that surround the Caspian Sea.

**Hence, option (b) is correct**

**81) Consider the following statements with reference to Ludwigia Peruviana:**

1. Ludwigia Peruviana is an aquatic weed native to India.
2. It is used as an ornamental plant for its tiny yellow flowers.
3. It grows fast along water bodies.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Ans B**

- **Ludwiga peruviana an invasive weed**, is threatening elephant habitats and foraging grounds in Tamil Nadu. It has infested the majority of the hill station's swamps, locally known as vayals. **It is popularly called primrose willow and is a native of Central and South America including Peru. Hence, statement 1 is incorrect.**
- **It is used as an ornamental plant for its tiny yellow flowers.** It grows fast along water bodies. **It is among the 22 priority invasive plants in Tamil Nadu.** Ludwigia peruviana is a perennial, sometimes deciduous, wetland shrub that can grow to 3 and 4 metres. **Hence, statements 2 and 3 are correct.**

**82) Batagaika Crater, located in Russia, is recently seen in the news for which of the following reasons?**

- (a) Land subsidence
- (b) Groundwater extraction
- (c) Meteor impact
- (d) Permafrost thawing

**Ans D**

**Batagaika Crater is the World's biggest permafrost crater located in the Far East of Russia.** Scientists believe that the crater is the result of a melting

permafrost land, which was frozen during the Quaternary Ice Age 2.58 million years ago. **The locals call it "gateway to the underworld" while scientists call it mega-slumps.** This is produced by higher air temperatures, warming climate and anthropogenic impact. It holds clues to prehistoric life on Earth. Researchers believe the exposed ice and soil along the crater's edges could hold up to 200,000 years of geological and biological history. **Hence, option (d) is correct.**

**83) Consider the following statements regarding Hydroelectricity:**

**Statement I** - Hydroelectricity is the generation of electricity from the humidity of the air.

**Statement II** - The key to harvesting electricity from humid air lies in a tiny device comprising two electrodes and a thin layer of material filled with nanopores.

**Which of the following is correct with respect to the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II –II is the correct explanation of Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement I is correct but Statement II is incorrect
- (d) Statement I is incorrect but Statement II is correct

**Ans A**

**Explanation:** Hydroelectricity is the generation of electricity from the humidity of the air. It is a **type of renewable energy that has the potential to be a major source of power in the future.** The key to harvesting electricity from humid air lies in a tiny device comprising two electrodes and a thin layer of material filled with nanopores. Just as clouds create electrical charges and give rise to lightning bolts during storms, this revolutionary device converts air humidity into usable electricity. **Unlike other renewable energy sources such as solar and wind, air humidity is continuously available, making it a sustainable reservoir of energy. Hence, both Statement I and Statement II are correct and Statement –II is the correct explanation of Statement I.**

**84) With reference to the Prime Minister's Development Initiative for North East Region (PM-DevINE) scheme consider the following statements:**

1. It will aim at providing livelihood opportunities to the youth and women of north northeastern region.
2. The central government is bearing the entire fund of the scheme.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans C

- PM-DevINE Scheme, short for "Prime Minister's Development Initiative for North Eastern Region," is a **Central Sector scheme with 100% central funding, introduced in the Union Budget 2022-23. The scheme aims to promote development in the North Eastern Region (NER) of India.** The PM-DevINE scheme will be implemented by the Ministry of Development of the North Eastern Region (MDoNER) through the North Eastern Council or Central Ministries/agencies or State Government agencies.
- **The objectives of PM-DevINE are to** (i) Fund infrastructure convergently, in the spirit of PM GatiShakti; (ii) Support social development projects based on felt needs of the North Eastern Region (NER); (iii) Enable livelihood activities for youth and women; and (iv) Fill the development gaps in various sectors. PM-DevINE will not be a substitute for existing Central and State Schemes. **It will lead to the creation of infrastructure, support industries, social development projects and livelihood activities for youth and women, thus leading to income and employment generation.**

Hence, both statements are correct.

85) Consider the following statements regarding the Solar Technology and Application Resource Centres (STAR-C) initiative:

1. It is a joint initiative of the International Solar Alliance and the United Nations Development Programme.
2. It aims to strengthen solar energy ecosystems in the world's poorest nations.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans C

**Explanation:** India is thinking of including many Pacific Island nations in its Solar Technology and Application Resource Centres (STAR-C) initiative. The International Solar Alliance and the United Nations Industrial Development Organisation (UNIDO) collaborate to

manage the project. **The programme aims to strengthen solar energy ecosystems in the world's poorest nations.** It aims to create a strong network of institutional capacities within ISA member states to enhance quality infrastructure for the uptake of solar energy products and services. **Hence, both statements are correct.**

86) With reference to Controlled human infection studies (CHIS), consider the following statements:

1. CHIS refers to the research methodology that involves intentionally exposing healthy human volunteers to a specific pathogen or infectious agent under controlled conditions.
2. India has conducted CHIS after the Covid-19 pandemic.

Which of the above statements is/are incorrect?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans B

- Indian Council of Medical Research's (ICMR) Bioethics Unit **has introduced a consensus policy statement on ethical conduct of CHIS in India.** It aims to address ethical issues of CHIS so that research can be conducted without compromising on ethical principles while ensuring protection of human participants. **CHIS refers to the research methodology that involves intentionally exposing healthy human volunteers to a specific pathogen or infectious agent under controlled conditions.** This is done for developing models of infection, understanding host-pathogen interactions and/or testing vaccines and therapeutics. **Hence, statement 1 is correct.**
- According to the ICMR, India has not conducted any CHIS yet, because they involve ethical dilemmas and controversial research ethics — such as **intentional harm, potential coercion, risk to others, withdrawal rights and research with vulnerable groups.** **Hence, statement 2 is incorrect.**

87) Consider the following statements:

**Statement I-** India Climate Energy Dashboard (ICED) 3.0 will facilitate insights and enhance understanding of the energy and climate sectors. **Statement II –** Ministry of Environment, Forest and Climate Change (MoEFCC) develops it in collaboration with Vasudha Foundation.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement-I is correct but Statement II is incorrect.
- (d) Statement-I is incorrect but Statement II is correct.

**Ans C**

**Explanation:** Recently, NITI Aayog released the India Climate Energy Dashboard (ICED) 3.0. It is **India's one-stop platform for near real-time data on the energy sector, climate, and related economic datasets based on government-published sources**. It is developed by NITI Aayog in collaboration with the energy and climate think-tank Vasudha Foundation. **It enables users to freely access and analyze datasets using an analytical engine**. ICED provides Near Real-Time Data with in-built Analytics to track Climate Action Progress. **Hence, statement-I is correct but statement II is incorrect.**

88) **With reference to ethanol blending, consider the following statements:**

1. An ethanol blend is defined as a blended motor fuel containing ethyl alcohol that is at least 99% pure, derived from agricultural products and blended exclusively with gasoline.
2. The Government of India has advanced the target for 20% ethanol blending in petrol to 2025 from 2030.
3. The government has allowed ethanol production from surplus rice with Food Corporation of India and maize respectively for blending with petrol under Ethanol Blended Petrol (EBP) programme.

**How many of the above statements is/are correct?**

- (a) Only one  
 (b) Only two  
 (c) All three  
 (d) None

**Ans C**

- Ethanol is one of the principal biofuels, which is naturally produced by the fermentation of sugars by yeasts or via petrochemical processes such as ethylene hydration. **Ethanol Blending Programme (EBP) is aimed at reducing the country's dependence on crude oil imports, cutting carbon emissions and boosting farmers' incomes**. An ethanol blend is defined as a blended motor fuel containing ethyl alcohol that is at least 99% pure, derived from agricultural products, and blended exclusively with gasoline. **Since it is plant-based, it**

**is considered to be a renewable fuel. Hence, statement 1 is correct.**

- **The Government of India has advanced the target for 20% ethanol blending in petrol (also called E20) to 2025 from 2030.** A "Roadmap for Ethanol Blending in India 2020-25" was also released, which lays out a detailed pathway for achieving 20% ethanol blending. This roadmap also mentioned an intermediate milestone of 10% blending to be achieved by November 2022. **Hence, statement 2 is correct.**
- **Government has allowed ethanol production/procurement from sugarcane-based raw materials viz. C & B heavy molasses, sugarcane juice/sugar/sugar syrup, surplus rice with Food Corporation of India (FCI) and Maize respectively for blending with petrol under the Ethanol Blended Petrol (EBP) programme. Hence, statement 3 is correct.**

89) **Kalagarh Tiger Reserve, recently seen in news, is located in which state?**

- (a) Uttar Pradesh  
 (b) Rajasthan  
 (c) Madhya Pradesh  
 (d) Uttarakhand

**Ans D**

**Explanation:** Kalagarh Tiger Reserve is located in the **Terai region of Uttarakhand, India**. It spans parts of Pauri Garhwal and Nainital districts, covering a significant area. The reserve is bounded by **the Ramganga River on the west and the Mandal River on the east. Hence, option (d) is correct.**

90) **With reference to 'Zero FIR' consider the following statements:**

1. It is an FIR that is registered irrespective of the area where the offence is committed and the police can no longer claim that they have no jurisdiction over the case.
2. It was recommended by the Justice Verma Committee in the aftermath of the Nirbhaya gang rape case in 2012.

**Which of the above statements is/are correct?**

- (a) 1 only  
 (b) 2 only  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

**Ans C**

**Explanation:** Unlike an FIR, which is restricted by jurisdiction, a **zero FIR can be filed in any police station, regardless of whether the offence was**

committed under the jurisdiction of that particular police station. Whereas FIRs have serial numbers assigned to them, **zero FIRs are assigned the number '0'**. After a police station registers a zero FIR, it has to transfer the complaint to a police station that has the jurisdiction to investigate the alleged offence. **The concept of a zero FIR is relatively new and was introduced on the recommendation of the Justice Verma Committee in the aftermath of the Nirbhaya gang rape case in 2012.** It is aimed to put a legal obligation on police to take quick action and prevent them from using the excuse of the absence of jurisdiction. **Hence, both statements are correct.**

91) Consider the following statements regarding Miocene Epoch:

1. During this epoch, there was a significant decrease in global temperatures.
2. Oceanic nutrient productivity during this time was uniform throughout all oceans.
3. During this period, the evolution of molluscs and marine plankton decreased.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans D**

- Recently, a research group in Japan has uncovered an exceptionally well-preserved fossil forest that belongs to the late Miocene epoch. The **Miocene epoch was a lengthy period characterized by the Earth's climate rebounding from the Oligocene cooling.** During this epoch, there was a significant increase in global temperatures. **Hence, statement 1 is incorrect.**
- Oceanic nutrient distribution patterns changed, resulting in greater production in some locations and decreased productivity in others. **Hence, statement 2 is incorrect.**
- The Miocene spurred accelerated evolution in marine plankton and molluscs, increasing biological diversity. **Africa has abundant Miocene fossils. Hence, statement 3 is incorrect.**

92) With reference to the No Confidence Motion, consider the following statements:

**Statement I** - A No-Confidence Motion should state the reasons for its adoption in the Lok Sabha.

**Statement II** – It can be moved against the entire council of ministers and not against an individual minister.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement I is correct but Statement II is incorrect.
- (d) Statement I is incorrect but Statement II is correct.

**Ans D**

**Explanation:** No-confidence motion tests the government's majority. Any Lok Sabha MP with 50 colleagues' support can introduce it. Lok Sabha can remove the ministry by passing this motion. **Article 75 makes the council of ministers collectively responsible to Lok Sabha.** It is not essential to state the reasons for the adoption of a No-confidence motion. **A No-Confidence motion cannot be moved against an individual minister.** If it is passed in the Lok Sabha, the Council of Ministers must resign from the office. **Hence, Statement I is incorrect but Statement II is correct.**

93) With reference to the STARFIRE algorithm, consider the following statements:

1. It can calculate the amount of Radio Frequency Interference emitted by FM radio stations.
2. It is being developed by Defence Research and Development Organisation.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans A**

- STARFIRE stands for **Simulation of Terrestrialradio Frequency Interference in orbits around Earth.** It can calculate and utilise the Radio Frequency Interference emitted by FM radio stations, WiFi networks, mobile towers, radar, satellites, and communication equipment to design and fine-tune antennas. **Hence, statement 1 is correct.**
- Scientists at the **Raman Research Institute (RRI)**, an autonomous institute of the Department of Science and Technology, have developed the STARFIRE algorithm. **Hence, statement 2 is incorrect.**

94) The 'Long March-10' rocket, a new crewed launch vehicle recently seen in the news was developed by which country?

- (a) USA

- (b) China
- (c) India
- (d) Japan

**Ans B**

**Explanation:** The new carrier rocket from China is intended for manned moon landing missions. **A crew module and lunar lander can both be transported by the rocket to an Earth-Moon transfer orbit.** It has a modular design and is made up of a service capsule, a return capsule, and an escape tower, which makes it resemble a little space station all by itself. **Hence, option (b) is correct.**

95) Which of the following options correctly describes the 'T+1 settlement system', recently seen in the news?

- (a) It refers to the transaction that is initiated through a bank and allows for the movement of funds from one account to another.
- (b) It refers to reporting and recovery of NPA within one year from the day it is listed as NPA.
- (c) It refers to the settlement dates of security transactions that occur on a transaction date plus one day.
- (d) It refers to the recovery phase of the business cycle after the recession.

**Ans C**

**Explanation:** The T+1 settlement cycle means any trade-related settlements must be completed within one day from the day of the transaction. For instance, if you have bought a share on Tuesday, it will be credited to your Demat account by Wednesday. T+1 settlement system will shorten the settlement cycle which will reduce the risk of default and will increase the liquidity in the market with availability of funds. **China is the only market of significant size and scale that operates on a shortened settlement cycle (T0/T+1).** SEBI announced a shift to a T+1 settlement cycle for all scripts from October 1, 2023. Earlier, India followed the T+2 settlement and now adopts the T+1 settlement. T+1 means settlements must be completed within one day of the transaction's completion. **Currently, trades on Indian stock exchanges are settled in two working days (T+2). Hence, option (b) is correct.**

96) Consider the following statements about the Jan Vishwas (Amendment of Provisions) Bill, 2023:

- 1. The primary objective is to encourage people's participation at the local level of government.
- 2. The Bill seeks to decriminalize decriminalise provisions
- 3. By amending these provisions, the Bill aims to reduce the burden of legal complexities.

4. The Bill proposes the introduction of compounding of offences.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Ans C**

- The Bill's primary objective is to **enhance Ease of Living and Ease of Doing Business by decriminalizing 183 provisions within 42 Central Acts under 19 Ministries/Departments.** Hence, **statement 1 is incorrect and statement 2 is correct.**
- The decriminalization process includes **eliminating imprisonment and/or fine for some provisions,** while in others, imprisonment will be abolished but fines increased. The amendments aim to reduce legal complexities and promote a more business-friendly and citizen-friendly environment. **Hence, statement 3 is correct.**
- Imprisonment and fines will be transformed into penalties in specific provisions, and compounding of offences will be introduced for selected cases, streamlining the enforcement process. **Hence statement 4 is correct.**
- To ensure effective implementation, fines and penalties will be pragmatically revised, **Adjudicating Officers will handle legal proceedings, and Appellate Authorities will handle appeals.** Periodic adjustments to fines and penalties will be made, aligning punishment with the seriousness of the offence committed. **The Bill seeks to strike a balance between deterrence and leniency, creating a fair and business-friendly legal framework.**

97) What effect does a US Federal Reserve interest rate hike have on the Indian stock market?

- (a) The Indian stock market experiences a surge in prices due to increased investor confidence.
- (b) The Indian stock market becomes more volatile, leading to fluctuations in prices.
- (c) The Indian stock market remains unaffected by the US Fed's decision.
- (d) The Indian stock market experiences a decline in prices due to reduced foreign investment.

**Ans B**

- When the US Federal Reserve (the Fed) raises its interest rates, it can have several impacts on the Indian stock market. **One significant effect is increased volatility.** The interest rate hike in the US

can lead to a shift in global investor sentiment and asset allocation strategies.

- **As the US interest rates rise, investors might be drawn to higher returns in the US, which could lead to a capital outflow from emerging markets like India.** This capital outflow can trigger a sell-off in the Indian stock market as foreign investors withdraw their funds, causing stock prices to decline.
- **Additionally, higher US interest rates can make borrowing more expensive for investors and companies, which can affect their investment decisions and capital allocation.** As a result, market participants may become more cautious, leading to fluctuations in stock prices.
- Moreover, changes in global interest rates can impact the flow of foreign institutional investment (FII) into India's equity markets. If FIIs anticipate better returns in the US, they might reduce their exposure to Indian equities, further contributing to market volatility.
- **Hence, a US Federal Reserve interest rate hike can create uncertainty and volatility in the Indian stock market, with fluctuations in prices being a common response to changes in global interest rates and investor sentiment.**

98) Consider the following statements about the **Global Education Monitoring Report, 2023**:

1. It is released by UNICEF.
2. Less than 10% of the countries provide for guaranteed data privacy in education by law.
3. The title of the report for this year is "Technology in education: a tool on whose terms?"
4. SDG-5 mentions the Goal of Education for all.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Ans A**

- The Global Education Monitoring Report, an **independent annual publication hosted and published by UNESCO**, plays a crucial role in monitoring progress towards **achieving the Sustainable Development Goals (SDGs) in the field of education.** Hence, **statement 1 is incorrect.**
- It serves as a mechanism to assess the implementation of national and international education strategies while holding all relevant partners accountable for their commitments. **The latest report, titled "Technology in education: a tool on whose terms?" highlights UNESCO's**

**warning against the uncritical adoption of digital products in education, citing the lack of robust evidence on their added value.** Hence, **statement 3 is correct.**

- Data privacy in education remains a concern, as only 16% of countries explicitly guarantee it by law. During the pandemic, 89% of education technology products were found to be capable of surveying children's data, while 39 out of 42 governments providing online education risked or infringed on children's rights. **Hence, statement 2 is incorrect.**
- Moreover, the report sheds light on the **financing gap for achieving SDG 4 targets, with basic digital learning in low-income countries and Internet connectivity** for all schools in lower-middle-income countries requiring an additional 50% of their current funding. **Hence, statement 4 is incorrect.**

99) Which of the following best describes **silvopasture**?

- (a) A farming technique that focuses on growing multiple crops together for higher yields.
- (b) A system of raising livestock exclusively in enclosed pastures.
- (c) An agroforestry practice that combines trees, forage crops, and livestock in a mutually beneficial arrangement.
- (d) A method of soil conservation that involves the use of cover crops.

**Ans C**

**Explanation:** Silvopasture is an **agroforestry practice that involves integrating trees, forage crops, and livestock in a complementary and mutually beneficial arrangement.** In a silvopasture system, trees are strategically planted in pastures or grazing lands, providing multiple benefits to both the environment and farming practices. **The trees in silvopasture serve several purposes. They offer shade and shelter to the livestock, protecting them from extreme weather conditions and reducing stress. The presence of trees also enhances biodiversity** by providing habitat for various wildlife species. Moreover, **the trees contribute to carbon sequestration, helping to mitigate the impacts of climate change.** In addition to the environmental benefits, **silvopasture is advantageous for agricultural productivity.** The forage crops grown in the pasture provide nutritious grazing options for the livestock, ensuring they have access to diverse and high-quality feed throughout the year. This can improve the health and well-being of the animals, leading to better growth and reproduction rates. **Furthermore, the tree cover helps to prevent soil erosion and nutrient loss, leading to improved soil fertility over time.** Silvopasture systems can be particularly valuable in areas with limited water

resources, as the tree canopy reduces evaporation and helps conserve water.

100) Consider the following statements about Hepatitis B:

1. Hepatitis B is primarily transmitted through contaminated food and water.
2. There is no vaccine available for hepatitis B.
3. Hepatitis B is a viral infection that primarily affects the respiratory system.
4. Hepatitis B can be transmitted through the exchange of body fluids, such as blood and semen.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans A

- Hepatitis B is not primarily transmitted through contaminated food and water. It is **primarily transmitted through the exchange of infected body fluids, such as blood, semen, and vaginal fluids**. Common modes of transmission include unprotected sexual contact, sharing of needles or syringes and from an infected mother to her newborn during childbirth. **Hence, statement 1 is incorrect.**
- **There is a highly effective and safe vaccine available for hepatitis B.** The hepatitis B vaccine is recommended for all infants and children, as well as for adults at risk of infection, such as healthcare workers, people with multiple sexual partners, and individuals who inject drugs. The vaccine provides long-term protection against the virus and is a crucial tool in preventing the spread of hepatitis B. **Hence, statement 2 is incorrect.**
- **Hepatitis B is a viral infection**, but it primarily affects the liver, not the respiratory system. **The hepatitis B virus (HBV) targets liver cells, leading to inflammation of the liver, which can range from mild to severe.** Chronic infection with HBV can result in liver cirrhosis, liver failure, or hepatocellular carcinoma (liver cancer). **Hence, statement 3 is incorrect.**
- **Hepatitis B is mainly spread through the exchange of infected body fluids, including blood, semen, vaginal fluids, and to a lesser extent, saliva and tears.** It is important to practice safe sex, avoid sharing needles or personal items that may come into contact with blood, and ensure proper infection control practices in healthcare settings to prevent the transmission of hepatitis B. Vaccination is the most effective way to protect

against hepatitis B infection. **Hence, statement 4 is correct.**

101) With reference to Conjunctivitis, consider the following statements:

**Statement I** - Conjunctivitis is an inflammation of the transparent membrane that lines the eyelid and eyeball.

**Statement II** – It can be caused due to allergies.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement I is correct but Statement II is incorrect.
- (d) Statement I is incorrect but Statement II is correct.

Ans B

- All India Institutes of Medical Sciences (AIIMS), Delhi has been witnessing an increase in conjunctivitis cases recently. **Conjunctivitis is an inflammation of the transparent membrane that lines the eyelid and eyeball.** This membrane is called the conjunctiva. It is also called Pink eye infection. It can be transmitted directly and indirectly.

Causes of Conjunctivitis:-

- Viruses
- Bacteria
- Allergies
- A chemical splash in the eye
- A foreign object in the eye
- In newborns, a blocked tear duct

Hence, both Statement I and Statement II are correct and Statement II is not the correct explanation for Statement I.

102) Markarian 421, recently seen in the news is related to which of the following?

- (a) Black hole
- (b) Asteroid
- (c) Crater
- (d) Satellite

Ans A

**Explanation:** NASA's IXPE Mission unveils twisted mysteries of the Supermassive Black Hole Markarian 421. **Markarian 421 is a supermassive black hole that is firing high-energy particles directly towards Earth.** It is situated about 400 million light-years from Earth. **It is located in the constellation Ursa Major and is a**



**strong source of gamma rays.** They are also often exceptionally bright since particles approach the speed of light. **Hence, option (a) is correct.**

103) **In the context of Full-Reserve Banking which of the following is not correct?**

- (a) Banks are prohibited from lending out demand deposits received from customers.
- (b) Banks must always hold 100% of these deposits in their vaults
- (c) Banks can only lend money received as time deposits.
- (d) This system relies heavily on electronic money for lending purposes.

**Ans D**

**Explanation:** Economists are urgently discussing the merits of Full-Reserve Banking as opposed to Fractional-Reserve Banking.

**Full-Reserve Banking:**

- Banks are prohibited from lending out demand deposits received from customers, reducing the risk of bank runs.
- **100% Reserve Requirement:** Banks must always hold 100% of these deposits in their vaults, acting merely as custodians.
- **Banks can only lend money received as time deposits.**
- **Banks serve as safekeepers of depositors' money and charge fees for this service.**

**Fractional-Reserve Banking:**

- The fractional-reserve banking system allows banks to lend more money than the cash they hold in their vaults.
- **This system relies heavily on electronic money for lending purposes.**
- **Central Bank Intervention:** Central banks can provide emergency cash to avert immediate crises in the fractional-reserve banking system.
- Bank runs are a potential risk if many depositors simultaneously demand cash.

104) **Consider the following pairs:**

1. Dhala Crater: It is India's oldest and largest impact crater.
2. Lonar Crater: It is a highly saline and alkaline water lake with no outflow.
3. Ramgarh Crater: It is located in Rajasthan's Baran district.

**How many of the above pairs are correct?**

- (a) Only one
- (b) Only two
- (c) All three

(d) None

**Ans C**

**Dhala Crater:**

- The **Dhala crater holds the distinction of being India's oldest and largest impact crater.**
- It is believed to have formed approximately 2500 million years ago.
- **Named after the village Dhala,** the crater remains as an eroded remnant of its original impact structure.
- Situated in **Madhya Pradesh's Shivpuri district,** the crater spans a massive 11 km in diameter, making it the largest in Asia.

**Lonar Crater:**

- Lonar Crater is in the **Buldhana district of Maharashtra, India.**
- It is a **highly saline and alkaline water lake** with no outflow, leading to mineral concentration.
- **Created by a meteorite impact** around 570,000 to 47,000 years ago.
- It is a **hover-backed protrusion in volcanic rock,** forming an endorheic or closed basin.
- **Declared a wildlife sanctuary due to its diverse wildlife,** including 160 bird species, 46 reptile species, and 12 mammal species like the endangered Asian woolly neck and grey wolf.

**Ramgarh Crater:**

- Ramgarh crater formed around 150 million years ago in **Rajasthan's Baran district.**
- **The crater is about three kilometres in diameter** and resulted in a lake measuring one kilometre in length and 250 meters in width.
- **First found by the Geological Survey of India in 1869,** it shows all the signs of an impact crater.
- Geo-scientists from GSI and INTACH conducted additional research on the crater before the COVID-19 pandemic.
- **Rajasthan's mines and geology department plans to recommend it as an international geo-heritage site to IUGH.**

105) **Consider the following initiatives:**

1. Shilaphalakam
2. Vasudha Vandhan
3. Veeron Ka Vandan
4. Collection of Soil
5. Amrit Vatika

**Which of the above initiatives is/are taken as part of the 'Meri Matti Mera Desh'?**

- (a) 1, 2 and 3 only
- (b) 3 and 4 only
- (c) 2, 3 and 5 only

(d) All of the above

**Ans D**

- The Centre has announced a series of events across the country under **the banner of the 'Meri Maati Mera Desh' campaign to mark the anniversary of India's independence in August.** The campaign aims to celebrate the diversity and unity of the nation, as well as to honour the sacrifices and contributions of freedom fighters and martyrs.
- **Key Components of the Campaign:**
  - **Shilaphalakam:** memorial plaque in every gram panchayat or village,
  - **Vasudha Vandhan:** Planting 75 saplings of indigenous species in every gram panchayat or village,
  - **Veeron Ka Vandan:** Saluting the freedom fighters and their families,
  - **Collection of Soil:** Collecting soil from every gram panchayat or village by young volunteers and others
  - **Amrit Vatika:** The garden will be made with soil brought from all parts of the country, representing the different regions, cultures and traditions of India.

Hence, all are correct.



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## Practice MCQs on Conventional Subjects- July 2023

### 1. Consider the following statements regarding Agricultural Emissions:

1. As per National Greenhouse Gas Inventory, Rice cultivation is the highest source of Green House Gas emissions in Indian agriculture.
2. Paddy fields are anthropogenic sources of atmospheric nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>). Which are powerful greenhouse gases.
3. The intermittent flooding or intermittent irrigation of rice reduces water, methane and nitrous oxide emissions.

#### Which of the statements given above is/are correct?

- (a) 1, 2 and 3
- (b) 1 and 3 only
- (c) 2 only
- (d) 3 only

**Ans C**

**Statement 2 is correct:** Paddy fields are **anthropogenic sources of atmospheric nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>)**, which have been reckoned as 273 and 80-83 times more powerful than CO<sub>2</sub> in driving temperature increase in 20 years' (as per IPCC AR6, 2021). The amount of CH<sub>4</sub> emitted from paddy fields of India is 3.396 tera-gram (1 tera-gram = 109 kilograms) per year or 71.32 MMT CO<sub>2</sub> equivalent.

### 2. Consider the following statements regarding Sustainable Agriculture Policy Action Agenda:

1. The Sustainable Agriculture Policy Action Agenda was among the highlight action pledges decided by the participating countries in 2018 at COP24 of UNFCCC in Katowice, Poland.
2. 27 countries have signed this action agenda and India has opted out of joining this initiative.
3. World Bank committed to spend \$25 billion in climate finance annually till 2025 through its Climate Action Plan.

#### Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None of the above

**Ans C**

The Ministry of Agriculture & Farmers Welfare launched a **Global Environment Facility (GEF) assisted project namely, "Green – Ag: Transforming Indian Agriculture for global environment benefits and the**

**conservation of critical biodiversity and forest landscapes"** in collaboration with the Food and Agriculture Organization (FAO) in high-conservation-value landscapes.

### 3. Consider the following statements with reference to the 'National Bee Board' (NBB):

1. NBB works under the aegis of the Union Ministry of Medium and Small Enterprises in collaboration with Ministry of Tribal Affairs, aims at preserving the traditional way of Beekeeping and honey production in India.
2. The Union Minister of Medium and Small Enterprises is the ex- officio chairman of the NBB.

#### Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans D**

**Statement 1 is incorrect:** National Bee Board (NBB), a registered society under the Societies Registration Act XXI of 1860, was reconstituted by the Department of Agriculture & Cooperation, Ministry of Agriculture and Farmers Welfare, Govt. Of India with public private partnership in June, 2006.

National Bee Board (NBB) envisages overall development of Beekeeping by promoting Scientific Beekeeping in India to increase the productivity of crops through pollination and increase the Honey production for increasing the income of the Beekeepers/ Farmers. **Statement 2 is incorrect**

### 4. With reference to the "Green – Ag: Transforming Indian Agriculture for global environment benefits and the conservation of critical biodiversity and forest landscapes' ' project, which of the following statements is incorrect?

- (a) The project aims to catalyze transformative change for India's agricultural sector to support achievement of national and global environmental benefits and conserve critical biodiversity and forest landscapes.
- (b) The Ministry of Agriculture & Farmers Welfare launched the project with collaboration with Food and Agriculture Organization and assisted by the Global Environment Facility (GEF)

(c) Keibul Lamjao National Park of Manipur is designated as one of the conservation-value landscapes under this project.

(d) None of the above statements is incorrect.

**Ans C**

**Statement 1 is incorrect:** The 'Sustainable Agriculture Policy Action Agenda for the Transition to Sustainable Agriculture and Global Action Agenda for Innovation in Agriculture' was among the highlight action pledges to be clinched. by the participating countries at the 26th Conference of Parties COP26 climate summit of the United Nations Framework Convention on Climate Change (UNFCCC) In Glasgow, UK in 2021.

**Statement 2 is incorrect: India is one of the 27 countries to sign this action agenda.**

**5. Which of the following statements is incorrect with respect to the system of fogponics in agriculture?**

(a) It is a sub-technique of aeroponics where fog is used to create a constant nutrient-rich environment for plant roots.

(b) The plants get the oxygen from the water oxygenated by an air pump in this technique.

(c) The process of fogponics is monitored through Artificial Intelligence induced programming.

(d) None of the above statement

**Ans C**

**Fogponics is a sub-technique of aeroponics.** Fogponics/Aeroponics works by hanging the plants in the air. It is held by a tray/foam. **The plant roots are suspended, so they have plenty of oxygen access.** Water is provided by plants via the foggers. The fogponics system uses foggers, which pump and vibrate under pressure to transform a nutrient and water mixture into humidity, not dissimilar to the humid atmosphere one might find in the rainforest. This fog creates a constant nutrient-rich environment for plant roots.

**6. Consider the following statements regarding Opportunity cost.**

1. Opportunity costs represent the potential benefits that an individual, investor, or business misses out on when choosing one alternative over another.

2. For companies, opportunity costs do not show up in the financial statements but are useful in planning by management.

**Which of the statements given above is/are correct?**

(a) Statement-1 is True, Statement-2 is True; Statement-1 is a correct explanation for Statement-2

(b) Statement-1 is True, Statement-2 is True; Statement-1 is NOT a correct explanation for Statement-2

(c) Statement-1 is True, Statement-2 is False

(d) Statement-1 is False, Statement-2 is True

**Ans A**

- **Opportunity costs represent the potential benefits that an individual, investor, or business misses out on when choosing one alternative over another.**
- To properly evaluate opportunity costs, the costs and benefits of every option available must be considered and weighed against the others.
- Considering the value of opportunity costs can guide individuals and organizations to more profitable decision-making.
- **Opportunity cost is a strictly internal cost used for strategic contemplation;** it is not included in accounting profit and is excluded from external financial reporting.

**7. Consider the following statements regarding GDP deflator.**

1. It shows the increase in gross domestic product has happened on account of higher prices rather than increase in output.
2. The GDP deflator contains only those goods and services which households purchase for consumption.

**Which of the above statements is/are correct?**

(a) Statement-1 is True, Statement-2 is True; Statement-1 is a correct explanation for Statement-2

(b) Statement-1 is True, Statement-2 is True; Statement-1 is NOT a correct explanation for Statement-2

(c) Statement-1 is True, Statement-2 is False

(d) Statement-1 is False, Statement-2 is True

**Ans C**

- Since the deflator covers the entire range of goods and services produced in the economy — as against the limited commodity baskets for the wholesale or consumer price indices — it is seen as a more comprehensive measure of inflation.

**8. The First Five-year Plan mainly focused on the development of**

- (a) Heavy industries
- (b) Consumer goods
- (c) Primary sector
- (d) Vocational education

**Ans C**

- The **First Five-year Plan was launched in 1951** which mainly focused in the development of the primary sector. **The motto of first five years plan was 'Development of agriculture'** and the aim was to solve different problems that formed due to the partition of the nation, Second World War. Rebuilding the country after independence was the vision of this plan.

**9. Which of the following are considered as consequences of inflation in the economy?**

1. Depreciation of currency
2. Borrowers suffer and lenders benefit out of inflation
3. Increases the nominal value of wages
4. Volume of exports decreases.

**How many of the correct options given above:**

- (a) One
- (b) Two
- (c) Three
- (d) All of the above

**Ans B**

- Inflation redistributes wealth from creditors to debtors, i.e., lenders suffer and borrowers benefit out of inflation.
- **With every inflation the currency of the economy depreciates** (loses its exchange value in front of a foreign currency) provided it follows the flexible currency regime.
- **With inflation, exportable items of an economy gain competitive prices in the world market.** Due to this, the volume of export increases and thus export income increases in the economy. It means the export segment of the economy benefits due to inflation.
- **Inflation increases the nominal value of wages, while their real value falls.** That is why there is a negative impact of inflation on the purchasing power and living standard of wage employees.

**10. Which of the following characterizes a managed exchange rate?**

1. Determined by the IMF based on market movements
2. Value of the currency is affected by the Balance of Payments of a nation
3. Central Bank intervenes to manage the value of the currency

**Select the correct answer code:**

- (a) 1 only
- (b) 2, 3

- (c) 1, 3
- (d) 1, 2

**Ans B.**

**Statement 1:** IMF does not peg a currency's level. Pegging of currencies by a central authority was done earlier in the Gold system where currencies were fixed in value.

**11. Which of the statements given below is correct regarding the Luminescent Solar Concentrators?**

1. It can collect direct and diffused solar lights and works even on cloudy days.
2. It is made using polymers and coated with organic dyes and quantum dots.
3. It is cheaper and generates greater amounts of solar power than solar cells.

**Select the correct answer using the codes given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2, and 3

**Ans A**

- **Statement 1 is correct:** Luminescent solar concentrators are **used for trapping solar energy into a large area.** It is a **cost-friendly alternative to solar cells.** The most important advantage offered by Luminescent solar concentrators is its ability to collect both direct and diffused solar radiations.
- **Statement 2 is correct:** Luminescent solar concentrators are **made of thin sheets of polymer material like Polymethylmethacrylate or PMMA.** Along with this, it is also doped with luminescent pigments like organic dyes and quantum dots or rare earth complexes.
- **Statement 3 is incorrect:** It is the cheaper alternative to the solar cells, but produces lesser power than them.

**12. Consider the following statements regarding the onshore and offshore wind farms:**

1. The onshore wind farms are more cost effective as compared to the offshore wind farms.
2. Operation and maintenance of the onshore farms is easier compared to the offshore ones.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2

(d) Neither 1 nor 2

**Ans C**

- Located in the regions of high wind velocities to obtain maximum energy output. **Wind farms can be located either onshore or offshore. Onshore wind farms are the ones that operate on land while offshore ones operate on water.** The setting up and maintenance of onshore wind farms is much easier as well as cheaper as compared to the offshore wind farms. The turbine blades of the onshore wind farms are cheaper.
- **Statement 2 is correct:** Construction of wind farms in a large body of water to produce electricity is not only expensive but also requires greater costs for the maintenance and the setting up of it. **Hence, onshore wind farms are easier to construct and operate than the offshore wind farms.**

**13. Consider the following factors regarding wind power:**

1. Using turbines with shorter diameters.
2. Installation of wind turbines in higher altitude regions.
3. Stronger speed of the winds.
4. Denser surrounding air.

**How many of the factors above are responsible for enhancing the wind power generated?**

- (a) 1 only
- (b) 2 only
- (c) 3 only
- (d) All of the above

**Ans B**

**Statement 1 is incorrect:** Greater the radius of turbine blade and hence the diameter of the blade of the turbine, more energy it produces.

**14. Consider the following statements regarding Hydro Power projects and Biomass:**

1. The run of the river projects is effective in dealing with remote energy needs.
2. Biomass burning releases the same amount of carbon dioxide as that of fossil fuels.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- **Statement 1 is correct:** Small Hydro Power projects are the ones that have **the installed capacity of**

**less than 25 MW. They are usually the run-of-the-river type plants with very small or no reservoir at all for the purpose of storage of water.** Hence, these projects are not as damaging for the environment as the large power projects that require the construction of big dams. These small hydro power projects are highly effective in serving the needs of the local or the remote areas located in their vicinity.

- **Statement 2 is correct:** Biomass is regarded as the renewable energy that is associated with the carbonaceous wastes generated by the living organisms. It acts as an effective substitute for fossil fuels and is used for heating and energy generation purposes. The burning of biomass releases the same amount of carbon dioxide as is released by the burning of fossil fuels.

**15. Which of the provisions given below form part of the PM-KUSUM?**

1. 10 GW of solar or any renewable energy power plant.
2. Solarisation of grid connected solar pumps.
3. Solar projects are less than 500 kW for the smaller farmers.
4. Solar power plants should not be established on marshy or pasture lands.

**Select the correct answer using the codes given below:**

- (a) 1, 2, and 4 only
- (b) 1, 2, and 3 only
- (c) 2, 3, and 4 only
- (d) 1, 3, and 4 only

**Ans B**

- Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahaabhiyan or PM- KUSUM **was launched to encourage farmers to make use of the solar power and replace the diesel water pumps.**
- **Statement 1 is correct:** Under the scheme, a setting up of 10 GW of decentralized ground or stilt mounted grid connected solar or any other renewable energy power plant is envisaged.
- **Statement 2 is correct:** It also aims to establish **off-grid solar pumps and the solarization of grid-connected electric pumps.**
- **Statement 3 is correct and 4 is incorrect:** After certain changes the scheme now allows:

1. Creation of smaller solar power plants of the size of less than 500 kW for the smaller farmers.

2. Allowing the installation of solar power plants on the pasture and marshy lands. Earlier, it was allowed in the barren, fallow, agricultural lands.

**16. In the context of food and nutritional security of India, enhancing the 'Seed Replacement Rates' of various crops helps in achieving the food production targets of the future. But what is/are the constraint/constraints in its wider/greater implementation?**

1. There is no National Seeds Policy in place.
2. There is no participation of private sector seed companies in the supply of quality seeds of vegetables and planting materials of horticultural crops.
3. There is a demand-supply gap regarding quality seeds in case of low value and high volume crops.

**How many of the above statements is/are correct?**

- (a) 1 only
- (b) 3 only
- (c) 2 only
- (d) None of the above

**Ans A**

- **Statement 1 is incorrect.** A National Seed Policy was launched in 2002.
- **Statement 2 is incorrect.** The private sector has played an important role in the supply of quality seeds of vegetables and crops like **hybrid maize, sorghum, Bajra, cotton, castor, sunflower, paddy etc.**
- **Statement 3 is correct.** There is a huge gap between the requirement and supply of seeds. **Seed firms are unable to take advantage of the situation since marginal farmers, who own 60 per cent of the land, go in for cheaper seeds supplied by unorganized sector.** In the case of field crops such as wheat and rice, farmers tend to use their own preserved seeds.

**17. "SPICe+", an initiative of the Government of India, is aimed at:**

- (a) Facilitating the direct benefit transfer of subsidies to poor people.
- (b) Promoting the marketing and export of Indian spices in global markets.
- (c) Making it easier for incorporating a business in India.
- (d) Protecting the interests of the persons affected by natural calamities

**Ans C**

- Simplified Proforma for Incorporating Company Electronically Plus (SPICe+) is an **integrated web form deployed by the Ministry of Corporate Affairs.** It is a new simple application to make it

further easier for incorporating a business in India. **The web-form offers 10 services by three Central Government Ministries and Departments (Ministry of Corporate Affairs, the Ministry of Labour & Department of Revenue in the Ministry of Finance), one State Government (Maharashtra) and various Banks.** Thus, saving procedures, time and cost for Starting a Business in India.

**18. Which of the following statements describes a Regulatory Sandbox, frequently seen in news?**

- (a) It refers to the regulatory authority that is mandated to develop beaches in India as per Blue Flag certification standards.
- (b) It refers to a safe harbour, where businesses can test innovative products under relaxed regulatory conditions.
- (c) It refers to the regulatory authority mandated by the Supreme Court to prevent illegal sand mining in rivers.
- (d) It refers to the controlled environment where genetically modified organisms can be tested before commercial release.

**Ans B**

- A regulatory sandbox is a **safe harbour, where businesses can test innovative products under relaxed regulatory conditions.** Typically, participating companies release new products in a controlled environment to a limited number of customers for a limited period of time. It **usually refers to live testing of new products or services in a controlled/test regulatory environment** for which regulators may permit certain regulatory relaxations for the limited purpose of the testing.

**19. Which of the following statements is/are correct regarding the following PPP models?**

1. Under the Build-Own-Operate (BOO) model, the infrastructure asset is transferred to the government after the negotiated period of time.
2. Under the Build-Operate-Lease-Transfer (BOLT) model, the government takes up the ownership of the facility at the end of the lease period.
3. Under the Build Operate and Transfer (BOT) model, the private partner is responsible to design and build the asset during the contracted period.

**Select the correct answer using the code given below:**

- (a) 3 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Ans C**

- **Statement 1 is incorrect.** Build-Own-Operate (BOO): In this, the **private player designs, builds and operates the facility.** Also, the ownership of the newly built facility will rest with the private party here.
- **Statement 2 is correct.** Build-Operate-Lease-Transfer (BOLT): In this approach, the **private party at the end of the lease period transfer the ownership of the facility to the government.**
- **Statement 3 is correct.** Build Operate and Transfer (BOT): Here, the private partner is **responsible to design, build, operate (during the contracted period) and transfer back the facility to the public sector.**

20. Consider the following pairs of Dedicated freight corridor and the states through which it passes.

Dedicated Freight corridor	Passing states
1. Eastern corridor	A. Telangana
2. Western corridor	B. Gujarat
3. North south corridor	C. Chhattisgarh
4. East west corridor	D. Bihar

How many of the above pairs is/are correctly matched?

- (a) 1 only
- (b) 2 only
- (c) 3 only
- (d) All of the above

Ans A

**Eastern Dedicated Freight Corridor (EDFC):** Ludhiana Punjab to Dankuni West Bengal. The EDFC route covers Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand & West Bengal.

**Western Dedicated Freight Corridor (WDFC):** Dadri, U.P to Jawaharlal Nehru Port, Mumbai. The WDFC covers Haryana, Rajasthan, Gujarat, Maharashtra & Uttar Pradesh.

**North-South Dedicated Freight Corridor connects Delhi with Tamil Nadu.** The 975 km long North-South Sub-Corridor will link Vijayawada-Nagpur-Itarsi which passes through Telangana.

**East-West Dedicated Freight Corridor connects West Bengal with Maharashtra.** The East-West corridor consist of 1,673 km long route linking Chhattisgarh.

21. Consider the following statements regarding the Micro-irrigation in India:

1. It allows the use of saline water for irrigation.
2. Helps to reduce fertiliser requirements of crops.
3. Among states, Punjab has the maximum area under micro irrigation.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans A

- **Statement 1 is correct.** Micro-irrigation allows the use of saline water for irrigation without causing salinity or osmotic stress to plants. **Drip irrigation allows water with higher salt content to be used than other delivery methods, as evaporation losses are minimal.** Drip irrigation can also reduce the effects of salinity near the plant roots by maintaining continuously moist soil around plant roots and providing steady leaching of salt to the edge of the wetted zone.
- **Statement 2 is correct. Micro-irrigation saves on fertiliser requirements.** Combined application of water and fertilizers through irrigation results in balanced nutrient application, reduced fertilizer requirement of around 7 to 42 per cent (thus, saving expenditure cost incurred by farmer), higher nutrient uptake and nutrient use efficiency.
- **Statement 3 is incorrect.** The states with the largest area under micro-irrigation include: **Rajasthan** (1.68 mh), **Maharashtra** (1.27 mh), **Andhra Pradesh** (1.16 mh), **Karnataka** (0.85 mh), **Gujarat** (0.83 mh) and **Haryana** (0.57 mh). Rajasthan has the maximum area under micro irrigation, whereas Haryana had the highest penetration rate of 16.3%.

22. Consider the following pairs of traditional irrigation method and the state where it is mainly practiced.

Traditional irrigation method	State
1. Ahar Pyne	Bihar
2. Phad	Uttar Pradesh
3. Kuls/Kuhls	Rajasthan

Which of the pairs given above is/are correctly matched?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1 and 3 only



### Ans A

- **Pair 1 is correctly matched.** Ahar Pyne is a traditional irrigation system of Bihar. Ahar is a rectangular embankment type water harvesting structure. It is **embanked on three sides & fourth side being the natural gradient of land**. It is used to grow Rabi Crops. Pyne are the irrigation channels.
- **Pair 2 is incorrectly matched.** Phad is community-managed irrigation system prevalent in north-western Maharashtra. Phad means a block of land used for irrigation purpose. Each phad is given name by village community.
- **Pair 3 is incorrectly matched.** Kuls/Kuhl is a traditional irrigation system of Himachal Pradesh managed by communities. These are surface channels that divert water from natural flowing streams (khuds). The structure consist of a temporary headwall (constructed usually with river boulders) across a khud for storage and diversion of the flow through a canal to the fields.

### 23. With reference to Food subsidy in India, Consider the following statements:

1. The food subsidy has risen consistently over last decade.
2. The Central Issue Price of rice and wheat for National food Security Act beneficiaries is linked to inflation and revised periodically.

### Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

### Ans D

- **Statement 1 is incorrect.** There has not been consistent decline or rise of food subsidy over last decade.
- **Statement 2 is incorrect.** The Central Issue price of rice and wheat for National food security act beneficiaries has not been revised since the introduction of the act in 2013.

### 24. With reference to the challenges faced by Food processing industries in India, which of the following statements is/are correct?

1. Majority of Food processing industries are in the unorganized sector.
2. Only 49% FDI is permitted in the food-processing sector in India.

3. Inadequate primary processing and distribution facilities.

### Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1 and 3 only

### Ans D

- **Statement 1 is correct.** According to ASI date, 39,748 food processing enterprises are in the organised sector in 2016-17 while the number of unincorporated enterprises as per NSSO data stood at 24,59,929 in 2015-16. It showed low percentage of FPI enterprises in organised sector.
- **Statement 2 is incorrect.** In India, 100%FDI is permitted under the automatic route in the food-processing sector. **100% FDI in food processing is allowed through government approval route for trading, including through e-commerce in respect of food products manufactured or produced in India**
- **Statement 3 is correct.** The Ministry of Food Processing Industries has identified six key challenges faced by the food processing industry:
  - (1) gaps in supply chain infrastructure (i.e., lack of primary processing, storage and distribution facilities);
  - (2) inadequate link between production and processing;
  - (3) seasonality of operations and low-capacity utilisations;
  - (4) institutional gaps in supply chain, viz., dependence on APMC markets, etc.;
  - (5) inadequate focus on quality and safety standards; and
  - (6) lack of product development and innovation.

### 25. In context of Pradhan Mantri Kisan Sampada Yojana which of the following statements is incorrect?

- (a) It will facilitate creation of modern infrastructure with efficient supply chain management.
- (b) It is a central sector scheme.
- (c) It is implemented by the Ministry of Agriculture & Farmer's welfare.
- (d) It will help in reducing wastage of agricultural produce.

### Ans C

- **Statement a, b and d is correct:** PM Kisan SAMPADA (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters)

Yojana is a **comprehensive package which will result in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet.**

**26. A Company named 'X' is registered in Canada and is providing digital services like advertisements, and e-commerce platform in India without any physical presence. Which of the following taxes given below would apply to the revenues of this company in India?**

1. Corporate Tax
2. Income Tax
3. Equalization Levy
4. Excise Duty

**Select the correct answer using the code given below.**

- (a) 1 and 4 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 4 only

**Ans B**

- **Statement 1 is incorrect.** Corporate tax is charged on the companies registered in India under Companies Act 1956. As the aforementioned company has not registered itself in India, it will not have to pay corporate tax.
- **Statement 2 is incorrect. Income tax is imposed under Income Tax Act of 1961.** However, it would be applicable only on companies registered in India.
- **Statement 3 is correct.** An Equalization Levy is levied on company involved in sales of digital services without any physical presence in India. **In 2020, the Indian Income-tax Act expanded the scope of Equalisation Levy (commonly referred to as 'Equalisation Levy 2.0 or EL 2.0') as part of the Finance Act 2020.**

**27. Consider the following pairs**

GST Concepts	Features
1. Reverse Charge Mechanism	Allows to pass benefit of reduced tax rate to customers
2. E-Way Bill	Mandatory document for all inter-state transport of goods
3. Input Tax Credit	Refunds on GST paid for the purchase of inputs.

**How many of the above pairs is are correctly matched?**

- (a) One only

- (b) Two only
- (c) Three Only
- (d) None

**Ans B**

- **Pair 2 is correct:** E-way bill is an electronic documentation containing details about movement of goods. **It can be generated from the Good and Services Tax Network (GSTN). It has been made mandatory from 1st April, 2018 for all inter-state transport of good all over India.** It was launched as part of anti-tax evasion measures under the new tax regime. **It is applicable on consignment exceeding Rs. 50, 000 in value.** Items out of the e-way bill's ambit include perishable items such as meat, milk and milk products and fruits and vegetables. Other items that don't need an e-way bill are gold and silver jewellery, cooking gas cylinders, raw silk, wool and handlooms.
- **Pair 3 is correct:** The input tax credit mechanism allows GST registered businesses to receive refunds on GST paid for the purchase of inputs to prevent the cascading.

**28. With reference to the different types of taxes, consider the following statements:**

1. Tax liability of a taxpayer increases in absolute amount with increase in income in case of progressive tax.
2. With increase in income tax burden of the taxpayer goes up when the tax is regressive.

**Which of the statements given above is/are correct?**

- (a) Both Statements 1 and 2 are true and Statement 1 is the correct explanation of 2.
- (b) Both Statements 1 and 2 are true but Statement 1 is not the correct explanation of 2
- (c) Statement 1 is true but 2 is false.
- (d) Statement 1 is false but 2 is true.

**Ans C**

- **Statement 1 is correct:** Progressive tax is the **one where the tax rate increases with the taxpayer's income. Thus, Statement 2 is incorrect:** Tax burden of the taxpayer goes up when the tax is progressive (and not regressive). In the case of **regressive tax, the tax rate decreases with increase in income.** Here, the tax liability of the taxpayer decreases with increase in his income. For example, suppose, there is 30% tax for Rs. 2 lakh, 20% for Rs. 5 lakh and 10% for Rs. 10 lakh. Here, the tax liability or the amount of the income to be paid as tax decreases with increase in income.

**29. Consider the following statements with respect to the Minimum Alternate Tax (MAT) and Alternate Minimum Tax (AMT):**

1. Minimum Alternate Tax is aimed at bringing zero-tax paying companies within the ambit of income tax.
2. Alternative Minimum Tax is payable by an individual taxpayer who has claimed various tax incentives.
3. While MAT is levied on both public and private companies, AMT is levied on Hindu Undivided Family and Limited Liability Partnership firm.
4. Both MAT and AMT are applicable on foreign entities.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 1, 2 and 3 only
- (d) 2, 3 and 4 only

**Ans C**

- **Statement 1 is correct:** Minimum Alternate Tax (MAT) was created to bring the 'zero-tax paying companies' within the ambit of income tax and make them pay a minimum amount in tax to the government. In 2019, the government reduced the MAT tax rate from 18.5% to 15%. **MAT is levied on book profit, unlike normal corporation tax**, which is levied on taxable profit. No MAT would be imposed on new domestic manufacturing company (incorporated on or after October 1, 2019).
- **Statement 2 is correct:** The Alternative Minimum Tax (AMT) is a **special tax that prevents non-corporate people with high incomes from abusing deductions and liable to pay little or no income tax**. It is payable by an individual or any other taxpayer, other than a company to ensure that the taxpayer claiming various tax incentives pays a minimum amount of tax. **AMT is levied at 18.5% (plus cess and surcharge) on the adjusted total income arrived after removing the claim for tax deductions and exemptions**. AMT came into force in 2011.
- **Statement 3 is correct:** **MAT is applicable to all corporate entities, whether public or private**. AMT included Individual, Hindu Undivided Family (HUF), an Association of Persons (AOP), a Body of Individuals (BOI) (whether incorporated or not), an artificial juridical person, Limited Liability Partnership firm (LLP), partnership firm etc.

- **Statement 4 is incorrect:** All companies in India, whether domestic or foreign, fall under the provisions of MAT. **MAT was later extended to cover non-corporate entities as well. The provisions of AMT are not applicable on foreign companies.**

**30. Consider the following statements with reference to the Capital Gains Taxes in India:**

1. When a property is received on inheritance, it is not taxable for the receiver.
2. The sale of preference shares in a company listed on a recognized stock exchange in India is not taxable.
3. Agricultural land in Rural Area in India is not considered a capital asset.

**Which of the statements given above is/are correct?**

- (a) 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Ans B**

**Any profit or gain that arises from the sale of a 'capital asset' is a capital gain.** This gain or profit comes under the category 'income', and hence you will need to pay tax for that amount in the year in which the transfer of the capital asset takes place. This is called capital gains tax, which can be **short-term or long-term**.

**31. Which of the following are the causes of demographic dividend?**

- 1) Falling birth rate
- 2) Lower fertility rate
- 3) Increased Longevity

**Select the correct answers using the codes given below:**

- (a) 1 & 2 only
- (b) 2 & 3 only
- (c) 3 only
- (d) All of the above

**Ans D**

**Demographic Dividend**

It is the **economic growth potential** resulting out of changing population age structure with a large section of people in the **working age group of 15 years to 64 years** as compared to the **non-working age population of below 14 years and above 65 years**.

**Key causes of demographic dividend are:**

- Falling birth rate
- Lower fertility rate

- Increased Longevity

**32. Consider the following statements with respect to Pink Collar Worker.**

1. It is one who is employed in a job that is traditionally considered to be women's work.
2. A pink collar worker need not require as much professional training as white-collar professions.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

**Pink Collar Worker**

- Pink-collar worker is one who is **employed in a job that is traditionally considered to be women's work.**
- The term pink-collar worker was used to **distinguish female-orientated jobs from the blue-collar worker**, a worker in manual labor, and the **white-collar worker**, a professional or educated worker in office positions.
- A pink collar worker need not require as much professional training as white-collar professions, they do not get equal pay or prestige.
- A pink collar worker is usually a **woman, Men rarely work in pink collar jobs.**
- Some examples of pink collar occupations are **baby sitter, florist, day care worker, nurses** etc.

**33. Which of the following statements is/are correct about Quinary Activities:**

1. It is the part of the economy where the top-level decisions are made. This includes the government which passes legislation.
2. It comprises the top decision-makers in industry, commerce and also the education sector.

**Which of the statements given above is/are correct?**

- (a) Both Statements 1 and 2 are true and Statement 1 is the correct explanation of 2.
- (b) Both Statements 1 and 2 are true but Statement 1 is not the correct explanation of 2
- (c) Statement 1 is true but 2 is false.
- (d) Statement 1 is false but 2 is true.

**Ans A**

- The quinary sector is the part of the economy where the **top-level decisions are made. This includes the government which passes legislation.**

- It also comprises the **top decision-makers in industry, commerce and also the education sector.**
- These are services that focus on **the creation, re-arrangement and interpretation of new and existing ideas; data interpretation and the use and evaluation of new technologies.**
- **Profession under this category often referred as 'gold collar' professions**, they represent another subdivision of the tertiary sector representing special and highly paid skills of senior business executives, government officials, research scientists, financial and legal consultants, etc.

**34. Consider the following statements with respect to Unorganized Sector:**

1. It includes a worker in the organized sector who is not covered by Unorganized Workers Social Security Act, 2008.
2. In this sector wage-paid labor is largely non-unionized due to seasonal nature of employment.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- An unorganised worker is a **home-based worker or a self-employed worker or a wage worker in the unorganized sector** and includes a worker in the organized sector who is not covered by any of the Acts pertaining to welfare Schemes as mentioned in Schedule-II of Unorganized Workers Social Security Act, 2008.
- **In this sector wage-paid labour is largely non-unionised** due to casual and seasonal nature of employment and scattered location of enterprises.

**35. Which of the following statements is/are correct about India's Demographic Dividend:**

1. The smaller share of children in the population enables higher investment per child.
2. The benefit to the GDP from demographic transition is very high in India when compared with its peers in Asia.

**Which of the statements given above is/are correct?**

- (a) Both Statements 1 and 2 are true and Statement 1 is the correct explanation of 2.
- (b) Both Statements 1 and 2 are true but Statement 1 is not the correct explanation of 2
- (c) Statement 1 is true but 2 is false.

(d) Statement 1 is false but 2 is true.

**Ans C**

- As fertility declines, the share of the young population falls and if this decline is rapid, the increase in the population of working ages is substantial, yielding the 'demographic dividend'.
- **The smaller share of children in the population enables higher investment per child.**
- Although, in India, the benefit to the GDP from demographic transition has been lower than its peers in Asia and is already tapering.

**36. Consider the following pairs**

Rainfall type	Reason of occurrence
1. Conventional	Intense heating of Earth's surface
2. Orographic	Adiabatic heating caused when cold, humid air raises due to the presence of a barrier.
3. Cyclonic	Rising winds form cumulonimbus clouds, bringing torrential rains.

**How many of the above pairs is/are correctly matched?**

- (a) One
- (b) Two
- (c) Three
- (d) None of the above

**Ans B**

**Pair2 is Incorrect –Orographic precipitation occurs when warm, humid air strikes an orographic barrier (a mountain range).**When the saturated air mass comes across a barrier, it is forced to ascend and as it rises, it expands; leading to adiabatic cooling. So the temperature falls, and the moisture is condensed. **The surplus moisture falls as orographic rainfall along the windward slopes.**

**37.**

Term	Description
1. Absolute humidity	It is the weight of water vapour per unit volume of air.
2. Relative humidity	It is the amount of water vapour in volume of air.
3. Dew point	It is the temperature at which the air becomes fully saturated.

**How many of the above pairs is/are correctly matched?**

- (a) One
- (b) Two
- (c) Three
- (d) None of the above

**Ans B**

**Pair 2 is incorrect.** Relative humidity is **the ratio of the amount of water vapour actually in a volume occupied by air to the amount the space could contain at saturation.**

**38. Consider the following statements:**

Statement 1: Earth's temperature remains stable over long periods of time.

Statement 2: The oceans absorb most of the excess heat from greenhouse gas emissions.

**Which one of the following is correct in respect of the above statements?**

- (a) Both the Statement 1 and Statement 2 are correct and Statement 2 is the correct explanation for Statement 1
- (b) Both statement 1 and Statement 2 are correct but Statement 2 is not the correct explanation for Statement 1
- (c) Statement 1 is correct but Statement 2 is not correct
- (d) Statement 1 is not correct but Statement 2 is Correct

**Ans B**

A heat budget **refers to the balance between incoming heat absorbed by earth and outgoing heat escaping it in the form of radiation.**

**Option b is correct.** The Earth's temperature remains stable over long periods of time. This is because the **earth receives almost all of its energy from the sun and in turn radiates back to space the energy received from the sun. This is termed as heat budget or heat balance of the earth.** Thus, the amount of heat received by different parts of the earth is not the same. This variation causes pressure differences in the atmosphere. This **leads to transfer of heat from one region to the other by winds.** The oceans do absorb most of the excess heat from greenhouse gas emissions. However, this is not the correct reason for earth to maintain the heat balance. The absorption of greenhouse gases by oceans has led to rise in ocean temperatures.

**39. What will be the impact on insolation distribution on Earth if it is not tilted at an angle on its axis?**

- One half of the Earth would be too hot with continuous insolation, while other half would be frozen due to absence of insolation.
- All the places on different latitudes will receive the same amount of insolation.
- The hot places would become cold due to reduced insolation and vice versa.
- There would be no seasonal variations in temperatures of a place.

**Ans D**

**The energy received by the earth's surface in the form of short waves is termed as Incoming Solar Radiation or**

**Insolation.** The axis of Earth is tilted towards the ecliptic of the Sun at an angle of approximately 23.5 degree.

**40. With reference to the mechanisms of heat transfer in Earth's atmosphere, consider the following statements:**

- Advection is the main mechanism of heat redistribution in the middle latitudes.
- Convective transfer of heat energy is confined only to the troposphere.

**Which of the statements given above is/ are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Ans C**

There are different ways of heating and cooling of the atmosphere like **conduction, convection and advection**. The earth after being heated by insolation transmits the heat to the atmospheric layers near to the earth in long wave form.

**Statement 1 is correct:** Advection refers to the **horizontal movement of air, parallel to the surface of the earth. Advection is the main mechanism of heat redistribution in the middle latitudes.** These winds blow from a region of high pressure (cooler) to low pressure (hotter). This helps dissipate some of the heat and affects the diurnal variation of temperature. **This effect of advection on diurnal temperature ranges is most pronounced in the mid latitudes.**

**41. Which of the following are the features of the Chalcolithic period?**

- Painted pottery was practiced during this period.

- People started using iron, but did not know of copper and bronze metals.
- A new technology for smelting metal ore was developed.

**How many of the above statements are correct?**

- Only one
- Only two
- All three
- None

**Ans B**

**Statement 2 is incorrect. Black on Red ware is a famous pottery of this age. It is marked by the use of copper as the first major metal in India. Bronze too was used. The Chalcolithic age is followed by Iron Age. Iron is frequently referred to in the Vedas.**

**42. Which one of the following edicts mentions the personal name of Ashoka?**

- Taxila
- Lumbini
- Maski
- Kalinga Edict

**Ans C**

- Maski is a town and an archaeological site in the Raichur district of the state of Karnataka, India.** It lies on the bank of the Maski River which is a tributary of the Tungabhadra.
- Maski derives its name from Mahasangha or Masangi.** The site came into prominence with the discovery of a minor rock edict of Emperor Ashoka by C. Beadon in 1915. **It was the first edict of Emperor Ashoka that contained the name Ashoka in it instead of the earlier edicts that referred him as Devanampiya piyadasi.**

**43. Consider the following statements regarding Cholas:**

- The temples remained centres of economic activity during this period.
- Education saw a rapid decline due to foreign invasions.
- Caste system was brittle and jobs were assigned based on the merit.

**How many of the above statements are correct?**

- Only one
- Only two
- All three
- None

**Ans A**

- **Only statement 1 is correct.** Caste system was widely prevalent during the Chola period. **Brahmins and Kshatriyas enjoyed special privileges.** The inscriptions of the later period of the Chola rule mention about two major divisions among the castes – **Valangai and Idangai castes.**
- Education was also given importance. Besides the temples and mathas as educational centres, several educational institutions also flourished.

**44. Consider the following statements regarding the bhakti saint Tukaram:**

1. He believed in a formless God.
2. He was a contemporary of saints Eknath and Ramdas.
3. He wrote his abhangas in Marathi.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans C**

- **Sant Tukaram** was a seventeenth century Marathi poet Saint, **related to the Bhakti movement of Maharashtra.** He was a contemporary of saints like Eknath and Ramdas.
- **Tukaram was a devotee of Vitthal** (a form of Lord Krishna), the supreme God in Vaishnavism.
- **Tukaram believed in a formless God.** According to him, it was not possible to enjoin spiritual joy with worldly activities. He stressed the all-pervasiveness of God. **He rejected Vedic sacrifices, ceremonies, pilgrimages, idol worship, etc.**

**45. The royal title of “Devaputra” and “Hindu Suratrana” are often associated with which of these ruler/kingdoms respectively?**

- (a) Kushanas and Vijayanagara
- (b) Vakatakas and Cheras
- (c) Shakas and Cholas
- (d) Magadha and Samudragupta

**Ans A**

- One means of claiming high status was to identify with a variety of deities. **This strategy is best exemplified by the Kushanas** (c. first century BCE-first century CE), who ruled over a vast kingdom extending from Central Asia to northwest India.
- **Colossal statues of Kushana rulers have been found installed in a shrine at Mat near Mathura** (Uttar Pradesh). Similar statues have been found in a shrine in Afghanistan as well. Some historians

feel this indicates that the Kushanas considered themselves godlike. Many **Kushana rulers also adopted the title devaputra, or “son of god”,** possibly inspired by Chinese rulers who called themselves sons of heaven.

**46. A substantial increase in atmospheric aerosols is likely to**

1. Affect rainfall patterns
2. Cut down the destruction of stratospheric ozone significantly
3. Increase global warming by large proportions

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans A**

**Only statement 1 is correct.**

- Aerosols are **minute particles suspended in the atmosphere.** When these particles are sufficiently large, we notice their presence as they scatter and absorb sunlight. Their scattering of sunlight can reduce visibility (haze) and redden sunrises and sunsets.
- **Aerosols interact both directly and indirectly with the Earth’s radiation budget and climate.** As a direct effect, the aerosols scatter sunlight directly back into space. **As an indirect effect, aerosols in the lower atmosphere can modify the size of cloud particles, changing how the clouds reflect and absorb sunlight, thereby affecting the Earth’s energy budget.**

**47. Consider the following statements regarding Parasitism.**

1. Parasitism occurs when two organisms interact, but while one benefits, the other experiences harm.
2. Tapeworm attaching itself to the intestine of a cow is an example of Parasitism.
3. The parasite always kill the host.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Ans B**

- **Statement 3 is incorrect. A parasite is an organism that lives in or on another living organism, deriving nutrients from it.** In this relationship the parasite benefits, but the organism being fed upon, the host, is harmed. **The host is usually weakened by the parasite** as it siphons resources the host would normally use to maintain itself. The parasite, however, is unlikely to kill the host. This is because the parasite needs the host to complete its reproductive cycle by spreading to another host.

**48. To avoid unfavourable conditions, which of the following enter into diapause, a stage of suspended development.**

- Zooplankton
- Bears
- Snails
- Fish

**Ans A**

In animals, the organism, if unable to migrate, might avoid the stress by escaping in time. **The familiar case of bears going into hibernation during winter is an example of escape in time.** Some snails and fish go into aestivation to avoid summer-related problems-heat and desiccation. Under unfavourable conditions **many zooplankton species in lakes and ponds are known to enter diapause, a stage of suspended development.**

**49. Consider the following statements.**

- Many desert plants have a special photosynthetic pathway that enables their stomata to remain closed during night time to minimise water loss through transpiration.
- In high altitudes, the body compensates low oxygen availability by increasing red blood cell Production and decreasing the binding affinity of haemoglobin.

**Which of the above statements is/are incorrect?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Ans A**

- **Many desert plants have a thick cuticle on their leaf surfaces and have their stomata arranged in deep pits (sunken) to minimise water loss through transpiration.** They also have a special photosynthetic pathway (CAM) that enables their stomata to remain closed during day time.
- In the low atmospheric pressure of high altitudes, the body does not get enough oxygen. **The body compensates low oxygen availability by**

**increasing red blood cell production,** decreasing the binding affinity of haemoglobin and by increasing breathing rate.

**50. Acid rain is mainly a by-product of a variety of human activities that emit the oxides of:**

- Sulphur and nitrogen in the atmosphere
- Mercury and lead compounds in water bodies
- Radioactive compounds in effluent discharge
- Carbon emitted by peat lands

**Ans A**

- Burning of fossil fuels (which contain sulphur and nitrogenous matter) such as **coal and oil in power stations and furnaces or petrol and diesel in motor engines produce sulphur dioxide and nitrogen oxides.**
- SO<sub>2</sub> and NO<sub>2</sub> after oxidation and reaction with water are major contributors to acid rain, because polluted air usually contains particulate matter that catalyze the oxidation.

**51. Consider the following statements regarding the Bureau of Indian Standards (BIS):**

- It is the National Standards Body of India under the Ministry of Commerce.
- It is member to the International Organisation for Standardization (ISO).

**Which of the statements given above is/are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Ans B**

- **Statement 1 is incorrect.** Bureau of Indian Standards (BIS) is the **National Standard Body of India under the Ministry for Consumer Affairs, Food and Public Distribution.** BIS is responsible for the harmonious development of the activities of **standardization, marking and quality certification of goods and for matters connected therewith or incidental thereto.**
- **Statement 2 is correct.** ISO is an independent, non-governmental international organization with a membership of 165 national standards bodies.

**52. Consider the following statements regarding the Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED):**

- It has a dual role of both a market developer and a service provider for tribals of the country.



2. It markets the handcrafted products directly procured from the tribals in India under the brand name TRIBES INDIA.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- **Both statements are correct.** Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED) was established in August 1987 under the **Multi-State Cooperative Societies Act, 1984** by the Government of India as a National level Cooperative body.
- TRIFED is **mandated to bring about socio-economic development of tribals of the country by institutionalizing the trade of Minor Forest Produce (MFP) & Surplus Agricultural Produce (SAP) collected/ cultivated by them.**

**53. Consider the following statements regarding the Student Entrepreneurship Programme:**

1. It is an initiative of the NITI Aayog-Atal Innovation Mission.
2. Students are provided with opportunity to transform their innovative prototypes into fully functioning products.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans C**

- **Both statements are correct.** Atal Innovation Mission (AIM), NITI-Aayog, in collaboration with Dell Technologies recently **launched the second edition of Student Entrepreneurship Programme (SEP 2.0) for young innovators of Atal Tinkering Labs (ATLs).**
- **SEP 2.0 will allow student innovators to work closely with Dell volunteers.** They will receive mentor support; prototyping and testing support; end-user feedback; intellectual property registration and patenting of ideas, processes, and products; manufacturing support; as well as the launch support of the product in the market.
- **Under SEP 1.0 (2019), the top 6 teams of ATL Marathon**—a nationwide contest where students identify community challenges and create

grassroots innovations and solutions within their ATLs—**got a chance to transform their innovative prototypes into fully functioning products, which are now available in the market.**

**54. Consider the following statements regarding the National Technical Advisory Group on Immunisation (NTAGI):**

1. It is tasked with undertaking the technical review of scientific evidence on matters related to immunization policy.
2. The NTAGI a regulatory and policy making body monitoring and licensing the vaccine production in India.

**Which of the statements given above is/are correct?**

**Choose the correct statement given below:**

- (a) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1
- (b) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1
- (c) Statement-1 is True, Statement-2 is False
- (d) Statement-1 is False, Statement-2 is True

**Ans C**

- **Statement 1 is correct.** National Technical Advisory Group on Immunisation (NTAGI) is not a statutory body. **It was established by an order of the Ministry of Health and Family Welfare (MoHFW) in 2001** and has been reconstituted twice, in 2010 and 2013.
- **The NTAGI includes a Standing Technical Sub-Committee (STSC).** The STSC is tasked with undertaking technical review of scientific evidence on matters related to immunization policy and programmes. Final recommendations are drafted by the NTAGI taking into account the scientific review by the STSC and any other relevant evidence.
- **Statement 2 is incorrect.** The NTAGI is not a policy making body in its own right and has no regulatory function. The overall objective of the NTAGI is to provide advice to the Ministry of Health and Family Welfare on the strategies to control the burden and appropriately evaluate the impact of immunization on Vaccine Preventable Diseases (VPDs) in the country.
- The National Expert Group on Vaccine Administration for COVID-19 has sought inputs from Standing Technical Sub-Committee of National Technical Advisory Group on

Immunization (NTAGI) regarding the vaccine candidates for COVID-19.

**55. What is the utility of the recently launched 'Swasthya' portal?**

- (a) Track the progress of the COVID-19 vaccine development
- (b) Provide life-saving medicines at subsidized prices
- (c) A database of health profile of all Indians
- (d) Health and nutrition information of the tribal population of India

**Ans D**

The Ministry of Tribal Affairs in collaboration with Piramal Swasthya, the Centre of Excellence has developed this Tribal Health and Nutrition Portal 'Swasthya', a one-stop solution presenting all information pertaining to tribal health and nutrition related to Scheduled Tribe people.

**56. Which of the following is/are features of the One Nation One Ration Card (ONORC) plan?**

- 1. Compulsory linking of Aadhar number of beneficiaries with their ration cards.
- 2. It is an IT-driven system to provide for seamless integration of Fair Price Shops with a central database.
- 3. The scheme is being implemented by Ministry of Electronics and IT.

**Select the correct answer using the code given below:**

- (a) 2 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Ans B**

- **Statement 1 is correct:** The government made it mandatory for seeding of Aadhar number with ration card in order to avail the benefits of PDS.
- **Statement 2 is correct: The IT system is the backbone of the ONORC scheme.** The new system identifies beneficiaries based on their Aadhar card and biometric authentication. Hence, a family can buy food grains from any FPS in any state.
- **Statement 3 is incorrect:** The plan is implemented by the **Department of Food and Public Distribution under the Ministry of Consumer Affairs, Food and Public Distribution.**

**57. With reference to price stabilization mechanisms in agricultural sector, consider the following statements:**

- 1. The chief purpose of the Price Stabilization Fund (PSF) is to ensure income security for farmers.

- 2. Import of perishable agricultural commodities are allowed as an activity under the Price Stabilization Fund.
- 3. Open Market Sale Scheme (OMSS) refers to the sale of food grains by the government to private traders/bulk consumers.
- 4. The reserve prices under Open Market Sale Scheme (OMSS) are kept at levels equal to the economic cost of food grains.

**Which of the statements given above is/are correct?**

- (a) 1, 3 and 4 only
- (b) 2 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

**Ans B**

The **chief purpose of the PSF is to manage volatility in the prices of agricultural commodities like onion, potato, and pulses.** The volatility in the prices can be managed through domestic procurement as well as imports. **The Open Market Sale Scheme is a mechanism undertaken by the FCI with an aim to ensure adequate supply of food grains in the market as well as to offload surplus stocks.** The reserve prices are kept above MSP but below the economic cost of food grains. The prices are not set below the MSP so that the buyers remain attracted to purchase of wheat from the mandis.

**58. Which of the following statements is/are correct regarding upstream and downstream stage in agriculture sector?**

- 1. Manufacturing of bread, textile spinning are upstream industries, whereas leather tanning, rice and flour milling are downstream industries.
- 2. Upstream includes inputs to agriculture, such as seeds, fertiliser, machinery and technology for new areas such as precision agriculture, while downstream is the food processing industry.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans B**

Rice and flour milling; leather tanning; cotton ginning; oil pressing, fish canning etc. are upstream industries whereas manufacturing of bread, biscuit, textile spinning and weaving; paper production; clothing and footwear manufacturing are downstream industries.

**Upstream includes inputs to agriculture, such as seeds, fertiliser, machinery and technology for new areas such as precision agriculture, while downstream is the food processing industry.**

**59. Which of the following statements is/are correct regarding Agreement on Agriculture under WTO?**

1. The minimum level of trade distorting subsidies allowed for developing countries including India is 10% of agricultural GDP.
2. Developed countries are not allowed to provide trade distorting subsidies.
3. The peace clause protects developing country's food procurement programmes against WTO action.
4. The peace clause was accepted in Bali ministerial conference in 2013.

**Select the correct answer using the code given below:**

- (a) 3 and 4 only
- (b) 1, 2 and 3 only
- (c) 1, 2 and 4 only
- (d) 1, 3 and 4 only

**Ans D**

The minimum level of trade distorting subsidies allowed for developing countries **including India is 10% of agricultural GDP while that for developed countries is 5% of agricultural GDP.** The peace clause protects a developing country's food procurement programmes against action from WTO members in case subsidy ceilings are breached. **This peace clause was accepted at the Bali Ministerial in 2013.**

**60. Which of the following statements is/are correct regarding the government schemes to integrate the agriculture supply chain?**

1. 'Kishan-rail' is launched by Indian railways for the seamless supply of perishable agricultural products.
2. Agri-Udaan is launched by Civil Aviation ministry for the seamless supply of perishable good to less accessible areas.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans A**

**Statement 1 is correct.** Kisan Rail is the **train service by Indian Railways to transport perishable agri-products such as milk, meat and fish.** It's a **cold storage on wheels.** It aims to increase the income in farm sector

by connecting production centres to markets and consumption centres.

**Statement 2 is incorrect.** AGRI-UDAAN programme is a **flagship programme to promote innovation and entrepreneurship in agriculture.** It will mentor start-ups and help them connect with potential investors.

**61. Which of the following statements best describes the 'Seed Capital'?**

- (a) Essential capital required to procure seeds for cultivation in monsoon season.
- (b) It is a capital required to make initial investments in stock market.
- (c) Bail out capital given by the government for public sector enterprises.
- (d) It is an early capital required to start a new business.

**Answer: (D)**

**Explanation: Seed capital is the funding required to get a new business started.** This initial funding, which usually comes from the business owner(s) and perhaps friends and family, supports preliminary activities such as market research, product research and development (R&D) and business plan development. **Hence, option (d) is correct. Seed capital is the funding required to get a new business started.** This initial funding, which usually comes from the business owner(s) and perhaps friends and family, supports preliminary activities such as market research, product research and development (R&D) and business plan development. **Hence, option (d) is correct.**

**62. Which of the following action/actions can be taken by the Government to reduce the deficit budget?**

1. Reducing revenue expenditure
2. Introducing new welfare schemes
3. Rationalizing subsidies
4. Reducing import duty

**Select the correct answer using the code given below:**

- (a) 1 and 4 only
- (b) 2 and 4 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (C)**

- **Statement 1:** Unnecessary revenue expenditure bloats the fiscal deficit, and since it forms the majority of government spending, its reduction has a very large effect on the fiscal deficit.
- **Statement 2:** It will further increase the fiscal deficit.

- **Statement 3: Subsidies are a major component of government spending**, and its reduction will cut down fiscal deficit.
- **Statement 4: It reduces tax revenue and thus increases fiscal deficit.**

63. Consider the following statements regarding stabilisation measures and structural reform measures:

1. Stabilisation measures are long-term measures, aimed at improving the efficiency of the economy and increasing its international competitiveness by removing the rigidities in various segments of the Indian economy.
2. Structural reform measures are short-term measures, intended to correct some of the weaknesses that have developed in the balance of payments and to bring inflation under control.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (D)

**Explanation:** Stabilisation measures are **short-term measures, intended to correct some of the weaknesses that have developed in the balance of payments and to bring inflation under control.** In simple words, this means that there was a need to maintain sufficient foreign exchange reserves and keep the rising prices under control. On the other hand, **structural reform policies are long-term measures, aimed at improving the efficiency of the economy and increasing its international competitiveness** by removing the rigidities in various segments of the Indian economy. Hence, both statements are incorrect.

64. Gross capital formation will necessarily increase if:

1. Gross domestic savings increases
2. Gross domestic consumption increases
3. GDP increases

Select the correct answer using the code given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 1 and 3 only
- (d) None of the above

Answer: (D)

**Explanation:** Gross capital formation, in simple terms is equivalent to investment made. It was earlier called gross domestic investment. The **part of GDP that is**

**used is called gross domestic consumption, while the part that is saved is gross domestic savings (GDS).** Some part of this GDS will be re-invested back, and that is called gross capital formation. Now, an increase in GDP or GDS will not necessarily lead to an increase in capital formation because how much is invested back will depend on many other factors.

65. Consider the following statements:

1. GDP is the total market value of all goods and services produced in the economy during a particular year, excluding taxes and subsidies on products.
2. Real GDP growth measures how much the production of goods and services in the economy has increased in actual physical terms during a year.
3. Nominal GDP growth helps to measure the increase in incomes resulting from rise in both production and prices.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:**

- **GDP is the total market value of all goods and services produced in the economy during a particular year, inclusive of all taxes and subsidies on products.** The market value taken at current prices is the nominal GDP. The value taken at constant prices — that is prices for all products taken at an unchanged base year — is the real GDP. **Hence, statement 1 is incorrect.**
- In simple terms, **real GDP is nominal GDP stripped of inflation.** Real GDP growth thus measures how much the production of goods and services in the economy has increased in actual physical terms during a year. Nominal GDP growth, on the other hand, is a measure of the increase in incomes resulting from rise in both production and prices. **Hence, statement 2 and 3 are correct.**

66. Consider the following statements.

**Statement 1** – Dedicated SONARs can be fitted to ships and submarines for underwater communication.  
**Statement 2** – SONARs fitted to aircrafts can act as beacons to trace their location in the event of their crash in the sea.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement II is the correct explanation for Statement-I.

(b) Both Statement-I and Statement-II are correct and Statement II is not the correct explanation for Statement-I.

(c) Statement-I is correct but statement II is incorrect.

(d) Statement -I is incorrect but Statement -II is correct

**Answer: (A)**

- SONAR is a technique that **uses sound propagation (usually underwater, as in submarine navigation) to navigate, communicate with or detect objects on or under the surface of the water, such as other vessels.**
- Dedicated sonars can be fitted to ships and submarines for underwater communication. Sonars which act as beacons are fitted to aircraft to allow their location in the event of a crash in the sea. Sound waves travel differently through fish than through water because a fish's air-filled swim bladder has a different density than seawater. This density difference allows the detection of schools of fish by using reflected sound. **Acoustic technology is especially well suited for underwater applications since sound travels farther and faster underwater than in air.**

Hence, both statement-I and statement-II are correct and statement II is the correct explanation for statement-I.

**67. Consider the following statements regarding Neutrinos:**

1. They can be weaponized.
2. Human body cannot tolerate exposure to Neutrinos.
3. They are completely massless.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (D)**

- **Neutrinos are the information bearers of the universe** — which are almost never lost in their path. India's effort in studying neutrinos at INO may help us unravel the deepest mystery of the universe — why there is more matter than antimatter in the universe.
- Neutrinos are the least harmful of all elementary particles, as they almost never react with solid bodies. Also, people tend to confuse the "neutrino" for the "neutron". This has also led to the confusion that neutrinos can be weaponised, which is far from the truth. **They are not used to trigger fission reactions, but are instead produced as a result of the reactions. Neutrinos have mass**

and as shown recently, they change their masses too. **The neutrino is so named because it is electrically neutral. Hence, all statements are incorrect.**

**68. Consider the following statements regarding Treaty on the Prohibition of Nuclear Weapons (TPNW):**

1. It is the first legally binding international agreement to comprehensively prohibit nuclear weapons.
2. It was passed in 1974 after India conducted its first nuclear test.
3. The treaty prohibits the development, testing, production, stockpiling, transfer and use of nuclear weapons for all the UN member countries.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

- The Treaty on the Prohibition of Nuclear Weapons (TPNW), or the Nuclear Weapon Ban Treaty, is **the first legally binding international agreement to comprehensively prohibit nuclear weapons**, with the goal of leading towards their total elimination. **Hence, statement 1 is correct.**
- It was **adopted on 7 July 2017, opened for signature on 20 September 2017, and entered into force on 22 January 2021. Hence, statement 2 is incorrect.**
- For those nations that are party to it, the treaty prohibits the development, testing, production, stockpiling, stationing, transfer, use and threat of use of nuclear weapons, as well as assistance and encouragement to the prohibited activities. For nuclear armed states joining the treaty, it provides for a time-bound framework for negotiations leading to the verified and irreversible elimination of its nuclear weapons programme. **Hence, statement 3 is incorrect.**

**69. Why are Bacteriophages seen as a possible therapy against multi-drug-resistant strains of many bacteria?**

1. These are ubiquitous viruses found wherever bacteria exist and can kill bacteria.
2. They do not contain any RNA or DNA and thus cannot be infected by bacteria.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only

- (c) Both 1 and 2  
(d) Neither 1 nor 2

**Answer:** (A)

**Explanation:** A bacteriophage is a type of virus that infects bacteria. In fact, **the word “bacteriophage” literally means “bacteria eater,” because bacteriophages destroy their host cells.** All bacteriophages are composed of a nucleic acid molecule that is surrounded by a protein structure. In other words, they are comprised of a protein capsule around an RNA or DNA genome. **Hence, statement 2 is incorrect.**

**70. Which of the characteristics of Graphene make it so special to the global electronics industry?**

1. It is only one atom thick.
2. It is a carbon material with high conductivity.
3. It is the strongest material ever tested.
4. It is highly opaque considering its darkness.

**How many of the above statements is/are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All four

**Answer:** (C)

**Explanation:** Graphene is an allotrope (form) of carbon consisting of a single layer of carbon atoms arranged in a hexagonal lattice. **It is nearly transparent.** It is the basic structural element of many other allotropes of carbon, such as graphite, charcoal, carbon nanotubes and fullerenes. **Its thin composition and high conductivity means it is used in applications ranging from miniaturised electronics to biomedical devices.** These properties also enable thinner wire connections; providing extensive benefits for computers, solar panels, batteries, sensors and other devices. The one-atom-thick sheets of carbon conduct electrons better than silicon and have been made into fast, low-power transistors. Researchers have measured the intrinsic strength of graphene, and they’ve confirmed it to be the strongest material ever tested. **Hence, only statement 4 is incorrect.**

**71. Consider the following statements regarding Western Ghats:**

1. Western Ghats is one of the eight hotspots of biological diversity in the world.
2. Western Ghats is older than the Himalaya mountains.
3. Western Ghats traverses through only five states in India.

4. The peak of Anamudi in Tamil Nadu is the highest peak in the Western Ghats.

**How many of the above statements is/are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All five

**Answer:** (B)

- It is a **UNESCO World Heritage Site** and is one of the eight hotspots of biological diversity in the world. According to UNESCO, **the Western Ghats are older than the Himalayas. Hence, statement 1 and 2 are correct.** Western Ghats traverses the states of Karnataka, Goa, Maharashtra, Gujarat, Kerala, and Tamil Nadu. **Hence, statement 3 is incorrect.**
- Anamudi is a mountain located in Ernakulam district and Idukki district of the Indian state of Kerala. It is the **highest peak in the Western Ghats and in South India. Hence, statement 4 is incorrect.**

**72. Which of these ecosystems would sequester most carbon for a given unit of area?**

- (a) Grassland  
(b) Saltmarsh  
(c) Mature tropical forests  
(d) Bare soil

**Answer:** (B)

**Explanation:** Saltmarshes are one of the **key coastal ‘blue carbon’ habitats**, recognised for their ability to store carbon within above- and below-ground biomass and sediments. **Saltmarshes sequester carbon at a rate two to four times greater than that recorded for mature tropical forests. Hence, option (b) is correct.**

**73. Many countries are aiming to achieve a net-zero emission scenario by the middle of the century. Consider the following statements regarding net-zero emission:**

1. Net-zero emission mean that a country would bring down its greenhouse gas emissions to near zero.
2. The net-zero goal does not figure in the 2015 Paris Agreement.
3. Net-zero emission can be achieved by creating more carbon sinks such as forests and relying on futuristic technologies such as carbon capture and storage.

**How many of the above statements is/are incorrect?**

- (a) Only one  
(b) Only two  
(c) All three  
(d) None

**Answer: (A)**

- Several other countries, including the UK and France, have already enacted laws promising to achieve a net-zero emission scenario by the middle of the century. Even China has promised to go net-zero by 2060. **Net-zero, which is also referred to as carbon-neutrality, does not mean that a country would bring down its emissions to zero.** Rather, **net-zero is a state in which a country's emissions are compensated by absorption and removal of greenhouse gases from the atmosphere.** Hence, **statement 1 is incorrect.**
- Absorption of the emissions can be increased by creating more carbon sinks such as forests, while removal of gases from the atmosphere requires futuristic technologies such as carbon capture and storage. The net-zero goal does not figure in the 2015 Paris Agreement, the new global architecture to fight climate change. **The Paris Agreement only requires every signatory to take the best climate action it can.** Hence, **statement 2 and 3 are correct.**

74. **Lead is a naturally occurring toxic metal found in the Earth's crust. Its widespread use has resulted in extensive environmental contamination, human exposure and significant public health problems in many parts of the world. Consider the following:**

1. Batteries of motor vehicles
2. Paints
3. Cosmetics and traditional medicines
4. Ceramic glazes
5. Smelting

**How many of the above can contribute to Lead pollution?**

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

**Answer: (D)**

- Lead is a naturally occurring toxic metal found in the Earth's crust. Its widespread use has resulted in extensive **environmental contamination, human exposure and significant public health problems in many parts of the world.**
- Important sources of environmental contamination include **mining, smelting, manufacturing and recycling activities, and, in some countries, the continued use of leaded paint, leaded gasoline, and leaded aviation fuel.** More than three quarters of global lead consumption is for the manufacture of lead-acid

batteries for motor vehicles. Lead is, however, also used in many other products, for example pigments, paints, solder, stained glass, lead crystal glassware, ammunition, ceramic glazes, jewellery, toys and in some cosmetics and traditional medicines. Drinking water delivered through lead pipes or pipes joined with lead solder may contain lead. Much of the lead in global commerce is now obtained from recycling. **Hence, option (d) is correct.**

75. **Consider the following statements:**

1. Phytoplankton are the foundation of the aquatic food web as the primary producers, and they help absorb atmospheric carbon dioxide.
2. Zooplankton feed on phytoplankton and play a vital role in transfer of organic matter from primary producers to secondary consumers.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (C)**

- Phytoplankton are **the foundation of the aquatic food web as the primary producers.**
- Zooplankton feed on phytoplankton and **play a vital role in food web of the food chain, nutrient recycling,** and in transfer of organic matter from primary producers to secondary consumers like fishes.

**Hence, both statements are correct.**

76. **The government of India had to make huge payments to people in England, which were called 'Home Charges'. They included:**

1. Interest on public debt raised in England
2. Annuities on account of railway and irrigation works
3. Payments in connection with civil departments where Englishmen were employed.
4. India Office expenses including pensions to retired officials who had worked for India in England.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (D)**

**Explanation:** The government of India had to make huge payments to people in England on account of **political, administrative and commercial connections**

established between India and England. These commitments were called 'Home Charges'. They included:

- Interest on public debt raised in England at comparatively higher rates;
- Annuities on account of railway and irrigation works;
- Payments in connection with **civil departments where Englishmen were employed;**
- India Office expenses including **pensions to retired officials who had worked in India or who had worked for India in England** and retired there, pensions to army and naval personnel, and their furlough allowances.

Hence, all statements are correct.

77. Consider the following pairs:

Organization	Founder
1. Social Service League	Gopal Krishna Gokhale
2. Servants of India Society	N M Joshi
3. Indian National Social Conference	M G Ranade

How many of the above pairs are correctly matched?

- Only one pair
- Only two pairs
- All three pairs
- None

Answer: (A)

- **Social Service League: 1911 Bombay: N M Joshi:** Its aim was to secure for the masses better and reasonable conditions of life and work.
- **Servants of India Society: 1905 Bombay: Gopalakrishna Gokhale:** Its aim was to train Indians in different fields for the service of their motherland.
- **Indian National Social Conference: 1887 Bombay: M G Ranade:** Its aim was to remove the social evils prevalent in the Indian society and to promote the welfare of women.

Hence, option (a) is correct.

78. Consider the following statements regarding Vedanta School of Thought:

1. This school upholds the philosophies of life as elaborated in the Upanishads.
2. The Vedanta theory denies the theory of rebirth.

Which of the above statements is/are correct?

- 1 only
- 2 only

- Both 1 and 2
- Neither 1 nor 2

Answer: (A)

**Explanation:** Vedanta is made of two words- 'Veda' and 'ant', i.e. the end of the Vedas. This school upholds the philosophies of life as elaborated in the Upanishads. **This argument considers atma and brahma to be the same** and if a person attains the knowledge of the self, he would automatically understand brahma and would achieve salvation. This argument would make brahma and atma indestructible and eternal. **Hence, statement 1 is correct.**

**The Vedanta theory also gives credence to the Theory of Karma. The theory believes in Punarjanama or rebirth.** They also argued that a person would have to bear the brunt of their actions from the previous birth in the next one. **Hence, statement 2 is incorrect.**

79. Consider the following statements regarding the teachings of Mahavira:

1. Mahavira regarded all objects, both animate and inanimate, have souls and various degrees of consciousness.
2. Mahavira rejected the authority of the Vedas and objected to the Vedic rituals.
3. He considered the practice of agriculture as the purest and credible occupation.

Which of the above statements are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Answer: (A)

- Mahavira regarded all objects, both animate and inanimate, have souls and various degrees of consciousness. They possess life and feel pain when they are injured. **Hence, statement 1 is correct.**
- **Mahavira rejected the authority of the Vedas and objected to the Vedic rituals.** He advocated a very holy and ethical code of life. Hence, **statement 2 is correct.**
- Even the practice of agriculture was considered sinful as it causes injury to the earth, worms and animals. **Hence, statement 3 is incorrect.**

80. In Mughal India, Malikana was a tax portion related to:



- (a) Service taxes
- (b) Military expeditions
- (c) Custom duties
- (d) Land revenue

**Answer:** (D)

**Explanation:** In the Mughal empire, zamindars had hereditary rights of collecting land revenues which could go up to 25 percent of the revenue. They generally made collection from the individual peasants at rates fixed by tradition or by themselves and paid a fixed tax to the state. **The difference between their collections and the amount paid to the state was their personal income.** If the state demand reached the maximum that the peasant could pay, a deduction of 10 percent was made from the total amount of revenue and paid to the Zamindars as malikana. **Hence, option (d) is correct.**

**81. Consider the following statements regarding the office of the governor as mentioned in the constitution of India:**

1. His office is constitutionally under the control and subordinate to the Central government.
2. The Governor of a particular state should not belong to that state.
3. The President of India must consult the Chief Minister of the concerned state before making the appointment of the Governor of that state.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (D)

**Explanation:** The governor holds an independent office under the constitution.

**The Constitution lays down only two qualifications for the appointment of a person as a governor. These are:**

- He should be a citizen of India.
- He should have completed the age of 35 years.

Additionally, two conventions have also developed in this regard over the years. **First, he should be an outsider, that is, he should not belong to the state where he is appointed,** so that he is free from the local politics. **Second, while appointing the governor, the president is required to consult the chief minister of the state concerned,** so that the smooth functioning of

the constitutional machinery in the state is ensured. However, both the conventions have been violated in some of the cases.

**Hence, all statements are incorrect.**

**82. The Citizenship Act 1955 deals with the determination of Citizenship on or after:**

- (a) 15th August 1947
- (b) 14th August 1947
- (c) 26th November 1949
- (d) 26th January 1950

**Answer:** (D)

**Explanation:** The **Citizenship Act, 1955** provides for the acquisition and loss of citizenship after the commencement of the Constitution. The act identifies the persons who became citizens of India at its commencement (i.e., on January 26, 1950). **Hence, option (d) is correct.**

**83. Consider the following statements regarding Committee on Private Members' Bills and Resolutions:**

1. The committee classifies bills and allocates time for discussion on bills and resolutions introduced by private members.
2. This is a special committee of the Lok Sabha only.
3. In Lok Sabha it is chaired by the Deputy Speaker.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** This committee classifies bills and allocates time for the discussion on bills and resolutions introduced by private members (other than ministers). This is a **special committee of the Lok Sabha and consists of 15 members including the Deputy Speaker as its chairman.** The Rajya Sabha does not have any such committee. The same function in the Rajya Sabha is performed by the Business Advisory Committee of that House. **Hence, all statements are correct.**

**84. The Election Commission registers political parties for the purpose of elections and grants them recognition as national or state parties on the basis of their:**

1. Poll performance
2. Financial backing
3. Number of elections contested
4. Cadre strength

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 1 only
- (c) 1, 2 and 4 only
- (d) 2 and 3 only

Answer: (B)

**Explanation:** The Election Commission registers political parties for the purpose of elections and grants them recognition as national or state parties on the basis of their Poll performance. Hence, option (b) is correct.

85. According to the 44th Amendment Act of 1978, President's rule can only be extended over a year every 6 months under which of the following conditions?

1. There is already a national emergency throughout India or in the whole or any part of the state.
2. The Election Commission certifies that elections cannot be conducted in the state concerned.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (C)

**Explanation:** The 44th Amendment Act of 1978 introduced a new provision to put a restraint on the power of Parliament to extend the President's rule in a state. According to this provision, the president's rule can only be extended over a year every 6 months under the following conditions:

- There is already a national emergency throughout India, or in the whole or any part of the state.
- The Election Commission certifies that elections cannot be conducted in the state.

President's rule can be revoked at any time by the President and does not need Parliament's approval. Hence, both statements are correct

86. Consider the following statements:

**Statement I** - The distribution of earthquakes provides information about magma pathways and the structure

of volcanoes.

**Statement II** - The world's distribution of earthquakes coincides very closely with that of volcanoes.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement –II is the correct explanation of Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-I is incorrect but Statement-II is correct

Answer: (A)

**Explanation:** Some, but not all, earthquakes are related to volcanoes. For example, most earthquakes are along the edges of tectonic plates. This is where most volcanoes are too. However, most earthquakes are caused by the interaction of the plates not the movement of magma. Most earthquakes directly beneath a volcano are caused by the movement of magma. The magma exerts pressure on the rocks until it cracks the rock. Then the magma squirts into the crack and starts building pressure again. Every time the rock cracks it makes a small earthquake. These earthquakes are usually too weak to be felt but can be detected and recorded by sensitive instruments. Once the plumbing system of the volcano is open and magma is flowing through it, constant earthquake waves, called harmonic tremor, are recorded (but not felt). Hence, both Statement-I and Statement-II are correct and Statement –II is the correct explanation of Statement-I.

87. Why are the states of Jammu and Kashmir, Himachal Pradesh and Uttarakhand highly vulnerable to earthquakes?

1. The Indian plate is slowly moving towards the north and north-eastern direction which is obstructed by the Eurasian plate.
2. Most of the active volcanoes in India lie in the Northern region of the country which are frequently thrusted by magma and seismic movements.

Which of the above statements is/are incorrect?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (B)

**Explanation:** The Indian plate is moving at a speed of one centimetre per year towards the north and northeastern direction and this movement of plates is

being constantly obstructed by the Eurasian plate from the north. As a result of this, both the plates are said to be locked with each other resulting in accumulation of energy at different points of time. Excessive accumulation of energy results in building up of stress, which ultimately leads to the breaking up of the lock and the sudden release of energy causes earthquakes along the Himalayan arch. Some of the most vulnerable states are Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Sikkim, and the Darjeeling and subdivision of West Bengal and all the seven states of the northeast. Hence, statement 1 is correct.

India is not located in a region with active volcanoes. The country does not have any active volcanoes, and historically, there has been no record of volcanic eruptions in the Northern region, which includes the states of Jammu and Kashmir, Himachal Pradesh, and Uttarakhand. Earthquakes in this region are primarily caused by tectonic activity related to the Indian plate's collision with the Eurasian plate. Hence, statement 2 is incorrect.

**88. Main tributaries of Kaveri are:**

1. Bhavani
2. Amravati
3. Brahmani
4. Baitarini

**Select the correct answer using the codes given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 and 4 only
- (d) 1 and 4 only

**Answer: (A)**

**Explanation:** The Kaveri rises in the Brahmagiri range of the Western Ghats and it reaches the Bay of Bengal in south of Cuddalore, in Tamil Nadu. Total length of the river is about 760 km. Its main tributaries are Amravati, Bhavani, Hemavati and Kabini. Its basin drains parts of Karnataka, Kerala and Tamil Nadu. The river Kaveri makes the second biggest waterfall in India. It is known as Sivasamudram. The Damoder, the Brahmani, the Baitarni and the Subarn rekha are major rivers flowing towards east, not tributaries. Hence, option (a) is correct.

**89. Consider the following statements:**

1. The soil develops on crystalline igneous rocks in areas of low rainfall.
2. They are generally poor in nitrogen, phosphorous and humus.

3. They are fertile when fine-grained and are poor in fertility when they are coarse-grained.

**The above statements refer to:**

- (a) Black Soil
- (b) Laterite soil
- (c) Red and Yellow Soil
- (d) None of the above

**Answer: (C)**

**Explanation:** Red soil develops on crystalline igneous rocks in areas of low rainfall in the eastern and southern part of the Deccan Plateau. Along the piedmont zone of the Western Ghat, long stretch of area is occupied by red loamy soil. Yellow and red soils are also found in parts of Odisha and Chhattisgarh and in the southern parts of the middle Ganga plain. The soil develops a reddish colour due to a wide diffusion of iron in crystalline and metamorphic rocks. It looks yellow when it occurs in a hydrated form. The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility. They are generally poor in nitrogen, phosphorous and humus. Hence, option (c) is correct.

**90. Consider the following statements regarding Dew point:**

1. Dew point is the temperature at which the atmosphere is saturated with water vapour.
2. The dew point gives an indication of the humidity.
3. A higher dew point means there will be less moisture in the air.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** Dew point is the temperature at which the atmosphere is saturated with water vapour, when it is cooled without changing its pressure or vapour content. A given volume of air containing much water vapour has a higher dew point than the same volume of drier air; thus the dew point gives an indication of the humidity. In meteorology the dew point is applied, for example, in predicting the height of the base of certain types of clouds. A higher dew point means there will be more moisture in the air. Hence, statement 3 is incorrect.

91. Consider the following statements regarding Special Drawing Right (SDR):

1. SDRs can be exchanged for freely usable currencies.
2. A Gold backing is mandatory for a nation to increase SDR deposits.
3. The SDR is a financial claim on the IMF as it is accepted by most international organizations.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

- The SDR was created by the IMF in 1969 as a **supplementary international reserve asset, in the context of the Bretton Woods fixed exchange rate system**. A country participating in this system needed official reserves—government or central bank holdings of gold and widely accepted foreign currencies—that could be used to purchase its domestic currency in foreign exchange markets, as required to maintain its exchange rate. **Hence, statement 1 is correct.**
- **The value of the SDR is based on a basket of five major currencies—the US dollar, the euro, the Chinese renminbi (RMB), the Japanese yen, and the British pound sterling.** No gold backing is needed. **Hence, statement 2 is incorrect.**
- The SDR is neither a currency, nor a claim on the IMF. Rather, it is a potential claim on the freely usable currencies of IMF members. Holders of SDRs can obtain these currencies in exchange for their SDRs in two ways: first, through the arrangement of voluntary exchanges between members; and second, by the IMF designating members with strong external positions to purchase SDRs from members with weak external positions. **Hence, statement 3 is incorrect.**

92. Which of the following are considered or counted while calculating GDP?

1. Rental value of all houses
2. Buying of newly produced cars as well as second-hand cars
3. Pensions and scholarships given by the Government.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

- There are imputed values as part of GDP. All houses are assumed to be rented as it is not possible for the government to check which one is owner occupied and which one is rented. Thus, rental value of all houses is part of GDP. **Hence, statement 1 is correct.**
- **In calculating GDP, only newly produced goods are counted.** Transactions in existing goods like second-hand cars are not included, as these do not involve the production of new goods. But the services provided by the agents while selling second-hand cars are counted. The agents make some money through commission which adds to the service economy. **Hence, statement 2 is incorrect.**
- **Transfer payments like scholarships, pensions and universal basic income** that the government gives do not fetch any direct returns in terms of addition to GDP and thus are not included in the GDP. **Hence, statement 3 is incorrect.**

93. Consider the following statements:

1. While Gross Domestic Product includes the production of goods and services within a country by all producers, Gross National Product captures all goods and services that is produced by the citizens of a country.
2. Usually Gross National Product tends to be less, if an economy is highly globalised and competitive and many of its MNCs are operating in other countries.

Which of the above statements is/are incorrect?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (B)

- Gross Domestic Product (GDP) includes the **production within a country by all producers i.e. citizens as well as foreign multinational corporations.** Gross National Product (GNP) captures all that is produced by the citizens of the country, whether it is within the geography of the country or abroad. **Hence, statement 1 is correct.**
- **In the age of globalisation, one country's GDP is another country's GNP.** If it's a highly globalised and competitive economy and many of its MNCs are operating in other countries, its GNP tends to be more. **Hence, statement 2 is incorrect.**

94. Which of the following is disadvantageous to developing countries' international trade?

- (a) Protection to domestic industries from dumping
- (b) Establishing regional trading blocs
- (c) Export of primary articles and import of manufactured goods
- (d) Free trade with other developing nations

Answer: (C)

**Explanation:** The present integration of global markets favours the more competitive product from a more competitive country. **Developed countries have an edge over manufactured goods due to advance in physical as well as human capital.** Developing countries are preferred for exporting primary articles because they have an abundance of it. This affects their competitiveness in the long-run as they miss out on the chance to build a manufacturing base, and remain a primary producer backward economy. **Hence, option (c) is correct.**

95. Laffer curve is a relationship between which of the following?

- (a) Tax buoyancy and tax elasticity
- (b) Tax rate and tax buoyancy
- (c) Tax rate and tax elasticity
- (d) Tax revenue and tax rate

Answer: (D)

**Explanation:** In economics, the **Laffer curve, developed by supply-side economist Arthur Laffer, illustrates a theoretical relationship between rates of taxation and the resulting levels of the government's tax revenue.** The Laffer curve assumes that **no tax revenue is raised at the extreme tax rates of 0% and 100%, and that there is a tax rate between 0% and 100% that maximizes government tax revenue.** The shape of the curve is a function of taxable income elasticity – i.e., **taxable income changes in response to changes in the rate of taxation.** The Laffer curve is typically represented as a graph that starts at 0% tax with zero revenue, rises to a maximum rate of revenue at an intermediate rate of taxation, and then falls again to zero revenue at a 100% tax rate. **Hence, option (d) is correct.**

96. Consider the following statements regarding Doppler radars:

- 1. Doppler radars forecast weather by using the mechanism of radio waves.
- 2. They track the movement of weather systems and cloud bands, and thus gauge rainfall over an area.
- 3. They cannot detect thunderstorms and lightning.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

- In radars, a beam of energy– called **radio waves**– is **emitted from an antenna.** When this beam strikes an object in the atmosphere, the energy scatters in all directions, with some reflecting directly back to the radar. **The larger the object deflecting the beam, the greater is the amount of energy that the radar receives in return.** Observing the time required for the beam to be transmitted and returned to the radar allows weather forecasting departments to “see” raindrops in the atmosphere, and measure their distance from the radar. **What makes a Doppler radar special is that it can provide information on both the position of targets as well as their movement. Hence, statement 1 and 2 are correct.**
- In India, Doppler radars of varying frequencies — **S-band, C-band and X-band** — are commonly used by the IMD to track the movement of weather systems and cloud bands, and gauge rainfall over its coverage area of about 500 km. An X-band radar is used to detect thunderstorms and lightning whereas C-band guides in cyclone tracking. **Hence, statement 3 is incorrect.**

97. The term 'Data Scraping' sometimes seen in news, rightly denotes:

- (a) Modifying the original data content in a website
- (b) Restricting data access from a website
- (c) Process of extracting data from a website
- (d) Process of deleting data from a website

Answer: (C)

**Explanation:** Data scraping, or web scraping, is the **process of extracting data from a website.** Scraper bots are designed to derive information from these websites. A user designing a bot to extract data is called a scraper. **Hence, option (c) is correct.**

98. Consider the following statements regarding Space Station:

- 1. A space station is a large spacecraft that remains in low-earth orbit for extended periods of time.
- 2. International Space Station is the first fully functional Space Station built by five space agencies.
- 3. The ownership and use of International space station

is established by intergovernmental treaties and agreements.

**How many of the above statements is/are incorrect?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

- Russia announced that it would be withdrawing from **the International Space Station in 2025, and build and manage its own floating laboratory that will be launched into orbit by 2030.**
- A space station is essentially a large spacecraft that remains in low-earth orbit for extended periods of time. **It is like a large laboratory in space,** and allows astronauts to come aboard and stay for weeks or months to carry out experiments in microgravity. **Hence, statement 1 is correct.**
- **The Mir space station of the former Soviet Union, and later operated by Russia, was functional from 1986 to 2001.** The ISS has been in space since 1998, and has been known for the exemplary cooperation between the five participating space agencies that have been running it: **NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada).** **Hence, statement 2 is incorrect.**
- The ownership and use of the space station is established by intergovernmental treaties and agreements. **Hence, statement 3 is correct.**

**99. Consider the following statements regarding Ultraviolet Radiation:**

1. Ultraviolet (UV) radiation is naturally emitted by the Sun.
2. The wavelength range of Ultraviolet Radiation is higher than that of visible light.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (A)

**Explanation:** Ultraviolet (UV) is a type of light or radiation naturally emitted by the Sun. It **covers a wavelength range of 100-400 nm.** The human visible light ranges from 380–700 nm. **UV is divided into three bands: UV-C (100-280 nm), UV-B (280-315 nm) and UV-A (315-400 nm).** **UV-A and UV-B rays from the Sun**

are transmitted through our atmosphere and all UV-C is filtered by the ozone layer. **Hence, statement 1 is correct while statement 2 is incorrect.**

**100. Consider the following statements regarding Zoonotic diseases:**

1. Zoonotic diseases are mainly infectious diseases that are naturally transmitted between vertebrate animals and humans.
2. Brucellosis is a zoonotic infection caused by the bacteria of the genus *Brucella*.
3. Zoonotic pathogens may be bacterial, viral or parasitic, or may involve unconventional agents.

**Which of the above statements are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer:** (D)

**Explanation:** A zoonosis is an infectious disease that has jumped from a non-human animal to humans. **Zoonotic pathogens may be bacterial, viral or parasitic,** or may involve unconventional agents and can spread to humans through direct contact or through food, water or the environment. **Various studies indicate that more than two-thirds of existing and emerging infectious diseases are zoonotic.** The transboundary impact of viral outbreaks in recent years such as the **Nipah virus, Ebola, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS) and Avian Influenza.** Brucellosis is a zoonotic infection caused by the bacteria of the genus *Brucella*. **Hence, all statements are correct.**

**101. Consider the following statements regarding Savanna type climate:**

1. It is a transitional type of climate between the equatorial forest and the trade wind hot deserts.
2. It is characterized by high and year-round rainfall.
3. It covers much of Africa as well as large areas of Australia, South America, and India.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) None

**Answer:** (B)

**Explanation:** Savanna or Sudan climate is a **transitional type of climate found between the equatorial forests & trade wind hot deserts**. It is **best developed in Sudan**, where dry & wet climate are most distinct, hence named Sudan climate. It covers much of Africa (Keya, Nigeria, Gambia) as well as large areas of Australia, South America (Brazilian highlands), and India. **Sudan climate is characterized by an alternate & distinct hot, rainy season (from May to Sep) & cool, dry season (Oct – April) in Northern Hemisphere & vice versa in Southern Hemisphere. Hence, statement 2 is incorrect.**

102. **Consider the following statements:**

1. Stenothermal organisms can tolerate and thrive in a wide range of temperatures.
2. Freshwater animals cannot live for long in sea water because of the osmotic problems.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both
- (d) Neither 1 nor 2

**Answer: (B)**

- A few organisms can tolerate and thrive in a wide range of temperatures (they are called eurythermal), but, a vast majority of them are restricted to a narrow range of temperatures (such organisms are called stenothermal). **Hence, statement 1 is incorrect.**
- Many freshwater animals cannot live for long in sea water and vice versa because of the osmotic problems, they would face. **Hence, statement 2 is correct.**

103. **Which of the following shows the symbiotic relationship (partially or fully) between Rhizobium bacteria and the plants they colonise?**

1. Rhizobium bacteria colonize plant cells within root nodules, where they convert nitrous oxide from the soil into ammonia and provide organic nitrogenous compounds to the plants.
2. The plant, in turn, provides the Rhizobium bacteria with organic compounds made using photosynthesis.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (C)**

- Rhizobium is a genus of Gram-negative soil bacteria that fix nitrogen. **Rhizobium species form an endosymbiotic nitrogen-fixing association with roots of (primarily) legumes and other flowering plants.**
- Rhizobium forms a symbiotic relationship with certain plants such as legumes, fixing nitrogen from the air into ammonia, which acts as a natural fertilizer for the plants. The plant, in turn, provides the bacteria with organic compounds made by photosynthesis. This mutually beneficial relationship is true of all of the rhizobia, of which the genus Rhizobium is a typical example. **Hence, both statements are correct.**

104. **The phenomenon of increasing concentration of a substance, such as a toxic chemical, in the tissues of tolerant organisms at successively higher levels in a food chain is known as:**

- (a) Bioaccumulation
- (b) Biosparging
- (c) Biomagnification
- (d) Biodilution

**Answer: (C)**

**Explanation:** Biomagnification, also known as **bioamplification or biological magnification, is the increasing concentration of a substance, such as a toxic chemical, in the tissues of tolerant organisms at successively higher levels in a food chain. Hence, option (c) is correct.**

105. **Ecological Succession is generally characterized by:**

1. Increased productivity
2. Decreased niche development
3. Increased complexity of food webs

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (C)**

- Ecological succession is the **process by which the structure of a biological community evolves over time**. The time scale can be decades (for example, after a wildfire), or even millions of years after a mass extinction.

- The community begins with relatively few pioneering plants and animals and develops through increasing complexity until it becomes stable or self-perpetuating as a climax community.
- **Two different types of succession—primary and secondary—have been distinguished. Primary succession occurs in essentially lifeless areas—regions in which the soil is incapable of sustaining life as a result of such factors as lava flows, newly formed sand dunes, or rocks left from a retreating**

glacier. **Secondary succession occurs in areas where a community that previously existed has been removed**; it is typified by smaller-scale disturbances that do not eliminate all life and nutrients from the environment.

- **Increased niche development is the characteristic feature of Ecological succession.**

Hence, option (c) is correct



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