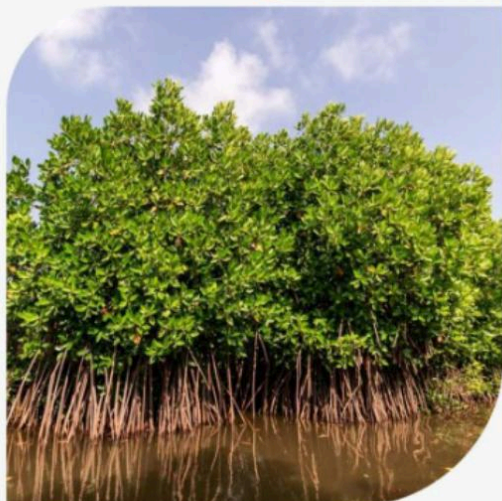


# CURRENT AFFAIRS MAGAZINE AUGUST, 2023

- RED FORT: VENUE FOR THE INDIA'S INDEPENDENCE DAY CELEBRATION
- INDIA'S CHANDRAYAAN-3 AND RUSSIA'S LUNA 25 MISSION
- CHINA'S STAPLED VISAS
- WHO REPORT ON TOBACCO CONTROL
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# Mains Daily Analysis

## GS – 1

### 1. Heat Waves and Heat Index

#### Why in News?

India has witnessed a **significant decline in heat-related deaths** in recent years, reflecting the country's efforts to combat the adverse effects of **heat-waves**.

- The **India Meteorological Department (IMD)** plays a vital role in this endeavour, issuing timely forecasts and warnings to mitigate the impact of severe weather events, including heat-waves.
- Recently, **IMD introduced the Heat Index**, a valuable tool that considers **humidity's influence on temperatures**.

#### What are Heat Waves?

##### About:

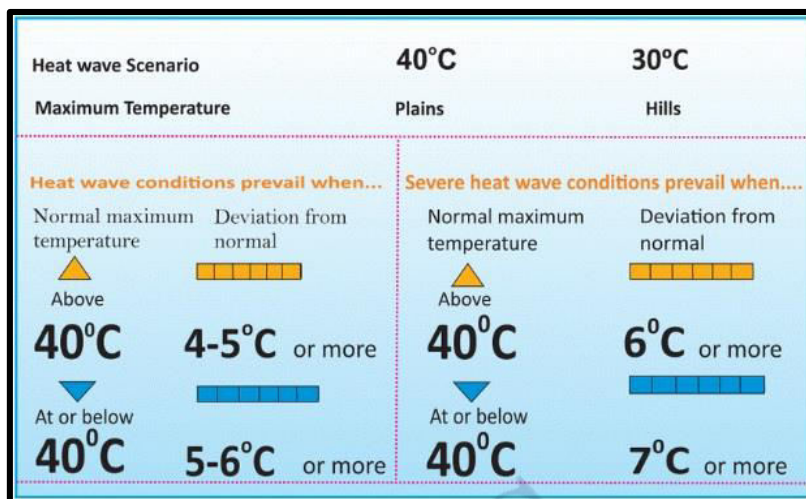
- Heat waves are **prolonged periods of excessively hot weather that can cause adverse impacts on human health, the environment, and the economy**.
- India, being a tropical country, is **particularly vulnerable to heat waves**, which have become more frequent and intense in recent years.
- **IMD Criteria for Declaring Heat Wave in India:**
  - Heat wave is **considered if the maximum temperature of a station reaches at least 40°C** or more for Plains and at least 30°C or more for Hilly regions.
  - **Based on Departure from Normal:**
    - Heat Wave: Departure from **normal is 4.5°C to 6.4°C**.
    - Severe Heat Wave: Departure from **normal is >6.4°C**.
  - **Based on Actual Maximum Temperature:**
    - Heat Wave: When actual **maximum temperature ≥ 45°C**.
    - Severe Heat Wave: When actual **maximum temperature ≥ 47°C**.
- **IMD's Initiatives and Tools to Combat Heat Waves:**
  - Timely issuance of heat wave forecasts to keep the public informed.
  - Warnings provided to disaster management authorities for necessary preparedness.
  - IMD offers Seasonal outlook and extended range forecast offering additional insights into temperature trends.
  - Daily forecasts for the next five days with real-time updates.
  - **Color-coded warnings** for severe weather events, including heat waves.
  - Cooperation with **National Disaster Management Authority (NDMA)** and local health departments for heat action plans.
  - Implementation of plans in vulnerable regions to minimize heat-related risks.

#### What is Heat Index?



### About:

- The Heat Index is a parameter that considers **both temperature and humidity to calculate the apparent temperature or "feel like" temperature** for human beings.
- It helps in understanding the **impact of humidity on high temperatures** and how it contributes to human discomfort during hot weather.
- The Heat Index has been launched on an **experimental basis by the India Meteorological Department (IMD)**.
- It aims to provide general guidance for regions experiencing higher apparent temperatures causing discomfort to people.



### ■ Indication of Heat Stress:

- High Heat Index values indicate a **greater risk of heat-related stress and health issues**.
- It serves as a warning for potential heat-related illnesses and dangers.

### ■ Categorization of Heat Levels:

- The Heat Index categorizes the apparent temperature into different levels using colour codes:

- **Green:** Experimental heat Index **less than 35°C**.
- **Yellow:** Experimental heat Index in the **range 36-45°C**.
- **Orange:** Experimental heat Index in the **range 46-55°C**.
- **Red:** Experimental heat Index **greater than 55°C**.

### ■ Useful Tool for Public Health:

- By understanding the Heat Index, individuals and communities can take **proactive steps to protect public health** during heat-waves.
- It assists in **making informed decisions** and formulating heat action plans to ensure the well-being of the population.

## 2. Monsoon, El Nino and Their Impact on Agriculture

### Why in News?

The **2023 southwest monsoon season in India** started late, with the initial two weeks experiencing a **significant rainfall deficiency of 52.6% below the normal long-period average (LPA)**.

- However, as of July 30, 2023 there was an overall **6% surplus rainfall**. This **turnaround has positively impacted kharif crop plantings**. However, concerns persist regarding the **potential impact of the approaching El Nino phenomenon on rabi crops**.

### What is the Long-Period Average (LPA) of Rainfall?

- 'The IMD defines the "LPA of rainfall" as the **average rainfall recorded over a specific region for a long period**, like **30 or 50 years**. Based on this, the IMD classifies rainfall into five categories on an all-India scale:

- **Normal or near normal:** Rainfall between 96-104% of LPA.
- **Below normal:** Rainfall between 90-96% of LPA.
- **Above normal:** Rainfall between 104-110% of LPA.
- **Deficient:** Rainfall less than 90% of LPA.
- **Excess:** Rainfall more than 110% of LPA.

## What are Kharif and Rabi Crops?

### Kharif crops:

- Kharif crops are sown during the **monsoon season**, from **June to October**, and harvested in the **late summer or early autumn**.
- They depend on the **southwest monsoon for irrigation and growth**.
- Major Kharif crops include rice, maize, sorghum, pearl millet (bajra), finger millet (ragi), groundnut and pulses like **pigeon pea (arhar) and green gram (moong)**.
- They account for about **55% of the total foodgrain production in India**.

### Rabi Crops:

- These crops are sown around the **Retreating Monsoon and Northeast monsoon season**, which begins in October and are called rabi or winter crops.
- The harvest for these crops happens typically during April and May, during the summer season.
- Major Rabi crops are **wheat, gram, peas, barley etc.**
- A warm climate is required for seed germination and cold climate for the growth of crops.

## What is the Impact of Monsoon on Indian Agriculture?

### Positive

### Impacts:

- **Increased Crop Production:** A major portion of the country's crop area is completely dependent on Monsoon rains as they're not equipped with methods of manual irrigation.
  - Adequate rainfall during the monsoon season leads to **increased soil moisture and promotes the growth of crops**, resulting in higher agricultural output.
  - The availability of water supports the cultivation of a variety of crops, including **rice, wheat, millets, and pulses**.
- **Economic Boost:** Successful monsoon seasons contribute to **rural prosperity by providing income to farmers and labourers**, which, in turn, stimulates **demand for goods and services in the rural economy**.
  - This increased economic activity has a positive impact on overall national growth.
- **Recharge of Groundwater:** The monsoon helps **recharge groundwater resources**, which is crucial for sustainable agricultural practices in regions where water scarcity is a challenge.

### Negative

### Impacts:

- **Erratic Monsoon Patterns:** The monsoon's timing, intensity, and distribution are unpredictable, **leading to uncertainties in agricultural planning and crop management**.
  - Delayed or early monsoons can **disrupt planting schedules** and affect crop yields.
- **Droughts and Floods:** Monsoon failure or **excess rainfall can lead to droughts or floods**, respectively.
  - Both scenarios can be disastrous for agriculture. **Droughts result in water shortages**, crop failures, and reduced yields, **while floods can damage crops**, wash away fertile topsoil, and lead to livestock losses.
- **Crop Losses:** Prolonged and excessive monsoon rains can cause **crop diseases, reducing crop quality and yield**. These conditions also hinder farmers' ability to conduct agricultural operations effectively.
- **Soil Erosion:** Heavy rainfall can lead to soil erosion, **which depletes soil fertility and affects agricultural productivity** in the long run.
  - Soil erosion also impacts water bodies and can lead to **siltation in reservoirs**, reducing their storage capacity.
- **Food Price Inflation:** Inconsistent monsoon patterns can affect crop production and **lead to shortages, resulting in food price inflation**.
  - This can have **adverse effects on the economy, especially for low-income households** that spend a significant portion of their income on food.

## What is El Nino and Its Implications on Agriculture

### About:

- **El Nino** is a climate phenomenon that occurs **irregularly in the tropical Pacific Ocean**, characterized by the **warming of sea surface temperatures**.
  - It can have significant impacts on weather patterns around the world, including India.
  - The **Oceanic Nino Index (ONI)** reached 0.8 degrees Celsius in **June, 2023** surpassing the **El Nino threshold of 0.5 degrees**.
  - Global weather agencies forecast El Nino to persist and strengthen through the 2023-24 winter.

### Impacts:

- **Temperature Extremes:** El Nino is often associated with **higher temperatures in some parts of India**.
  - Elevated temperatures can adversely impact crops, leading to heat stress and reduced yields, especially for sensitive crops like fruits and vegetables.
- **Pest and Disease Outbreaks:** El Nino conditions can create a **conducive environment for certain pests and diseases** that affect crops.
  - Warmer temperatures and altered precipitation patterns can lead to increased pest populations, posing additional challenges to farmers.
- **Impact on Livestock:** Reduced availability of fodder and water scarcity during El Nino can affect **livestock** and animal husbandry, **leading to lower milk and meat production**.

## 3. Offshore Areas Mineral (Development and Regulation) Amendment Bill, 2023

### Why in News?

The Rajya Sabha recently passed the **Offshore Areas Mineral (Development and Regulation) Amendment Bill, 2023**, aiming to introduce crucial reforms in India's offshore mining sector.

- This amendment seeks to modify the existing **Offshore Areas Mineral (Development and Regulation) Act, 2002**, to enable the auction as the method of **allocating operating rights in offshore areas**.

### What are the Key Features of the Amendment Bill?

- **Introduction of Auction Regime:**
  - Two types of operating rights, production lease, and composite licence, to be granted through auction by competitive bidding exclusively to the private sector.
  - **Operating rights to be granted to PSUs** in the mineral bearing areas reserved by the Central Government. PSUs will be **exclusively granted operating rights** for atomic minerals.
    - Atomic minerals include **mainly minerals containing uranium**, thorium, rare metals, viz. niobium, tantalum, lithium, beryllium, titanium, zirconium, and **Rare Earth Elements (REEs)** as well as beach sand minerals.
- **Fixed Period for Production Lease:**
  - The provision for renewal of production **leases has been removed**.
  - The production lease period is set at **50 years, aligning with the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**.
- **Area Acquisition Limit:**
  - A limit has been imposed on the **total area** one entity can acquire offshore.
  - The maximum **acquisition area is restricted to 45 minutes latitude by 45 minutes longitude** for any mineral or prescribed group of associated minerals under one or more operating rights.
- **Non-lapsable Offshore Areas Mineral Trust:**

- To ensure funds for exploration, disaster relief, research, and benefits to affected parties, a **non-lapsable Offshore Areas Mineral Trust** will be established.
  - The trust will be funded by an additional levy on mineral production, not exceeding one third of the royalty, with the exact rate prescribed by the Central Government.
- **Ease of Business and Timelines:**
- Provisions for easy transfer of composite licence or production lease.
  - Timelines for commencement of production and dispatch after execution of **production lease to ensure timely start of production.**
- **Revenues:**
- Royalty, auction premium, and other revenues from mineral production in offshore areas will accrue to the Government of India.

#### What is the Need for Such an Amendment Bill?

- **Lack of Activity in Offshore Areas:**
- Despite the enactment of the **Offshore Areas Mineral (Development and Regulation) Act, 2002**, there has been no mining activity in offshore areas.
  - This indicates a lack of interest or effective utilization of the vast maritime resources available to India.
  - The Amendment Bill seeks to **address the underlying issues and incentivize exploration** and mining in these offshore areas.
- **Discretion and Lack of Transparency:**
- The current Act suffers from the problem of discretion and lacks transparency in the allocation of **operating rights for mining in offshore areas.**
  - The Amendment Bill aims to introduce a transparent auction mechanism to allocate operating rights, inspired by the successful amendments to the **MMDR Act for onshore areas.**
- **Harnessing Maritime Resources:**
- India holds a unique **Maritime Position**, with an **Exclusive Economic Zone (EEZ) covering over two million square kilometres**, rich in recoverable resources. Geological Survey of India (GSI) estimates **significant reserves of lime mud, construction-grade sand, heavy mineral placers, phosphorite, and polymetallic ferromanganese nodules** and crusts in various offshore areas.
  - However, the potential of these resources remains largely untapped. The Amendment Bill seeks to **harness the full potential of these maritime resources** to support India's high-growth economy by promoting exploration and mining through the participation of both the public and private sectors.

#### Conclusion

- By introducing auction as the method of allocation of operating rights, the Bill **aims to promote transparency**, attract private sector participation, and optimize India's maritime resources to support its economic growth ambitions.
- This reform aligns with **India's vision to harness its vast maritime resources** while ensuring sustainable and responsible mining practices.

## 4. Dam Safety and Water Resource Management in India

#### Why in News?

Recently, the Minister of State for Jal Shakti has shed light on India's significant strides in the realm of **dam safety and water resource management.**

#### What are the Highlighted Initiatives for Dam Safety Water Resource Management in India?

- **Dam Safety Act, 2021: A Regulatory Framework:**
  - Enactment of the **Dam Safety Act, 2021**, by the Union Government.

- Focuses on **proper surveillance, inspection, operation, and maintenance of specified dams.**
- Aims to prevent **dam failure-related disasters** and establish an institutional mechanism for safe functioning.

#### **Institutional Mechanism:**

- **National Committee on Dam Safety (NCDS):**
  - Formation of the National Committee on Dam Safety at the national level.
  - Responsible for **evolving dam safety policies and recommending essential regulations.**
  - Provides a strategic platform for ensuring uniform safety standards.
- **National Dam Safety Authority (NDSA):**
  - Creation of the National Dam Safety Authority as a regulatory body.
  - Tasks include implementing policies of the National Committee on Dam Safety.
  - Offers technical assistance to **State Dam Safety Organisations (SDSO)** and resolves inter-state disputes.
- **State-level Dam Safety Measures:**
  - Empowerment of State Governments to establish **State Committee on Dam Safety.**
  - Creation of **State Dam Safety Organisations** responsible for enforcing dam safety standards.
  - Renders crucial instructions to dam owners regarding safety protocols and remedial actions.
- **National Hydrology Project (NHP):**
  - **National Hydrology Project (NHP)** is designed with four major components: **Water Resources Monitoring System, Water Resources Information System, Water Resources Operations and Planning System, and Institutional Capacity Enhancement.**
  - The project aims to **enhance water resource management capabilities across the country.**
  - Supports **studies related to flood forecasting** undertaken by implementing agencies.

#### **What is the State of Indian Dams?**

- India has **5745 numbers of dams (5334 are completed and 411 are under construction).**
- **India is ranked third in the world in terms of building large dams.**
- **Tehri Dam** in Uttarakhand is the **highest dam in India** built on the Bhagirathi River.
- **Hirakud Dam** in Odisha built on river Mahanadi is the longest dam in India.
- **Kallanai Dam** in Tamil Nadu is the **oldest dam in India.** It is built on the **Kaveri River** and is about 2000 years old.

#### **What are the Other Related Water Resource Management Initiatives?**

- Swachh Bharat Mission.
- Jal Jeevan Mission.
- National Water Policy, 2012.
- Pradhan Mantri Krishi Sinchayee Yojana.
- Jal Shakti Abhiyan- Catch the Rain Campaign.
- Atal Bhujal Yojana.
- Sujalam 2.0.
- Amrit Sarovar Mission.

#### **What are the Challenges Associated with Dam Safety and Water Resource Management?**

- **Geological and Geotechnical Challenges:**
  - Many regions in India are **seismically active**, which poses a risk of **earthquakes that could impact dam stability.**
  - Poor soil quality and unstable geological conditions in certain areas also contribute to challenges in ensuring dam safety.
- **Ageing Infrastructure:**



- Several **dams in India are aging and may not meet modern safety standards**. Maintenance and rehabilitation of these older structures are essential to prevent potential failures.
- **Climate Change and Extreme Weather Events:**
  - **Changing climate patterns** and increasing instances of extreme weather events, such as **heavy rainfall and floods**, can strain dams and their reservoirs, potentially leading to overtopping or dam failure.
- **Interstate and International Cooperation:**
  - Many rivers in India are shared with neighbouring states or countries, requiring **coordinated efforts for dam safety and water management**. Disputes and lack of cooperation can impact effective dam management.
- **Emergency Response Infrastructure:**
  - Developing and maintaining effective **communication networks, evacuation plans, and emergency shelters** in the vicinity of dams is essential to manage potential disasters.
- **Community Resettlement and Rehabilitation:**
  - In cases where dam construction or operation requires the displacement of local communities, ensuring their proper resettlement and rehabilitation presents challenges.

#### Way Forward

- Develop a **dynamic and adaptable project plan** that incorporates **real-time monitoring, eco-friendly technologies, disaster preparedness, and ecosystem restoration**, ensuring long-term environmental and social sustainability.
- Integrate **climate change considerations into dam design** and management, anticipating shifts in **weather patterns and implementing adaptive measures** to withstand extreme events.
- Continue organizing **training programs to equip dam safety professionals** with skills and knowledge.
- Strengthen **cooperation with neighbouring countries/states** to ensure effective management of shared river systems, and resolve conflicts.
- Prioritize meaningful engagement with **local ethnic communities, valuing their input, cultural heritage**, and concerns to foster a **harmonious project coexistence and ensure their well-being**.

## 5. Nurturing India's Cotton Sector

#### Why in News?

Recently, the Union Minister of State for the Ministry of Textiles highlighted the significant strides taken to **empower cotton farmers and promote the cotton sector**.

#### What are the Indian Government Initiatives Related to the Development of the Cotton Sector?

- **Cotton Development Programme Under National Food Security Mission (NFSM):**
  - Implemented by the **Department of Agriculture & Farmers Welfare** in 15 major cotton-growing states: **Assam, Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Telangana, Tamil Nadu, Tripura, Uttar Pradesh & West Bengal** from 2014-15.
  - Aims to enhance **cotton production and productivity in major cotton-growing states**.
  - Includes demonstrations, trials, distribution of plant protection chemicals, and training.
- **MSP Formula for Cotton:**
  - Introduced a formula of 1.5 times the cost of production (A2+FL) for **Minimum Support Price (MSP) calculation**.
  - Ensures economic interest of cotton farmers and availability of cotton to the textile industry.
  - Increases **MSP rates to support farmers' income**.
  - For cotton season 2022-23, **MSP of Fair Average Quality (FAQ) grade cotton had increased by about 6%** which has further been **increased by 9% to 10% for ensuing cotton season 2023-24**.

- **Cotton Corporation of India (CCI):**
  - Appointed as a Central Nodal agency for **MSP operations when Fair Average Quality grade seed cotton (kapas)** fall below the MSP rates.
  - Safeguards farmers from distress sales.
- **Branding and Traceability:**
  - Launched **Kasturi Cotton** to promote Indian cotton with a brand name.
  - Aims to ensure **quality, traceability, and branding of Indian cotton.**
- **Large-Scale Demonstrations Project:**
  - Sanctioned by the Ministry of Agriculture & Farmers Welfare under NFSM.
  - Focuses on best practices to enhance cotton productivity.
  - Focus on innovative technologies, such as **High Density Planting System (HDPS) and the value chain approach.**
  - Sanctioning of a project titled "**Targeting technologies to agro-ecological zones-large scale demonstrations of best practices to enhance cotton productivity.**"
- **Textile Advisory Group (TAG):**
  - Constituted by the Ministry of Textiles to **facilitate coordination among stakeholders in the cotton value chain.**
  - Addresses issues related to **productivity, prices, branding, and more.**
- **Cott-Ally Mobile App:**
  - Developed to provide farmers with knowledge through a user-friendly interface.
  - **Key Features:**
    - a. MSP Rate Awareness.
    - b. Nearest Procurement Centres.
    - c. Payment Tracking.
    - d. Best Farm Practices.
- **Committee on Cotton Promotion and Consumption (COCP):**
  - Ensures availability of cotton to the textile industry.
  - Monitors cotton scenario and advises the government on production and consumption matters.

#### What are the Key Facts about Cotton?

- Kharif Crop which requires 6 to 8 months to mature.
- Drought-resistant crop ideal for arid climates.
- **Occupies 2.1% of the world's arable land**, meets 27% of the world's textiles needs.
- **Temperature:** Between 21-30°C.
- **Rainfall:** Around 50-100cm.
- **Soil Type:** Well-drained black cotton soil (Regur Soil) (E.g. Soil of Deccan Plateau)
- **Products:** fibre, oil and animal feed.
- **Top Cotton Producing Countries:** India > China > USA
- **Top Cotton Producing States in India:** Gujarat > Maharashtra > Telangana > Rajasthan > Andhra Pradesh
- **Four Cultivated Species of Cotton:** *Gossypium arboreum*, *G. herbaceum*, *G. hirsutum* and *G. barbadense*.
  - *Gossypium arboreum* and *G. herbaceum* are known as old-world cotton or Asiatic cotton.
  - *G. hirsutum* is also known as American cotton or upland cotton and *G. barbadense* as Egyptian cotton. These are both new world cotton species.
- **Hybrid Cotton:** Cotton made by crossing two parent strains that have different genetic characters. Hybrids are often spontaneously and randomly created in nature when open-pollinated plants naturally cross-pollinate with other related varieties.
- **Bt Cotton:** It is a genetically modified pest-resistant variety of cotton.

## 6. Red Fort: Venue for the India's Independence Day Celebration

### Why in News?

As India proudly celebrated its **77th Independence Day**, the spotlight once again fell upon the **iconic Red Fort in Delhi**.

### What are the Series of Events Associated with Red Fort?

#### ➤ Historical Significance of Red Fort:

- **Under the Delhi Sultanate:** Delhi emerged as a pivotal capital during the Delhi Sultanate (1206-1506).
  - **Babur, the founder of the Mughal dynasty**, termed **Delhi** the 'capital of all Hindustan' in the 16th century.
  - Despite brief relocations (**Akbar** shifted his capital to Agra) the **Mughals, under Shah Jahan, re-established Delhi as their capital with Shahjahanabad in 1648**, known today as **Old Delhi**.
  - Shah Jahan laid the **foundation of his citadel, Lal-Qila or Red Fort**.

#### ➤ Symbolic Significance of the Mughal Emperor: By the 18th century, the **Mughal Empire had lost most of its territories and power**.

- They were still regarded as symbolic rulers of India by some sections of society, **especially by those who opposed British colonialism**.
- The **1857 Rebellion** epitomized this connection, when people marched towards Red fort and **declared the aged Bahadur Shah Zafar as their leader**.

#### ➤ British Imperial Rule and Transformation of the Red Fort:

- **British Capture of Delhi:** After subduing the 1857 Rebellion, the British intended to **erase the Mughal legacy by demolishing Shahjahanabad**.
- While sparing the Red Fort, they stripped it of its grandeur, looted artworks, and replaced inner structures with British buildings.
- This transformation left an indelible mark of British imperial authority on the Red Fort.
- **Utilizing Symbolic Authority:** The British recognized Delhi's symbolic power.
- The **Delhi Durbar ceremonies** reinforced British dominance and proclaimed the monarch as the Emperor of India.
- In 1911, the **British moved their capital to Delhi**, constructing a new city that embodied the Indian ethos and centralized authority.

### How Red Fort Became Venue for India's Independence Day Celebration?

- The **Indian National Army's** trials at the Red Fort in the 1940s elevated its **symbolism**. These trials sparked sympathy for the INA and **intensified nationalist sentiments against British rule**, reinforcing the Red Fort's role as a symbol of defiance.
- As India approached independence, Jawaharlal Nehru, the first Prime Minister of India, **decided to hoist the national flag at the Red Fort**.
  - On **August 15, 1947**, Jawaharlal Nehru hoisted the National flag "Tiranga" at **Princess Park**, followed by his historic "**Tryst with Destiny**" **speech at the Red Fort on August 16, 1947**.
  - This was a **symbolic gesture of reclaiming the fort from British colonial rule and asserting India's sovereignty and identity**. It also marked the culmination of India's long and arduous struggle for freedom.
- **Since then**, every year on 15th **August**, the Prime Minister of India hoists the national flag and addresses the nation from the Red Fort.
  - This tradition has become an integral part of India's Independence Day celebrations and reflects its pride and patriotism.

### About Red Fort

- The Red Fort, so called because of the **red colour of the stone** largely used in it, is **octagonal on plan**, with two longer sides on the east and west.
- The fort is a masterpiece of Mughal architecture and a symbol of their cultural and artistic achievements. It was **designated as a UNESCO World Heritage Site in 2007**.
  - Also, the fort is depicted on the reverse side of the new 500 rupee note.

- It is **currently under the management of the Archaeological Survey of India (ASI)**, which is responsible for its conservation and maintenance.
- The ASI has also installed various facilities for visitors, such as **museums, galleries, audio guides, light and sound shows, etc.**

## 7. Cauvery Water Sharing Dispute

### Why in News?

The **Cauvery water dispute** has once again taken centre stage, as Tamil Nadu appeals to the **Supreme Court of India** for intervention in **ensuring the release of 24,000 cubic feet per second (cusecs) from its reservoir's water by Karnataka.**

- Tamil Nadu also urged the Court to direct **Karnataka to ensure the release of 36.76 TMC (thousand million cubic feet) stipulated for September 2023** as per the **Cauvery Water Disputes Tribunal (CWDT)'s final award of February 2007** that was modified by the SC in 2018.

### What Led to Tamil Nadu's Appeal to the Supreme Court?

#### ➤ Tamil Nadu's Appeal to SC:

- The issue arose from Karnataka's refusal to abide by previously agreed-upon water release quantities.
  - Tamil Nadu advocates for the release of **10,000 cusecs of water for the stipulated 15-day duration.** On the other hand, Karnataka has suggested a reduced **water release of 8,000 cusecs for the same 15-day timeframe.**

#### ➤ Karnataka's Explanation:

- Karnataka cites **poor inflow due to reduced rainfall in Cauvery catchment, including origin point Kodagu.**
  - Karnataka highlights a **44% rainfall deficit in Kodagu from June to August.**
- Karnataka rejects Tamil Nadu's distress-sharing formula demand.

### Implications:

- Tamil Nadu's farmers await Karnataka's response, as the Mettur reservoir **holds only 20 TMC, lasting ten days.**
- The Supreme Court's decision holds significance in resolving the complex dispute.
- Collaborative solutions are crucial for equitable water management and conflict resolution.

### How is the Cauvery Water Being Shared?

- A carefully crafted monthly schedule governs the distribution of water between Karnataka and Tamil Nadu, the two riparian states of the Cauvery basin.
  - In a **"normal" water year**, Karnataka is bound to **release 177.25 TMC (thousand million cubic feet) of water from June to May to Tamil Nadu.**
  - This annual **quota includes 123.14 TMC** allocated during the monsoon months from June to September.
- The ongoing southwest monsoon season often triggers disputes when rainfall falls short of expectations.

### What is the Cauvery River Dispute?

#### River Cauvery (Kaveri):

- It is known as **'Ponni' in Tamil** and is a sacred **river of southern India.**
- It **rises on Brahmagiri Hill** of the **Western Ghats** in southwestern Karnataka state, flows in a southeasterly direction through the states of **Karnataka and Tamil Nadu**, and descends the **Eastern Ghats** in a series of great falls and **drains into Bay of Bengal** through **Pondicherry.**
- **Left Bank Tributary:** Arkavathi, Hemavathi, Shimsa, and Harangi.
- **Right Bank Tributary:** Lakshmantirtha, Suvarnavati, Noyil, Bhavani, Kabini, and Amaravathi.



### The Dispute:

- As the river originates in Karnataka, flows through Tamil Nadu with major tributaries coming from Kerala and drains into the Bay of Bengal through Pondicherry the **dispute therefore involves 3 states and one Union Territory**.
- The genesis of the dispute is **150 years old and dates back to the two agreements of arbitration in 1892 and 1924** between the then **Madras presidency and Mysore**.
- It **entailed the principle that the upper riparian state** must obtain consent of lower riparian state for any construction activity viz. reservoir on the river Cauvery.
- The Cauvery water dispute between Karnataka and Tamil Nadu began in 1974 when Karnataka started diverting water without Tamil Nadu's consent.
  - After several years, the **Cauvery Water Disputes Tribunal (CWDT)** was established in 1990 to resolve the issue. It took 17 years for the CWDT to reach a final order in 2007, which outlined the sharing of Cauvery water among the four riparian states. In distress years, water would be shared on a **pro-rata basis**.
  - CWDT issued its final award in February 2007, specifying **water allocations among the four states in the Cauvery basin**, considering the total availability of 740 TMC in a normal year.
  - The allocation of water among the four states is as follows: **Tamil Nadu - 404.25 TMC, Karnataka - 284.75 TMC, Kerala - 30 TMC, and Puducherry - 7 TMC**.
  - In 2018, the Supreme Court declared the Cauvery a national asset and largely upheld the water-sharing arrangements determined by the CWDT.
  - It also directed the Centre to notify the **Cauvery Management Scheme**.
  - The central government notified the 'Cauvery Water Management Scheme' in June 2018, constituting the '**Cauvery Water Management Authority**' and the '**Cauvery Water Regulation Committee**'.



## 8. Unveiling California's Past Extinction to Illuminate Modern Challenges

### Why in News?

As the prevalence of deadly **wildfires** has surged, driven by the combined forces of human-caused **climate change** and disruptive land management practices, a new study delves into California's history during the **Pleistocene epoch**, a time marked by **profound climatic shifts** and **Earth's largest extinction event in over 60 million years**.

### What is the Pleistocene Epoch?

- It is the geological epoch that lasted from about **2,580,000 to 11,700 years ago**, spanning the earth's most recent period of repeated glaciations.
  - It was during the Pleistocene that the most recent episodes of global cooling, or ice ages, took place.
- The epoch featured ice age giants, such as **woolly mammoths (Mammuthus primigenius) giant bears, dire wolves and camels**, many of which disappeared at the end of the Pleistocene in a major extinction event.
  - The extinction resulted in substantial losses, **North America lost over 70% of mammals** weighing more than 97 pounds, **South America lost over 80%**, and **Australia nearly 90%**.
- The end of the Pleistocene epoch also marks the beginning of the **Holocene epoch, which is the current epoch we are living in**.

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

- **Revealing Insights from the La Brea Tar Pits: La Brea Tar Pits is a prolific ice age fossil site in Los Angeles, US** home to preserved remains of thousands of large mammals trapped in asphalt seeps.

- By analysing proteins in the fossils, the study reveals a deadly **combination of a warming climate marked by prolonged droughts and rapid human population growth.**
- These factors pushed Southern California's ecosystem to a tipping point, causing irreversible changes in vegetation and mega-mammal populations.
- As California warmed coming out of the last ice age, the landscape became drier and forests receded.
  - At La Brea, **herbivore populations also declined, probably from a combination of human hunting and habitat loss.** Species associated with trees, like camels, disappeared entirely.
- **A New Paradigm: Fire's Role:** The study highlights that **fire is a relatively recent phenomenon in Southern California,** with fire becoming frequent only after human arrival.
- Over **90% of wildfires in coastal California are ignited by human activities** such as downed power lines and campfires.
- Parallels between Pleistocene extinctions and contemporary crises underscore the vulnerability of ecosystems under compounded stress.
- **Relevance for Today's Climate and Biodiversity Crisis:** Today's convergence of climate warming, human population expansion, biodiversity loss, and human-triggered fires mirrors the past.
- The pace of current temperature rise, primarily fuelled by fossil fuel burning, far **surpasses that of the ice age's end.**
- The study underscores the need to intensify efforts to curtail greenhouse gas emissions, prevent reckless fire ignitions, and safeguard mega-fauna.

### What is the Geological Time Scale?

- The **Geological Time Scale** is like a vast timeline that helps us understand the history of our planet.
  - Just as a calendar breaks down years, months, and days, the Geological Time Scale breaks down **Earth's history into eons, eras, periods, and epochs.**
- Eons are divided into Eras, Eras into Periods, Periods into Epochs, and Epochs into Ages.

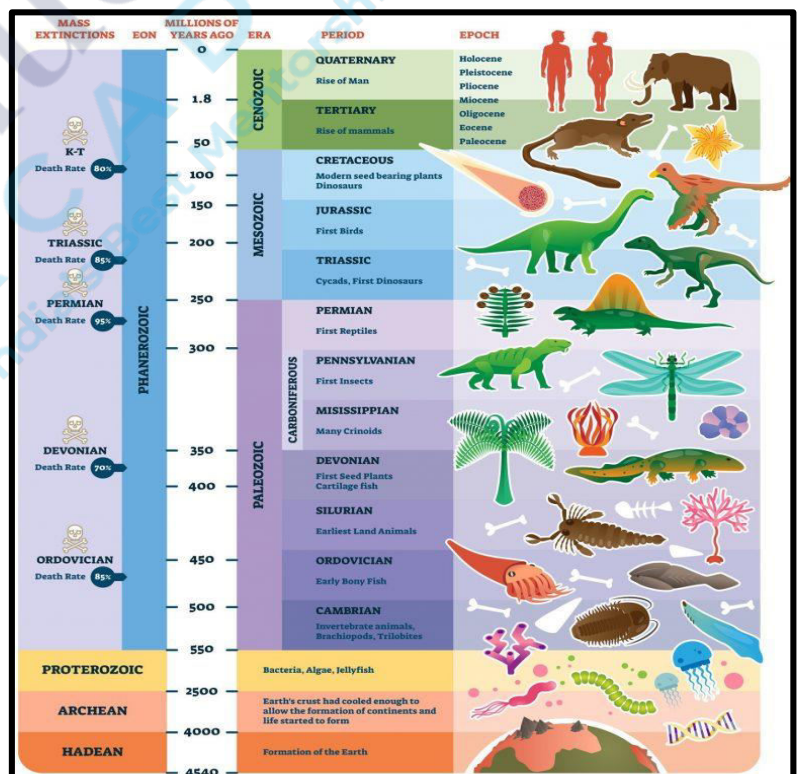
### What should be the Priorities to Prevent Future Mass Extinctions?

#### ■ Holistic Ecosystem Restoration and Preservation:

- **Innovative Ecosystem Mapping:** Develop advanced mapping technologies to assess ecosystem health and identify critical areas for restoration.
- **Bio-corridor Creation:** Establish ecological corridors to connect fragmented habitats, enabling species to migrate and thrive across diverse environments.
- **Pre-emptive Conservation:** Prioritize conservation of keystone species to maintain the ecological balance crucial for long-term ecosystem resilience.

#### ■ Synthetic Biology for Species Resilience:

- **Genetic Augmentation:** Employ synthetic biology techniques to enhance genetic diversity within vulnerable species, bolstering their adaptability to changing conditions.
- **Assisted Evolution:** Proactively guide species adaptation through controlled interventions, accelerating their response to environmental shifts.



- **Ethical Considerations:** Forge a global ethical framework to guide the responsible use of synthetic biology in conservation efforts.

■ **Green Innovation for Sustainable Resource Utilization:**

- **Circular Economies:** Promote **circular economies** to minimize resource depletion and waste, thereby reducing stress on ecosystems.
- **Bio-mimicry and Sustainable Design:** Harness **nature-inspired designs to develop eco-friendly products**, reducing environmental impacts across industries.
- **Green Infrastructure:** Invest in **sustainable infrastructure that reduces habitat destruction**, such as **wildlife-friendly roadways and energy installations**.

■ **Data-Driven Conservation Management**

- **Predictive Analytics:** Utilize **machine learning and AI to model ecosystem dynamics**, enabling timely interventions to prevent disruptions.
- **Real-time Monitoring:** Implement remote sensors and satellite technology for real-time monitoring of ecosystems and early detection of stressors.
  - There is a need to establish interconnected data-sharing networks to facilitate collaborative conservation efforts across borders.

■ **Youth and Community Empowerment:**

- **Environmental Education Reform:** Revamp educational curricula to foster a deep understanding of biodiversity's importance and instill a sense of stewardship from an early age.
- **Youth-Driven Initiatives:** Encourage youth-led conservation projects and platforms to amplify their influence and involvement in shaping policies.
- **Cultural Integration:** Integrate **indigenous and local knowledge systems into conservation strategies**, promoting community ownership and sustainable practices.

## 9. Changing Youth Concerns and Aspirations

### Why in News?

In the ever-evolving landscape of youth concerns and aspirations, a recent survey conducted by **Lokniti-CSDS** across 18 states in India sheds light on the **shifting priorities of the young population**.

- The survey highlights the **rising prominence of unemployment and price rise as pressing issues**, the intersection of these concerns with **economic classes and gender**, and the **evolving preferences in job aspirations**.

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

➤ **Unemployment, Price Rise and Gender Disparity:**

- A **7% point increase** in the share of respondents **identifying price rise as a primary concern**.
- **40% of highly educated respondents** (graduate and above) pointing to **unemployment as their most pressing concern**.
- **27% of non-literate individuals** expressed concern about unemployment, attributed to their flexibility in undertaking various job opportunities.
  - Poverty and price rise emerged as more prominent issues for young women, regardless of their economic background.

➤ **Occupational Diversity: Insights into Youth Employment:**

- Almost half (49%) of the respondents were engaged in some form of work.
  - 40% held full-time jobs, while 9% worked part-time.
- 23% of employed youth were self-employed, showcasing a significant entrepreneurial inclination.
- Professions such as doctors and engineers constituted 16% of the workforce.
- Agriculture and skilled labour comprised 15% and 27% respectively.



➤ **Job Aspirations and Preferences:**

- **16%** of respondents expressed a preference for jobs in the **health sector**.
- The education sector was the second most preferred, chosen by **14% of youth**.
- Science and technology-related jobs, along with starting their own businesses, garnered 10% support each.
- Government jobs continued to hold allure, with **60% of respondents opting for them when given a choice between a government job, a private job, or starting their own business**.
- The **preference for self-employment has grown steadily from 16% in 2007 to 27% in 2023**, indicating an increasing entrepreneurial inclination among the youth.

**What are the Opportunities and Challenges Related to Youth Population in India?**

■ **Status of Youth Population:** India has more than **50% of its population below the age of 25** and more than **65% below the age of 35**.

- India is home to a **fifth of the world's youth demographic** and this population advantage could play a critical role in achieving the nation's ambitious target to become a **USD 5 trillion economy**.

**Note:** There is no universally agreed international definition of the youth age group. In India, as per **National Youth Policy 2014**, the persons between the age group of **15 and 29 years are considered youth**. Several UN entities, instruments, and regional organizations have differing definitions of youth:

Entity/Instrument/ Organization	Age (years)
UN Secretariat/ UNESCO/ ILO	Youth: 15–24
UN Habitat (Youth Fund)	Youth: 15–32
UNICEF/ WHO/ UNFPA	Adolescent: 10–19 Young people: 10–24 Youth: 15–24
UNICEF/ The Convention on Rights of the Child	Child under 18
The African Youth Charter	Youth: 15–35

**Opportunities:**

- **Human Capital Investment:** India's youth population is a potential demographic dividend, which means if harnessed correctly, it can **contribute significantly to economic growth**.
  - A youthful population provides an opportunity to focus on **education and skill development**, creating a highly skilled workforce that can meet the demands of various industries.
- **Innovation and Entrepreneurship:** The youth are often more **open to innovation, new technologies, and entrepreneurship**.
  - They can drive the development of new industries and start-ups, fostering economic diversification.
  - Also, with a significant portion of India's population engaged in agriculture, youth involvement in modernizing and optimizing farming practices through technology and sustainable methods **can lead to increased agricultural productivity**.
- **Digital Connectivity:** India's youth are **tech-savvy** and can play a crucial role in **adopting and promoting digital technologies**, contributing to the growth of the digital economy.
- **Social Change and Activism:** Young people are often at the forefront of **social and political change**.
  - They can **drive positive social movements, advocate for change, and raise awareness** about critical issues.

**Challenges:**

- **Underemployment and Skill Mismatch:** While unemployment is often discussed, **underemployment and skill mismatch are equally pressing issues**. Many young Indians find jobs that are below their skill levels or do not align with their education.
  - This not only leads to dissatisfaction but also hampers productivity and economic growth.
- **Mental Health and Stigma:** **Mental health** problems among the youth are on the rise, yet there is a significant stigma associated with seeking help.



- This stigma is **deeply ingrained in Indian society** and can discourage young people from accessing proper care.
- **Digital Divide within Youth:** While India has a large and growing youth population, access to digital technology is still uneven.
  - This digital divide creates **disparities in education, employment opportunities,** and access to information.
- **Gender Inequality and Traditional Norms:** Despite progress, gender inequality remains a significant concern.
  - Traditional norms and patriarchal attitudes persist, affecting young **women's education, employment, and agency.**
- **Political Apathy and Youth Representation:** Despite comprising a substantial portion of the population, the youth in India often feel disconnected from the **political process.**
  - This leads to **inadequate representation of their concerns and aspirations.**

#### What are the Government Schemes Related to Youth?

- Pradhan Mantri Kaushal Vikas Yojana
- YUVA: Prime Minister's Scheme For Mentoring Young Authors
- Integrated Child Development Services (ICDS) Scheme
- National Youth Policy-2014
- National Skill Development Corporation
- Rashtriya Yuva Sashaktikaran Karyakram Scheme

#### Way Forward

- **Integrated Skill Ecosystem:** There is a need to **develop a comprehensive skill ecosystem** that combines formal education with experiential learning, apprenticeships, and online platforms.
  - This can bridge the gap between **theoretical knowledge and practical skills,** enhancing employability.
- **Gamified Civic Engagement Platforms:** Develop gamified mobile applications that engage youth in civic activities and political processes.
  - By turning civic participation into an interactive and rewarding experience, these platforms can encourage **more informed voting, increase political awareness, and foster a sense of ownership in governance.**
- **Entrepreneurship in Traditional Crafts:** Foster entrepreneurship among young artisans by combining traditional crafts with modern design and marketing techniques.
  - This could involve **creating platforms for selling handcrafted products online,** preserving cultural heritage while generating income for youth in rural areas.
- **Youth Diplomacy and Cultural Exchanges:** Facilitate cultural exchanges between young people from India and other countries to foster global understanding, diplomacy, and cross-border friendships.
  - **The Y20 Summit** can facilitate this.

### 10. Stalled Real Estate Projects in India

#### Why in News?

Recently, a committee chaired by former **National Institution for Transforming India (NITI Aayog)** CEO Amitabh Kant, formed by the **Ministry of Housing and Urban Affairs (MoHUA)**, has put forward a series of recommendations to address the **issue of stalled legacy real estate projects in India.**

- The committee's formation was recommended by the **Central Advisory Council under the Real Estate (Regulation and Development) Act, 2016.**
- According to the Indian Banks' Association, more than **4.12 lakh "stressed dwelling units"** exist across India, of which around **2.4 lakh units are located in the National Capital Region (NCR), mainly in Noida and Greater Noida.**

#### What are the Key Recommendations?

- **Model Package for Stalled Projects:**
  - Introduction of a **"model package"** designed for stalled projects in specific regions, starting with Noida and Greater Noida.
    - Other states are encouraged to develop similar packages tailored to their respective stalled projects.

- The key components of the **model package may include:**
- **Zero Period:**
  - The concept of a "zero period" that takes into account disruptions caused by factors like the **Covid-19 pandemic** and court orders.
  - During this period, **developers would be exempted from interest and penalty payments, acknowledging the unforeseen challenges that led to project delays.**
- **Partial Surrender Policy:**
  - Inclusion of a **partial surrender policy within the model package.**
  - Developers were granted the **option to surrender a portion of the land associated with the project.**
  - Aims to offer flexibility in project planning and execution while optimizing resource utilization.
- **Subsidized Interest Rates:**
  - Suggestion of a "subsidized interest rates or guarantee scheme" similar to those benefiting the MSME sector.
  - Designed to incentivize financial institutions to provide funding for stalled real estate projects.
  - Aims to **improve liquidity and funding access for developers** struggling with stalled projects.
- **Establishment of a "Guarantee Fund":**
  - Proposal for the creation of a dedicated "guarantee fund" analogous to the one established for the MSME sector.
  - Aimed at **enhancing financial support and investor confidence in the real estate sector.**
  - The MoHUA is tasked with drafting the fund scheme and forwarding it to the Ministry of Finance.
- **Expansion of Fast-Track NCLT Benches:**
  - The committee has also suggested the creation of **five additional fast-track benches** at the **National Company Law Tribunal (NCLT)** so that all pending **Insolvency and Bankruptcy Code (IBC)** real estate cases can be disposed of on a **"priority basis"**.

#### **Real Estate (Regulation and Development) Act, 2016:**

- **Real Estate Regulatory Authorities (RERAs):**
  - The Act establishes RERAs in each state, serving as regulatory bodies and dispute resolution forums.
- **Mandatory Registration:**
  - All real estate projects with a **minimum plot size of 500 sq.mt or eight apartments must be registered with RERAs before launch.** This aims to enhance transparency in project marketing and execution.
- **Transparency and Database:**
  - RERAs maintain a public database of registered projects on their websites. This includes project details, registration status, and ongoing progress, providing transparency to buyers.
- **Funds Management:**
  - Promoters are required to **deposit 70% of the collected funds in a separate escrow account** for the specific project's construction and land costs, preventing fund diversion.
- **Time-Bound Adjudication:**
  - Appellate Tribunals are mandated to adjudicate cases within 60 days, while Regulatory Authorities must resolve complaints in the same timeframe, ensuring faster dispute resolution.

#### **What are the Challenges Related to Stalled Real Estate Projects in India?**

- **Funding Shortages:**
  - Lack of timely funding due to **high-interest rates and strict lending norms.**
  - Reduced **cash flows and revenues from low demand in the real estate market.**
  - Difficulty in **securing funds from alternative sources like private equity or foreign investors.**
  - Results in project delays, **cost overruns, compromised quality, and dissatisfaction.**
- **Regulatory Complexities:**
  - The multiplicity of **regulations and approvals at central, state, and local levels.**

- Time and cost escalations, uncertainty, litigation, and barriers to entry.

#### ➤ **Legal Disputes:**

- Boundary disputes **affecting land ownership and sovereignty.**
- Land acquisition and compensation conflicts with stakeholders.
- **Project disruptions, damages, judicial interventions, and trust issues.**

#### ➤ **Market Slowdowns:**

- Economic downturns affect buyer's purchasing power.
- Disruption due to the **Covid-19 pandemic** and lockdowns.
- Policy changes create market uncertainty.
- Resulting in **low demand, unsold units, falling prices, and reduced investments.**

#### **Way Forward**

- Exploring innovative financing models, such as **real estate investment trusts (REITs), and peer-to-peer lending**, can provide an alternative source of funding. These models can democratize investment and inject capital into projects.
- Incorporate **sustainable and green building practices** to attract **environmentally conscious buyers and investors.** These designs not only resonate with modern preferences but also lead to **long-term cost savings.**
- Leverage the potential of **Public-private partnership (PPPs)** to revitalize stalled projects. Collaborating with **government entities can provide access to land, infrastructure, and regulatory support.**
- **Repurpose stalled projects into multifunctional spaces.** Transform vacant buildings into creative hubs, cultural centres, or community spaces that thrive on versatility.
- Develop regulations that adapt to **changing market conditions and technologies.** This flexibility prevents projects from becoming outdated due to evolving trends and demands.

## **11. Urban Form of a City to Deal with Heat-waves**

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

Rising instances of **Heat-waves** have emerged as a critical issue in India, making it imperative to adopt **Urban Form** of a City.

- While larger cities are struggling to deal with **Climate Change** to improve Liveability, the smaller ones are on the brink of explosive growth and require **"heat-proof" development.**

#### **What is the Urban Form of a City?**

##### **About:**

- Every city has a **unique combination of natural and human-made infrastructure** and the activities resulting from them.
- Closely packed buildings, for instance, will generate shorter trips and **Hence, less vehicular emissions that pollute the air and trap heat.**
- More greenery and water bodies will sequester carbon emissions and cool the ambient environment.
- This combination of green spaces, water bodies and buildings is called the **Urban Form of a city**, which plays a crucial role in its **heat resilience and liveability.**

##### ■ **The Role of Urban Form in Heat Resilience:**

- Parameters such as urban morphology, aspect ratio, sky view factor (SVF), blue/green infrastructure (B/GI), floor area ratio (FAR)/floor space index (FSI), and street orientation **collectively define a city's urban form and influence its susceptibility to heat.**
  - A study by the **Centre for Science and Environment (CSE)** in 2022 investigated the response of diverse urban forms to heat across 10 Indian cities, including Pune, Delhi, Kolkata, Bengaluru, and Jaipur.
  - Key findings from the study highlighted potential steps for combating heat in urban India.

#### **What are the Findings of the CSE Related to Urban Infrastructure?**

➤ **Urban Morphology and Heat Resilience:**

- Urban areas characterized by **open high-rise, open midrise**, and compact midrise morphologies with moderate vegetation exhibited **lower land surface temperatures (LST) in heat pockets**.
- Neighbourhoods featuring low-rise buildings **suffered 2-4°C higher LST** due to sparse vegetation. Large low rise industrial zones are particularly **problematic due to heat-trapping roofing materials** like asbestos, galvanised iron sheets and plastic sheets.
  - Such neighbourhoods can benefit by using better roof materials, **reflective paints and green roofs**.

➤ **Aspect Ratio:**

- Aspect ratio is the ratio of building height and street width. It affects how much heat is trapped by urban surfaces.
- The study shows that the **higher the aspect ratio, the lower the LST**. This means the narrower the street, the lesser the heat gain. Buildings shade each other and decrease direct exposure of surfaces to the sun.

➤ **Sky View Factor and Heat Trapping:**

- The SVF determines **heat trapping and dissipation within streets** and open spaces. The **value of sky view factor lies between 0 and 1**. Value 1 means there is none to negligible enclosure. Higher SVF values were associated with a considerable increase in LST.
- Locations with higher SVF, including highways, road intersections, and open parking lots, **experienced heightened temperatures**.

➤ **Street Orientation and Sun Exposure:**

- Street orientation impacts heat gain due to sun exposure and wind speed. North-south-oriented streets had higher LST due to greater sun exposure.
- Streets aligned along the **east-west axis were cooler** as they received less direct sun exposure.

➤ **Blue / Green Infrastructure:**

- Greens play a crucial role in **enhancing microclimate of an urban area**. They regulate temperature and relative humidity, absorb and decompose pollutants, improve the overall air quality.
  - However, the benefits vary widely depending on the kind of greens — grass, shrubs or trees with thick foliage.
  - Singapore provides a methodology to calculate effective vegetation cover (**EVC**) to **reduce urban heat island effect and conserve natural resources**.
- The CSE study found that a **30% rise in EVC reduces LST by 2-4°C**. **EVC is better in trees with canopy**. LST under trees with thick foliage is about 10°C cooler than LST under palm trees in the same locality.

**What are the Steps to Adopt Urban Form of a City?**

- Urban form-based codes **can offer context-specific cooling solutions**. These codes can tailor zoning regulations to the unique characteristics of a city or neighbourhood. Old markets could feature shaded walkways, temple precincts, cool roofs, and business districts with high EVC (30%).
- Cities must revise their **building by-laws and master plans to incorporate** the insights from this study and improve heat resilience.
  - For instance, Pune's focus on SVF, aspect ratio, effective vegetation cover, and urban morphology could be the model for similar cities.
- Even a modest 1°C temperature decrease could translate into a 2% reduction in a city's power consumption, showcasing the **potential impact of effective planning**.



## GS – 2

### 1. China's Stapled Visas

#### Why in News?

Recently, India withdrew its **eight-athlete 'Wushu' martial arts athlete's contingent from the Summer World University Games** in Chengdu, China. The move came in response to **China's issuance of stapled visas to three athletes from the Indian team**, all of whom were from Arunachal Pradesh.

- The practice of issuing **stapled visas started around 2005**, and China has consistently issued such visas to residents of Arunachal Pradesh and Jammu and Kashmir.

#### What are Stapled Visas?

- A stapled visa is an **unstamped piece of paper attached to a passport** with staples or a pin.
- Unlike regular visas that are **affixed and stamped directly on the passport**, stapled visas are detachable.
- The issuance of stapled visas is part of **China's ongoing territorial disputes with India over Arunachal Pradesh**.
- The **stapled visas are considered valid by China**, but **India refuses to accept** them as legitimate travel documents.

#### Note:

- Passports and visas enable authorized, secure international travel, reflecting nation-state sovereignty and control over borders.
  - Passports signify identity and citizenship, while **visas grant entry permissions to specific destinations**.
  - A passport is issued by the **birth country or current country of residence**. A visa is issued by an **Embassy/Consulate representing a foreign country**.

#### Why China Issued Stapled Visas?

- **Dispute Over Sovereignty:**
  - China disputes India's sovereignty over Arunachal Pradesh and challenges the **legitimacy of the McMahon Line**, the boundary **between Tibet and British India**, agreed upon in the **Shimla Convention of 1914**.
  - The disagreement over the **Line of Actual Control (LAC)** lies at the heart of Chinese claims on the disputed territory and leads to repeated transgressions into Indian Territory.
- **Unilateral Claim to Indian Territory:**
  - China claims approximately **90,000 sq. km of Arunachal Pradesh** as part of its territory, **referring to it as "Zangnan" or "South Tibet"** in Chinese maps.
  - It issues lists of **Chinese names for places in Arunachal Pradesh** and periodically underlines its unilateral claim to Indian Territory.
- **Undermining India's Sovereignty:**
  - Issuing stapled visas to Indian nationals from Arunachal Pradesh and Jammu and Kashmir is part of **China's efforts to undermine India's sovereignty over these regions**.
  - China's actions are seen as **attempts to challenge India's control** and authority over parts of its own territory.

#### What are the Impacts and Concerns Regarding Stapled Visas?

- Stapled visas create confusion and uncertainty for travellers, as their validity and acceptance vary.
- India consistently rejects the validity of stapled visas and protests against their issuance.
- These actions by China contribute to diplomatic tensions between the two nations and complicate bilateral relations.

### 2. WHO Report on Tobacco Control

## Why in News?

The **World Health Organisation (WHO)** recently released a comprehensive report on **tobacco control measures**. The report evaluates the progress made globally since the introduction of the **MPOWER measures - a set of strategies developed by WHO** to combat tobacco use and its detrimental effects on health.

## What are MPOWER Measures?

- In 2008, the WHO established **MPOWER**, a plan consisting of the six most important and effective tobacco control methods. The six MPOWER strategies include:
  - **M: Monitor tobacco use and prevention policies**
  - **P: Protect people from tobacco smoke**
  - **O: Offer help to quit smoking**
  - **W: Warn about the dangers of tobacco**
  - **E: Enforce bans on tobacco advertising, promotion and sponsorship**
  - **R: Raise taxes on tobacco**

## What are the Major Highlights of the Report?

### ■ Global Tobacco Control Progress:

- Worldwide, there has been a **decline in smoking prevalence from 22.8% in 2007 to 17% in 2021**, resulting in 300 million fewer smokers today.
- The **WHO's MPOWER measures** have played a vital role in tobacco control over the past 15 years, **protecting 5.6 billion people (71% of the global population) with at least one measure**.
- The **number of countries implementing at least one MPOWER measure has risen from 44 in 2008 to 151 in 2022**, and four countries - **Brazil, Turkey, Netherlands, and Mauritius** - have successfully implemented all measures.

### ■ Addressing the Challenges:

- The report also sheds light on the challenges that need to be addressed for more effective tobacco control.
- **At least 44 countries still do not implement any MPOWER measure, and 53 countries do not have a complete ban on smoking in healthcare facilities.**
  - Additionally, **only half of the countries enforce smoke-free workplaces and restaurants.**
- WHO emphasizes the **dangers of e-cigarettes, noting that the tobacco industry's aggressive promotion of e-cigarettes** as a safer alternative undermines progress.
  - E-cigarettes pose risks to both users and those around them, especially in indoor environments.

### ■ Second-hand Smoking:

- Of the estimated **8.7 million tobacco-related deaths annually, 1.3 million are non-smokers exposed to second-hand smoke**.
- Second-hand smoke is **linked to almost 400,000 deaths due to heart disease**. Moreover, second-hand smoke **adversely affects children**, leading to **severe asthma**, respiratory tract infections, and sudden infant death syndrome.
  - Around **51,000 deaths in children and adolescents under 20 years** are attributed to exposure to second-hand smoke.

### ■ India's Progress in Tobacco Control:

- **India excels in implementing health warning labels** on tobacco products and providing tobacco dependence treatment.
- **About 85% of cigarette packs in India carry health warnings** on both the front and back, placing the country among the **top 10 in terms of warning label size**.
- **India has also banned the sale of e-cigarettes** and implemented smoking bans in healthcare facilities and educational institutions.

- Bengaluru has seen significant progress in tobacco control due to hundreds of enforcement drives, '**No Smoking' sign displays**, and extensive awareness campaigns about the hazards of smoking and second-hand smoke.
  - The city's efforts have **led to a commendable 27% reduction in smoking in public places**.

### What is the Status of Tobacco Consumption in India?

#### About:

- Nearly **267 million adults (15 years and above) in India (29% of all adults)** are users of tobacco, according to the **Global Adult Tobacco Survey India, 2016-17**.
  - The most prevalent form of tobacco use in India is **smokeless tobacco**.
- It is one of the major causes of death and disease in India and accounts for nearly **1.35 million deaths every year**. India is also the **second largest consumer and producer of tobacco**.

#### Related Government Initiatives:

- **National Tobacco Control Programme**
- **Promulgation of the Prohibition of Electronic Cigarettes Ordinance, 2019**
- **Cigarettes and other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Amendment Rules, 2023**.
- **National Tobacco Quitline Services (NTQLS)**
- The Union Finance Minister of India announced a **16% increase in National Calamity Contingent Duty (NCCD) on cigarettes** in the **Budget 2023-24**.
- The Union Health Ministry of India has announced **new regulations requiring Over-The-Top (OTT) platforms to display tobacco-related health warnings** during streamed content.

## 3. POCSO Act

### Why in News?

Recently, the Ministry of Women and Child Development has informed the **Lok Sabha** that the **Protection of Children from Sexual Offences (POCSO) Act, 2012**, is one of the crucial legislations enacted by the Government to protect children from Sexual Abuse.

### What is the POCSO Act?

#### About:

- **POCSO Act** came into effect on 14th November 2012 which was enacted in consequence to India's ratification of the **UN Convention on the Rights of the Child in 1992**.
- The aim of this special law is to address **offences of sexual exploitation and sexual abuse** of children, which were either not specifically defined or in adequately penalised.
- The Act defines a **child as any person below the age of 18 years**. The Act provides **punishment as per the gravity of offence**.
  - The Act was further reviewed and **amended in 2019** to introduce more stringent punishment including the death **penalty for committing sexual crimes on children**, with a view to deter the perpetrators & prevent such crimes against children.
  - The Government of India has also notified the **POCSO Rules, 2020**.

#### Features:

- **Gender-Neutral Nature:**
  - The Act recognizes that both girls and boys can be victims of sexual abuse and that such abuse is a **crime regardless of the gender** of the victim.
  - This is in line with the **principle that all children have the right to protection from sexual abuse and exploitation**, and that laws should not discriminate based on gender.
- **Ease in Reporting Cases:**

- There is sufficient general awareness **now to report cases of sexual exploitation of children** not only by individuals but also by institutions as non-reporting has been made a specific **offence under the POCSO Act**. This has made it comparatively difficult to hide offences against children.
- **Explicit Definition of Terms:**
  - The storage of child pornography material has been **made a new offence**.
  - Further, the offence of 'sexual assault' has been defined in explicit terms (with increased minimum punishment) unlike an abstract definition of 'outraging modesty of a woman' in the **Indian Penal Code**.

#### POCSO Rules 2020:

- **Interim Compensation and Special Relief**
  - Rule-9 of the POCSO Rules allows the **Special Court to order interim compensation** for the child's needs related to relief or rehabilitation after the FIR's registration. This compensation is adjusted against the final compensation, if any.
- **Immediate Payment of Special Relief:**
  - Under the POCSO Rules, the **Child Welfare Committee (CWC)** may recommend immediate **payment for essential needs** like food, clothes, and transportation, using funds from the District Legal Services Authority (DLSA), the District Child Protection Unit (DCPU), or funds maintained under the **Juvenile Justice Act 2015**.
  - The payment must be made within a week of receiving the CWC's recommendation.
- **Support Person for the Child:**
  - The POCSO Rules **empower the CWC to provide a support person** to assist the child throughout the **investigation and trial process**.
  - The support person is **responsible for ensuring the child's best interests**, including physical, emotional, and mental well-being, access to medical care, counselling, and education. They also inform the child and their parents or guardians about court proceedings and developments related to the case.

**Note:** In furtherance to the **Criminal Law (Amendment) Act, 2018**, Department of Justice has started a Centrally Sponsored Scheme in October, 2019 for setting up of a total of 1023 **Fast Track Special Courts (FTSCs)** (including 389 exclusive POCSO Courts) across the country.

- As on May 31, 2023, a total of 758 FTSCs including 412 Exclusive POCSO (e-POCSO) Courts are functional in 29 States/UTs across the country.

#### What are the Issues and Challenges with the POCSO Act?

- **Issue with the Investigation:**
  - **Low Representation of Women in the Police Force:**
    - The POCSO Act provides for **recording the statement of the affected child by a woman sub-inspector** at the child's residence or place of choice.
    - But it is practically **impossible to comply with this provision** when the number of women in the police force is **just 10%**, and many police stations hardly have women staff.
  - **Lapses in the Investigation:**
    - Though there is a provision to record statements using **audio-video means**, however, there are still reports of **lapses in the investigation** and preservation of crime scenes in some cases,
    - In **Shafiqi Mohammad vs The State of Himachal Pradesh (2018)**, the **Supreme Court** held in cases of heinous crimes, it is the duty of the investigating officer to photograph and video-graph the scene of crime and to preserve the same as evidence.
  - **No Examination by Judicial Magistrates:**
    - Another provision of the act mandates the recording of the statement of the **prosecutrix by a judicial magistrate**.



- Though such statements are recorded in most cases, judicial magistrates are neither **called for cross-examination during trial** nor are those who retract their statement punished. In such a scenario, such statements get nullified.

#### Issue of Age Determination:

- Though age determination of a juvenile delinquent is guided by the **Juvenile Justice (Care and Protection of Children) Act 2015** no such provision exists under the POCSO Act for juvenile victims.
  - In **Jarnail Singh vs State of Haryana (2013) case**, the SC held that the given statutory provision should also be the basis to help determine age even for a child who is a victim of crime.
  - However, in absence of any change in the law or even specific directions, the investigating officers (IOs) **continue to rely on the date of birth recorded in school admission-withdrawal registers**.

#### Delays in the Filing of Charges:

- As per the POCSO Act, the investigation of a case under the act is to be **completed within a period of one month** from the date of the commission of the offence, or from the date of the reporting of the offence.
- However, in practice, the **completion of investigation often takes longer** than one month due to various reasons such as lack of adequate resources, delays in obtaining forensic evidence, or the complexity of the case.

#### No Conditions to Prove Recent Intercourse:

- Courts are required to presume that the accused committed the **offence under the POCSO Act**.
- The POCSO Act **does not impose any conditions** on the prosecution, contrary to the **Indian Evidence Act**, which clearly requires the prosecution to establish recent intercourse, as well as the consent of the prosecutrix.
- However, it has been observed that even after the minor age of the victim is **proved, no such presumption is taken** up by the court during trial.
  - Under such circumstances, the expected increase in the conviction rate is unlikely to be achieved.

#### What are the Initiatives to Curb Child Abuse?

- Child Abuse Prevention and Investigation Unit
- Beti Bachao Beti Padhao
- The Juvenile Justice (Care and Protection of Children) Act, 2015
- Child Marriage Prohibition Act (2006)
- Child Labour Prohibition and Regulation Act, 2016
- POCSO Courts under Special Fast Track Courts.

#### Way Forward

- The government should provide adequate resources such as **funding and personnel to investigating agencies** handling POCSO cases. This will help to ensure that investigations are conducted in a timely and efficient manner.
- Investigating officers **should be provided with proper training** on the handling of POCSO cases. This can include **training on the proper techniques** for collecting and preserving evidence, interviewing child victims and witnesses, and the legal requirements of the POCSO Act.
- Setting up special courts for POCSO cases can **help to ensure that cases are handled promptly and efficiently**. This will also help to speed up the trial process, which can be important for the victim and their family.

## 4. Revised Good Manufacturing Practices Standards

#### Why in News?

Recently, the government of India has directed all pharmaceutical companies to implement the **Revised Good Manufacturing Practices (GMP)**, bringing their processes at par with Global Standards.

- Larger companies with a turnover of over Rs. 250 crore have been asked to **implement the changes within six months**, while medium and small-scale enterprises with turnover of less than Rs. 250 crore have been asked to do so within a year.

### What are Good Manufacturing Practices (GMP)?

#### About:

- GMP is a system for ensuring that **products are consistently produced and controlled according to quality standards**.
- It is designed to **minimize the risks involved** in any pharmaceutical production that cannot be **eliminated through testing the final product**.

#### The Main Risks:

- Unexpected contamination of products
- Causing damage to health or even death
- Incorrect labels on containers, which could mean that patients receive the wrong medicine
- Insufficient or too much active ingredient, resulting in ineffective treatment or adverse effects.
  - **WHO (World Health Organization)** has established detailed guidelines for GMP. Many countries have formulated their own requirements for GMP based on WHO GMP.
  - Others have harmonized their requirements, for example in the Association of South-East Asian Nations (ASEAN), in the European Union and through the Pharmaceutical Inspection Convention.
  - The GMP system was first incorporated in India in 1988 in **Schedule M of the Drugs and Cosmetics Rules, 1945**, and the last amendment was done in June 2005. WHO-GMP standards are now part of the revised Schedule M.

### What are the Major Changes in Revised GMP Guidelines?

#### ■ Pharmaceutical Quality System and Risk Management:

- The new guidelines introduce a **pharmaceutical quality system**, which emphasizes the establishment of a comprehensive **quality management system throughout** the manufacturing process.
- Companies are now required to **implement quality risk management practices** to identify potential risks to the quality of their products and take appropriate preventive measures, also **regular quality reviews** of all products are **mandated to ensure consistency** in quality and processes.

#### ■ Stability Studies:

- Companies are now required to **conduct stability studies based** on climate conditions. This involves maintaining **drugs in stability chambers** at specified temperatures and humidity levels to assess their stability over time. Additionally, accelerated **stability tests may be conducted** to assess the product's stability under accelerated conditions.

#### ■ GMP-Related Computerized Systems:

- The new guidelines emphasize the use of computerized systems to **manage GMP-related processes**.
- These systems are designed to prevent data tampering, unauthorized access, and omission of data. They also automatically record all steps and checks to ensure adherence to processes without any tampering.

#### ■ Investigational Products for Clinical Trials:

- The new **schedule M also lists out the requirements** for additional types of products, including biological products, **agents with radioactive ingredients**, or plant-derived products.
- The new guidelines lay out requirements for **investigational products being manufactured** for clinical trials. This ensures that the products used in clinical trials meet the **necessary quality and safety standards**.

### What is the Need for Revised GMP Guidelines?

#### ➤ Alignment with Global Standards:

- Implementation of the new norms will bring the Indian industry **on par with global standards**.
- **Incidents of Contamination:**
  - There have been a **string of incidents where other countries have reported alleged contamination** in India-manufactured syrups, eye-drops, and eye ointments.
  - The **deaths of 70 children in the Gambia**, 18 children in Uzbekistan, three persons in the United States, and six deaths in **Cameroon have been linked to these products**.
- **Deficiencies in Current Practices:**
  - Risk-based inspection found numerous deficiencies in 162 manufacturing units in India.
  - Deficiencies include inadequate testing of raw materials, lack of product quality review, infrastructure issues, and missing qualified professionals.
  - There are only 2,000 of the 10,500 drug manufacturing units in India at **present that meet global standards**, being WHO-GMP certified.
  - The improved standards will **ensure that pharmaceutical companies follow standard processes**, quality control measures, and do not cut corners, improving the quality of medicines available in India as well as sold in the global market.
- **Confidence to Regulators from Other Countries:**
  - Instituting the same quality across the industry will give confidence to regulators from other countries.
  - In addition, it will improve the **quality of drugs in the domestic markets**. Most of the 8,500 manufacturing units that are not WHO-GMP certified supply medicine within India.

#### Way Forward

- India's move to implement revised GMP guidelines signifies a significant step toward achieving global quality standards in the pharmaceutical industry.
- The revised standards **aim to enhance quality control measures**, proper documentation, and IT support, thus ensuring the production of high-quality medicines in India and for the global market.

## 5. Organ Donation in India

#### Why in News?

Recently, the **critical shortage of organ donations**, particularly **deceased donations**, has led to a dire situation in India, with thousands of patients waiting for transplants and a significant number losing their lives daily.

- The **Ministry of Health and Family Welfare** has earlier modified **National Organ Transplantation Guidelines**, allowing those above **65 years of age to receive an organ** for transplantation from deceased donors.
- In India, **the Transplantation of Human Organs Act, 1994** provides various regulations for the removal of human organs and their storage. It also regulates the transplantation of human organs for therapeutic **purposes and for the prevention of commercial dealings in human organs**.

#### What is the Status of Organ Donation in India?

- **Growing Demand and Persistent Shortage:**
  - Over **300,000 patients are on the waiting list for organ donations in India**.
  - The supply of organ donors has not kept up with the increasing demand.
  - Approximately **20 individuals die daily while awaiting organ transplants** due to the shortage.
- **Slow Growth in Donor Numbers:**
  - Donor numbers, including **both living and deceased**, have shown **slow growth over the years**.
  - From **6,916 donors in 2014**, the count increased to about **16,041 in 2022**, indicating a modest rise.
  - The **deceased organ donation rate** in India has remained **consistently below one donor per million population for a decade**.
- **Deceased Organ Donation Rate:**
  - Urgent efforts are required to raise the deceased organ donation rate to address the shortage.

- Countries like **Spain and the United States** have achieved significantly higher donation rates, ranging from **30 to 50 donors per million population**.

#### ■ Prevalence of Living Donors:

- Living donors constitute the majority, **accounting for 85% of all donors in India**.
  - However, deceased organ donations, especially for **kidneys, liver, and heart**, remain considerably low.

#### ■ Regional Disparities:

- Disparities in organ donation rates exist among different states in India.
  - **Telangana, Tamil Nadu, Karnataka, Gujarat, and Maharashtra** have reported the highest number of **deceased organ donors**.
  - Delhi-NCR, Tamil Nadu, Kerala, Maharashtra, and West Bengal are prominent regions with a high number of living donors.

#### ■ Kidney Transplants:

- Kidney transplantation in India faces a significant disparity between demand and supply.
- Annual demand for **200,000 kidney transplants** is met with only around **10,000 transplants** each year, creating a substantial gap.

### What are the Challenges Regarding Organ Donation?

#### ■ Lack of Awareness and Education:

- Limited awareness among the **general public about organ donation** and its impact.
- Insufficient education among medical professionals to **identify potential donors and counsel families effectively**.

#### ■ Family Consent and Decision-Making:

- Family reluctance to give consent for organ donation, even when the **deceased individual had expressed a willingness to donate**.
- **Emotional and ethical dilemmas** that families face when making decisions about organ donation.

#### ■ Organ Trafficking and Black Market:

- Illegal **organ trafficking and the existence of a black market for organs**.
- Criminal activities exploiting the demand for organs and undermining legitimate donation processes.

#### ■ Medical Eligibility and Compatibility:

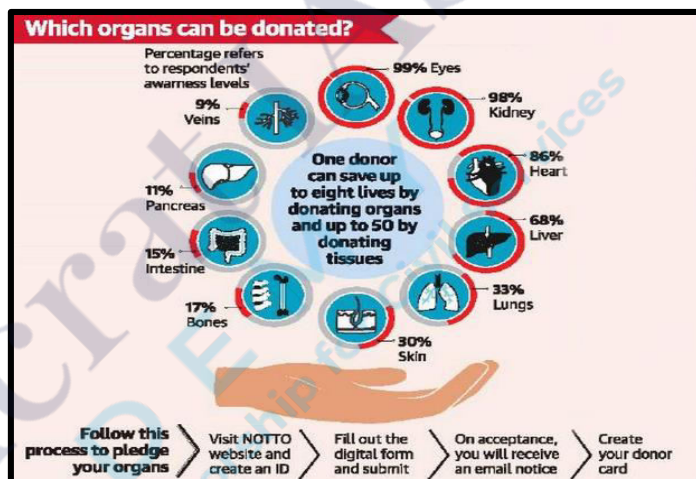
- Matching **suitable donors and recipients based on medical compatibility** and organ availability.
- Limited availability of compatible organs, leading to prolonged waiting periods for patients.

#### ■ Donor Incentives and Compensation:

- Debates over the **ethical implications of offering financial incentives or compensation to organ donors**.
- Balancing the need for increasing donation rates with ensuring ethical practices.

#### ■ Infrastructure and Logistics:

- Inadequate **infrastructure and resources for organ retrieval, preservation, and transplantation**.
- Challenges in the timely transportation of organs from donors to recipients, especially across different regions.



### What are the Highlights of the New National Organ Transplantation Guidelines?

#### ■ Removed Age Cap:

- Age limit for organ recipients eliminated due to improved life expectancy.
- **NOTTO (National Organ and Tissue Transplant Organization)** guidelines previously prohibited end-stage organ failure patients **above 65 years from registering for organ transplants**.

#### ■ No Domicile Requirement:

- Domicile requirement waived for organ recipient registration.



- 'One Nation, One Policy' approach allows patients to register for organ transplants in any state.

■ **No Registration Fees:**

- Removal of registration fees for organ recipient registration.
- States, including Gujarat, Telangana, Maharashtra, and Kerala, no longer charge fees for patient registration.

**Note:**

- NOTTO is set up under the **Directorate General of Health Services**, Ministry of Health and Family Welfare, located in New Delhi.
- National Network division of NOTTO functions as the apex centre for all Indian activities for procurement, distribution and registry of organs and tissues donation and transplantation in the country.

**Way Forward**

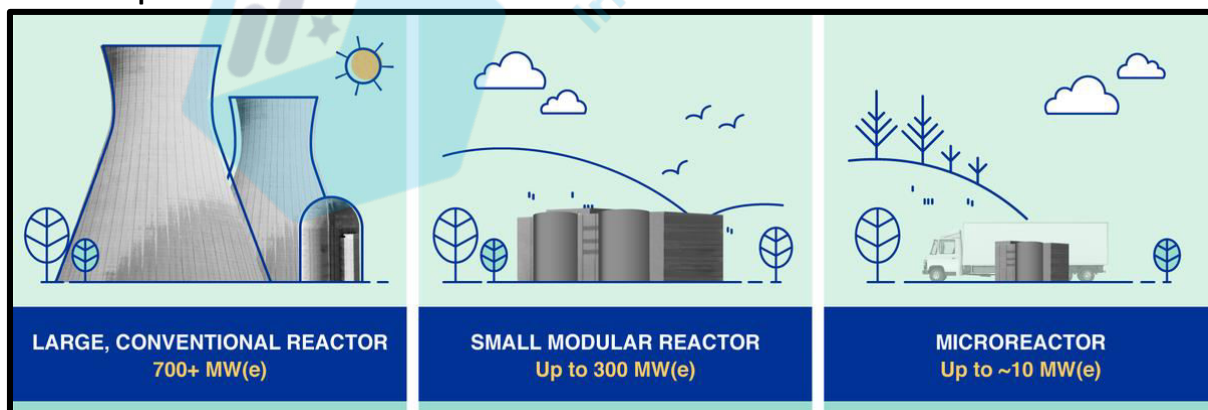
- Partner with **artists, influencers, and celebrities** to create **impactful campaigns** highlighting organ donation's significance.
- Organize seminars for medical professionals, employing **interactive simulations and case studies for donor identification and family counseling.**
- Collaborate with educational institutions to **raise awareness among students** about organ donation through workshops and talks.
- Host **community-driven events** that showcase the **success stories of organ recipients and donors.**
- Engage **religious leaders to debunk myths and misconceptions about organ donation**, emphasizing its compassionate aspect.
- Introduce a program to honour donors and their families, recognizing their selfless **contribution through plaques and certificates.**
- Foster collaborations between healthcare institutions to optimize organ transplantation processes for efficient outcomes.
- Promote the **idea of organ donation as a selfless act of compassion and empathy.**

## 6. Small Modular Reactors for Decarbonisation

**Why in News?**

The rise in coal consumption despite increased solar and wind power underlines the need for Low-Carbon Electricity Resources such as **Small Modular Reactors (SMRs)** to ensure Deep **Decarbonisation.**

- Conventional **NPPs (Nuclear Power Plants)** have generally suffered from **time and cost overruns.** As an alternative, several countries are developing (SMRs) – nuclear reactors with a maximum capacity of **300 MW – to complement conventional NPPs.**



**What is Decarbonisation?**

**About:**

- Decarbonisation refers to the process of reducing the **Carbon Dioxide (CO2) Emissions** produced by human activities, particularly those related to the burning of fossil fuels such as **Coal, Oil, and Natural gas.**

**Need:**

- The global pursuit of decarbonisation aligns with the **UN Sustainable Development Goal 7**, which emphasizes **affordable and sustainable energy access**.
- However, the world's heavy reliance on fossil fuels, **constituting 82% of energy supply**, necessitates the urgent decarbonisation of the power sector.
  - The rise in coal consumption in Europe despite increased solar and **Wind Power** underlines the need for reliable low-carbon electricity resources to ensure deep decarbonisation, grid stability, and energy security.

### Challenges of Decarbonisation:

- **Clean Energy Transition Challenges:** The shift from **coal to clean energy is a complex challenge** globally. Several nations concur that relying solely on solar and wind energy would not suffice **reliable and affordable energy access** for all.
  - In decarbonized power systems dominated by renewables, introducing at least one **stable power source enhances grid reliability and reduces expenses**, contributing to a balanced energy mix.
- **Critical Minerals Demand and Complexities:** The **International Energy Agency (IEA)** predicts a potential 3.5x surge in demand for **critical minerals like lithium, nickel, cobalt, and Rare Earth Elements** by 2030, essential for clean energy technologies.
  - However, this demand **escalation raises multiple global issues**, including the large capital investments to develop new mines and processing facilities.
- **Challenges in the Mineral Supply Chain:** Rapid development in countries like **China, Indonesia, Africa, and South America**, coupled with concentration of mineral extraction and processing capacities, presents **environmental, social, geopolitical, and supply risks**.
  - Addressing these challenges becomes critical for sustainable clean energy advancement.

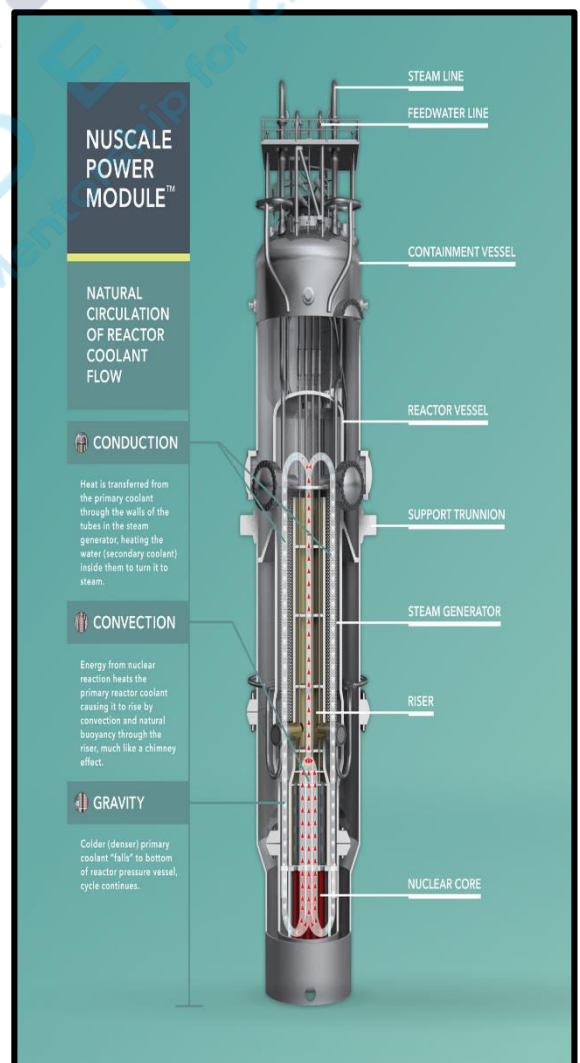
### What are Small Modular Reactors (SRMs)?

#### About:

- SMRs are **advanced nuclear reactors** that have a power capacity of up to **300 MW(e) per unit**, which is about one-third of the generating capacity of traditional **nuclear power reactors**.
- SMRs, which can produce a large amount of low-carbon electricity, are,
  - **Small:** Physically a fraction of the size of a conventional nuclear power reactor.
  - **Modular:** Making it possible for systems and components to be factory-assembled and transported as a unit to a location for installation.
  - **Reactors:** Harnessing nuclear fission to generate heat to produce energy.
- Their designs incorporate **enhanced safety features**, reducing the risk of uncontrolled radioactive material release.
  - SMRs are designed to operate for **40-60 years with capacity factors exceeding 90%**.

#### Advantages:

- **Reliable Low-carbon Electricity Source:**
  - As the demand for electricity is projected to surge by **80-150% by 2050**, SMRs could provide a **reliable 24/7 low-carbon electricity** source that complements intermittent renewables.
  - This is crucial for achieving **grid reliability and reducing costs in decarbonized** electricity systems.
- **Minimized Land Acquisition Challenges:**



- SMRs generate less spent nuclear fuel and can be safely operated in existing brownfield sites, minimizing land acquisition challenges.
- SMRs are also simpler to design and manufacture, with potential for cost reduction through serial manufacturing.
- **Alternatives to Critical Minerals:**
  - The transition to clean energy requires **Critical Minerals for technologies like lithium-ion batteries**, leading to concerns about geopolitical risks and environmental impacts.
  - SMRs offer an alternative, as they require **low-enriched uranium**, which is more widely distributed than critical minerals.
- **Integration with India's Energy Strategy:**
  - For India, which aims to achieve net-zero emissions by 2070, SMRs can play a pivotal role. As coal-based thermal power plants and variable renewable energy sources **contribute significantly to the energy mix**, SMRs can enhance energy security and grid stability.
  - India's **Central Electricity Authority** envisions SMRs as a crucial element in meeting electricity demands, while private sector investments, including public-private partnerships, are vital for expansion.

#### How can Low-Carbon Electricity Resources be promoted for Decarbonisation?

- An efficient regulatory regime comparable to that in the civil aviation sector – which has more stringent safety requirements – is important if **SMRs are to play a meaningful role in decarbonising** the power sector.
- This can be achieved if all countries that accept nuclear energy **direct their respective regulators to cooperate amongst themselves** and with the **International Atomic Energy Agency (IAEA)** to harmonize their regulatory requirements and expedite statutory approvals for SMRs based on standard, universal designs.
- To facilitate SMR deployment, India needs to amend the **Atomic Energy Act, 1962** to allow private sector involvement.
- While maintaining government control over nuclear fuel and waste, an independent regulatory board should oversee the entire nuclear power cycle.
- The **India-US '123 agreement'** provides opportunities for India to reprocess spent fuel from SMRs under IAEA safeguards, contributing to resource sustainability.
  - It also permits India to set up a facility to reprocess spent fuel from SMRs under safeguards of the IAEA.

## 7. Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana

### Why in News?

Recently, The **Comptroller and Auditor-General of India's (CAG)** performance audit report flagged irregularities in the **Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (PMJAY)**.

### What are the Issues Highlighted by CAG?

#### ■ Treatment of Dead Patients:

- The patients earlier shown as “dead” continued to **avail treatment under the scheme**.
  - The maximum number of such cases were in Chhattisgarh, Haryana, Jharkhand and minimum number of such cases were from Andaman & Nicobar Islands, Assam and Chandigarh.
- 88,760 patients died during treatment **specified under the Scheme**. A total of 2,14,923 claims shown as paid in the system, related to fresh treatment in respect of these patients.

#### ■ Unrealistic Household Sizes:

- There are instances where the **registered household sizes were unrealistically large, ranging from 11 to 201 members**.
  - Such discrepancies suggest a lack of **proper validation controls during the beneficiary registration process**.

#### ■ Pensioners Availing Benefits:

- Pensioners in certain states were **found to possess PMJAY cards** and were availing treatment under the scheme.

- Delayed actions to **remove ineligible beneficiaries** from the scheme led to ineligible **individuals receiving benefits** under the PMJAY.
- **Bogus Mobile Number and Aadhaar:**
  - It revealed that some **beneficiaries were registered with a single bogus mobile number**, potentially compromising the verification process.
  - Similarly, some Aadhaar numbers were linked to multiple beneficiaries, raising questions about proper verification.
- **Systemic Failures:**
  - CAG's report unearthed systemic issues, including **private hospitals performing public hospital-reserved procedures**, infrastructural inadequacies, equipment shortages, and medical malpractice cases.
    - Absence of **adequate validation controls**, invalid names, unrealistic date of birth, duplicate PMJAY IDs.
  - In several States and UTs, the available equipment in empanelled hospitals were found to be non-functional.
- **Pending Penalties:**
  - The report flagged pending penalties of Rs 12.32 crore from **100 hospitals across nine states**.
- **Issue of data collection in the Scheme:**
  - It is possible that some random ten-digit number **was entered by the field level workers in some cases**.
    - Further, necessary changes have been made in the **current IT portal used by the National Health Authority (NHA)** to capture only valid mobile numbers, in case the same is possessed by the beneficiary.

#### What are the Clarifications provided by the Government?

- **Mobile Numbers and Verification:**
  - The Ministry of Health clarified that mobile numbers were not used for beneficiary verification.
    - The scheme **primarily identifies beneficiaries through Aadhaar-based e-KYC**, and the mobile numbers were used for **communication and feedback purposes** rather than for verification.

#### Authentication Options:

- **NHA provided multiple options for beneficiary verification**, including fingerprint, iris scan, face authentication, and OTP.
- Fingerprint-based authentication is **commonly used and helps ensure the accuracy of beneficiary verification**.

#### What is Ayushman Bharat-PMJAY?

##### About:

- PM-JAY is the **world's largest health insurance** scheme fully financed by the government.
- Launched in February 2018, it offers a sum insured of **Rs.5 lakh per family for secondary care** and tertiary care.
  - Health Benefit Packages covers surgery, medical and day care treatments, cost of medicines and diagnostics.

##### Beneficiaries:

- It is an entitlement-based scheme that targets the beneficiaries as identified by latest **Socio-Economic Caste Census (SECC)** data.
  - The National Health Authority (NHA) has provided flexibility to **States/UTs to use non- Socio-Economic Caste Census (SECC) beneficiary family databases** with similar socio-economic profiles for tagging against the leftover (unauthenticated) SECC families.

##### Funding:

- The funding for the scheme is shared – **60:40 for all states and UTs** with their own legislature, 90:10 in Northeast states and Jammu and Kashmir, Himachal and Uttarakhand and 100% Central funding for UTs without legislature.



### Nodal Agency:

- The **National Health Authority (NHA)** has been constituted as an autonomous entity under the Society Registration Act, 1860 for effective implementation of PM-JAY in alliance with state governments.
- The **State Health Agency (SHA)** is the apex body of the State Government responsible for the implementation of AB PM-JAY in the State.

### Way Forward

- The PMJAY's irregularities **demand corrective measures**, including stringent beneficiary verification, hospital oversight, and a robust grievance redressal mechanism to ensure the scheme's intended effectiveness.

## 8. Additional Guidelines for Health and Wellness Celebrities

### Why in News?

Recently, the Ministry of Consumer Affairs, Food and Public Distribution, has issued **Additional Influencer Guidelines For Health and Wellness Celebrities, Influencers and Virtual Influencers**, making it mandatory for them to give disclaimers while presenting as Health Experts.

- These guidelines are an extension of the previously established "**Guidelines for Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements, 2022**".
- The additional guidelines aim **to deal with misleading advertisements, unsubstantiated claims and ensure transparency** in health and wellness endorsements.

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

#### ■ Disclosure of Health Certificates:

- Certified medical practitioners and health & fitness experts holding certifications from recognised institutions when sharing information, promoting products or services or making any health-related claims, must **disclose that they are certified health/fitness experts** and medical practitioners.

#### ■ Must Provide Clear Disclaimer:

- Celebrities, influencers, and virtual influencers **who position themselves as health experts or medical practitioners** need to provide clear disclaimers.
- These disclaimers must **emphasize that their endorsements should not be treated as substitutes** for professional medical advice, diagnosis, or treatment.
- Endorsers must encourage their audience to seek advice from health and wellness centres prior to making any significant alterations to their diet, exercise or medication routines.

#### ■ Adequate Due Diligence:

- Endorsers will have to conduct adequate due diligence before **endorsing any product or service**. They may, preferably, use or experience product or service to the extent **possible before endorsement**.
- Influencers and virtual influencers must refrain from **making false, misleading or exaggerated claims** that could potentially mislead their consumers.

#### ■ Scope of Disclosure:

- The requirement for disclosure or **disclaimer applies to endorsements**, promotions, and instances where health-related claims are made.
- Topics such as health benefits from **food items, nutraceuticals, disease prevention, treatment**, cure, medical conditions, recovery methods, and immunity enhancement fall within the purview of these regulations.

#### ■ Exemptions for General Wellness Advice:

- General wellness and health advice, which do not pertain to specific products, services, health conditions, or outcomes, are exempt from these regulations.
- For instance, advice like "Drink Water and Stay Hydrated," "Exercise Regularly," and "Get Enough Good Sleep" are exempt.

### ■ Distinguishing Personal Views and Professional Advice:

- Celebrities who position themselves as health experts must clearly differentiate between their personal opinions and professional advice.
- They are cautioned against making specific health claims without credible evidence. Encouraging audiences to **consult healthcare professionals** for accurate medical advice is strongly recommended.

### ■ Enforcement and Penalties:

- The Department of Consumer Affairs will actively monitor and enforce these guidelines.
- Violations may lead to **penalties under the Consumer Protection Act 2019** and other relevant legal provisions.

### What are the Initiatives for Consumer Protection?

- Consumer Welfare Fund;
- Central Consumer Protection Council;
- Consumer Protection Rules, 2021;
- Consumer Protection (E-Commerce) Rules, 2020;
- National Consumer Day.

## 9. Vishwakarma Yojana and Lakhpati Didi Scheme

### Why in News?

In the recent **Independence Day address**, the Prime Minister unveiled two significant initiatives aimed at empowering **artisans and women's self-help groups (SHGs)** across India.

- The two initiatives are: the **Vishwakarma Yojana** and the **provision of drones for women SHGs under Lakhpati Didi Scheme**.

### What is Vishwakarma Yojana?

#### About:

- The Vishwakarma Yojana is a pioneering scheme designed to **uplift individuals skilled in traditional craftsmanship**, particularly from the **Other Backward Classes (OBC) community**.
- This scheme, named **after the divine architect and craftsman Vishwakarma**, seeks to preserve and enhance the **guru-shishya parampara (teacher-pupil tradition)** of passing down skills within families engaged in various artisanal trades.

#### Features:

- **Recognition and Support:** Artisans and craftspeople enrolled in the scheme will receive a **PM Vishwakarma certificate and an identity card**.
  - They will also be **eligible for collateral-free credit support of up to ₹1 lakh (first tranche)** and ₹2 lakh (second tranche) at a concessional interest rate of 5%.
- **Skill Development and Empowerment:** The Vishwakarma Yojana has been allocated a budget ranging from **₹13,000 crore to ₹15,000 crore** for five financial years from 2023-2024 to 2027-2028.
  - The scheme offers a stipend of **₹500 for skill training** and ₹1,500 for the purchase of modern tools.
- **Scope and Coverage:** The scheme encompasses **18 traditional trades across both rural and urban areas**. These trades encompass carpenters, **boat-makers, blacksmiths, potters, sculptors, cobblers, tailors, and more**.
- **Registration and Implementation:** Registration for the Vishwakarma Yojana can be completed at **common services centres in villages**.
  - While the central government will provide funding for the scheme, state governments' support will also be sought.

- **Integration with Value Chains:** A notable objective of the scheme is to **ensure that artisans are seamlessly integrated into both domestic and global value chains**, thus enhancing their market access and opportunities.

### What is the Lakhpati Didi Scheme?

■ **About:** The government's goal is to create **two crore "lakhpati didis" (prosperous sisters) in villages**. This scheme aligns with the broader mission of poverty alleviation and economic empowerment.

- Under this scheme, **women will be provided skill training so that they can earn over Rs. 1 lakh per year**.

■ **Features:**

- Drones will be **provided to women SHGs for agricultural activities**.
  - This initiative aims to leverage technology to transform the agricultural landscape while empowering women **in rural communities**.
  - Around **15,000 women's SHGs will be given training in operating and repairing drones**.
  - This training will not only create new avenues for income generation but also equip women with cutting-edge skills.
  - Drones have the potential to revolutionize agriculture by enabling **precision farming, crop monitoring, and pest control**.
- Under the scheme, women will be trained in skills like **LED bulb making, plumbing, among others**.

**Note: Self-Help Groups (SHGs)** are **informal associations of people** who choose to come together to find ways to improve their living conditions.

■ It can be defined as self-governed group of people with **similar socio-economic background** and having a desire to collectively perform common purpose.

### What are the Other Initiatives Related to Women Empowerment and Poverty Alleviation?

- Swadhar Greh;
- Sukanya Samridhi Yojna;
- Pradhan Mantri Mahila Shakti Kendra Scheme;
- Rashtriya Mahila Kosh.

## 10. India Smart Cities Award Contest 2022

### Why in News?

Recently, the Ministry of Housing and Urban Affairs (MoHUA) has announced the **India Smart Cities Award Contest (ISAC) 2022** under the **Smart Cities Mission (SCM)** that felicitated 66 winners in various categories.

■ Indore, Madhya Pradesh, and Chandigarh emerged as **top performers in the ISAC 2022 awards**, securing recognition for their excellence in different areas of urban development.

### What are the Key Highlights of ISAC 2022?

■ **National Smart City Award:**

- Indore secured the prestigious national smart city award, reflecting its exceptional progress in urban development strategies, followed by **Surat and Agra**.
  - Indore's commitment to sanitation, water supply, and urban environment earned it recognition as a leader in these vital areas.

■ **State Award:**

- Madhya Pradesh received the **state award for its comprehensive approach** to fostering smart city initiatives within its borders.
- Madhya Pradesh is followed by **Tamil Nadu and Rajasthan**.

■ **Union Territory (UT) Award:**

- Chandigarh was honoured with the UT award, acknowledging its efforts to transform itself into a model smart city.

#### ■ Other Categories:

- Coimbatore took the top spot for built environment,
- Ahmedabad for the culture and **Integrated Command and Control Centre (ICCC) category**,
- Jabalpur for economy,
- Chandigarh for governance and mobility,
- Indore for sanitation, water and urban environment,
- Vadodara for social aspects,
- Hubballi Dharwad for the innovative idea category and Surat for Covid innovation category.

#### What is ISAC?

- The ISAC recognizes and rewards the cities, projects and innovative ideas that are **promoting sustainable development across the 100 smart cities**, as well as stimulating **inclusive, equitable, safe, healthy and collaborative cities**, thus enhancing quality of life for all.
- The ISAC has witnessed three editions in **2018, 2019 and 2020**.
- The fourth edition of the ISAC was launched in April 2022 during the **'Smart Cities-Smart Urbanization' event in Surat, Gujarat**.
  - The ISAC 2022 award had a **two-stage submission process consisting of 'Qualifying Stage'**, which involved overall assessment of the city's performance, and the 'Proposal Stage' which required the smart cities to submit their nominations for six award categories.
    - **Project Awards:** 10 different themes,
    - **Innovation Awards:** 2 different themes,
    - National/Zonal City Awards,
    - State Awards,
    - UT Award, and
    - Partners Awards, 3 different themes.

#### What is a Smart Cities Mission?

##### ■ About:

- It is a **Centrally Sponsored Scheme**, launched in June 2015 to transform 100 cities to provide the necessary **core infrastructure and clean and sustainable environment** to enable a decent quality of life to their citizens through the application of "Smart Solutions".
- The mission aims to meet the aspirations of India's population living in cities through various urban development projects.

##### ■ Features:

- Among its strategic **components is 'area-based development'**, which includes city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development), plus a pan-city initiative in which 'smart solutions' are applied covering larger parts of the city.
- **Key focus areas** of the scheme include construction of walkways, pedestrian crossings, cycling tracks, efficient waste-management systems, integrated traffic management and assessment.
- The scheme also assesses various indices to track urban development such as the **Ease of Living Index, Municipal Performance Index, City GDP framework, Climate Smart Cities assessment framework**, etc.

##### ■ Achievements:

- **Integrated Command and Control Centres (ICCC):** One of the pivotal achievements of the Smart Cities Mission is the establishment of ICCC in all 100 smart cities.
  - These centres serve as the operational hubs for **urban management, utilizing technology** to enhance various aspects of city operations. Notably, ICCCs have contributed to improvements in crime tracking, citizen safety, transport management, waste management, water supply, and disaster preparedness.



- **Sectoral Progress:** The Smart Cities Mission encompasses a wide array of projects across sectors, including mobility, energy, water, sanitation, public spaces, social infrastructure, and governance.
  - **Smart Mobility:** Completion of 1,174 projects.
  - **Smart Energy:** Successful completion of 573 projects.
  - **Water Supply, Sanitation, and Hygiene (WASH):** Over 1,162 projects completed.
  - **Public Spaces:** Development of more than 1,063 public spaces.

### What is a Smart City?

- There is no standard definition or template of a smart city. **In the context of our country, the six fundamental principles on which the concept of Smart Cities is based are:**



### What are the other Initiatives Related to Urban Development?

- Atal Mission for Urban Rejuvenation and Urban Transformation (AMRUT).
- Pradhan Mantri Awas Yojana-Urban (PMAY-U).
- Climate Smart Cities Assessment Framework 2.0.
- TULIP-The Urban Learning Internship Program.

## 11. India and Greece Relations

### Why in News?

Recently, India and Greece have taken a significant step by upgrading their relationship to a strategic partnership. The partnership aims to **double trade, enhance defence and security collaboration, and address shared challenges.**

- On this occasion, the Greek President Katerina Sakellariopoulou conferred the Prime Minister (PM) of India with **“The Grand Cross of the Order of Honour”**.
- The Indian PM paid tribute at the **‘Tomb of Unknown Soldier’** in Athens.

### What are the Main Areas of Cooperation under the Strategic Partnership?

- **Defence and Security:**
  - India and Greece agreed to **intensify their defence and security cooperation**, especially in maritime security, **counter-terrorism, cyber security, and the defence industry.**
  - Decided that there should also be an **India-Greece dialogue framework at the level of National Security Advisors (NSAs).**
- **Maritime Security and Adherence to International Law:**
  - As leaders of two **ancient sea-faring nations with a long-standing maritime outlook**, they shared their vision of a **free, open and rules-based Mediterranean Sea and Indo-Pacific**, in accordance with the law of the sea, in particular the provisions of the **United Nations Convention on the Law of the Sea (UNCLOS)** and with full respect for the **sovereignty, territorial integrity, and freedom of navigation to the benefit of international peace, stability and security.**
- **Culture and Tourism:**
  - Both leaders **welcomed efforts to promote exchanges in all forms of art.**
  - They also agreed to encourage joint efforts in preserving and protecting ancient sites and **strengthen cooperation within the United Nations Educational, Scientific and Cultural Organization (UNESCO).**

### ■ Trade and investment:

- The two countries also aimed to **double bilateral trade by 2030**. They agreed to explore new opportunities in sectors such as renewable energy, infrastructure, pharmaceuticals, agriculture, and innovation.

### ■ Mobility and Migration Partnership Agreement (MMPA):

- Both leaders agreed that an early finalization of an MMPA would be mutually beneficial, facilitating in particular the **free movement of the workforce between the two countries**.

### ■ Broad Spectrum of Collaboration:

- Discussions span various domains, including digital **payments, shipping, pharmaceuticals, and education**.

### What is the Tomb of the Unknown Soldier?

- The Tomb of the Unknown Soldier is a **war memorial located in Syntagma Square in Athens, Greece**.
- It is dedicated to **Greek soldiers who lost their lives in various wars**.
- The tomb serves as a symbol of remembrance and honour for the sacrifices made by anonymous soldiers.
- It was sculpted between **1930 and 1932** by sculptor **Fokion Rok**.



### What is the Grand Cross of the Order of Honour?

- The Grand Cross of the Order of Honour is the **second-highest civilian honour in Greece, after the Grand Cross of the Order of the Redeemer**.
- The award was established in 1975 and features the **head of goddess Athena on its front side**, along with the inscription **“ONLY THE RIGHTEOUS SHOULD BE HONORED”**.
- The award is given to individuals who have distinguished themselves in the fields of politics, diplomacy, culture, science, or social service, and who have promoted the interests and values of Greece.

### How are India's Relations with Greece?

#### ■ Historical Linkages:

- India's contacts with Greece began over 2500 years ago.
- **Alexander the Great's campaign** in the 4th century BCE, which reached the **north-western part of the Indian subcontinent**.
- Diplomatic, trade, and cultural relations between India and Greece were mentioned in **Ashoka's edicts**.
- Trading between the **Mauryan Kings** and Greece is evidenced by coinage and writings.
- **Chanakya**, in Chandragupta's Court, records in **Arthashastra** about the Yavan Ambassador in the Kings' court named Megasthenes.
- **Gandhara art**, which flourished in the region of present-day Pakistan and Afghanistan, is believed to be a result of Indian and Greek influences.

#### ■ Commercial Relations

- Bilateral trade between India and Greece **stood at USD 2 billion in 2022-23**.
- India mainly exports **aluminium, organic chemicals, fish and crustaceans and iron and steel** to Greece, among other things.
- Meanwhile, Greece's top exports to India are **minerals fuels, mineral oils and products, sulphur and aluminium foil**.
- India Participated as 'Honoured Country' in the **84th Thessaloniki International Fair (TIF), 2019**, the largest annual commercial exposition of Greece.

#### ■ Political Relations

- Diplomatic relations were established between India and Greece in May 1950. Greece opened its embassy in Delhi in 1950 and India opened its embassy in Athens in 1978.

- Greece has been marked by consistent support to each other on issues of core national interest, such as **Kashmir and Cyprus**.
- **Greece is also favouring United Nation Security Council (UNSC) expansion, with India as a permanent member.**

#### ■ Defence Relations

- India and Greece's Defence Cooperation accelerated in 1998, which envisages cooperation in areas such as military training, joint exercises, defence industry collaboration, etc.
- Indian Air Force participation in **EXERCISE INIOCHOS-23**.

#### ■ Culture:

- Dimitrios Galanos, a Greek, became the first European Indologist and spent 47 years in **India translating many Hindu texts into Greek** and compiled a **Sanskrit-English-Greek dictionary of over 9000 words**.
- A "**Dimitrios Galanos**" Chair for Hellenic Studies was established at Jawaharlal Nehru University in New Delhi, India in September 2000.
- The Indian Council for Cultural Relations has been offering an **annual scholarship for Greek students to study in India**.
- Prof. Nicholas Kazanas, a distinguished Greek Indologist, was declared as one of the awardees of the prestigious **Padma Shri award** on the occasion of the 72nd Republic Day of India in 2021.

#### Key Facts about Greece:

- Greece is a country in southern Europe with a long coastline on the **Mediterranean Sea**. It is bordered by **Albania, North Macedonia, Bulgaria, and Turkey**.
- Greece is one of the **oldest civilizations in the world and is considered the cradle of Western civilization**. It is the birthplace of **democracy, philosophy, theatre, and the Olympic Games**.
- **Government:** Parliamentary Republic.
- **Capital:** Athens, **National**
- **Language:** Greek
- **Currency:** Euro
- **Major Mountains Ranges:** Pindus and the Taurus mountains.
- The longest river in **Greece is the river Haliacmon**.
- Greece's highest mountain is Mount Olympus.



## 12. OBC Reservation in Local Bodies

#### Why in News?

Recently, the state government of Gujarat hiked **reservations for Other Backward Classes (OBCs)** from the existing 10% to **27% in the panchayats and urban local bodies**.

#### Note:

- In 2022, the **SC permitted Madhya Pradesh** to provide reservation to OBC in Local Body Elections.
- In January 2022, **following a plea by Maharashtra Govt. SC recalled its 2021 order** which stayed 27% reservation for OBC in local body elections.

#### What are the Key Points about this Decision?

- The decision followed recommendations of the **Justice K S Jhaveri Commission** that was formed in response to a **Supreme Court (SC)** directive in 2022 to make suggestions for OBC reservation in local bodies in Gujarat.
- The expanded 27% OBC reservation **will apply to all levels of local bodies** (municipal corporations, municipalities, gram panchayats, taluka panchayats, and district panchayats).
- The increased OBC reservation, however, will **not be applicable in areas covered by the PESA Act 1996** where the **scheduled tribe (ST) population exceeds 50%**. In such regions, OBC candidates will receive a **10% reservation**.
- The **existing quota for SCs (14%) and STs (7%)** remains unchanged without any breach of the **50% reservation ceiling as mandated by the SC**.

#### What is the SC's View about Reservation in Local Bodies?

- In the five-judge Constitution Bench decision in *K. Krishnamurthy (Dr.) v. Union of India (2010)*, the SC interpreted **Article 243D(6) and Article 243T(6)**, which permit reservation by enactment of law for backward classes in panchayat and municipal bodies respectively.
  - The SC also held that the barriers to political participation are not the same as the barriers that limit access to education and employment.
    - **Article 15 (4) and Article 16 (4)** form the basis for reservation in education and employment.
- However, the SC also held that although reservation to local bodies is permissible, it is subject to empirical finding of backwardness in relation to local bodies as fulfilled through the **triple tests** which refers to the following three conditions:
  - Set up a **dedicated Commission to conduct empirical inquiry** into the nature of the backwardness in local bodies
  - **Specify the proportion of reservation** required to be provisioned local body-wise
  - Such **reservation shall not exceed an aggregate of 50%** of the total seats reserved for SCs/STs/OBCs taken together.

#### What are the General Arguments regarding OBC Reservation in Local Body Polls?

##### ■ Arguments in Favour:

- **Empowerment, Inclusion and Participation:** Reservation provides OBC individuals with opportunities to participate actively in local governance, allowing them to voice their concerns, advocate for their communities, and contribute to policy-making that affects their lives.
- **Policy Relevance:** Elected representatives from OBC communities are more likely to understand the challenges faced by their communities and work towards addressing them effectively.
- **Skill and Leadership Development:** Reservation would provide them more opportunities to gain experience in leadership roles, public speaking, and decision-making.
- **Enhanced Political Awareness:** It would encourage political awareness and engagement among community members inspiring them to contribute more actively in the political process.
- **Long-Term Positive Impact:** Proponents argue that over time, this may lead to a more equitable distribution of resources, improved socio-economic indicators, and reduced disparities between different sections of society.

##### ■ Arguments Against:

- **Caste-Based Division:** Some opponents contend that caste-based reservations perpetuate divisions within society, emphasising differences rather than fostering unity.
- **Disadvantaged Groups Within OBCs:** There is concern that within the OBC category, some groups may be more privileged (creamy layer) than others. Implementing reservations for the entire OBC category might result in some relatively more privileged groups benefiting disproportionately, while the most marginalised OBCs remain underrepresented.
- **Reservation Efficacy:** Sceptics also question the long-term efficacy of reservations in truly addressing socio-economic disparities. They argue in favour of alternative approaches like targeted welfare programs, skill development etc.



- **Impact on Local Governance:** There are apprehensions about political considerations outweighing governance concerns when candidates are elected through reservations. This could hinder effective decision-making and the overall development of local bodies.



## GS - 3

### 1. Self-Reliant India Fund for MSMEs

#### Why in News?

Recently, the **Minister of State for Micro Small and Medium Enterprises** provided valuable insights into the **Self Reliant India Fund** during a written reply in the Lok Sabha.

#### What is Self-Reliant India (SRI) Fund?

##### ■ About:

- As part of the **Atmanirbhar Bharat package**, the Indian government announced the **allocation of Rs. 50,000 crores for equity infusion in MSMEs** through the **Self-Reliant India (SRI) Fund**.
- SRI fund operates through a **mother-fund and daughter-fund structure** for equity or quasi-equity investments.
- The **National Small Industries Corporation (NSIC) Venture Capital Fund Limited (NVCFL)** was designated as the **Mother Fund** for the implementation of the SRI Fund.
  - It was registered as a Category-II **Alternative Investment Fund (AIF)** with **SEBI**.

##### ■ Objectives of the SRI Fund:

- To provide **equity funding to viable and high-potential MSMEs**, fostering their growth and transformation into larger enterprises.
- To bolster the MSME sector's contribution to the Indian economy by promoting **innovation, entrepreneurship, and competitiveness**.
- To create an **environment conducive to technological up-gradation**, research and development, and increased market access for MSMEs.

##### ■ Composition of the SRI Fund:

- The Rs. 50,000 crore SRI Fund comprises:
  - Rs. 10,000 Crore from the Government of India to initiate **equity infusion in select MSMEs**.
  - Rs. 40,000 Crore sourced through **Private Equity (PE) and Venture Capital (VC) funds**, leveraging private sector expertise and investment.

#### Note:

- **Equity Infusion:** It refers to the process of **injecting fresh capital or funds into a company** by issuing additional shares to existing shareholders or new investors.
- **Venture Capital Fund:** It is a type of investment fund that **provides capital to early-stage and start-up companies** with high growth potential.
  - The primary objective of a venture capital fund is to **identify promising start-ups and invest in them in exchange for equity** (ownership) in the company.
- **SEBI:** It is a Statutory Body established on **12th April, 1992** in accordance with the provisions of the **Securities and Exchange Board of India Act, 1992**.
  - The basic functions of SEBI is to **protect the interests of investors in securities** and to **promote and regulate the securities market**.

#### What is the Status of MSME Sector in India?

##### ■ About:

- MSME stands for Micro, Small, and Medium Enterprises. The MSME sector of India contributes around **33% of the country's total GDP** and is predicted to contribute worth **USD 1 trillion to India's total exports by 2028**.

## What's MSME

Revised Classification applicable w.e.f 1st July 2020

Composite Criteria: Investment in Plant & Machinery/equipment and Annual Turnover

CLASSIFICATION	MICRO	SMALL	MEDIUM
Manufacturing Enterprises and Enterprises rendering Services	Investment in Plant and Machinery or Equipment: Not more than Rs.1 crore and Annual Turnover ; not more than Rs. 5 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover ; not more than Rs. 50 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover ; not more than Rs. 250 crore

### ■ Significance:

- **Employment Generation:** MSMEs provide about 110 million jobs which is **22-23% of the total employment in India**.
  - It contributes to **reducing unemployment and underemployment**, supporting inclusive growth and poverty reduction.
- **Promotion of Entrepreneurship and Innovation:** The MSME sector fosters a culture of entrepreneurship and innovation.
  - It encourages individuals to **start their own businesses, promotes indigenous technologies**, and contributes to the development of new products and services.
- **Boon for Rural Development:** Compared with large-scale companies, **MSMEs aided in the industrialisation of rural areas** at minimal capital cost.

### Challenges:

- **Infrastructure and Technology:** **Outdated infrastructure and limited access to modern technology** due to limited finance and expertise can hinder the growth and efficiency of MSMEs.
  - The lack of **proper transportation, power supply, and communication** networks affects their ability to compete on a global scale.
- **Complex Regulatory Environment:** Cumbersome and complex regulations can be challenging for small businesses to navigate.
  - Compliance with various laws related to **taxation, labour, environmental norms, etc., requires time, effort, and expertise**.
- **Inadequate Working Capital Management:** Many MSMEs struggle with managing their working capital effectively.
  - **Late payments from customers and long payment cycles** with suppliers can create cash flow issues.
- **Vulnerability to Economic Fluctuations:** The MSME sector is particularly vulnerable to economic downturns, as they **may not have the financial buffers or scale** to withstand challenging economic conditions.

### Government Initiatives for the MSME Sector:

- **MSME Champions Scheme:** Comprising **MSME-Sustainable (ZED), MSME-Competitive (Lean), and MSME-Innovative (for incubation, IPR, Design, and Digital MSME)**, this scheme provides financial assistance to MSMEs to enhance their competitiveness and innovation capabilities.
- **Infusion in Credit Guarantee Fund:** As part of the **Budget 2023-24**, the government announced an infusion of Rs. 9,000 crore in the corpus of **Credit Guarantee Fund Trust for Micro & Small Enterprises**.
- **Raising and Accelerating MSME Performance (RAMP):** This initiative focuses on strengthening institutions and governance of MSME programs at both the central and state levels.
- **Amendment in Income Tax Act:** The Finance Act 2023 brought about an amendment in **Section 43B of the Income Tax Act, 1961**, to offer more **favourable tax provisions for MSMEs**.

### Way Forward

- **Ease of Doing Business:** There is a need to continuously work towards improving the **ease of doing business for MSMEs**, reducing bureaucratic red tape, and simplifying regulatory compliance

- **Mobile Innovation Labs:** There is a need to set up **mobile innovation labs that travel to different regions, especially in rural areas**, to provide MSMEs with access to cutting-edge technologies, training, and mentorship.
  - This initiative would help bridge the technology gap and promote innovation in remote areas.
- **Government-Private Sector Co-Innovation Funds:** It's a time to create **co-investment funds where the government partners with private sector companies** to invest in promising MSME innovations.
  - This collaboration would not only support the growth of innovative businesses but **also enhance public-private partnerships**.
- **Innovation Impact Assessment:** There is a need to develop a **standardized impact assessment framework** that measures the societal and environmental benefits of MSME innovations.
  - Businesses that can demonstrate a positive impact through their innovations **can receive additional recognition and support**.

## 2. Mangroves in India

### Why in News?

On the **International Day for the Conservation of the Mangrove Ecosystem**, West Bengal, which is home to **approximately 40% of India's mangrove forests**, unveiled plans to establish a dedicated '**Mangrove Cell**' to streamline mangrove management efforts.

### International Day for the Conservation of the Mangrove Ecosystem

- The **International Day for the Conservation of the Mangrove Ecosystem** is celebrated every year on **26 July** and aims 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.
- This International Day was adopted by the General Conference of the **UN Educational, Scientific and Cultural Organization (UNESCO)** in 2015.

### What is the Status of Mangroves in India?

#### ■ About:

- Mangroves are a unique type of coastal ecosystem found in **tropical and subtropical regions**. They are dense forests of salt-tolerant trees and shrubs that thrive in **intertidal zones, where land meets the sea**.
- These ecosystems are characterized by their ability to withstand harsh conditions, such as **saline water, tidal fluctuations, and muddy, oxygen-poor soils**.

#### ■ Characteristics:

- **Mangroves exhibit Viviparity mode of reproduction**, where seeds germinate within the tree before falling to the ground. This is an adaptive mechanism to overcome the challenge of germination in saline water.
- Some mangrove species **secrete excess salt through their leaves**, while others block the absorption of salt at their roots.
- **Mangrove plants have special roots like prop roots and pneumatophores**, which help impede water flow and provide support in the challenging tidal environment.

#### ■ Mangrove Cover in India:

- According to the **Indian State Forest Report 2021**, Mangrove cover in India is 4992 sq. Km which is **0.15% of the country's total geographical area**.
- **Sundarbans** in West Bengal are the largest mangrove forest regions in the world. It is listed as a **UNESCO World Heritage Site**.
- Besides the Sundarbans, the Andamans region, the Kachchh and Jamnagar areas in Gujarat too have substantial mangrove cover.

#### ■ Significance:

- **Biodiversity Conservation:** Mangroves provide a unique habitat for a wide variety of plant and animal species, serving as **breeding, nursery, and feeding grounds** for numerous marine and terrestrial organisms.



- For example, Sundarban hosts the **Royal Bengal tiger, Irrawady Dolphin, Rhesus macaque, Leopard cats, and Small Indian civet.**
- **Coastal Protection:** Mangroves act as **natural buffers against coastal erosion, storm surges, and tsunamis.**
  - Their dense root systems and tangled network of prop roots stabilize shorelines and reduce the impact of waves and currents.
  - During hurricanes and cyclones, **mangroves can absorb and dissipate a significant amount of energy,** protecting inland areas and human settlements from devastating damage.
- **Carbon Sequestration:** Mangroves are **highly efficient carbon sinks,** sequestering large amounts of carbon dioxide from the atmosphere and storing it in their biomass and sediments.
- **Fisheries and Livelihoods:** Mangroves support fisheries by providing **nursery areas for fish and shellfish,** enhancing fishery productivity and contributing to livelihood and local food security.
- **Water Quality Improvement:** Mangroves act as **natural filters,** trapping and **removing pollutants and excess nutrients** from coastal waters before they reach the open ocean.
  - Their role in purifying water contributes to the **health of marine ecosystems** and helps maintain the balance of fragile coastal ecosystems.
- **Tourism and Recreation:** Mangroves offer recreational opportunities such as **eco-tourism, bird-watching, kayaking, and nature-based activities,** which can promote sustainable economic growth for local communities.
- **Challenges:**
- **Habitat Destruction and Fragmentation:** Mangroves are often cleared for various purposes, including **agriculture, urbanization, aquaculture, and infrastructure development.**
  - Such activities lead to the fragmentation and loss of mangrove habitats, disrupting their ecosystem functioning and biodiversity.
  - The **conversion of mangroves into shrimp farms** and other commercial uses is a significant concern.
- **Climate Change and Sea Level Rise:** Rising sea levels due to climate change pose a significant threat to mangroves.
  - Climate change also brings about extreme weather events, such as cyclones and storms, which can cause **severe damage to mangrove forests.**
- **Pollution and Contamination:** Pollution from **agricultural runoff, industrial discharges, and improper waste disposal** contaminate mangrove habitats.
  - **Heavy metals, plastics, and other pollutants** adversely affect the flora and fauna of these ecosystems.
- **Lack of Integrated Management:** Often, mangroves are managed in isolation, without considering their interconnectedness with adjacent ecosystems like **coral reefs and seagrass beds.**
  - Integrated management approaches that consider the **broader coastal ecosystem** are necessary for effective conservation.
- **Government Initiatives Related to Mangrove Conservation:**
  - MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes)
  - Sustainable Aquaculture In Mangrove Ecosystem (SAIME) initiative

### Way Forward

- **Drone Monitoring and AI:** Employ drone technology equipped with high-resolution cameras and AI algorithms to monitor mangrove health and detect illegal activities such as **encroachment or illegal logging.**
  - This approach can help in efficient and timely surveillance over vast areas.
- **Mangrove Adoption Program:** Launch a public-driven initiative where individuals, corporates, and institutions can **"adopt" a patch of mangroves.**
  - Participants would be responsible for the **maintenance, protection, and restoration of their adopted area,** fostering a sense of ownership and collective responsibility.
- **Mangrove Research and Development:** Invest in research to explore novel applications of mangroves, such as **phytoremediation to clean polluted water or developing new medicines from mangrove plant extracts.**
  - This could lead to innovative ways to **leverage mangroves' unique properties for sustainable development.**

### 3. Finger Minutiae Record - Finger Image Record (FMR-FIR) Modality

Recently, the **Unique Identification Authority of India (UIDAI)** has rolled out an in-house **Artificial Intelligence/Machine Learning (AI/ML)** technology-based **Finger Minutiae Record – Finger Image Record (FMR-FIR) modality**.

- This technology, specifically designed to enhance **Aadhaar-enabled Payment System (AePS) transactions**, aims to tackle **fraudulent activities**, including the misuse of cloned fingerprints.

#### What is Finger Minutiae Record - Finger Image Record (FMR-FIR) Modality?

##### ■ About:

- The **FMR-FIR modality** is an **advanced AI/ML-based technology** developed by the UIDAI to bolster security measures within the **Aadhaar-enabled Payment System (AePS)**.

##### ■ Key Features and Functionality:

###### ➤ Hybrid Authentication:

- FMR-FIR combines the analysis of two distinct components – **finger minutiae** and **finger image** – to establish the **authenticity of fingerprint biometrics during Aadhaar authentication**.

###### ➤ Liveness Detection:

- The modality's primary function **lies in assessing the liveness of the captured fingerprint**.
- It can differentiate between a **genuine, "live" finger** and a **cloned or fake fingerprint**, thereby preventing spoofing attempts.

###### ➤ Real-time Verification:

- FMR-FIR operates in real-time, providing instant verification results during the authentication process.

###### ➤ Robust Fraud Prevention:

- By detecting and deterring the use of cloned fingerprints, the technology significantly reduces the risk of AePS frauds.

##### ■ Rationale and Implementation:

- **Addressing Emerging Threats:** The emergence of fraudulent activities involving cloned fingerprints necessitated the development of a sophisticated solution to safeguard AePS transactions.

- Payment-related frauds have surged in India, with **over 700,000 reported in FY21**.
- The figures dramatically **escalated to nearly 20 million in FY23**, according to data from supervised entities of the **Reserve Bank of India (RBI)**.
- While many cases go unreported due to limited awareness about cyber frauds, instances of financial frauds remain significant.

- **Silicone-based Fraud:** Instances of unauthorized money transfers through **fake fingerprints created using silicone** prompted the need for a more secure and technologically advanced approach.

- **Integration of AI/ML:** The integration of **artificial intelligence** and **machine learning technologies** enhances the accuracy and effectiveness of fingerprint authentication.

##### ■ Advantages and Implications:

- UIDAI's FMR-FIR technology bolsters security, mitigates vulnerabilities, boosts transaction confidence, and exemplifies technological innovation for societal welfare.

#### What is the Unique Identification Authority of India?

- **Statutory Authority:** The UIDAI is a **statutory authority established** on 12th July 2016 by the Government of India under the jurisdiction of the Ministry of Electronics and Information Technology, following the provisions of the **Aadhaar Act 2016**.

- The UIDAI was **initially set up by the Government of India in January 2009**, as an attached office under the aegis of the **Planning Commission**.

- **Mandate:** The UIDAI is **mandated to assign a 12-digit unique identification (UID) number (Aadhaar)** to all the residents of India.

- As of 31st October 2021, **UIDAI had issued 131.68 crore Aadhaar numbers**.

### What is AePS?

- The AePS is a bank-led model that allows **online interoperable financial transactions at Point of Sale (PoS) or micro-ATMs** through the **Business Correspondent (BC)** of any bank using the **Aadhaar authentication**.
- It was taken up by the **National Payments Corporation of India (NPCI)** - a joint initiative of the **Reserve Bank of India (RBI) and the Indian Banks' Association (IBA)**.
- The AePS is meant to provide **easy and secure access to banking services** for the poor and marginalized sections of society, especially in rural and remote areas.
- It **eliminates the need for OTPs, bank account details**, and other financial information.
- Transactions can be carried out with only the **bank name, Aadhaar number, and captured fingerprint during Aadhaar enrolment**.

## 4. Land Restoration and Afforestation

### Why in News?

Recently, the **Union Minister of State for Environment, Forest and Climate Change**, in a written reply in the **Lok Sabha**, shed light on the pivotal initiatives taken by India to **combat land degradation and promote afforestation**.

- The **Nagar Van Yojana (Urban Forest Scheme)**, a progressive initiative the Ministry of Environment, Forest and Climate Change, has gained significant traction as its progress continues to illuminate India's commitment to creating vibrant urban green spaces.

### What is Nagar Van Yojana (NVY)?

#### ■ About:

- The **NVY** was introduced in the year **2020** with a visionary objective – the creation of **1000 Nagar Vans (urban forests)** in cities equipped with **Municipal Corporations, Municipal Councils, Municipalities, and Urban Local Bodies (ULBs)**.
- This ambitious initiative is designed to foster not only a holistic and healthy living environment for city residents but also to **contribute significantly to the growth of cleaner, greener, and more sustainable urban centres**.

#### ■ Key Features:

- Creating **green space and aesthetic environment in an urban set-up**.
- Creating awareness about **plants and biodiversity** and developing environment stewardship.
- Facilitating **in-situ conservation of important flora of the region**.
- Contributing to **environmental improvement of cities by pollution mitigation**, providing cleaner air, noise reduction, water harvesting and reduction of heat islands effect.
- Extending **health benefits to residents** of the city and helping cities become **climate resilient**.

#### ■ Progress and Impact of NVY:

- Since its inception, the **NVY** has gained remarkable momentum, with **385 projects sanctioned across the country**.
- This impressive progress underscores India's dedication to transforming its cities into thriving, eco-conscious communities.

### What are the Initiatives to Combat Land Degradation and Promote Afforestation?

#### ■ Government Initiatives to Boost Forest Cover:

- **National Forest Policy (NFP) 1988:**
  - The NFP 1988 sets a national goal of achieving a **minimum of one-third of the total land area under forest or tree cover**.
  - The aim is to maintain **ecological balance, conserve natural heritage, and prevent soil erosion in river, lake, and reservoir catchment areas**.
- **National Mission for a Green India (GIM):**
  - It is under the **National Action Plan on Climate Change (NAPCC)** and aims to increase forest and tree cover, restore degraded ecosystems, and enhance biodiversity.

- **Forest Fire Protection & Management Scheme (FFPM):**
  - This scheme focuses on **preventing and managing forest fires**, contributing to the overall health of forests.
- **Compensatory Afforestation Fund:**
  - This approach involves utilizing funds collected for diverting forest land for non-forest purposes to undertake afforestation and reforestation projects, thus restoring forest cover.
  - Utilized by States/UTs for compensatory afforestation to offset forest land diversion for developmental projects.
  - **90% of the Compensatory Afforestation Fund money is to be given to the states while 10% is to be retained by the Centre.**
- **National Coastal Mission Programme:**
  - Under the National Coastal Mission Programme on 'Conservation and Management of Mangroves and Coral Reefs', **annual Management Action Plan (MAP) for conservation and management of mangroves are formulated and implemented** in all the coastal States and Union Territories.

#### State Specific Initiatives:

- **Mission Haritha Haram:**
  - It is a flagship programme of the Telangana government to increase the **green cover of the State from the present 25.16 to 33% of the total geographical area.**
- **Green Wall:**
  - It is an initiative launched by the Haryana government to **restore and protect the Aravalli range.**
  - It is an ambitious plan to create a **1,400km long and 5km wide green belt** buffer around the Aravali Mountain range covering the **states of Haryana, Rajasthan, Gujarat and Delhi.**

#### Afforestation Achievements:

- **Twenty Point Programme Reporting:**
  - Over the period from 2011-12 to 2021-22, approximately **18.94 million hectares of land have been covered through afforestation efforts.**
  - These achievements result from concerted efforts by both the State Governments and central and state-specific schemes.
- **Multi-Sectoral Approach:**
  - Afforestation activities are undertaken collaboratively across various sectors, involving departments, non-governmental organizations (NGOs), civil society groups, and corporate entities. This multi-faceted approach ensures a holistic effort to combat land degradation.
- **Measures to Combat Land Degradation:**
  - **Desertification and Land Degradation Atlas:**
    - Published by the **Space Applications Centre (SAC)** of the **Indian Space Research Organisation**, this atlas provides **critical data on the extent of land degradation** and desertification in India. It helps in planning restoration efforts based on accurate information.
  - **Centre of Excellence at ICFRE:**
    - The establishment of a Centre of Excellence at the **Indian Council for Forestry Research and Education (ICFRE)** in Dehradun promotes South-South Cooperation.
      - It facilitates knowledge **exchange, best practice sharing, and capacity building for sustainable land management.**
  - **Bonn Challenge Pledge:**
    - India committed to **restoring 26 million hectares of degraded and deforested land by 2030** as part of the **voluntary Bonn Challenge.** This global initiative focuses on restoring degraded lands for enhanced ecosystem services and biodiversity.
  - **UNFCCC COP and UNCCD COP14:**



- India's participation in the **United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP)** and the **United Nations Convention to Combat Desertification (UNCCD) COP14** demonstrates the country's commitment to global efforts in land restoration and combating desertification.

### What are the Challenges Associated with Land Degradation and Afforestation?

#### ■ Challenges Associated with Land Degradation:

- **Soil Erosion:**
  - Intense **rain and wind remove topsoil**, reducing soil fertility.
  - Improper **agricultural practices and deforestation** contribute to erosion.
  - **Climate change** disrupts soil health through shifting precipitation patterns and rising temperatures. Altered weather conditions, such as **intense rainfall exceeding soil absorption capacity**, **accelerate erosion, causing runoff and degradation**.
- **Desertification:**
  - **Arid and semi-arid areas** experience soil degradation and loss of vegetation cover.
  - **Overgrazing** and unsustainable land use exacerbate desertification.
- **Industrialization and Urbanization:**
  - Urban expansion and industrial activities **lead to soil sealing, impeding water infiltration and nutrient cycling**.
  - Pollution from industries can contaminate soil and water resources.
- **Land Pollution and Contamination:**
  - Improper **disposal of waste and hazardous materials** leads to soil contamination and reduced soil productivity.
  - Landfills and **improper waste management** contribute to land degradation.

#### ■ Challenges Associated with Afforestation:

- **Species Selection:**
  - Choosing **suitable tree species that thrive in the local ecosystem**.
  - Invasive species may outcompete native vegetation.
- **Survival and Growth:**
  - Ensuring newly planted trees survive harsh conditions and grow successfully.
  - Water availability, soil quality, and climate influence tree establishment.
- **Competing Land Uses:**
  - Conflicts arise when **afforestation competes with agriculture, urbanization, or other land uses**.
  - Balancing conservation goals with economic activities is challenging.
- **Ecosystem Imbalance:**
  - Rapid afforestation without considering **native species and ecosystems** may disrupt natural balances.
  - Planting monocultures can lead to biodiversity loss.
- **Community Participation:**
  - Engaging local communities in afforestation efforts is crucial for long-term success.
  - Inadequate community involvement may lead to resistance or unsustainable practices.

### Way Forward

- **Integrated Landscape Management:**
  - Develop holistic land-use plans integrating afforestation with other activities.
  - Implement sustainable land management practices to prevent erosion and desertification.
- **Science-Based Species Selection and Agroforestry:**
  - Conduct research to select suitable tree species for local ecosystems.

- Promote agroforestry models for enhanced biodiversity and productivity.
- **Bio-Engineering Solutions:**
  - Harness bio-engineering techniques like soil bio-remediation and bio-fencing to restore land health and prevent erosion.
- **Traditional Ecological Wisdom:**
  - Collaborate with indigenous communities to revive traditional agroforestry practices, integrating local knowledge into modern restoration strategies.
- **Eco-Entrepreneurship:**
  - Encourage community-led afforestation enterprises, creating sustainable livelihoods and nurturing a sense of ownership.
- **Sustainable Financing Mechanisms:**
  - Mobilize funds from budgets, international sources, and public-private partnerships.
  - Ensure transparent allocation for afforestation projects.
- **Monitoring, Research, and Innovation:**
  - Develop robust monitoring systems for progress and impact assessment.
  - Invest in research and innovation for climate-resilient afforestation techniques.

## 5. World Elephant Day 2023

### Why in News?

Recently, on the occasion of **World Elephant Day**, the Union Minister of Environment, Forest and Climate Change and Labour and Employment highlighted various initiatives and accomplishments in India's elephant conservation journey.

### What is World Elephant Day?

#### ■ About:

- World Elephant Day, observed **globally on August 12**, is a dedicated observance aimed at raising awareness about the **critical challenges confronting elephants and advocating for their protection and conservation**.
- This significant day provides a platform to emphasize the issues elephants face, encompassing habitat loss, ivory poaching, human-elephant conflicts, and the imperative for enhanced conservation endeavours.

#### ■ Historical Perspective:

- The campaign World Elephant Day was **initiated in 2012 to bring awareness to the disturbing situations of African and Asian elephants**.
  - The objective of this campaign is to **create a sustainable environment where animals are not exploited and taken care of**.
- It was first observed by Canadian filmmakers Michael Clark and Patricia Sims with the Thailand-based Elephant Reintroduction Foundation.
  - In 2012, Patricia Sims **founded an organization called the World Elephant Society**.
  - The organization has succeeded to create awareness about the dangers confronted by elephants and the inevitability to protect them globally.

### What are the Key Highlights of Elephants?

#### ■ About:

- Elephant is the **Natural Heritage Animal of India**.
- Elephants are considered a "**Keystone Species**" as they play a critical role in maintaining the balance and health of forest ecosystems.
  - They are **known for their exceptional intelligence**, boasting the largest brain size of any land animal.

#### ■ Significance in Ecosystem:

- Elephants are very **important grazers and browsers**, eating vast amounts of **vegetation every day, spreading seeds around as they go**.
  - They also help **shape the often-thick vegetation of the Asian landscape**.

- For example, in forests, **elephants create clearings and gaps in the trees that let sunlight in to reach new seedlings**, helping plants grow and the forest to regenerate naturally.
- Elephants will also dig for water when there is not any surface water – **opening water access for other creatures as well as themselves.**
- **Elephants in India:**
  - India has the **largest number of wild Asian Elephants**, estimated at **29,964 according to the 2017 census by Project Elephant.**
    - It is about 60% of the species' global population.
  - **Karnataka** has the highest number of elephants, followed by **Assam and Kerala.**
- **Conservation Status:**
  - **International Union for Conservation of Nature (IUCN) Red List of threatened species:**
    - African Forest Elephant (*Loxodonta Cyclotis*)- **Critically Endangered**
    - African Savanna Elephant (*Loxodonta Africana*)- **Endangered**
    - Asian Elephant (*Elephas maximus*)- **Endangered**
  - **Convention of the Migratory species (CMS):**
    - African Forest Elephant: **Appendix II**
    - Asian Elephant: **Appendix I**
  - **Wildlife (Protection) Act, 1972: Schedule I**
  - **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):**
    - African Savanna Elephant: **Appendix II**
    - Asian Elephant: **Appendix I**

#### What are the Initiatives and Accomplishments in India's Elephant Conservation Journey?

- **Addressing Elephant-Human Conflict:**
  - Establishment of over **40 elephant corridors and 88 wildlife crossings to reduce conflicts.**
  - Creation of **buffer zones around protected areas covering more than 17,000 sq. km.**
- **Project Elephant:**
  - Launched in 1992, covering 23 states across India.
  - Improved the status of wild elephants, with a **population increase from about 25,000 in 1992 to around 30,000 in 2021.**
- **Elephant Reserves:**
  - Establishment of **33 Elephant Reserves covering approximately 80,777 Sq.km.**
  - These reserves play a crucial role in safeguarding **wild elephant populations and their habitats.**
- **Human-Elephant Conflict Management:**
  - Rapid response teams deployed in various states to handle conflict situations.
  - Around **110 critical stretches across the railway network in the country that traverse through elephant habitats** have been identified for the implementation of eco-friendly measures to mitigate human-elephant conflicts.
    - In these locations measures such as building underpasses, clearing vegetation along the tracks to increase visibility for the loco pilots to avoid collisions, provisioning ramps, and others will also be taken up.
- **Community Participation and Empowerment:**
  - **Gaj Yatra program and Gaj Shilpi initiative** involving people to raise awareness about elephant conservation.
- **Recognition of Exemplary Efforts:**
  - Conferment of **Gaj Gaurav awards** individuals and organizations for their exemplary contributions in the field of elephant conservation and management.
- **International Agreements and Protocols:**
  - Participation in international conferences like the **Conference of Parties under CITES.**

- **Monitoring of Illegal Killing of Elephants (MIKE) Programme** - The MIKE Programme was established by the CITES by **Resolution 10.10 adopted at the tenth Conference of the Parties in 1997**.
  - The MIKE program **started in South Asia in the year 2003 with the following purpose:**
  - To provide information needed for elephant range States to make appropriate management and enforcement decisions, and to **build institutional capacity within the range States for the long-term management of their elephant populations.**

#### Mike Sites in India:

- Chirang-Ripu Elephant Reserve (Assam)
- Deomali Elephant Reserve (Arunachal Pradesh)
- Dihing Patkai Elephant Reserve (Assam)
- Garo Hills Elephant Reserve (Meghalaya)
- Eastern Dooars Elephant Reserve (West Bengal)
- Mayurbhanj Elephant Reserve (Odisha)
- Shivalik Elephant Reserve (Uttarakhand)
- Mysore Elephant Reserve (Karnataka)
- Nilgiri Elephant Reserve (Tamil Nadu)
- Wayanad Elephant Reserve (Kerala)

## 6. India's Chandrayaan-3 and Russia's Luna 25 Mission

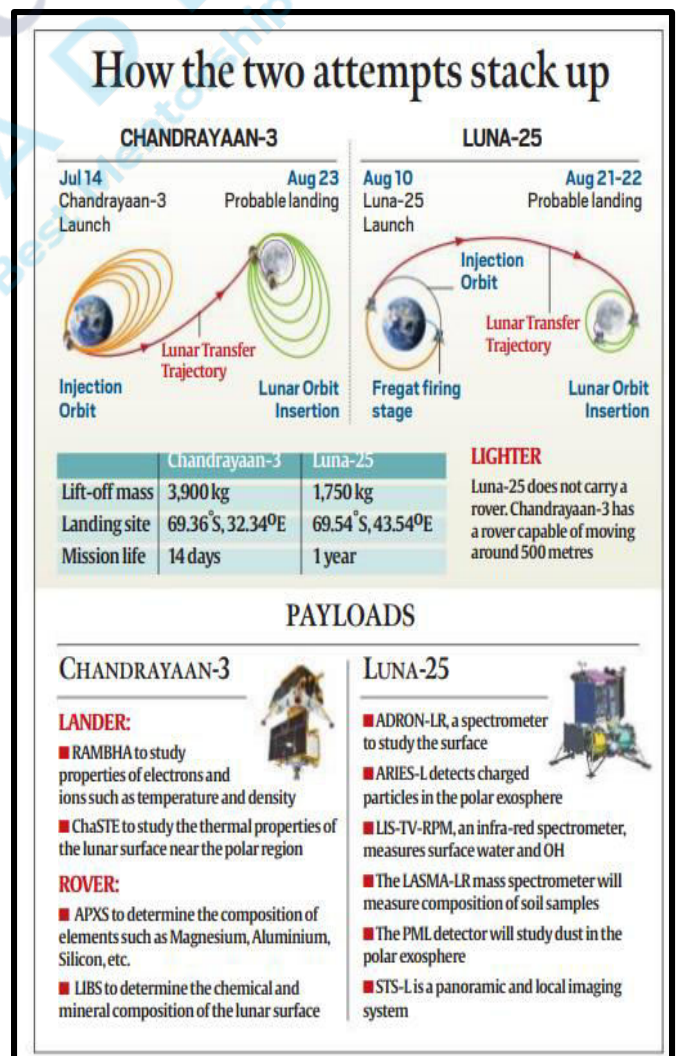
### Why in News?

The race for lunar exploration has taken an intriguing turn as **Russia's Luna 25 mission, launched aboard its Soyuz rocket on August 10, 2023, seeks to soft-land close to the lunar South Pole, just days before India's Chandrayaan-3.**

- **Russia's space agency, Roscosmos** asserts that Luna 25's landing would not impact Chandrayaan-3, as their landing regions are distinct.

### Why is Luna 25 Reaching the Moon Earlier than Chandrayaan-3?

- **Direct Trajectory Advantage:** Despite being launched almost a month later than Chandrayaan-3, Luna 25 is set to reach the moon earlier due to its more **direct trajectory**.
- **Payload and Fuel Storage:** Luna 25's lift-off mass of **1,750 kg is significantly lighter than Chandrayaan-3's 3,900 kg**, facilitating a quicker journey.
- **Circuitous Route for Chandrayaan-3:** Chandrayaan-3 took a longer route to compensate for its **lower fuel reserve**, involving manoeuvres to gain velocity and sling-shooting towards the moon.
  - This elongated its journey to the **lunar orbit by 22 days.**
- **Lunar Dawn Timing:** Luna 25 benefits from an **earlier lunar dawn at its landing site, ensuring full solar panel power for its payloads during the lunar day (equal to 14 Earth days).**





**Note:** Only three countries have managed to complete a soft landing on the Moon in history: the United States, the Soviet Union, and China.

### What are the Other Differences between Luna 25 and Chandrayaan 3?

- **About:** Luna 25 marks **Russia's return to lunar exploration after 47 years**, aiming to reclaim its reputation in space exploration.
  - **Chandrayaan-3 is India's third lunar mission and second attempt at achieving a soft landing** on the moon's surface
- **Payload Difference:** Luna 25 is lighter and **lacks a rover**, focusing on studying **soil composition, dust particles, and detecting surface water**.
  - **Chandrayaan-3 carries a rover capable of moving 500 meters**, aims to study lunar soil, and has **instruments to detect water-ice in shadowed craters near the lunar South Pole**.
- **Lifespan:** Luna 25 is designed for a **year-long mission**, equipped with heating mechanisms and a non-solar power source.
  - In contrast, **Chandrayaan-3 is built for a single lunar day** due to lack of heating during lunar nights.
- **Objective of the Mission:** The Russian lander has **eight payloads mainly to study the soil composition, dust particles in the polar exosphere**, and most importantly, detect surface water.
  - The Indian mission also has scientific instruments **to study the lunar soil as well as water-ice**. The location near the southern pole was chosen because **of the presence of craters that remain in permanent shadow**, increasing the likelihood of finding water-ice.
    - The lander will carry four experiments on-board (RAMBHA, ChaSTE, ILSA, LASER Retroreflector Array (LRA)).  
There are two scientific experiments on the rover.
      - The LASER Induced Breakdown Spectroscope (LIBS).
      - The Alpha Particle X-ray Spectrometer (APXS).

### What is the Status of India Russia Space Collaboration?

- India's first satellite, **Aryabhata**, was launched by the **Soviet Union in 1975**.
- Only one Indian citizen has ever flown to space- Rakesh Sharma flew to the **Salyut 7 space station on a Soyuz rocket in 1984 as part of the USSR's Interkosmos program**.
- In 2004, the two countries signed a protocol to boost cooperation in space. This included the development of the **GLONASS navigation system** and the launching of **Russian GLONASS satellites by Indian rockets**.
- Chandrayaan-2 was initially supposed to be a collaboration between India and Russia.
  - However, **Russia withdrew from designing the lander-rover for Chandrayaan-2, leading India to develop it independently**.
- Also, four astronauts who will be part of **India's first crewed space mission: Gaganyaan have been trained in Russian facilities**.

## 7. MoEFCC Reverses Decision to Merge Autonomous Bodies

### Why in News?

Recently, the **Ministry of Environment, Forests and Climate Change (MoEFCC)** reversed its decision to **establish integrated regional offices** by merging key environmental bodies under its umbrella.

### What was the Initial Proposal of the MoEFCC?

- **Proposal:**
  - The initial plan, announced during the Covid-19 lockdown, aimed to bring together the **Forest Survey of India (FSI), the National Tiger Conservation Authority (NTCA), the Wildlife Crime Control Bureau (WCCB), and the Central Zoo Authority (CZA)** under a unified structure.
    - This move was intended to streamline operations and create a single point of authority for these organizations.

■ **Criticisms:**

- It would **undermine the independence and authority of these bodies**, which have different mandates and roles in environmental governance.
- It would **create administrative confusion and chaos**, as these bodies have different reporting structures and jurisdictions.
- It would **compromise the quality and credibility of their work**, as they would be **subject to political interference and pressure from the MoEFCC**.
- It would **dilute the focus and expertise of these bodies**, which have specialised functions and skills in their respective domains.

■ **Reversal of Decision:**

- The recent notification from the MoEFCC **not only scrapped the merger plan but suggests rearranging the current regional offices**, and this plan is also facing criticism.
  - For instance, the Bengaluru regional office would have had jurisdiction of three states and a Union Territory with different geography and environment: **Karnataka, Kerala, Goa, and Lakshadweep**.
  - Concerns were also raised over the recent plan to merge **Project Tiger and Project Elephant**, potentially affecting the autonomy and importance of these initiatives.

Environment Bodies	Features
<p><b>Forest Survey of India(FSI):</b></p>	<ul style="list-style-type: none"> <li>■ It is a government agency responsible for conducting forest surveys, assessments, and related research.</li> <li>■ FSI replaced the "<b>Pre-investment Survey of Forest Resources</b>" (<b>PISFR</b>), an initiative initiated by the Indian government in <b>1965</b>, with assistance from the <b>FAO and the UNDP</b>.</li> <li>■ <b>India State of Forest Report (ISFR)</b> is a biennial publication of FSI.</li> </ul>
<p><b>National Tiger Conservation Authority:</b></p>	<ul style="list-style-type: none"> <li>■ It is a statutory body established under <b>Wildlife (Protection) Act, 1972</b> in December 2005, following a <b>recommendation of the Tiger Task Force</b>.</li> <li>■ It is responsible for managing <b>Project Tiger and India's Tiger Reserves</b>.</li> <li>■ The <b>Union Environment Minister is the Chairperson of NTCA</b> and the State Environment Minister is the Vice-Chairperson.</li> </ul>

**Wildlife Crime  
Control Bureau:**

- It is a statutory multi-disciplinary body (**WPA 1972**) established to **combat organized wildlife crime in the country**.
- The Bureau has its headquarters in New Delhi. It advise the Government of India on issues relating to **wildlife crimes having national and international ramifications**, relevant policy and laws.
- It also assists and advises the **Customs authorities** in inspection of the consignments of **flora & fauna** as per the provisions of **Wild Life Protection Act, CITES and EXIM Policy** governing such an item.

**Central Authority:  
Zoo**

- It is also a statutory body (**WPA 1972**) to **regulate and monitor the functioning of zoos in India** and ensure their compliance with the standards and norms prescribed by it.
- Apart from the primary function of grant of recognition, the CZA also regulates the **exchange of animals of endangered category listed under Schedule- I and II of the Wildlife (Protection) Act, 1972** among zoos.
- The Environment Minister is the chairperson of CZA.

## 8. Rising Methane Levels and the Threat to Climate Stability

### Why in News?

The surge in **methane levels** in Earth's atmosphere has raised concerns about the planet's ongoing climate transition.

- As methane, a potent greenhouse gas, gains momentum in its growth, it raises questions about whether **Earth is undergoing a 'termination-level transition' similar** to past climate shifts.

### What is Termination-Level Transition?

- The concept of a "termination-level transition" refers to a **significant and abrupt shift in Earth's climate from one state to another.**
- These transitions are marked by **rapid and substantial changes in various climatic factors**, which can have far-reaching consequences for the planet's ecosystems, weather patterns, and overall environmental stability.
- Earth's climate has undergone termination-level transitions throughout its history.
  - These transitions are often associated with the **end of ice ages** (It was during the Pleistocene, epoch spanning from approximately 2.6 million to 11,700 years ago, which witnessed the most recent instances of global cooling, or ice ages) and the subsequent shift to warmer interglacial periods.
- Various factors, including **changes in ocean currents, and atmospheric composition, can trigger termination-level transitions.**

### How Does Methane Threaten Warming Limits?

- **Potency of Methane as a Greenhouse Gas:**
  - Methane is much more effective at trapping heat than **carbon dioxide (CO<sub>2</sub>)**.
  - It has a shorter atmospheric lifespan of less than a decade compared to CO<sub>2</sub>'s centuries.
  - While present in smaller quantities than CO<sub>2</sub>, methane's heat-trapping capacity is **approximately 28-36 times stronger over a 100-year period.**
  - Methane was about **0.7 parts per million (ppm) in the air** before humans began burning fossil fuels. **Now it is over 1.9 ppm and rising fast.**
    - This enhanced warming potential **intensifies its impact on the greenhouse effect.**
- **Challenges in Limiting Warming:**
  - The rapid increase in methane levels complicates efforts to **limit global warming to safe levels.**
  - Elevated methane concentrations contribute to the overall greenhouse gas effect, **exacerbating temperature rise.**
  - Rising methane levels can push the **planet closer to dangerous temperature thresholds.**
  - Warming caused by methane can lead to further methane release from **thawing permafrost and melting Arctic ice, amplifying its warming effects.**
- **Effects on Ecosystems:**
  - The increased methane concentrations can impact ecosystems, **disrupt natural processes, and affect biodiversity.**
  - Vulnerable ecosystems, such as **wetlands, are particularly sensitive to methane-related changes.**
- **Implications for Sea-Level Rise:**
  - Elevated methane levels can contribute to **sea-level rise** by accelerating the melting of polar ice and glaciers.
  - Sea-level rise threatens **coastal communities and exacerbates the impacts of climate change.**

### Methane

- Methane is the **simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms (CH<sub>4</sub>).**
- It is flammable and is used as a fuel worldwide.
- Methane is a powerful **greenhouse gas.**
- Methane has more than **80 times the warming power of carbon dioxide** over the first 20 years of its lifetime in the atmosphere.
- Roughly three-fifths of methane emissions come from **fossil fuel use, farming, landfills and waste.** The remainder is from **natural sources, especially vegetation rotting in tropical and northern wetlands.**

### What are the Initiatives to Tackle Methane Emissions?

- **Indian:**
  - **'Harit Dhara' (HD): Indian Council of Agricultural Research (ICAR)** has developed an anti-methanogenic feed supplement **'Harit Dhara' (HD)**, which can cut down cattle methane emissions by 17-20% and can also result in higher milk production.



- **India Greenhouse Gas (GHG) Program:** The India GHG Program led by WRI India (non-profit organization), Confederation of Indian Industry (CII) and **The Energy and Resources Institute (TERI)** is an industry-led voluntary framework to measure and manage greenhouse gas emissions.
  - The programme builds comprehensive measurement and management strategies to reduce emissions and drive more profitable, competitive and sustainable businesses and organisations in India.
- **National Action Plan on Climate Change (NAPCC):** NAPCC was launched in 2008 which aims at creating awareness among the representatives of the public, different agencies of the government, scientists, industry and the communities on the threat posed by climate change and the steps to counter it.
- **Bharat Stage-VI Norms:** India shifted from **Bharat Stage-IV (BS-IV) to Bharat Stage-VI (BS-VI)** emission norms.
- **Global:**
  - **Methane Alert and Response System (MARS):** MARS will integrate data from a large number of existing and future satellites that have the ability to detect methane emission events anywhere in the world, send out notifications to the relevant stakeholders to act on it.
  - **Global Methane Pledge:** At the **Glasgow climate conference (UNFCCC COP 26)** in 2021, **nearly 100 countries had come together in a voluntary pledge**, referred to as the Global Methane Pledge, to cut methane emissions by at least 30% by 2030 from the 2020 levels.
    - **India is not a part of the Global Methane Pledge.**
  - **Global Methane Initiative (GMI):** It is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a clean energy source.

## 9. Gene Editing in Mustard Breeding

### Why in News?

Indian scientists have developed the **first ever low-pungent mustard** that is pest and disease-resistant. It is based on **CRISPR/Cas9 gene editing**, while being non-GM and transgene-free.

### What is the Significance of Gene Editing in Mustard Breeding?

#### ■ Background:

- Traditional mustard seeds (*Brassica juncea*) that are grown in India contain about **120-130 parts per million (ppm) of compounds called glucosinolates**, which are a group of sulphur and nitrogen-containing compounds contributing to the **characteristic pungency of their oil and meal**.
  - These compounds serve as **natural defenders, protecting the plant from pests and diseases**.
  - In comparison, **canola seeds have much fewer glucosinolates**, around 30 ppm. These lower levels let the canola oil and meal have a **specific pleasant taste**.
- Oilseeds yield oil for cooking, and **their leftover meal**, a protein-rich ingredient, is used in **animal feed**. **Rapeseed meal, rich in glucosinolates**, is fed to livestock but requires mixing with grass and water.
  - High glucosinolates are also known to **cause goiter (swelling of neck)** and internal organ abnormalities in livestock.
- Scientists have been **working on a goal to develop mustard seeds that have fewer glucosinolates**, similar to canola seeds.
  - However, reducing glucosinolates in mustard seeds can weaken the plant's overall ability to defend itself against pests and diseases, which presents a challenge.

#### ■ The Role of Gene Editing in Mustard Breeding:

- Scientists directed their efforts toward modifying specific genes known as **glucosinolate transporter (GTR) genes**.
  - These genes play a crucial role in how glucosinolates, important compounds in mustard seeds, build up.
- To achieve this modification, **they employed a gene-editing tool called CRISPR/Cas9**, which works like precision scissors to alter gene sequences accurately.
- In a particular mustard variety named '**Varuna**,' the researchers focused on 10 out of the 12 GTR genes.

- Through these genetic modifications, **they deactivated the proteins produced by these genes**, resulting in a significant reduction in glucosinolate levels within the seeds.
- **Implications of Gene Editing on Plant Defense and Pest Resistance:**
  - The modified mustard plants showcased glucosinolate levels in their seeds that were **lower than the 30 ppm threshold set for canola-quality seeds**.
  - Interestingly, the **leaves and the walls of the pods around the seeds displayed higher amounts of glucosinolates**.
    - This increase was attributed to a disruption in the transport of these compounds. This heightened accumulation of glucosinolates in the leaves and pods plays a **crucial role in bolstering the plant's ability to resist pests**.
  - As a result of these genetic modifications, the edited mustard lines exhibited robust defence mechanisms against both fungal and insect pests.

#### What is the Difference between Genome Editing and Genetic Modification?

- The GTR genes-edited mustard lines are the **result of genome editing (GE), distinguishing them from genetically modified (GM) plants**.
  - Unlike GM crops, where **foreign genes are introduced, like those of the Bacillus thuringiensis bacteria** in cotton or Bar-Barnase-Barstar (isolated from other soil bacteria) in the GM hybrid mustard (DMH-11), **GE focuses on modifying the genes that already exist** without adding new genetic material.
  - The recently developed mustard lines are completely free of transgenes and do not possess any foreign genes.
- It's important to note that the **CRISPR/Cas9 enzyme**, which is employed for gene editing, is **not present in the final genome-edited plants**.
  - This sets them apart from transgenic GM crops, where the introduced genes can persist.
- **Regulatory Landscape and Future Prospects:**
  - In India, the regulation of genetic modification is stringent and necessitates approval from the **Genetic Engineering Appraisal Committee (GEAC)** under the **Ministry of Environment, Forest and Climate Change**.
    - However, an official memorandum from the MoEFCC has **exempted genome-edited (GE) plants that don't incorporate foreign DNA from requiring GEAC approval** for open field trials.
    - The newly developed genome-edited mustard lines are **poised to undergo open field trials**, having obtained clearance from the **Institutional Bio-safety Committee (IBSC)**.
  - The potential benefits of these advancements are substantial, particularly because **India currently imports a significant amount of edible oils**, incurring substantial costs annually.
    - These innovations hold the promise of enhancing domestic oilseed production by bolstering crop yields, resistance to pests, and product quality.
    - This progress could **ultimately contribute to diminishing the country's reliance on imported vegetable oils**.

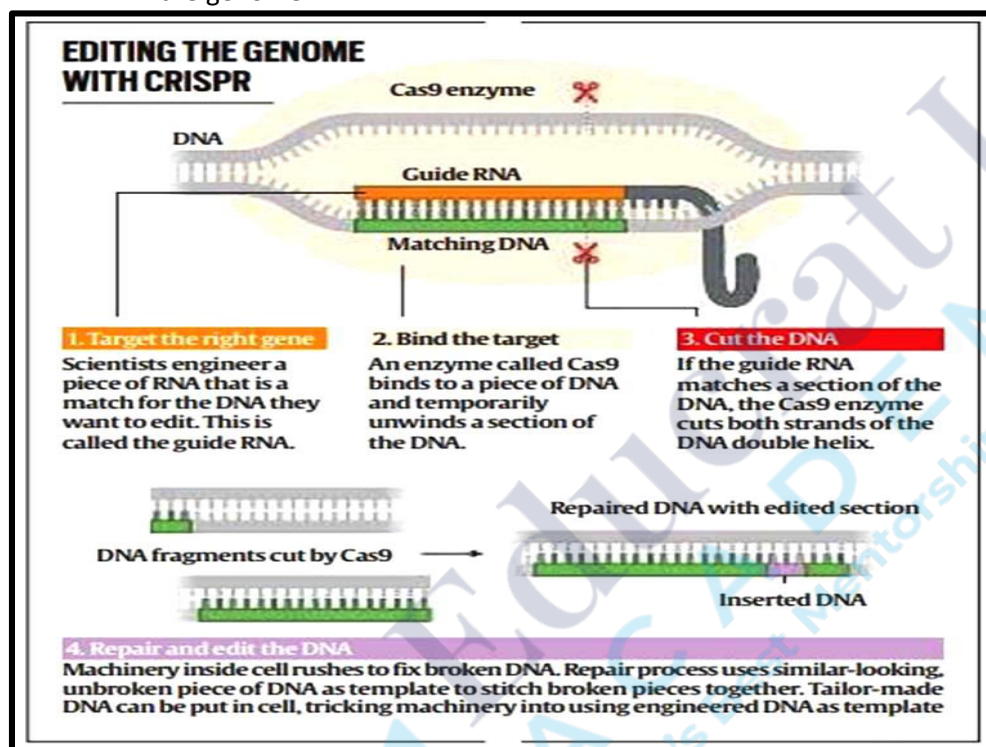
#### What is the Status of Mustard Cultivation in India?

- Mustard is India's most widely-cultivated oilseed crops, planted annually on **9 million hectares area respectively**. It is grown in Rabi season.
  - Its higher average oil extractable content (38%) makes mustard a good "oilseed" crop, while a **source of both fat for humans and protein for animals**.
- Mustard is an important cash crop for farmers in **Rajasthan, Haryana, Madhya Pradesh and Uttar Pradesh**, among others.

#### What is CRISPR Cas9 Technology?

- CRISPR-Cas9 is a ground-breaking technology that empowers geneticists and medical researchers to modify specific portions of the genome.

- This is achieved through the precise **removal, addition, or modification of segments within the DNA sequence.**
- The CRISPR-Cas9 system involves two important components that bring about changes or mutations in DNA. These components are:
  - An enzyme known as **Cas9**, which acts like a **pair of precision "molecular scissors."**
    - Cas9 has the **ability to cut the two strands of DNA** at a specific spot within the genome. This precise cutting enables the **addition or removal of segments of DNA.**
  - A segment of RNA referred to as guide **RNA (gRNA)**. This consists of a small, pre-designed RNA sequence.
    - This RNA sequence is embedded within a longer RNA structure. **The lengthier part of the RNA attaches itself to DNA**, while the specific sequence within it functions as a "guide" for Cas9.
    - This guidance mechanism **directs the Cas9 enzyme to the exact location in the genome where it should make the cut.**
    - This ensures that the cutting action of the Cas9 enzyme takes place accurately at the intended point in the genome.



## 10. Chandrayaan-3 Successfully Lands on Moon's South Pole

### Why in News?

**Chandrayaan-3** has made history by becoming the **first mission to soft-land on the lunar south-pole**, a region that has never been explored before. The mission aimed to demonstrate safe and soft lunar landing, rover mobility, and **in-situ scientific experiments.**

- India now joins the **United States, Russia, and China** as one of the few countries to successfully **land on the Moon.**

### How did Chandrayaan-3 Prevail over Obstacles Encountered in the Previous Mission?

- Chandrayaan-3's successful landing came after the **setback of the Chandrayaan-2 mission's landing failure in 2019.**
  - The Vikram lander of Chandrayaan-2 had lost control and communication during descent, leading to a crash on the lunar surface.
- Lessons from the Chandrayaan-2 mission were applied to Chandrayaan-3, focusing on a **"failure-based" design approach** to anticipate and mitigate potential issues.

- Critical changes included strengthening the **lander's legs**, **increasing fuel reserves**, and **enhancing landing site flexibility**.

### Why did Chandrayaan-3 Choose Moon's Near Side for Landing?

- Chandrayaan-3 aimed to investigate "**permanently shadowed regions**" near the **South Pole** for potential water-ice and resources.
  - The Vikram lander's controlled descent achieved **one of the closest approaches to the Moon's South Pole**.
- While a notable achievement, **Vikram's landing occurred on the Moon's near side**, unlike China's Chang'e 4 on the **far side**.
  - The near side, **visible from Earth due to synchronous rotation**, covers **60% of the Moon**.
  - The **far side**, though not always in darkness, remained hidden until the **Soviet spacecraft Luna 3 captured images in 1959**.
    - Astronauts aboard the **Apollo 8 mission in 1968** became the first humans to observe the far side directly.
- The near side boasts smoother surfaces and numerous '**maria**' (**large volcanic plains**), while the far side features massive craters from asteroid impacts.
  - The lunar crust on the near side is thinner, causing volcanic lava to flow and fill craters over time, creating flat terrains.
- The decision to land on the near side was **driven by the mission's primary goal of a controlled soft landing**.
  - Landing on the far side would require a **relay for communication due to the lack of direct line-of-sight with Earth**.

### What are the Intended Actions for Chandrayaan-3 after its Landing?

- **Chandrayaan-3** is expected to **operate for at least one lunar day (14 Earth days)** on the lunar surface.
  - The **Pragyan rover will move around the landing site within a radius of 500 meters**, conducting experiments and sending data and images to the lander.
  - The **Vikram lander will relay the data and images to the orbiter**, which will then transmit them to Earth.
- **Lander and Rover modules** are collectively equipped with advanced scientific payloads.
  - These instruments are designed to conduct comprehensive investigations into diverse facets of lunar characteristics, **encompassing terrain analysis, mineralogical composition, surface chemistry, atmospheric attributes**, and crucially, the **exploration for water and potential resource reservoirs**.
  - The **propulsion module that carried the lander and rover configuration till 100 km lunar orbit** also has a **Spectro-polarimetry of Habitable Planet Earth (SHAPE) payload** to study the spectral and Polari metric measurements of Earth from the lunar orbit.

### What are ISRO's Future Expeditions?

- **Chandrayaan-4: Navigating the Path of Lunar Evolution**
  - Building upon past missions, **Chandrayaan-4 emerges as a potential candidate for a sample return mission**.
    - If successful, it could mark the next logical step after Chandrayaan-2 and 3, offering the capability to retrieve lunar surface samples.
  - The mission holds promise for advancing our understanding of the Moon's composition and history.
- **LUPEX: Lunar Polar Exploration (LUPEX) mission**, a collaborative effort between **ISRO and JAXA (Japan)**, is poised to explore the **Moon's polar-regions**.





- It will be specifically designed to venture into **permanently shaded areas**.
- Investigating the presence of water and assessing the potential for a sustainable long-term station are among LUPEX's objectives.
- **Aditya-L1: Aditya L1** will be the first space based Indian mission to study the Sun.
  - The spacecraft shall be placed in a **halo orbit around the Lagrange point 1 (L1)** of the Sun-Earth system, which is about 1.5 million km from the Earth.
  - Observing the sun's **corona, emissions, solar winds, flares, and coronal mass ejections** are the primary focus areas of **Aditya-L1**.
- **XPOsat (X-ray Polarimeter Satellite):** It is India's **first dedicated polarimetry mission to study various dynamics of bright astronomical X-ray** sources in extreme conditions.
  - The spacecraft will carry two scientific payloads in a low earth orbit.
- **NISAR: NASA-ISRO SAR (NISAR)** is a **Low Earth Orbit (LEO)** observatory being jointly developed by NASA and ISRO.
  - NISAR will **map the entire globe in 12 days** and provide spatially and temporally consistent data for understanding **changes in Earth's ecosystems, ice mass, vegetation biomass, sea level rise, ground water and natural hazards** including earthquakes, tsunamis, volcanoes and landslides.
- **Gaganyaan:** Gaganyaan mission aims to send **humans to space and return them safely to Earth**. The mission will consist of **two unmanned flights and one manned flight, using the GSLV Mk III launch vehicle and a human-rated orbital module**.
  - The **manned flight will carry three astronauts, including a woman**, for up to seven days in low Earth orbit.
- **Shukrayaan 1:** It is a planned mission to send an **orbiter to Venus**, the second planet from the Sun. It is expected to **study Venus's geological and volcanic activity**, emissions on the ground, wind speed, cloud cover, and other planetary characteristics.

## 11. Bharat New Car Assessment Programme

### Why in News?

The **Ministry of Road Transport and Highways**, Government of India, has introduced the **Bharat New Car Assessment Programme (Bharat NCAP)**.

- This indigenous star-rating system aims to **evaluate the safety of vehicles in the event of a collision**, empowering consumers to make informed decisions while purchasing cars.
- This comprehensive program is set to come into effect from **October 1, 2023**, and will play a pivotal role in curbing the alarming number of road fatalities in India.

### What is Bharat NCAP?

- **About:** Under the Bharat NCAP initiative, vehicles, particularly **passenger cars**, will be **subjected to rigorous crash testing procedures**, and based on their performance as per protocols laid down in the soon-to-be-published Automotive Industry Standard 197, they will be assigned a safety rating ranging from one to five stars.
  - The programme is applicable to passenger vehicles with **not more than eight seats** in addition to the driver's seat with gross vehicle weight not exceeding **3,500 kgs**.
  - The test procedure involves **Frontal Offset Test, Side Impact Test and Pole-Side Impact Test**.
    - This rating will provide consumers with a clear indication of a vehicle's safety standards in the event of a collision.
  - Notably, **Bharat NCAP is voluntary**, encouraging manufacturers to nominate their vehicles for testing, thereby driving the production of safer cars in the Indian market.
- **Testing Parameters:** Bharat NCAP evaluates vehicles based on three crucial parameters:
  - **Adult Occupant Protection:** This parameter assesses the level of protection a vehicle offers to adult passengers in the event of a crash.
  - **Child Occupant Protection:** The safety of child occupants is equally vital. This parameter gauges a vehicle's effectiveness in safeguarding young passengers during collisions.

- **Safety Assist Technologies:** Modern vehicles are equipped with a range of safety assist technologies. This parameter examines the presence and effectiveness of these technologies in preventing accidents or minimizing their impact.
- **Mandatory and Recommended Testing:** While the Bharat NCAP is voluntary, certain scenarios can trigger mandatory testing:
  - **Base Model Testing:** The base model of a popular variant, with a minimum sale of 30,000 units, may be subjected to testing.
  - **Ministry Recommendations:** If recommended by the **Ministry of Road Transport and Highways** based on market feedback or public safety concerns, certain models might undergo testing.
- **Evolution and Alignment with Global Standards:** The Bharat NCAP draws inspiration from the **Global NCAP**, a project initiated by the **U.K.-based NGO Towards Zero Foundation**.
  - The Global NCAP acts as a collaborative platform for new car assessment programs worldwide including countries such as the U.S. which has the world's oldest crash testing regime since 1978. .
  - Over the years, India's testing protocols have evolved, with more than **50 crash test results published for the Indian market**.
    - Notably, Tata achieved India's first 5-star car rating in 2018.
- **Possible Outcomes:**
  - **Reduced Fatalities:** With India witnessing around **1.5 lakh road fatalities** annually, Bharat NCAP aims to reduce casualties by encouraging the **production of safer vehicles**.
  - **Healthcare and Insurance Relief:** Improved vehicle safety would lead to a reduction in the burden on **healthcare and insurance sectors**, resulting in positive societal and economic impacts.
  - **Manufacturer Reputation:** Manufacturers can enhance their brand reputation through consumer-centric practices, **fostering higher consumer loyalty**.
- **Challenges:**
  - **Diverse Road Conditions:** India's road infrastructure varies greatly, from **congested urban roads to poorly maintained rural highways**.
    - Different road conditions can impact the way vehicles behave during crashes, making it **challenging to design a one-size-fits-all safety assessment framework**.
  - **Affordability and Market Dynamics:** A substantial portion of the Indian population seeks **budget-friendly vehicles**, which might pose a challenge for manufacturers in implementing advanced safety features.
    - Striking a **balance between affordability and safety could be a complex task**, requiring innovative engineering solutions.
  - **Variety of Vehicles:** India's automotive market is diverse, featuring a wide range of vehicle types and sizes.
    - Designing crash tests that effectively evaluate safety across this diversity, from **compact cars to SUVs**, requires thorough consideration of different vehicle dynamics.
  - **Consumer and their Preferences:** While the Bharat NCAP aims to empower consumers, the **challenge lies in creating awareness about safety ratings and convincing buyers to prioritize safety over other features**.
    - Consumer preferences might still **lean towards design, features, and price**, limiting the immediate impact of safety ratings.

#### Way Forward

- **Collaborative Safety R&D Hubs:** There is a need to **establish safety research and development hubs** in collaboration with academic institutions and manufacturers.
  - These hubs can focus on addressing specific safety challenges unique to India, fostering innovation through joint research.
- **Road Safety Awareness through Art:** There is a need to collaborate with **local artists to create safety-themed public art installations near accident-prone areas** that can raise awareness about the importance of safe driving.
- **"Safety Score" Integration:** Insurance companies can **assign a safety score to each vehicle model based on its NCAP rating**.
  - This safety score can be **displayed prominently on advertisements and dealerships**, making safety a focal point of consumer decisions.

## 12. India's Interest Arctic Region and the Northern Sea Route

### Why in News?

Murmansk, popularly called the capital of the **Arctic Region** and the beginning point of the **Northern Sea Route (NSR)**, is witnessing the rising trend of **Indian involvement in Cargo traffic**.

- In the first seven months of 2023, India got a share of **35%** of eight million tonnes of cargo handled by the Murmansk port, which is about **2,000 km northwest of Moscow, Russia**.

### What is the Significance of the Arctic for India?

#### ■ Untapped Hydrocarbon Reserves:

- The region constitutes the **largest unexplored prospective area** for hydrocarbons remaining on the earth. It is estimated that the region may hold over 40% of the current global reserves of oil and gas.
- The region has rich deposits of coal, gypsum and diamonds and also substantial reserves of zinc, lead, placer gold and quartz.
  - The Arctic can therefore **potentially address India's energy security** needs and deficiency of strategic and rare earth minerals.
  - However, the government's Arctic Policy of 2022 mentions that the country's approach to economic development of the region is guided by **UN Sustainable Development Goals**.

#### ■ India's Historical Engagement:

- India's engagement with the Arctic dates back to the signing of the **Svalbard Treaty in 1920**.
- India has conducted various scientific studies and research in the region, focusing on **atmospheric, biological, marine, hydrological**, and glaciological studies.
- Initiatives like the Himadri research station, multi-sensor moored observatory, and northernmost atmospheric laboratory showcase India's commitment to Arctic research.
  - Becoming an observer-state of the Arctic Council in 2013 strengthened **India's Arctic presence**.

#### ■ Geographical Significance:

- The Arctic helps circulate the world's **ocean currents**, moving cold and warm water around the globe.
- Also, Arctic sea ice acts as a huge white reflector at the top of the planet, bouncing some of the sun's rays back into space, helping keep the Earth at an even temperature.

#### ■ Environmental Significance:

- The Arctic and the **Himalayas**, though geographically distant, are interconnected and share similar concerns.
- The Arctic meltdown is helping the **scientific community to better understand the glacial melt in the Himalayas**, which has often been referred to as the 'third pole' and has the largest freshwater reserves after the North and South poles.
- Therefore, the study of the Arctic is critical to Indian scientists. In line, India launched its first scientific expedition to the Arctic Ocean in 2007 and opened the **Himadri research base** in the Svalbard archipelago (Norway) and has been actively engaging in research there ever since.

### What is the North Sea Route (NSR)?

#### ■ About:

- The NSR, the **shortest shipping route for freight transportation between Europe and countries of the Asia-Pacific region**, straddles the **Four Seas (Barents, Kara, Laptev and East Siberian Sea)** of the **Arctic Ocean**.

- Running to 5,600 km, the Route begins at the boundary between the Barents and the Kara seas (**Kara Strait**) and ends in the **Bering Strait (Provideniya Bay)**.
- It offers potential distance savings of up to 50% compared to traditional routes through the Suez or Panama Canals.
  - The **2021 Suez Canal Blockage** heightened interest in the NSR as an alternative trade route.



#### ■ Russia's Role in NSR Development:

- The Arctic's icebound nature necessitates icebreaking assistance for safe navigation along the NSR. **Russia boasts the world's** only nuclear-powered icebreaker fleet, **ensuring year-round operation**. Rosatom, the NSR infrastructure operator, oversees this fleet.
- With Russia's ambitious plans to enhance the NSR's cargo traffic, its **nuclear icebreaker fleet remains central to the project**.

#### ■ Driving Factors for India's NSR Engagement:

- The increasing cargo traffic along the NSR, with a growth rate of **approximately 73% during 2018-2022**, aligns with India's expanding imports of **Russian Crude Oil and coal**.
- The NSR's potential as a transit route also suits India's trade-heavy economy.
- The **Chennai-Vladivostok Maritime Corridor (CVMC)** project offers a shorter and efficient trade route, further boosting **India's interest in the NSR**.
- Additionally, India seeks to balance **China and Russia's potential collective influence over the NSR**.

#### ■ Future Developments and Collaborations:

- Russia's NSR development plan aims for significant cargo traffic growth by 2035. The CVMC project, designed to link India and Russia via the NSR, holds promise for reducing transport times and enhancing trade efficiency.
- A forthcoming workshop between the two countries is expected to provide a platform for advancing the CVMC project.

#### Way Forward

- India's engagement in the Arctic region and its increasing participation in the NSR underscore its **strategic interests in economic security**, environmental sustainability, and trade efficiency.
- As the Arctic continues to experience transformations, India's role in the region is likely to evolve, shaping its economic and geopolitical interests on the global stage.

### 13. Concerns Over Consuming Ultra-Processed Food

#### Why in News?

Recently, a report released by **World Health Organization (WHO)** and the **Indian Council for Research on International Economic Relations** found that India's **Ultra-Processed Food Sector** grew at a Compound Annual Growth Rate (CAGR) of 13.37 % in retail sales value from 2011 to 2021.

#### What is Ultra Processed Food?

##### ■ About:

- Processed food usually has **salt, sugar and fat added** to it. Food is considered ultra-processed if **five or more ingredients have been added** to the original product.



- These other ingredients are usually **flavour and taste enhancers, emulsifiers and colours**, and all of them are meant to **improve shelf life and taste** or make the food convenient to eat.
  - For instance, **atta in raw form is unprocessed**. Dalia, with salt and sugar added, is processed food. If we make **cookies out of atta** and add a lot of other things, **it is ultra-processed**.

#### ■ **Concerns:**

- Salt, sugar and fat are commonly added to **all processed food**. Such foods are not healthy to consume regularly or in large quantities.
- They can cause **obesity, hypertension, cardiac issues** and lifestyle diseases. The artificial chemicals added to ultra-processed food have a **negative impact on gut health**.
- Any imbalance in gut health can lead to a host of problems, from neurological **issues and stress to mood swings and obesity**.
- Most ultra-processed foods use taste enhancers, so people automatically get addicted to them.
  - On top of that, the natural food is broken down to such an extent that it gets absorbed very quickly by the body.
- The effect of high doses of simple sugar is that the body releases insulin, which makes you **feel hungry and want to eat more food**. That is why we say sugar is addictive.

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

##### ■ **Temporary Disruption and Rebounded:**

- The **Covid-19 Pandemic** caused a temporary disruption, causing the annual growth rate of the Indian ultra-processed food sector to plummet from 12.65% in 2019 to 5.50% in 2020.
  - However, the sector rebounded remarkably, with an 11.29% growth recorded in 2020-2021.

##### ■ **Dominant Categories and Sales Volume:**

- The most popular ultra-processed food categories include **chocolate and sugar confectionery**, salty snacks, beverages, ready-made and convenient foods, and breakfast cereals.
  - In terms of retail sales volume from 2011 to 2021, **beverages held the highest share**, followed by chocolate and sugar confectionery and ready-made and convenience foods.

##### ■ **Health Consciousness and Changing Consumption Patterns:**

- Health-conscious consumers shifted away from carbonated sugar-sweetened beverages to **fruit and vegetable juices** during the pandemic, potentially due to their perceived immune-boosting properties.
  - However, these alternative beverages may also contain high levels of free sugars.

#### What are the Recommendations?

##### ■ **Stricter Advertising and Marketing Regulations:**

- The report underscores the **necessity for stricter advertising and marketing regulations**, particularly concerning products like sweet biscuits that are popular among children.
  - The high salt content in salty snacks poses risks to consumers' health, making it crucial to address through regulations.

##### ■ **Clear Definition of High Fat Sugar Salt (HFSS) Foods:**

- The **Food Safety and Standards Authority of India (FSSAI)** should collaborate with stakeholders to establish a clear definition of High Fat Sugar Salt (HFSS) foods.
- Linking the **tax structure with the definition of HFSS foods** through the GST Council can **incentivize healthier and reformulated options by imposing higher taxes** on products exceeding recommended levels of fat, sugar, and salt.

##### ■ **Comprehensive National Nutrition Policy:**

- There is a need for a **robust national nutrition policy** addressing both under- and over-nutrition, with well-defined objectives and targets, after thorough consultations with stakeholders.
  - Existing policies like **Saksham Anganwadi and Poshan 2.0** lack comprehensive coverage of overnutrition and diet-related diseases.

##### ■ **Nutritional Transition and Long-Term Goals:**

- The report calls for a shift towards a healthier lifestyle, emphasizing the importance of reducing the consumption of ultra-processed foods and increasing the intake of whole grains.
- Low intake of whole grains has been identified as a **primary dietary risk factor for non-communicable diseases in India.**

**What are the Government Initiatives to Promote Healthy Lifestyle?**

- The National Food Security Act (NFSA), 2013.
- PM-POSHAN Scheme.
- Fit India Movement



## Prelims Booster – The Hindu & Indian Express

1st August

**1) Measures to improve the financial health of DISCOMs:** The Ministry of Power notified additional measures including:

- **Streamlining the process of accounting, reporting, billing and payment of subsidies** by States to Distribution Companies (DISCOMs).
- **Quarterly report shall be submitted by DISCOMs and the State Electricity Regulatory Commission (SERC)** shall examine the report.
- Aggregate Technical and Commercial (AT&C) loss reduction trajectory would be approved by State Commissions for tariff determination.
- ATC losses are a combination of energy loss and commercial loss.

**2) Atlantic Meridional Overturning Circulation (AMOC):** A recent study calculated that AMOC will collapse with **95% certainty between 2025 and 2095**.

- AMOC is a **system of ocean currents in the Atlantic Ocean that circulates heat from the tropics towards the North Pole** and disseminates cold, saline, dense waters towards the Tropics and even further south towards the South Pole.

**Consequences of a slowing AMOC:**

- **Sea level rise** across the U.S. East Coast.
- Would cool the northern hemisphere and decrease rainfall over Europe.
- Would cause **droughts**.
- Ocean currents are the **continuous, predictable, directional movement of seawater** driven by gravity, wind (**Coriolis Effect**), and water density.

**3) Cryptobiosis:** Scientists brought microscopic worms back to life after they were frozen in the Siberian permafrost for 46,000 years by entering into a state called cryptobiosis.

**About Cryptobiosis**

- Cryptobiosis is the **state of an organism when it shows no visible signs of life** and when its metabolic activity becomes hardly measurable, or comes reversibly to a standstill.

- In this state, **organisms can survive the complete absence of water and oxygen** and withstand other extreme conditions.

- Since metabolism is a defining characteristic of life, **cryptobiosis can be termed as a temporary death of an organism**.

**4) cell-free DNA (cfDNA):** CfDNA refers to small fragments of nucleic acids that are released from cells and found outside the cell in body fluids such as plasma, urine, and cerebrospinal fluid (CSF).

- cfDNA quantity in the blood increases under pathological conditions such as auto-immune diseases, cancer etc.

**Application of cfDNA:**

- **Detect genetic abnormalities** in foetuses,
- Early detection, diagnosis, and treatment of cancers,
- **Monitor immune response after organ transplantation** and can be used as a biomarker.

2nd August

**1) Regulation of online advertisement:** The Union Cabinet has assigned the Ministry of Information & Broadcasting (I&B) as the administrative authority for the regulation of online advertisements.

- It was done by amendment to **Allocation of Business (AoB) Rules, 1961**.
- The Ministry of I&B was already looking at online advertising, most notably through circulars in 2022 to clear ads from **"betting and gambling" firms from TV and OTT**.
- Prior to this, regulation of online gaming content and advertisements was primarily overseen by **MeitY and the Information Technology Act, of 2000**.

**2) Cinematograph (Amendment) Bill, 2023:** Parliament has passed Cinematograph (Amendment) Bill, 2023 which aims to tackle film piracy.

- It **seeks to amend the Cinematograph Act 1952** which was enacted to make provision for certification of cinematograph films.

- **Bill classifies films based on 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.
- Bill considers the **act of piracy as an offence legally** and will include even transmitting pirated content punishable.

**3) Infrastructure Investment Trusts (InvITs):** The Centre is working on a proposal to launch a fresh InvIT for national highways.

- InvITs are **stock-market traded investments** regulated by the **Securities and Exchange Board of India**.
- It allows investors to invest directly and get part ownership in infrastructure projects.
- Any dividend or interest income that one can get from an InvIT is **completely taxable as per their Income Tax Slab rate**.
- InvITs are recognized as borrowers under the '**Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002**'.

**4) Gross Fixed Capital Formation (GFCF):** GFCF in the Indian economy has increased from Rs. 32.78 lakh crore (constant 2011-12 prices) in 2014-15 to Rs. 54.35 lakh crore in 2022-23 (Provisional Estimates).

- GFCF is the **estimate of net capital expenditure** (acquisitions less the proceeds from disposals) on fixed assets by both the **public and private sectors**.
- Fixed assets are purchased assets used in production processes for more than one year.
- Generally, **the higher the capital formation of an economy, the faster an economy can grow its aggregate income**.

### 3<sup>rd</sup> August

**1) Rohini Commission:** Rohini Commission has submitted its report on the sub-categorisation of OBCs.

- The government had constituted the commission in **2017 under Article 340**.
- Article 340 empowers the **President to appoint a Commission to investigate conditions of socially and educationally backward classes**.

#### Objective of Commission

- Examine the extent of **inequitable distribution of benefits of reservation** (i.e. 27% reservation in jobs

and education) among castes or communities with reference to the central OBC list.

**2) National Investigation Agency (NIA):** NIA conducted searches at various locations to locate those involved in the attack on the **High Commission of India in London**.

- **NIA was formed under the NIA Act 2008**, in the aftermath of the **26/11 attacks**.
- It is a **federal counter-terror agency** that can take **suo-motu cognizance of terrorist activity** in any part of India.
- **NIA (Amendment) Act, 2019 empowered NIA to investigate scheduled offences committed outside India**, subject to **international treaties and domestic laws of other countries**.
- Act 2019 also empowered the centre to designate sessions court as a **special court for NIA trials**.

**3) Nyaya Bandhu Program:** Nyaya Bandhu Mobile Application has been developed and onboarded on the UMANG platform.

- Nyaya Bandhu is a **pro bono legal service scheme that provides voluntary legal advice** to individuals/organizations that are unable to afford/access legal aid.
- It is being implemented by the **Department of Justice, Ministry of Law & Justice**.
- As per the Legal Service Authority Act 1987, **marginalized and disadvantaged including SC, ST, women, children, PwDs, etc., can get free legal aid under the program**.
- Article 39A (DPSP) obligates the **state to provide free legal aid to the needy**.

**4) Account Aggregators (AA):** SEBI has released a **consultation paper on AA to curb the misuse of financial information** in fraud and improve user safeguards.

- AA is an **RBI-regulated entity** (with an NBFC-AA license) that helps an **individual to secure, digitally access and share information** from one financial institution to another.
- In AA, data cannot be shared without the consent of the individual.
- **AA system can make lending and wealth management a lot faster and cheaper**.
- Registering with an AA is **fully voluntary for consumers**.



#### 4<sup>th</sup> August

**1) G20 EMPOWERTech-Equity Platform:** The platform was launched by the **G20 Alliance** for the **Empowerment and Progression of Women's Economic Representation (G20 EMPOWER)**.

- It was developed with the support of the **Ministry of Women and Child Development** and aims to **bridge the gender digital divide**.
- It offers **women self-learning course modules** for digital skilling including **Financial Literacy**.
- **The platform is open to women and girls** from across G20 nations.
- It is **available in 120 plus languages** and is also accessible to people **with Dyslexia, ADHD, and is color-blindness-friendly**

**2) Vivad se Vishwas (VsV) II:** Launched by: Ministry of Finance.

- **About:** One-time settlement scheme for **pending contractual disputes with government/government undertaking**.
- **Applicability:** Court award (passed up to 30.04.2023) and Arbitral orders (passed upto 31.01.2023).
- **Settlement amount offered: upto**
  - 85% of the net amount awarded by the court
  - 65% of the net amount awarded in arbitral.
- **Implemented through:** Government e-Marketplace.
- **Background:** The VsV scheme was announced in the **Union Budget 2020-21** to reduce litigations in the direct tax payments.
- **VsV I was launched to provide relief to MSMEs during the COVID-19 period.**

**3) Participatory notes (P-notes):** P-note investments touched a 5-year high of Rs 1.13 trn at June-end in the country.

- P-notes are **offshore derivative instruments with Indian shares as the underlying assets**.
- They are issued **by registered foreign portfolio investors (FPIs) to overseas investors** who wish to invest in the Indian stock market without directly registering themselves with SEBI.
- The anonymity provided by the P-Notes makes it **lucrative for entities that try to use this route to round trip funds**.

**4) Sahakar-22:** National Cooperative Development Corporation (NCDC) launched **Sahakar-22 during FY 2017-18 to achieve rural and farm prosperity through Cooperatives by 2022**.

- NCDC is a statutory body under the **administrative control of the Ministry of Cooperation**.

**It included:**

- **FOCUS 222:** NCDC's focused assistance for Cooperatives in **222 Districts** (including 117 Aspirational Districts);
- **PACS HUB:** Transformation of PACS and other Coops as **Apna Kisan Resource Centers**;
- **AENEC:** Act East and North East Cooperatives;
- **CEMtC:** Centres of Excellence to Market through Cooperatives;
- **SAHAKAR PRAGYA** – Capacity Development through Laxmanrao Inamdar National Academy for Cooperative Research Development (LINAC).

#### 5<sup>th</sup> August

**1) Rajya Sabha passed Advocates (Amendment) Bill, 2023:** The bill seeks to make the **act of 'Tout' punishable and repeal certain provisions of the Legal Practitioners Act, 1879** which have become obsolete.

**Provisions**

- Bill provides that **every high court and district judge can frame and publish lists of touts**.
- Such persons named in the list of touts will be excluded from entering the court premises.
- **Tout refers to a person who either proposes to procure or procures the employment of a legal practitioner in return for any payment.**

**2) Cabinet Secretary (CS):** The Cabinet Secretary was granted an extension for another year.

**About CS**

- Appointed by the **Appointments Committee of the Cabinet (ACC)** on seniority-cum-merit basis;
- CS is responsible for the **administration of the GoI (Allocation of Business) Rules, 1961 and GoI (Transaction of Business) Rules, 1961**;
- CS is also the **head of the Civil Services Board (CSB)**.

**Issues with the office of CS**

- Short tenure.

- No authority over working departments, as CS is regarded as *primus inter pares* among secretaries of the union government.

**3) Morgan Stanley (Brokerage firm) Upgrades India's Ratings:** It has upgraded India's markets to overweight from equal weight.

- An overweight rating means that **the firm expects India's economy to perform better in the future.**
- **It acknowledges reforms, macro stability, and strong capex** and added that India's economy is on track to achieve the GDP forecast of 6.2%.
- **Back in 2013, it identified India as one of the "Fragile Five"** which termed India as risky for foreign investments.

**4) Yellow-bellied Sea snake (Pelamis Platurus):** Recently Yellow-bellied Sea snake, a highly venomous species of snake was seen on the **coast of the Bay of Bengal, which is usually found in the Arabian Sea.**

- **Habitat distribution:** tropical parts of the Pacific and Indian Oceans.

**Features:**

- It has a **distinctive bi-colour pattern** with a yellow underbelly and brown back with a flattened yellow tail with large black spots
- It can swim by the **lateral undulation of the body** and can move both forward and backwards.

**7<sup>th</sup> August**

**1) Committee of Parliament on Official Language:** It came into existence in **1976 as a result of arrangements made in the Official Language Act, 1963.**

- **Article 344(4)** provides for the formation of such committee.
- **Mandate:** To **review progress made in the use of Hindi for official purposes of the Union** and to submit a report to the President while making recommendations on it.
- **Composition:** 30 members (20 from Lok Sabha and 10 from Rajya Sabha).
- **Chairman:** Union Home Minister.

**2) Virtual Courts:** It has been introduced under the eCourts project to deal with **petty traffic offence cases and offences where summons can be issued under Section 206 of CrPC 1973.**

- The **establishment of Virtual Courts falls within the domain of the judiciary** and respective State Governments.
- It is **aimed at eliminating the presence of litigants or lawyers** in the court and for adjudication of cases on a virtual platform.
- Administered by a Judge whose jurisdiction may extend to the entire State and function 24/7.

**3) Bhu-Vision (Krishi-RASTAA) platform:** It is an **Internet of Things (IoT) based automated soil testing and agronomy advisory platform, which can conduct 12 key soil parameter tests (like pH value, electrical conductivity etc.).**

- It can immediately send the summary of results in a **soil health card to mobile devices and will help to quickly identify the deficiencies.**
- **Developed by:** ICAR-IIRR (Indian Council of Agricultural Research – Indian Institute of Rice Research), Hyderabad and **KrishiTantra** (an Agri-tech start-up).

**4) Digital Health Incentives Scheme (DHIS):** The National Health Authority (NHA) announced the extension of its **DHIS under the Ayushman Bharat Digital Mission (ABDM) till 31<sup>st</sup> December 2023.**

- NHA is an **attached office of the Ministry of Health & Family Welfare.**
- Under DHIS, **incentives are provided to hospitals and diagnostic labs and providers of digital health solutions** for adopting and enabling transformative digitization under ABDM.
- They can earn **financial incentives of up to Rs. 4 crores based on the number of digital health records** created and linked to ABHA (Ayushman Bharat Health Account) numbers of patients.

**8<sup>th</sup> August**

**1) Central Registrar of Cooperative Societies (CRCSs):** The Union Ministry of Cooperation launched the digital portal of the CRCS.

- Portal aims to digitize various activities of CRCS like **registration, audit, election, vigilance, training, etc.**

**About CRCS:**

- It is a **statutory body under the Multi-State Cooperative Societies (MSCS) Act, 2002.**
- It is responsible for the **registration of MSCSs, amendment to by-laws of MSCSs, arbitration, etc.**

- Cooperative societies confined to one state only are governed by cooperative laws of respective state governments.

**2) Arash-Dorra Gas Field:** Iran objected to an agreement between Kuwait and Saudi Arabia to develop the Arash/Dorra Gas field.

- This offshore gas field, located in the Persian Gulf, is known as Arash in Iran and Dorra in Kuwait and Saudi Arabia.

**3) World Trade Statistical Review (WTSR) 2023:** WTO released the 2023 edition of WTSR that provides data on global trade in merchandise and commercial services.

**Key findings related to India.**

- **Ranked 18<sup>th</sup>** (China remained at the top) in the list of merchandise exporters in 2022.
- **Ranked 7<sup>th</sup> in the list of services exporters** with 4.4% of global trade share.
- **9<sup>th</sup> largest goods importer** with 2.8% of the global share.

**4) Digital India RISC-V Microprocessor (DIR-V) Program:** The union government launched the DIR-V program with the objective to enable the creation of next-generation microprocessors in India.

- It will help ensure partnership between startups, academia, and multinationals to make India a RISC-V Talent Hub and supplier of RISC-V system of chips.
- Reduced Instruction Set Computer – V (RISC-V).
- It is an **open-source instruction set architecture** used to develop custom processors for a variety of applications, from embedded designs to supercomputers.
- **Applications:** wearable appliances, smartphones, the Internet of Things (IoT), High-performance computing, data centres, etc.

**9<sup>th</sup> August**

**1) Government of National Capital Territory of Delhi (GNCTD) (Amendment) Bill, 2023:** Parliament has passed GNCTD (Amendment) Bill 2023.

**Key features:**

- **Establishes National Capital Civil Services Authority (NCCSA)**, which consists of the CM, Chief

Secretary of Delhi, and Principal Home Secretary of Delhi.

- **Empower Central Government to make rules in connection with the affairs of GNCTD** including the functions, terms and other conditions of service of officers and employees.

**2) North East Venture Fund (NEVF):** North Eastern Development Finance Corporation Ltd. (NEDFi) under the Ministry of Development of North Eastern Region (DoNER) has set up NEVF for North East Region (NER).

- It is the **only dedicated Venture Fund for NER** with an initial corpus of Rs. 100 crores. **A venture fund is money invested in startups or small businesses with high-growth potential.**
- It is **registered under SEBI Alternative Investment Funds (AIF) Regulations, 2012.**
- **Investment size:** Minimum Rs. 25.00 lakhs; Maximum Rs. 10.00 crore.
- The nature of financial instruments includes **Equity, Convertible preference shares, and Debentures.**

**3) Swathi Weapon Locating Radar Mountains (WLR-M):** The Indian Army has inducted Swathi WLR-M to locate hostile artillery and enhance combat potential.

- It is an **advanced electronically scanned phased array radar**, specifically designed for operations in mountainous and high-altitude areas.
- It was **developed by Bharat Electronics Limited (BEL) in Bengaluru.**
- Swathi radar also comes in a **WLR-Plains version.**
- WLR uses advanced signal processing techniques to **detect and track mortars, rocket launchers and fire trajectories for more accurate artillery strikes.**
- **Its hallmark is high mobility and swift deployment capabilities**, allowing it to adapt to changing operational requirements efficiently.

**4) New dinosaur species 'Tharosaurus Indicus':** It is a long-necked, plant-eating dicraeosaurid dinosaur found in Jaisalmer, Rajasthan by Indian Scientists.

- It is 167 million years old and belongs to a new species, unknown to scientists thus far.
- Theories so far have suggested that **the oldest dicraeosaurid was from China** (about 166-164 million years old).

- Also, fossils of dicraeosaurid dinosaurs have been found previously in North and South Americas, Africa and China.
- It is named after the 'Thar desert' of Rajasthan where it was found.

### 10<sup>th</sup> August

**1) Interpol Global Academy Network (IGAN):** CBI Academy becomes a member of IGAN.

- **Launched in 2019**, IGAN supports academic collaboration among law enforcement training institutions across the world.
- **International Criminal Police Organization (Interpol) is an inter-governmental organization that helps police in all member countries** to work together to make the world a safer place.
- **Members:** 195 (India has been a member since 1949).

**2) Compulsory Convertible Debentures (CCD):** Foreign investors from **Mauritius, Cyprus and Singapore** are issued notices for gains from investment in CCDs issued by Indian companies.

- CCDs are **debentures with an underlying characteristic of compulsory conversion** into equity after a certain period of time.
- **CCDs are a type of hybrid instrument**, i.e. it is neither considered a pure debt nor pure equity.
- **CCDs include a convertibility feature** which acts as an incentive for the investors over and above the interest income.

**3) Software as a Service (SaaS):** As per industry projections, SaaS in India is expected to reach **\$50 billion by 2030**.

- It is a **cloud-based software delivery model** in which the cloud provider develops and maintains cloud application software.
- **g., email services, office tools like MS Office 365, cloud-based data storage like Google Drive, etc.**
- Software is made available to consumers via the **Internet on a pay-as-you-go basis**.
- **Benefits:** reduced costs for customers, easy deployment, and scalability for businesses.

**4) Special skill initiative for North-East Region:** Recently, a special initiative of "Transforming

Lives – Building Futures: Skill and Entrepreneurship Development in North-East" was launched.

**It will include:**

- Skill training under the **PM Kaushal Vikas Yojana (PMKVY) and Jan Sikshan Sansthan (JSS)**
- Apprenticeship engagement;
- Quality Enhancement of ITIs;
- Strengthening of Polytechnics;
- Skill India International Centre to be set up to promote overseas job opportunities.

### 11<sup>th</sup> August

**1) Raisina Dialogue:** Raisina Dialogue is an annual conference on **geopolitics and geo-economics addressing issues facing the global community**.

- It takes its name from **Raisina Hill, the seat of the Indian government**.
- It has been **held annually in New Delhi since 2016 by the Observer Research Foundation (ORF)**, an independent think-tank, in collaboration with the Ministry of External Affairs.
- **8<sup>th</sup> Edition was held in March 2023** with the theme "**Provocation, Uncertainty, and Turbulence: Lighthouse in the Tempest**".

**2) Revised timeline for Initial Public Offering (IPO):** SEBI has halved the time for IPO listing of companies from **six days to three days. i.e. from T+6 to T+3**.

- IPO refers to the selling of securities to the public in the primary market.
- **It acts as the largest source of funds for the company**.
- It will **enhance the ease of doing business for issuers and provide investors with quicker access to capital and liquidity**.
- **The revised T+3 days' timeline will become mandatory from 1 December 2023 onwards**.

**3) CAG Report on Railway Finances 2023:**

**Key findings:**

- **High Operating Ratio (OR):** OR is 107% i.e., railways spent ₹107 to earn ₹100 during 2021-22 owing to higher appropriation to fund pensions.
- **Loss decreased:** However, entire profits from freight operations were used to **cross-subsidize passenger fares**.



- **Other:** Higher dependence on Budget Support and Extra Budgetary Resources, continuation of cash transactions, etc.
- **Recommendations:** Utilize funds judiciously, foster greater responsibility and accountability, etc.

**4) High Price Day Ahead Market and Surplus Power Portal (PUSHP portal):** The PUSHP portal was launched by the **Ministry of Power to ensure greater availability of power during peak demand season.**

- Power Distribution Companies (DISCOMS) will be able to indicate their surplus power in block times/days/months on the portal.
- Those DISCOMs who need power will be able to requisition the surplus power.
- This will **reduce the fixed cost burden on DISCOMs**, and enable the available generation capacity to be utilized.

**12<sup>th</sup> August**

**1) Post Office Bill, 2023 introduced in Rajya Sabha:** The Bill seeks to repeal the Indian Post Office Act, of 1898.

**Provisions of the Bill:**

- The Post Office will have the **exclusive privilege of issuing postage stamps.**
- Central Government will have the power to give effect to the arrangements made with any foreign country.
- Central Government may, by notification, empower any officer to intercept or detain any item for the security of the State.

**2) No-confidence motion:** A no-confidence motion is a **parliamentary process** that signifies that the **present government is no longer deemed fit to hold positions of responsibility.**

- First, no confidence was moved during the **third Lok Sabha in 1963** against the government.
- No prior reason needs to be stated for its adoption, and if passed, the government must resign.
- **A no-confidence motion can only be moved in the Lok Sabha.**
- It is not specifically mentioned in the Constitution and it can be admitted when **a minimum of 50 members support the motion in the House.**

**3) Monetary Policy Committee (MPC):** Highlights of recent MPC.

- **The repo rate was left unchanged at 6.50%** for the third consecutive time.
- FY24 real GDP growth projection is unchanged at 6.5%.
- The existing cash reserve ratio remains unchanged at 4.5%.
- Imposes an incremental cash reserve ratio (ICRR) of 10% on an increase in deposits to absorb liquidity.

**About MPC.**

- **MPC is a statutory body constituted under the Reserve Bank of India Act, 1934 (Amendment).**
- **Composition:** MPC is a 6-member body, 3 Members from the RBI and the other 3 Members appointed by the Central Government.
- **The decision is taken based on voting.**

**4) Deflation:** China slips into deflation as post-Covid recovery weakens.

- **Deflation is a general decline in prices for goods and services**, typically associated with a **contraction in the supply of money** and credit in the economy.

**14<sup>th</sup> August**

**1) Adjourned sine die:** Both Houses of Parliament adjourned sine die.

- Adjournment sine die means **terminating a sitting of Parliament for an indefinite period.**
- Here, the House is adjourned without naming a day for reassembly.
- The power of adjournment sine die **lies with the Presiding Officer of the House.**
- The Presiding Officer can also call a sitting of the House any time after the House has been adjourned sine die.

**2) Amendment to CGST and IGST:** Both houses of the Parliament **passed two bills to amend the CGST (Central Goods & Services Tax) and IGST (Integrated Goods & Services Tax) Acts.**

- It will implement the **GST Council's recommendation for 28% GST on online gaming, casinos, and horse racing.**

- It will be **applied on the initial amount** paid upon entry, and not on the total value of each bet placed.
- **Covers both games based on both skill and chance.**

**3) Consumer Welfare (Corpus) Fund (CWF):** Consumer Welfare Guidelines have been amended to include **reimbursement of legal expenses incurred by a complainant, after its final adjudication.**

- The prescribed amount shall be paid from the **interest accrued on the Consumer Welfare (Corpus) Fund (CWF).**
- CWF aims to promote, protect and advocate the welfare of consumers in India, **create consumer awareness and strengthen consumer movement in the country.**
- It has **been established at the State level**, through co-contribution with the **Department of Consumer Affairs, under the Central Goods and Services Act, 2017.**

**4) Pink Bollworm (PBW):** Scientific name: *Pectinophora gossypiella*.

- **Impact:** Adults lay eggs on cotton bolls; once hatched, the larvae eat the seeds and damage the fibres of the cotton.
- **Distribution:** It is now recorded in nearly all the cotton-growing countries of the world.

#### 15<sup>th</sup> August

**1) Remittances to India by NRIs:** As per the latest data from the Ministry of Finance, remittances to India by NRIs grew by 26% in FY23.

- India continues to be the top recipient of remittances globally for the last several years.
- Remittances **usually refer to payments made from one person to another person, with both individuals located in different countries.**
- Top sources of inward remittances to India: **US, UAE, UK, Singapore, and Saudi Arabia.**
- **Significance:**
  - Major boost to the current account.
  - More stable and tend to be counter-cyclical to counter the financial crisis

**2) National Apprenticeship Promotion Scheme (NAPS):** The Ministry of Education (MoE) and Ministry of Skill Development & Entrepreneurship (MoSDE) launched Direct Benefit Transfer (DBT) in NAPS.

- **NAPS was launched in 2016 (MoSDE) to promote Apprenticeship in the country** by providing financial incentives, technology and advocacy support.
- **The components of NAPS are:**
  - 25% of the prescribed stipend (up to Rs. 1500/- pm) per apprentice is reimbursed to establishments (especially MSMEs).
  - Sharing of basic training costs up to Rs. 7,500 per apprentice.
- **Note:** National Apprenticeship Training Scheme NATS is implemented by MoE.

**3) National Syllabus and Teaching Learning Material Committee (NSTC):** NCERT has established a 19-member NSTC to shape the curriculum and educational materials for students in grades 3<sup>rd</sup> to 12<sup>th</sup>.

- **About NSTC**
  - It is tasked to **ensure alignment of the school syllabus, textbooks, teaching, and learning materials with the National Curriculum Framework (NCF).**
  - It will be assisted by **'Curricular Area Groups' (CAGs)** consisting of subject experts to develop textbooks
- **Earlier NCF for School Education, 2023, recommended major restructuring of school education viz.**
  - board examination twice a year, semester system for class 12,
  - freedom for students to choose interdisciplinary subjects.

**4) Metagenome sequencing:** Metagenomic sequencing is a **method of analyzing the genetic material of microbial communities directly from environmental or clinical samples.**

#### Use:

1. **It can reveal microorganisms' diversity, interactions,** and functions in their original habitats.
2. Help **detect pathogens** and monitor viral outbreaks.
3. Assist in **ruling out viral infections** in some individuals and link their symptoms to pesticide poisoning instead.

#### 17<sup>th</sup> August

**1) Self-Regulatory Mechanism for Media Broadcasters:** The Supreme Court (SC) has emphasized on the necessity of an enhanced self-regulatory mechanism for media broadcasters.

- The existing self-regulatory mechanism is represented by the **News Broadcasters and Digital Association (NBDA)**.
- **NBDA represents 27 news and current affairs broadcasters** and issues broadcasting and programming standards in the form of guidelines.
- Its chairperson is a **former Supreme Court Judge**.
- **NBDA administers the 'Codes of Ethics & Broadcasting Standards'** for its member broadcasters and can impose a penalty of ₹1 lakh in case of violation.
- This penalty has been deemed insufficient by SC

**2) First Mile Connectivity (FMC):** FMC is a part of the proposed **National Coal Logistic Plan, which focuses on eliminating road transportation of coal in mining areas** by using conveyors or roads to the nearest railway siding.

- **National Coal Logistics Policy:** aims to identify, evaluate & eliminate gaps in existing coal evacuation infrastructure & **environment-friendly transportation of coal from the mine to the end-use plant.**
- **Impact of FMC**
  - **Reduced Carbon Footprint** by optimizing transport systems and reducing reliance on fossil fuel-powered vehicles.
  - Preserving Natural Environment.
  - Improving Public Health through **Reduced air pollution and traffic congestion.**

**3) Deemed Forest:** After the passage of the Forest (Conservation) Amendment Bill, 2023, the **Odisha government has underlined that 'deemed forests' as a category would cease to exist.**

- Deemed forest is forest land that **hasn't been recorded as such by the Centre or States.**
- The concept of deemed forests has not been clearly defined in any law including the Forest Conservation Act, 1980.
- **In the 1996 Godavarman verdict, the Supreme Court broadened the definition of forest** to include not just land classified as forest under forest or revenue departments, but also those that are **forests according to the dictionary definition of a forest.**
- Later, the Supreme Court asked States to form committees to identify such **non-notified and unrecorded forests and classify them as 'Deemed Forests'.**

**4) Vishwakarma Yojana:** Prime Minister on the **77<sup>th</sup> Independence Day** announces Vishwakarma Yojana to benefit individuals skilled in traditional craftsmanship.

- **Targeted beneficiaries:** Weavers, goldsmiths, blacksmiths, laundry workers, barbers, etc. Details of the Yojana will be provided by the government in the coming days.

### 18<sup>th</sup> August

**1) PM e Bus Sewa Scheme:** The Cabinet has approved the "PM-eBus Sewa" scheme.

- **Two components:**
  - **Augmenting the City bus services:** 10,000 e-buses to be introduced on the **Public Private Partnership (PPP) model.**
  - **Green Urban Mobility Initiatives:** Envisages green initiatives like **bus priority, infrastructure, multimodal interchange facilities, etc.**
- **Coverage:** Cities with a population of Three lakh and above as per the census 2011.
- Priority will be given to cities having no organised bus service.
- **Duration:** It will **support bus operations for 10 years**

**2) PM Gati Shakti National Master Plan:** The Cabinet approved **7 multi-tracking railway projects under PM Gati Sakti.**

- PM Gati Sakti is a **national master plan for multi-modal connectivity.**
- It **aims to provide integrated and seamless connectivity for the movement of people and goods** improve logistics efficiency and address critical infrastructure gaps.
- It **facilitates integrated and holistic planning** across concerned Ministries/Departments.

**3) Aatmanirbhar Bharat Rojgar Yojana (ABRY):** The government has fallen short of its target for employment generation in the formal sector under ABRY.

- **ABRY has been launched in 2020 by the Ministry of Labour & Employment** as part of Atmanirbhar Bharat package 3.0.
- It **aims to incentivize employers for the creation of new employment** and restoration of loss of employment during the Covid-19 pandemic.
- It **intends to reduce the financial burden of employers** and encourages them to hire more workers.
- It was being implemented through the **Employees' Provident Fund Organisation (EPFO).**

**4) Indian Pharmacopoeia Commission (IPC):** The MoU between India and Suriname in the field of Medical

Products Regulation includes **recognition of Indian Pharmacopoeia (IP)**.

- IP prescribes **standards for identity, purity and strength of drugs** essentially required from a health care perspective.
- It is **published and updated by IPC**, an Autonomous Institution of the Ministry of Health and Family Welfare.
- **IPC sets standards for drugs in the country.**
- It also **provides IP Reference Substances (IPRS)** which act as a **fingerprint for identification of an article under test.**

### 19<sup>th</sup> August

#### 1) Drones to monitor MGNREGA scheme worksites:

The Union Ministry of Rural Development is pressing drones into service to monitor both the progress and quality of assets produced under the Rural Employment Guarantee Act (MGNREGA) scheme.

- As per Standard operating procedure, **drones will be used for four types of monitoring: Surveying the ongoing works, inspecting the completed works, impact assessment, and special inspection in case of complaints.**
- **Benefits:** Curb corruption by real-time monitoring and garnering evidence.
- Earlier **National Mobile Monitoring System (NMMS) App was introduced for mandatory attendance capture at all worksites using the NMMS app**

#### 2) UDGAM (Unclaimed Deposits – Gateway to Access Information) Portal: RBI has launched a **centralized web portal – UDGAM** (Unclaimed Deposits – Gateway to Access Information).

- **Objective:** It will enable bank customers to find their unclaimed deposits across multiple banks in one place.
- **Unclaimed deposits:** Balances in savings/current accounts that are not operated for 10 years, or term deposits not claimed within 10 years from the date of maturity.
- It will **promote financial inclusivity**, using digital advances to deliver banking services to its customers efficiently.

#### 3) Mobile User Protection reforms: The Ministry of Communications **introduced two Mobile User Protection reforms which will supplement the Sanchar Saathi portal.**

- **Reforms:**
  - **Mandatory registration of franchisees, Agents, and Distributors (PoS)** by Licensees, thus eliminating the rogue PoS who by fraudulent

practices issue SIMs to anti-social/anti-national elements

- **KYC Reforms-** demographic details will mandatorily be captured by **scanning the QR code of printed Aadhaar.**
- **Sanchar Saathi's portal empowers mobile subscribers to:** Find out mobile connections registered in their name, report stolen/lost mobile handsets & block them etc.

#### 4) FloodWatch Mobile Application: Central Water Commission (CWC) has launched the mobile application, FloodWatch.

- **FloodWatch provides real-time flood situations in the country and flood forecasts to the public.**
- It will provide a State-wise/Basin-wise Flood Forecast.
- FloodWatch app utilises advanced technologies such as **satellite data analysis, mathematical modelling, and real-time monitoring** to deliver accurate and timely flood forecasts.

### 21<sup>st</sup> August

#### 1) The Spirit of Camp David: Leaders of the **United States, Japan, and South Korea issued a joint statement titled 'The Spirit of Camp David'.**

- A summit was held to **project unity in the face of China's growing power** and nuclear threats from North Korea.
- **Key highlights of the joint statement**
  - Consult promptly with each other during crises.
  - Hold annual **multi-domain trilateral exercise**
  - Develop the **Partnership for Resilient and Inclusive Supply-chain Enhancement (RISE)**
  - Hold trilateral summits annually

#### 2) Infrastructure Debt Fund - Non-Banking Financial Company (IDF – NBFC): RBI revised regulatory framework for IDF-NBFCs.

- **IDF-NBFCs will not need sponsors but will be required to have**
  - net-owned funds of at least ₹300 crore;
  - capital-to-risk weighted assets ratio (CRAR) of 15%.
- They will be allowed to raise funds through **rupee or dollar-denominated bonds with at least a five-year maturity**
- **IDF-NBFC is a non-deposit-taking NBFC permitted to:**
  - Refinance infrastructure projects that have **completed at least one year of commercial operations**
  - Finance Toll-Operate-Transfer (TOT) projects as direct lender



**3) Debt-for-nature swap:** Gabon has recently announced a \$500 million debt-for-nature swap deal for marine conservation.

- It is an **agreement where a creditor forgoes a portion of the debtor's foreign debt or provides debt relief** in exchange for the debtor's commitment to invest in a specific environmental project.
- It can be **bilateral or multi-party**.
- **Significance:** Mainstreaming the environment in government policies, better adaptation and mitigation to climate change, Free up fiscal resources for government.

**4) Deboosting:** The Lander module of Chandrayaan 3 has successfully conducted **its first deboost manoeuvre**.

- Deboosting the lander module means the **process of slowing down of lander to an orbit** where **Perilune** (orbit's closest point to the Moon) and **Apolune** (farthest point from the Moon) are only a few kilometres away from the spacecraft.
- It involves reducing the spacecraft's thrust in order to achieve a stable orbit.
- Deboosting **will help in the soft landing on the Moon**.

## 22<sup>nd</sup> August

**1) RBI study on investment attractiveness:** The RBI study gives an indication of how attractive states are among investors.

- **UP, Gujarat, Odisha, Maharashtra and Karnataka** accounted for 57.2 per cent of total bank-assisted investment proposals made during 2022-23.
- **Kerala, Goa and Assam** got the lowest number of new investments.
- Overall investment plans shot up by 79.50 per cent, the highest since 2014-15.
- **Investment in green field projects accounted for the largest share**.

**2) Public Tech Platform for Frictionless Credit:** RBI announced a pilot programme for 'Public Tech Platform for Frictionless Credit'.

- It would strive to **deliver frictionless credit by "facilitating seamless flow of required digital information to lenders"**.
- The platform will **simplify credit assessment by providing an end-to-end digital ecosystem**.
- Currently, the Data required for the credit appraisal rests with different entities like governments, and account aggregators.
  - This hinders the delivery of rule-based lending.

- Initial Focus is on **Kisan Credit Card loans, dairy loans, collateral-free MSME loans, and personal loans**.

**3) World's highest Motorable Road:** Border Roads Organisation has started construction of the **64-km long Likaru-Mig La-Fukche road in Eastern Ladakh's Demchok sector**.

- Once completed, it will be the **world's highest motorable road (19,400 ft height)**.
- It will **play a crucial role in accessing the LAC for the armed forces** to be deployed all along the Indus Valley in Fukche.
- Currently, **Umling La in Ladakh (19,024 ft height)** is the **highest motorable road in the world**.
- It **connects Chishumle to Demchok** and is right on the Line of Actual Control (LAC).

**4) Tactical Airborne Platform for Aerial Surveillance - Beyond Horizon-201 (TAPAS BH-201):** Defence Research and Development Organisation's TAPAS crashed in Karnataka.

- **TAPAS BH-201 (previously Rustom-II) is a Medium Altitude Long-Endurance (MALE) Unmanned Aerial Vehicle (UAV)**
- Can operate at 30000 ft altitude, endurance of 24 hours.
- Can carry payloads up to a maximum of 350 kgs.
- Has a **range of 250 km and is capable of day and night missions**.
- Can fly autonomously or via remote control.
- Can provide **Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance (ISTAR) services**.

## 23<sup>rd</sup> August

**1) Commonwealth Parliamentary Association (CPA):** Lok Sabha Speaker inaugurated the 9<sup>th</sup> India Region Conference of the CPA in Udaipur

- **Genesis:** Founded in 1911, as the **Empire Parliamentary Association and renamed as CPA in 1948**.
- **Objective:** The association is to **serve the Parliamentarians of the Commonwealth Countries** by providing machinery for regular consultation and exchange of ideas.
- **Members:** It has more than **180 Parliaments and Legislatures in 53 Commonwealth countries**.
- **9 regions of CPA:** Africa; Asia; Australia; British Islands and Mediterranean; Canada; Caribbean, Americas and Atlantic; India; Pacific; South-East Asia.

**2) Advisory Board on Banking and Financial Frauds (ABBFF):** Central Vigilance Commission (CVC) has reconstituted the ABBFF.

- It **conducts the first level examination of bank frauds** (of ₹3 crores or more) before references are made to investigative agencies such as the CBI.
- **It is empowered to examine the role of officials of**
  - public sector banks,
  - public sector insurance companies; and
  - public sector financial institutions
- It can also **periodically carry out fraud analysis in financial systems** and give inputs on policy formulation related to frauds by the RBI and CVC

**3) Adjusted Gross Revenue (AGR):** TRAI sought to reduce license fees as a percentage of AGR in its recommendations titled "**License Fee and Policy Matters of DTH Services**".

- In the case of DTH service, **AGR should mean total revenue as reflected in the audited accounts** from the operation of DTH, as reduced by
  - Subscription fee charges, sale of hardware, service entertainment tax.

**4) Special Assistance to States for Capital Investment scheme:** Under the scheme, the Centre has earmarked **Rs 80,000 crore as interest-free loans for states undertaking capital works in the current fiscal.**

- Under the scheme, **State Governments will get special assistance in the form of a 50-year interest-free loan** up to an overall sum of Rs. 1.3 lakh crore during the financial year 2023-24.
- Capital expenditure **refers to the outlay of government funds in the form of investments or development spending** towards the creation of assets for the long term.

## 24<sup>th</sup> August

**1) African Union:** AU has suspended Niger from all its activities due to a military coup

- **About:** AU is a **continental body consisting of 55 member states** (including Niger).
- **Genesis:** Established in **2002** as a successor to the Organisation of African Unity (OAU, 1963-1999).
- **Vision/Objective:** Integrated, Prosperous and Peaceful Africa, driven by its own citizens.
- **India's cooperation project in AU:** Pan-African e-Network Project, Indian Technical and Economic Cooperation (ITEC) Programme, etc

**2) Ultra-processed food:** A WHO study found a rapid rise in UPF sales in India in 10 years.

- **UPFs are a category of food products that have undergone extensive processing** and contain a

significant amount of additives (preservatives, artificial flavours, colours, etc.).

- Ex. Snacks, sodas, fast food items.

- **Effects of high intake of UPFs:** Leads to obesity, digestive problems, inhibits type 2 diabetes, cardiovascular issues etc.
- **Initiatives:** FSSAI has formed a committee to review and highlight new challenges in the area of nutraceuticals and UPF.

**3) India Post Payments Bank (IPPB):** IPPB was established in 2018 under the Ministry of Communication to use the vast network of India Post as a Payment bank to enhance penetration of banking services.

- Payments Bank can carry out most banking operations but can't advance loans or issue credit cards.
- **Government of India owns 100% equity in IPPB**

**4) Chabahar Port:** It is reported that India and Iran have agreed not to seek commercial foreign arbitration for disputes between users and operators at Chabahar Port.

- **Chabahar is India's first foreign port project.**
- It is located in **Iran's southeastern Sistan-Baluchestan province** on the Gulf of Oman.
- It has two ports -- **Shahid Kalantari and Shahid Beheshti.**
- It is **considered a gateway that would enable India to bypass Pakistan and access Afghanistan, and ultimately Central Asia.**
- With its strategic location near the Strait of Hormuz and the Indian Ocean, the port offers significant potential.

## 25<sup>th</sup> August

**1) Members of Parliament Local Area Development Scheme (MPLADS):** MPLADS, launched in 1993, enables MPs to suggest and execute developmental works of a capital nature based on local needs for the creation of durable assets.

- MPs receive Rs. 5 crore each year in two instalments of Rs. 2.5 crore each.
- MPs shall recommend at least 15% and 7.5% of MPLADS funds for areas inhabited by the S.C. population and S.T. population respectively.
- **Funds are non-lapsable.**
- District Authority coordination and supervision at the district level.
- The district authority must inspect at least 10% of all work under implementation every year.
- **The Ministry of Statistics and Program Implementation** is responsible for policy

formulation, and the release of funds under the scheme

**2) ASTRA missile:** Light Combat Aircraft Tejas, has successfully **test-fired the ASTRA missile**.

- It is a **Beyond Visual Range air-to-air missile, indigenously developed by DRDO**
- **Range:** 80-110 km for version Mk1 and 160 km for version Mk2.
- **Altitude:** up to 20 km.
- **Max Speed:** Mach 4.5

**3) Galaxy ESO 300-16:** Hubble Space Telescope (HST) captured an image of **the irregular galaxy ESO 300-16**.

- An irregular galaxy lacks the distinct spiral arms or elliptical shape of some galaxies. **It lies 28.7 million light-years from Earth in the constellation Eridanus.**
- It **resembles the shape of a cloud**, comprised of many tiny stars all clumped together.
- **HST, launched in 1990, is a collaboration between NASA and the European Space Agency.**
  - It observes the universe in visible, near-infrared light, and ultraviolet light.
  - It orbits above Earth's atmosphere, which gives it a better view of the universe than telescopes have at ground level.

**4) G20 welcomes global Initiatives to curtail AMR:** Global Antibiotic Research and Development Partnership (GARDP): **It is a non-profit organization created by WHO and others to tackle antibiotic resistance.**

- It accelerates the development and access of treatments for drug-resistant infections.
- **SECURE:** the first dedicated mechanism to expand access in LMICs to essential antibiotics which goes beyond access to single products.
- It is being **developed by the WHO and GARDP**
- **Combating Antibiotic-Resistant Bacteria (Carb-X):** A global non-profit partnership to accelerate antibacterial innovation.

## 26<sup>th</sup> August

**1) Gulf Cooperation Council (GCC):** GCC has proposed to restart **Free Trade Agreement talks with India**.

- Earlier in 2006 and 2008, both sides had negotiated a trade pact however it stopped later on.
- **GCC is a political and economic alliance of 6 countries in the Gulf region** – Saudi Arabia, UAE, Qatar, Kuwait, Oman, and Bahrain.
- **GCC was established in Riyadh, Saudi Arabia in 1981.**

- The official language is **Arabic**.
- **GCC is currently India's largest trading partner bloc.**

**2) Insurance Surety Bonds:** NHAH recently held discussions with stakeholders on insurance surety bonds for NHAH contracts.

- It is a **three-party contract** by which one party (the surety) guarantees the performance or obligations of a second party (the principal) to a third party (the obligee).
- It **acts as a security arrangement for infrastructure projects** and insulates the contractor as well as the principal.
- Insurance Surety Bonds (ISB), allowed by the **Insurance Regulatory and Development Authority in April 2022**, have been brought as a replacement for bank guarantees.

**3) Money Market:** A money market is a market for short-term (up to one year) funds and financial assets that are close substitutes for money.

### Instruments of Money Market:

- **Call money:** Funds are transacted on an overnight basis.
- **Notice money:** funds are transacted for a period **between 2 days and 14 days**.
- **Commercial Papers (CP):** Unsecured money market instruments in the form of promissory notes for short-term funding.
- **Certificate of Deposit (CD):** A negotiable money market instrument issued in **dematerialized form against funds deposited at a bank for a specified time period**.
- The minimum value of CP and CD must be 5 lakhs and 1 lakh respectively with maturity from at least 7 days, upto one year.

**4) "Mera Bill Mera Adhikaar" Scheme:** The Central Board of Indirect Taxes and Customs (CBIC) is launching the **Invoice Incentive Scheme "Mera Bill Mera Adhikaar" from 1<sup>st</sup> September 2023 on a pilot basis**

- **Objective:** to bring a **cultural and behavioural change in the general public** to 'Ask for a Bill' as their right and entitlement.
- Allows people to earn cash prizes from ₹10,000 to ₹1 crore on the upload of GST invoices.
- **All B2C (business-to-consumer) invoices issued by GST-registered suppliers to consumers will be eligible for the scheme.**
- Minimum value for invoices: Rs. 200

## 28<sup>th</sup> August



**1) Tele-Law 2.0:** Launched by Ministry of Law and Justice, Tele-Law- 2.0 integrates Tele-Law and Nyaya Bandhu App to ensure access to Justice.

- Tele-Law seeks to connect the beneficiary with the Lawyer via tele/conferencing facilities available at the Common Service Centers and through Tele-Law Citizens Mobile Application.
- Nyaya Bandhu (Pro Bono Legal Services) connects practising advocates, interested in volunteering their time and services with eligible marginalised beneficiaries.
- Lawyers of NALSA are onboarded to provide Tele-Law Services and Pro Bono Legal services at the district level

**2) 70 years of coup in Iran:** In 1953 US orchestrated coup toppled Iran's prime minister.

- The coup was driven by America's fears about a possible tilt toward the Soviet Union and the loss of Iranian crude oil.
- It is considered to be backed by the country's leading Shiite clergy and brought Shah Mohammad Reza Pahlavi to power.
- It also lit the fuse for the 1979 Islamic Revolution. The revolution forced Shah to flee Iran and Ayatollah Ruhollah Khomeini usher in the theocracy that still governs the country

**3) India Smart Cities Awards Contest (ISCAC) 2022:** ISCAC is organized under Smart Cities Mission by Ministry of Housing and Urban Affairs.

- ISCAC recognizes and reward cities, projects and innovative ideas that are promoting sustainable development across 100 smart cities, and stimulating inclusive, equitable, healthy and collaborative cities.
- ISCAC has witnessed three editions in 2018, 2019 and 2020.
- Top 3 Smart City: Indore, Surat and Agra
- Top 3 in State: Madhya Pradesh, Tamil Nadu, Rajasthan
- Top UT: Chandigarh

**4) Fleet Support Ships (FSS):** Ministry of Defence signed a contract with Hindustan Shipyard Limited for acquisition of five FSS for Indian Navy.

- FSS of 44,000 tonnes will be the first-of-its kind to be built in India by an Indian shipyard.
- FSS will be employed for replenishing ships at sea with fuel, water, ammunition and stores.
- Deployed for evacuation of people and Human Assistance and Disaster Relief (HADR) operations.

- **Significance:** Enhance strategic reach and mobility of fleet; Enhance blue water capability of Indian Navy; Generate Employment; boost goal of achieving self-reliance in defence manufacturing etc.

**29<sup>th</sup> August**

**1) Goldilocks Scenario:** A Goldilocks scenario in an economy refers to an ideal situation where there is a steady growth.

- Economic growth is neither too high (hot) to trigger inflation nor too low (cold) for a slowdown.
- Key feature under the Goldilocks scenario
  - Low rate of unemployment
  - Steady GDP growth rate
  - Relatively low retail inflation and interest rates
- The Goldilocks phase is usually temporary in nature and sets in typically after an adverse shock to the economy, during the recovery and growth period.

**2) Bilateral Investment Treaty (BIT):** BITs are reciprocal agreements between two countries to promote and protect foreign private investments in each other's territories.

- BITs establish minimum guarantees regarding the treatment of foreign investments, such as
  - National treatment (treating foreign investors at par with domestic companies).
  - Fair and equitable treatment (in accordance with international law).
- Till 2015, India had signed BITs with several countries based on the Indian Model BIT of 1993.
- India revised its Model BIT text in 2015 and since then has signed four agreements of which two are in force.

**3) Military Exercises:** AUSINDEX-23 is a biennial maritime exercise between the Indian Navy and the Royal Australian Navy.

- BRIGHT STAR-23 is a biennial multilateral tri-service exercise held in Egypt. For the first time, the Indian Air Force is participating in it.
  - Other participating countries include the US, Saudi Arabia, Greece, and Qatar

**4) IUCN's Integrated Tiger Habitat Conservation Programme (ITHCP) or Tiger program:** ITHCP has launched a Call for Concept Notes for Phase IV of the Program.

- Phase IV will expand its focus to include other Pantherine species, in particular leopards and clouded leopards.
- ITHCP, launched in 2014, is a strategic funding mechanism supported by the German Federal



### Ministry for Economic Cooperation and Development (BMZ).

- It is contributing to the **Global Tiger Recovery Programme, a global effort to double tiger numbers in the wild by 2022.**
- Additionally, MoEFCC cleared the **National Tiger Conservation Authority (NTCA)'s in-principle approval to declare Kumbhalgarh Wildlife Sanctuary (in Rajasthan) as a tiger reserve.**

### 30<sup>th</sup> August

**1) Article 35A:** Supreme Court observed that Article 35A denied fundamental rights to non-permanent residents of Jammu & Kashmir (J&K).

- **Article 35A** was introduced through the **Constitution (Application to Jammu and Kashmir) Order, 1954 issued by the President under Article 370.**
- It provides permanent residents of J&K with the **exclusive right to purchase land, seek State government employment,** and other benefits in education and health care.
- It had even provided immunity to these special privileges from judicial review.
- **Abolished through the Constitution (Application to Jammu and Kashmir) Order, 2019 which revoked Article 370**

**2) Zonal Council:** Zonal Councils are **statutory, deliberative, and advisory bodies set up under the States Re-organization Act, of 1956.**

- **Aim:** to promote interstate cooperation and coordination.
- **Chairperson:** Union Home Minister.
- 5 Zonal councils viz:
  - **Northern:** Haryana, Himachal Pradesh, Jammu Kashmir, Punjab, Rajasthan, Delhi, Chandigarh

### 31<sup>st</sup> August

#### 1) Social Stock Exchanges (SSEs):

SEBI has **proposed to reduce the threshold of the minimum issue size** for not-for-profit organizations (NPOs) to facilitate fund-raising.

- SSEs are **platforms regulated by SEBI** that allow NPOs to raise funds for their social initiatives.
- The idea of an SSE for the listing of social enterprises and voluntary organisations for raising capital as equity, debt or a mutual fund was mooted in the Union Budget 2019-20.
- Social enterprises include a **revenue-generating business whose primary objective is to achieve a social objective,** for example, providing healthcare or clean energy

- **Central:** Chhattisgarh, Uttarakhand, Uttar Pradesh, Madhya Pradesh
- **Eastern:** Bihar, Jharkhand, Orissa, Sikkim, West Bengal
- **Western:** Goa, Gujarat, Maharashtra, Daman & Diu and Dadra & Nagar Haveli.
- **Southern:** Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, and Puducherry

#### 3) Census:

- **Statutory Provision: Section 3 of the Census Act, of 1948, empowers "only the Central Government" to conduct a Census.**
- **Constitutional Mandate:** It is covered in the **Union List under Entry 69 in the Seventh Schedule.**
- **Conducting Authority:** Office of the Registrar General and Census Commissioner of India, under the Ministry of Home Affairs.
- **The last census was conducted in 2011.**
- The last caste census was conducted in the year 1931.

**4) National Strategy for Financial Education (NSFE) for 2020-25:** RBI is taking various initiatives towards fulfilling the objectives of NSFE.

- **NSFE for 2020-25 has been prepared by the National Centre for Financial Education (NCFE)** to enable people to develop knowledge, and skills needed to manage their money better.
- Objectives of NSFE are **financial literacy** concepts among the population, encouraging participation in financial markets, developing credit discipline, planning for old age and retirement etc.
- It focuses on the **5C approach of content, capacity, community, communication and collaboration.**

**2) Self-Respect Marriages:** Recently, the Supreme Court ruled that **lawyers can solemnise 'self-respect marriages' (suyamariyathai or seerthiruththa) between two consenting adults under Section 7-A of the Hindu Marriage Act (HMA) 1955.**

- Also, public declaration of such marriage is not necessary.
- **Section 7-A of HMA, added in 1967 and applicable only to Tamil Nadu,** deals with the special provision on "self-respect and secular marriages".
- Self-respect marriage allows **partners to solemnize their marriage without a priest** and through a joint declaration in the presence of friends, relatives or other persons.

**3) Pacific Decadal Oscillation (PDO):** According to studies, PDO could make cyclones near the Equator more frequent in future.

- PDO is a **sea surface temperature (SST) climate cycle describing sea surface temperature anomalies over the Northeastern Pacific Ocean.**
- PDO is a **naturally occurring phenomenon that shifts between warm and cool phases**, with each phase lasting around 20-30 years.
- It is often described as a **long-lived El Niño-like pattern of Pacific climate variability.**
- **Impact on climate:** Change in the location of the cold and warm water masses alters the path of the jet stream.

**4) Global Research Alliance on Agricultural Greenhouse Gases (GRA):** The New Zealand Minister recently invited India to join the GRA for sharing researches on mitigation of climate change impacts on agriculture.

- **GRA was launched in 2009 to promote international cooperation and investment in research** to mitigate the effect of agricultural greenhouse gas emissions.
- It **aims to deepen and broaden mitigation research efforts** across the agricultural sub-sectors of paddy rice, cropping, and livestock.
- **It currently has 67 member countries** (excluding India).



## Prelims Booster – Press Information Bureau (PIB)

1<sup>st</sup> August

**1) Ministerial Conference on Women's Empowerment:** The Ministerial Conference on Women's Empowerment under the G20 Indian Presidency, chaired by **Union Minister of Women & Child Development** is set to take place in **Gandhinagar, Gujarat**. The Conference while focusing on **women-led development will be an opportunity for accelerating achievement towards Gender Equality and Women's Empowerment and achieving SDG: Goal 5**. Gandhinagar is an exquisite example of a vibrant fusion of centuries-old architecture with modernity and cultural vibrancy and is known for its historical legacy, artefacts, handicrafts, arts, festivals, grand temples and museums and a rich civilization that flourished on the western bank of the river Sabarmati.

**2) PM YASASVI Scheme:** Ministry of Social Justice and Empowerment offer scholarships to meritorious students under the PM YASASVI scheme. **This programme is open to deserving students from classes 9 through 12 who belong to the underprivileged group.** To be eligible for the PM YASASVI programme, a student must fall under one of the following categories: **Other Backward Class (OBC), De-Notified, Nomadic and Semi-Nomadic (DNT), or Economically Backward Class (EBC).** The candidate's guardians' or parents' income must be less than Rs 2.5 Lakh per year for them to qualify for this scholarship. The Class 9 and Class 10 students will receive Rs. 75,000 annually under this programme, and the Class 11 and Class 12 students will receive Rs. 1, 25,000 annually. **Students have to apply for the PM YASASVI scheme to get the scholarship. Students will be chosen for the scholarship based on their performance on the National Testing Agency's YASASVI Entrance Exam.**

**3) Lokmanya Tilak National Award:** Prime Minister will be honoured with the Lokmanya Tilak National Award on his visit to Pune. **The award was instituted in 1983 by the Tilak Smarak Mandir Trust.** This award is given every year on **1st August, the death anniversary of Lokmanya Tilak**, to persons who have made remarkable and extraordinary contributions, working for the progress and development of the nation.

**4) Lokmanya Tilak:** Bal Gangadhar Tilak was a prominent Indian nationalist, freedom fighter, social reformer, and political leader during the Indian independence movement. **He was one of the prime architects of modern India and probably the strongest advocate of Swaraj or Self Rule for India.** He is known for his slogan, **"Swaraj is my birthright and I shall have it."** He was considered a radical Nationalist. **The British Government termed him the "Father of Indian Unrest".** He joined the Indian National Congress Party in the year 1890. **He used his newspaper, "Kesari" (meaning Lion) in Marathi and later "Maratha" in English to disseminate nationalist ideas.** Some of his notable literary works include "The Arctic Home in the Vedas," where he presented his theory that the Vedas originated in the Arctic region, and "Shrimad Bhagavad Gita Rahasya," an interpretation of the Bhagavad Gita from a nationalist perspective.

Tilak believed in the power of education and **established the Deccan Education Society in Pune in 1884.** The society founded Fergusson College and the New English School, which played crucial roles in promoting modern education in Maharashtra. He was arrested for sedition on multiple occasions. His most prolonged incarceration lasted from 1908 to 1914, during which he wrote the famous book "Gita Rahasya" (The Secret of the Bhagavad Gita).

**In 1916 he concluded the Lucknow Pact with Mohammed Ali Jinnah, which provided for Hindu-Muslim unity in the nationalist struggle.**

2<sup>nd</sup> August

**1) Monitoring App for Seamless Inspection (MASI):** It is developed by **National Commission for Protection of Child Rights (NCPCR).**

**Aim:** For real-time monitoring of the Child Care Institutions (CCIs) and their inspection mechanism across the country. **MASI enables unified inspections by Child Welfare Committees (CWCs), State Inspection Committees, District Inspection Committees, Members of Juvenile Justice Boards (JJBs), and State Commissions for Protection of Child Rights (SCPCRs) as laid down under the JJ Act, 2015.**

**2) Pehchan Scheme:** Pehchan' cards scheme is a **part of the initiative of the Union Textile Ministry to register and provide identity cards to handicraft artisans and link them to a national database.** Launched in 2016, it is a new upgraded ID card for artisans that is linked with their Aadhaar numbers and bank accounts so that they can receive direct cash

transfer benefits. **The scheme was planned to facilitate the benefits of various schemes of the Union Government to flow directly into their accounts.** Besides, the ID card enables the artisans to avail easy loans at lower interest rate. 27.80 lakhs handicrafts artisans across the country have been registered under the PAHCHAN scheme.

**3) Offshore Areas Minerals (Development and Regulation) Amendment Bill, 2023:** The Bill amends the Offshore Areas Mineral (Development and Regulation) Act, 2002. **The new bill regulates mining in maritime zones of India.** It allows the government to reserve offshore areas that are not held under any operating rights.

The Bill also allows the administering authority to grant a composite licence or production lease to the government or a government company. **It proposes to remove the provision for renewal of production lease and provide a fixed period of fifty years for production lease similar to the provisions of the Mines and Minerals (Development and Regulation) Act 1957.** It also seeks to provide for the grant of production lease to the private sector only through auction by competitive bidding. **It also provides for grant of operating rights without competitive bidding to a government or a government company,** or a corporation in the mineral-bearing areas reserved by the central government.

In the case of atomic minerals, the grant of exploration licence or production lease shall be made only to a government or a government or corporation. **It aims to introduce a four-year timeline for commencement of production and dispatch after the execution of composite licence or production lease under and timeline of two years (extendable by one year)** for re-commencement of production and dispatch after discontinuation. It will enable the central government to frame rules for the conservation and systematic development of minerals in offshore areas and for the protection of the environment by preventing or controlling any pollution which may be caused by exploration or production operations.

### 3<sup>rd</sup> August

**1) Port Health Organisation:** The Union Minister of Ports, Shipping & Waterways (MoPSW) launched **Port Health Organisation (PHO) module under Sagar Setu – National Logistics Portal (Marine).** PHO will conduct disease surveillance, health inspection and quarantine measures to safeguard citizens and port workers. **This has been envisaged as a part of 'Ease of Doing business'** by covering features like request for PHO clearance certificates, online certification generation,

tracking of request status etc. This will help in collaborating with different departments & agencies for accordance of approval etc. **It will also ensure data mobility.**

**2) NIDHI (National Initiative for Developing and Harnessing innovations) program:** As part of the Startup India initiative DST proposes to provide momentum and scale to radically change the startup ecosystem in India. The main stakeholders include the different ministries, governments of the center and state, R&D and academic institutions, financial institutions and the private sector. **NIDHI has 8 components that support each stage of a nascent startup from its idea stage to the market stage.** The first component **PRAYAS** was inaugurated in 2016 and its goal is to back innovators to create prototypes of their start-up ideas. It does this by giving a grant of up to Rs.10 lakhs and an admission to Fabrication Laboratory (Fab Lab). **It stands for Promoting and Accelerating Young and Aspiring Innovators & Startups.**

**3) Study in India Portal:** It is a dedicated website that will **provide comprehensive information about the Indian Higher Education Institutions (HEIs).** The website will illustrate academic programs covering but not limited to **undergraduate (UG), postgraduate (PG), Doctoral level programs as well as courses in Indian Knowledge System like Yoga, Ayurveda, classical arts** etc. The website-portal will present information about the academic facilities, research support, and related information. The new website will now have the provision for students to apply in more than one institute/course of their choice. **SII Portal is a one-stop platform that will simplify international students' academic journey in India.** From registration to visa approval and selecting desired courses or institutions, the portal will simply the entire journey of the international students wishing to study in India.

**4) Rajmargyatra Application:** The National Highways Authority of India (NHAI) takes a significant stride towards improving the highway user experience with the launch of **'Rajmargyatra,' a citizen-centric unified mobile application.** **Rajmargyatra gives essential information for National Highway users.** Get real-time weather conditions, timely broadcast notifications, and access to details about nearby toll plazas, petrol pumps, hospitals, hotels, and other essential services that ensure a seamless and safe journey on National Highways. **The app comes equipped with an inbuilt complaint redressal and escalation mechanism.** Users can easily report highway-related issues, attaching geo-tagged videos or photos for better clarity. **'Rajmargyatra' integrates its services with**



various bank portals, making it convenient for users to recharge their FASTags, avail monthly passes, and access other FASTag-related banking services – all within a single platform.

#### 4<sup>th</sup> August

**1) Papua New Guinea:** It is an island country that lies in the south-western Pacific. Indonesia to the west, Australia to the south and Solomon Islands to the southeast are the neighbours.

**Capital: Port Moresby.** The islands that constitute Papua New Guinea were settled over a period of 40,000 years by a mixture of peoples who are generally referred to as Melanesians. **English is the main language of government and commerce. Linguistically, it is the world's most diverse country, with more than 800 languages.** The majority of Papua New Guinea's people are at least nominally Christian. **It became self-governing on 1 December 1973 and achieved independence on 16 September 1975.** The country is a **constitutional monarchy and a member of the Commonwealth.** The British monarch, represented by a governor-general, is the head of state, and the Prime Minister is the head of government.

**2) JALDOST Airboat:** The National Aerospace Laboratories (NAL) unveiled the JALDOST airboat. It is an **airboat that operates on water.** It is **designed to remove excess aquatic weed and floating waste from water bodies.** It has a closed airtight pontoon type hull to make it inherently unsinkable. According to NAL, it has a **hybrid propulsion system, comprising air propulsion and paddle wheel propulsion.** The ability to travel through weed makes JALDOST an ideal platform to collect them and bring them to the shore. A steel mesh belt conveyor system fixed in the front collects the waste. The collected waste falls on the horizontal deck conveyor. After reaching the shore, the collected waste is unloaded by a rear conveyor system to trucks or tractors. **NAL has developed two versions of the airboat – JALDOST Mark-1 and an upgraded version JALDOST Mark-2.**

**3) Ayush Visa:** It is specifically designed for foreign nationals looking to receive medical treatment in India through traditional Indian systems of medicine. **This visa aims to cater to those interested in Ayurveda, Yoga, and other traditional forms of therapeutic care and wellness.** The introduction of the Ayush Visa category is part of the country's roadmap for the Heal in India initiative.

**Heal in India initiative:** It seeks to provide "integrated and holistic treatment" to the world in India and

enhance patient mobility for access to world-class, affordable, and quality healthcare services".

**4) Reciprocal Access Agreement (RAA):** It was signed between Australia and Japan to bolster security ties against the backdrop of rising Chinese military and economic might. The RAA, Japan's first with any country, will allow the Australian and Japanese militaries to work seamlessly with each other on defence and humanitarian operations. **Japan is Australia's closest partner in Asia as demonstrated by the special strategic partnership, Australia's only such partnership.** The agreement comes in response to tension over Chinese-claim over Taiwan, which has been rising as President Xi Jinping seeks to assert China's sovereignty claims over the democratically ruled island.

With its entry into force, **the Japan-Australia RAA will facilitate implementation of cooperative activities between the defence forces of the two countries and further promote bilateral security and defence cooperation.**

The agreement will also pave the way for an enhanced contribution by Japan and Australia to the peace and stability of the Indo-Pacific region.

#### 5<sup>th</sup> August

**1) Bhu-Vision:** Recently, a revolutionary IoT-based automated soil testing and agronomy advisory platform, **Bhu-Vision was officially launched at AICRP (ICAR-IIRR), Hyderabad.** It is also known as **KRISHI-RASTAA Soil Testing System.** It has been **jointly developed by ICAR-IIRR (Indian Council of Agricultural Research -Indian Institute of Rice Research) and KrishiTantra.** This system seamlessly conducts **12 key soil parameter tests in just 30 minutes.** It provides quick and accurate results directly to farmers and stakeholders through a soil health card on their mobile devices.

**2) Digital Portal of the Central Registrar of Cooperative Societies (CRCS):** It is aimed at promoting ease of doing business in the cooperative sector and streamlining various processes. **Objectives is to Implement completely paperless applications, ensuring automatic compliance with the Multi-State Co-operative Societies Act (MSCS Act) and rules through software, enhancing the ease of doing business, enabling digital communication, ensuring transparent processing, and improving analytics and management information system.** The digital portal will encompass various modules, including registration, amendment of bye-laws, annual return filing, appeal,

audit, inspection, inquiry, arbitration, winding up, liquidation, ombudsman, and election. **It will also incorporate the recently passed amendments to the Multi-State Cooperative Societies (MSCS) Act, 2002, and its rules.** The portal will expedite the processing of applications and service requests through electronic workflow, facilitating a time-bound approach. It will **also feature provisions for OTP-based user registration, validation checks to ensure compliance with the MSCS Act and Rules,** hearing through video conferencing, issuance of registration certificates, and electronic communication.

**3) UNMESHA And UTKARSH Festival:** These festivals were organised by **Sahitya Akademi and Sangeet Natak Akademi, respectively,** with the purpose of celebrating inclusivity and cultural diversity.

**Unmesha Festival:** It is **India's most inclusive and Asia's largest literature festival** in terms of the number of languages represented. **More than 575 authors in 102 languages are expected to participate in over 75 events in 'Unmesha 2023',** and writers from 13 countries will participate in the festival.

This will be the second edition of 'Unmesha'. **The first event was held in Shimla in June 2022.**

**4) Utkarsh festival:** It **showcases the folk and tribal Performing Arts.** It casts a spotlight on the treasure trove of India's folk and tribal heritage, endowing these expressive art forms with a resplendent stage to captivate and enthrall.

**A poignant tribute to the nation's cultural legacy, 'Utkarsh' serves as a vital launchpad for traditional artists and performers to unfurl their artistry, safeguarding the priceless heritage of myriad communities.** Amidst its vibrant canvas, 'Utkarsh' brings forth a vivid tableau of cultural diversity, nurturing an appreciation for indigenous arts and underscoring their intrinsic value in an increasingly interconnected world.

**7<sup>th</sup> August**

**1) Technical Textiles:** According to a recent research report, the global Technical Textile market size is expected to reach USD 272.3 billion by 2030. **Technical Textiles are textile products that are manufactured primarily for their functionality and use rather than aesthetic appeal.** They are designed to have high levels of physical, mechanical, thermal, and/or chemical properties for use in specific applications within industrial sectors such as **earthworks, construction, civil engineering, transport, Defence, medical, and healthcare.**

**2) Technical Textiles Mission in India:** The **Ministry of Textiles has launched NTTM to increase the penetration level of technical textiles in India** while leveraging the extraordinary growth rate of the sector. **The aim of the mission is to position India as a global leader in Technical Textiles.** The mission will comprise the following four components: **Research, Innovation and Development; Promotion and Market Development; Export Promotion; Education, Training, Skill Development.** The NTTM has been approved with an implementation period of four years starting from FY 2020-21 till FY 2023-24. The Mission has a target to take the domestic market size of the technical textile sector to \$ 40-50 Bn by the year 2024 with an average growth rate of 15-20% per annum.

**3) NIDHI Program:** National Initiative for Developing and Harnessing innovations (NIDHI) program was launched in 2016. **It is an umbrella programme conceived and developed by the Innovation & Entrepreneurship division, Department of Science & Technology.** The Aim is to nurture start-ups through scouting, supporting and scaling innovations. Funding: By the National Science & Technology Entrepreneurship Development Board (NSTEDB).

**Key Components:**

- **The NIDHI- PRAYAS** (Promoting and Accelerating Young and Aspiring Innovators and Startups) program at Proof-of-Concept level provides mentoring and financial support to innovator for converting their ideas into prototypes.
- **NIDHI Entrepreneurs-In-Residence (EIR)** Program provides fellowships to the students opting for entrepreneurship.
- **The NIDHI Seed Support** Program provisions availability of early-stage seed support funding to start-ups and the NIDHI Accelerator program speeds up the investment readiness of the start-ups.
- **NIDHI Accelerator:** An accelerator is typically a 3-6 months fast track structured program helping ideas get accelerated to the next orbit.

**4) Committee of Parliament on Official Language:** The **Committee of Parliament on Official Language was set up in 1976 under Section 4 of the Official Language Act 1963.** Under the provisions of the 1963 Act, the panel submits its report to the President, who "shall [then] cause the report to be laid before each House of Parliament, and sent to all the State Governments". **The Committee is chaired by the Union Home**

Minister, and has, in accordance with the provisions of the 1963 Act. The committee consists of 30 members — 20 MPs from Lok Sabha and 10 MPs from Rajya Sabha. The mandate of the Committee is to review the progress made in the use of Hindi for official purposes, and to make recommendations to increase the use of Hindi in official communications. The first Report of the Committee was submitted in 1987.

### 9<sup>th</sup> August

**1) Quit India Movement:** Every year Quit India Day is observed on August 8 to commemorate the occasion. This year marks the 81st anniversary of the event. The Quit India Movement, also known as the August Movement or Bharat Chodo Andolan, was a significant civil disobedience movement launched by Mahatma Gandhi and the Indian National Congress on August 8, 1942 at Gowalia Tank Maidan also known as August Kranti Maidan in Bombay.

On this day, August 8th, in 1942, Gandhi gave the famous “Do or Die” speech, urging the Indian people to act decisively and nonviolently against British rule.

While factors leading to such a movement had been building up, matters came to a head with the failure of the Cripps Mission. The failure of the Cripps Mission made Gandhi realize that freedom would come only if Indians fought tooth and nail for it.

**2) National Pharmaceutical Pricing Authority (NPPA):** It is a government regulatory agency established with the aim of controlling and regulating the prices of pharmaceutical drugs and medical devices in the country to ensure their availability at affordable rates. It was constituted vide Government of India Resolution dated 29th August 1997 as an attached office of the Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers. It is to implement and enforce the provisions of the Drugs (Prices Control) Order in accordance with the powers delegated to it.

- To deal with all legal matters arising out of the decisions of the Authority.
- To monitor the availability of drugs, identify shortages, if any, and to take remedial steps.
- To collect/ maintain data on production, exports and imports, market share of individual companies, profitability of companies etc., for bulk drugs and formulations.

**3) Direct Incentive Disbursement Program:** Recognising the pivotal role of its sales force,

the Postal Life Insurance (PLI) introduced the pilot program for “Direct Incentive Disbursement” in the Delhi and Uttarakhand Circles. This programme will recognize the role of PLI’s sales force which is the driving force behind the department’s accomplishments. It will impact around two lakh sales force members across the nation, including Gramin Dak Sevaks, Direct Agents, Field Officers, and Departmental Employees.

#### Key benefits:

- **Swift and Secure Transactions:** Sales force receives incentives directly in their Post Office Savings Bank accounts.
- **Convenience and Motivation:** Sales force can conveniently manage their funds, and immediate rewards drive optimal performance.
- **Simplified Administration:** Automated payouts reduce administrative costs, enabling a greater focus on delivering client service.

**4) Economic Community of West African States (ECOWAS):** It is the West African nation’s regional group which was established in 1975 through the Lagos Treaty.

**Mandate:** Promoting economic integration among its members. Aim is to have a single common currency and create a single, large trading bloc in areas of industry, transport, telecommunications, energy, financial issues, and social and cultural matters.

**Member countries:** Benin, Burkina Faso, Cape Verde, Cote d’Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo.

**Headquarters:** Abuja, Nigeria.

### 10<sup>th</sup> August

**1) Exercise Zayed Talwar:** Indian Navy and United Arab Emirates to conduct bilateral exercise ‘Zayed Talwar.’

**Two ships of the Indian Navy, INS Visakhapatnam, and INS Trikand are participating in the exercise.** During the visit, the ships will undertake professional interactions with UAE Naval Force on multiple elements of maritime operations. They will further share best practices to enhance cooperation and strengthen ties between the two navies. This exercise will boost the maritime partnership between the two navies and foster a common understanding of the security challenges in the region.



**2) Maulana Azad Fellowship for minorities scheme (MANF):** The Ministry of Minority Affairs implements MANF Scheme for educational empowerment of students belonging to six notified minority communities i.e. Buddhist, Christian, Jain, Muslim, Sikh, Zoroastrian (Parsi). **The Scheme is implemented through the University Grants Commission (UGC)** and no waiting list is prepared under the Scheme by UGC. Candidates belonging to the six centrally notified minority are considered for award of fellowship under the MANF Scheme.

**The selection of candidates is done through JRF-NET (Junior Research Fellow- National Eligibility Test) examination conducted by the National Testing Agency.**

**3) National Pension Scheme for Traders and The Self-employed Persons (NPS):** It is a pension programme for Vyaparis, or shopkeepers, retail merchants, and independent contractors, whose annual sales does not exceed Rs. 1.5 Crore. **It is a contributing, voluntary pension plan.** The beneficiaries are not charged for enrolment in the programme. **Self-certification is used to determine enrolment.** On reaching the age of 60, it provides a provision for a minimum assured pension of Rs. 3,000 per month. **50% of the monthly contribution will be provided by the central government, while the remaining 50% will come from the recipient.**

**4) MALABAR 2023:** Indian Navy's indigenous frontline warships INS Sahyadri and INS Kolkata will participate in Exercise MALABAR 2023 scheduled at/ off Sydney along with ships and aircraft from the US Navy (USN), Japan Maritime Self Defence Force (JMSDF) and the Royal Australian Navy (RAN). **MALABAR series of maritime exercise commenced in 1992 as a bilateral exercise between Indian Navy and US Navy and has grown in stature over the years to include four prominent navies in the Indo-Pacific Region.** The 2020 edition witnessed the maiden participation of the Royal Australian Navy (RAN). **This year marks the 27th edition of MALABAR which is being hosted by Royal Australian Navy (RAN).**

**5) World Lion Day:** World Lion Day is observed on August 10 each year. **Established in 2013 by Big Cat Rescue,** the world's largest accredited sanctuary dedicated to lions, **World Lion Day was co-founded by Dereck and Beverly Joubert.** In partnership with National Geographic, they **launched the Big Cat Initiative (B.C.I.) to protect big cats, including lions.** Since its inception, World Lion Day has been observed annually on **August 10** to draw attention to lion

conservation issues and to celebrate the majesty and significance of these iconic big cats.

### 11<sup>th</sup> August

**1) Legionnaire's disease:** It is a **severe form of pneumonia** — lung inflammation usually caused by infection. **It's caused by a bacterium known as legionella.** This bacterium is found in lakes and ponds, but they can also develop in tanks and other water systems. **The most common form of transmission of Legionella is inhalation of contaminated aerosols from contaminated water.** The main symptoms are fever, chills, headache, malaise and muscle pain (myalgia). Treatments exist, but there is no vaccine currently available for Legionnaires' disease.

**2) United Nations Population Fund:** It is an international development agency created in 1968 to support the execution of projects and programmes in the area of population and sexual and reproductive health. **Its mission is to deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled.** In 1987, it was officially renamed as the United Nations Population Fund but the original abbreviation UNFPA (United Nations Fund for Population Activities) was retained.

**Headquarters: New York.** It is not directly responsible for the collection of primary statistics; it plays an important role in the technical and financial support of statistical activities in countries, such as **population censuses and thematic surveys etc.**

UNFPA funds assistance, research, and advocacy programs in three major areas: **Reproductive health, including family planning, safe motherhood, and the prevention and treatment of sexually transmitted diseases,** The population problems of developed and developing countries and possible strategies for addressing them. Issues related to the status of women, including the gender gap in education. **UNFPA assistance programs are undertaken only in response to government requests.**

**3) National Automated Fingerprint Identification System (NAFIS):** The NAFIS is a **pan-India searchable database of crime and criminal-related fingerprints.** It is **managed by the National Crime Records Bureau (NCRB) at the Central fingerprint bureau, based in New Delhi.** The main objective of the web-based application is to **collect fingerprint data of all the criminals from all the states and the Union Territories.** It will enable law enforcement agencies to upload,



trace and retrieve information from the database 24x7 in real-time.

**The Working Process of NAFIS:** NCRB enables law enforcement agencies to upload, trace, and retrieve data from the database. **Within 24 hours, NAFIS provides a unique 10-digit National Fingerprint Number (NFN) to each criminal who is arrested for the crime.** The unique ID will be used for a lifetime of an offender. Different crimes registered under different FIRs will be logged as incidents belonging to the same NFN. **The first two digits of the ID will be the state code of the state where the criminal is registered, followed by a sequence number.** The state partition will have IDs belonging to a state. **Apart from this, a digital record will be added as storage to match the fingerprints in the future.** With NAFIS, it is possible to locate a person of interest in a matter of minutes and connect that individual's name to any active warrants, warnings, or information about related criminal conduct stored in other police information reference systems.

### 12<sup>th</sup> August

**1) MSCI Index:** Rural Electrification Corporation Limited under the Ministry of Power, has secured a coveted place in the esteemed **Morgan Stanley Capital International (MSCI) Global Standard Index, effective from 1st September 2023.** It is owned by the **multinational investment management and financial services company Morgan Stanley.** It is an investment research firm that provides stock indexes, portfolio risk and performance analytics, and governance tools to institutional investors and hedge funds. **It is a leading provider of critical decision support tools, including stock indexes, and services for the global investment community.** MSCI indices facilitate the construction and monitoring of portfolios in a cohesive and complete manner, avoiding benchmark misfit. It has over 160,000 indices in its portfolio. **MSCI has indexes for countries, regions, emerging markets, developed markets, small cap, all cap and even Islamic indexes.** It selects stocks for its equity indexes that are easily traded and have high liquidity, with companies having high free float getting more weightage. It prefers stocks that have active investor participation, and are without owner restrictions.

**2) PUSHp portal:** A High Price Day Ahead Market (HP-DAM) and Surplus Power Portal (PUSHp) was launched by the Ministry of Power. **It was launched to ensure greater availability of power during the peak demand season at a price higher than the ceiling of Rs. 12 per unit by certain category of sellers.** The power distribution companies (DISCOMs) will be able to

indicate their surplus power in block times / days / months on portal. **Those DISCOMs who need power will be able to requisition the surplus power.** The new buyer will pay both variable charge (VC) and fixed cost (FC) as determined by Regulators. Once power is reassigned, the original beneficiary shall have no right to recall as entire FC liability is also shifted to the new beneficiary. This will reduce the fixed cost burden on the DISCOMs, and will also enable all the available generation capacity to be utilized.

**Day Ahead Market:** It is a **physical electricity trading market where power is delivered within 24 hours of the next day starting from midnight.** They are traded in 15 minute time blocks and the prices and quantum of electricity closed the auction bidding process.

**3) Controller of Certifying Authorities (CCA):** The Information Technology Act 2000 (IT Act) provides for the CCA. **Function is to license and regulate the working of Certifying Authorities (CAs).** The CAs issue digital signature certificates for electronic authentication of users. **The CCA also maintains the National Repository of Digital Certificates (NRDC),** which contains all the certificates issued by all the CAs in the country. **Its aim is to promote the growth of e-Commerce and e-Governance through a wide use of digital signatures.** The Controller of Certifying Authorities (CCA) is appointed by the Central Government under section 17 of the IT Act.

### 14<sup>th</sup> August

**1) STEREO spacecraft:** The pair of STEREO (Solar Terrestrial Relations Observatory) spacecraft were launched on October 25, 2006, from Florida's Cape Canaveral Air Force Station. **The two spacecraft were situated in Sun's orbit, STEREO-A ("Ahead") and STEREO-B ("Behind").** The dual-spacecraft mission accomplished its major goal by delivering the first-ever stereoscopic view of our star. It will synthesize its views with those from **Nasa's and the European Space Agency's Solar and Heliospheric Observatory (SOHO) and Nasa's Solar Dynamics Observatory (SDO).** Its distance from Earth changes throughout the flyby, it will optimize its stereo vision for different-sized solar features at different times, akin to adjusting the focus on a several million-mile-wide telescope. It will allow scientists to understand how a coronal mass ejection's (CME) magnetic field evolves on its way to Earth.

**2) Vindhyagiri frigate:** President of India will launch Vindhyagiri frigate at Garden Reach Shipbuilders and Engineers Limited, Kolkata. It is named after a

mountain range in Karnataka. **It is the sixth ship of the Project 17A frigates.** These warships are follow-ons of the Project 17 Class Frigates (Shivalik Class), with improved stealth features, advanced weapons and sensors and platform management systems. **Under the Project 17A programme, four ships by Mumbai-based Mazagaon Dock Shipbuilders Limited (MDL) and three by Garden Reach Shipbuilders and Engineers Limited (GRSE) are under construction.** The project's first five ships were launched by MDL and GRSE, between 2019-2022. These ships have been designed in-house by the Indian Navy's Warship Design Bureau. As much as 75% of the orders for equipment and systems of Project 17A ships are from indigenous firms, including MSMEs.

**3) Pradhan Mantri Uchchar Shiksha Abhiyan:** In the light of the National Education Policy, **Rashtriya Uchchar Shiksha Abhiyan (RUSA) scheme has been launched as Pradhan Mantri Uchchar Shiksha Abhiyan (PM-USHA).** It covers government and government-aided institutions of the States and UTs. It is a **Centrally Sponsored Scheme (CSS).** **The scheme focuses on equity initiatives and gender inclusion** by providing adequate opportunities to underprivileged groups, and it promotes the inclusion of women, minorities, SCs/STs/OBCs, and specially-abled people in higher education, which will help to increase the GER. It would **provide the facilities to the institution for upgrading the physical and digital infrastructure and also for the conversion of single-stream higher education institutions (HEIs) into multiple streams institutions.** To ensure greater access to education, there is the significant importance of technology in bridging the language barrier between teachers and students, creating digital libraries, popularizing language learning as well as introducing the Open distance learning (ODL) programs.

**4) Urea Gold:** Normal urea contains 46% of a single plant nutrient: Nitrogen or N. Urea Gold has 37% N plus 17% sulphur (S). **It aims at two things. The first is to deliver S along with N.** Indian soils are deficient in S, which oilseeds and pulses – the country is significantly import-dependent in both – particularly require. **The second is to improve the NUE of urea.** Coating of S over urea ensures a more gradual release of N. By prolonging the urea action, the plants stay greener for a longer time – reducing the frequency of application and use of Urea, say, only two bags (against three), for an acre of paddy or wheat. **RCF is yet to commercially introduce Urea Gold or reveal any pricing details.**

15<sup>th</sup> August

**1) Murmansk Port:** India's engagement with Russia's Arctic region has been strengthening with India-bound goods constituting the maximum share of cargo handled this year by Murmansk Port. **The seaport of Murmansk is one of the largest ice-free ports in Russia.** It is located on the Kola Peninsula at the coast of Barents Sea. It is about 2,000 km northwest of Moscow. **The port is navigated all year round.** The dimensions of vessels calling at the port of Murmansk are not limited. The main port capabilities are located on the western coast of Kola Bay, among them the mooring berths of the commercial port (including passenger area), fishing port, ship-repair yard, shipyard, oil terminal, and FSUE Atomflot premises. On the eastern coast of Kola Bay there is a number of small fish and fleet maintenance terminals.

**2) Section 377 of the IPC:** Section 377 of the IPC states: "Whoever voluntarily has carnal intercourse against the order of nature with any man, woman or animal, shall be punished with imprisonment for life, or with imprisonment of either description for a term which may extend to ten years, and shall also be liable to fine. The explanation to the provision states that "penetration is sufficient to constitute the carnal intercourse necessary to the offence." For decades, **the LGBTQ community and others argued that this section was discriminatory,** and provided legal protection to the harassment and intimidation of gay couples.

**Navtej Singh Johar v. Union of India Case (2018):** In September, 2018, a five-judge bench of the Supreme Court **unanimously decriminalized consensual sex between two adults irrespective of their gender and partially struck down Section 377 of the IPC.** The court referred to those areas of the section that criminalized consensual unnatural sex as "irrational, indefensible and manifestly arbitrary". **The court also noted that Section 377 was used as a weapon to harass members of the LGBTQ community, resulting in their discrimination.** However, in its ruling, the court also made it clear that other aspects dealing with unnatural sex with animals and children still remained in force, and that it was confining its order to consenting acts between two adults.

**3) Cauvery River:** Cauvery (or Kaveri) is the largest river in the state and originates at Talakaveri in the Brahmagiri hills of the Western Ghats in Karnataka. **It is often called the Dakshina Ganga** (the Ganges of the South) and considered one of the sacred rivers of India. **The origin of the River Kaveri, is a famous pilgrimage and tourist spot set amidst Brahmagiri Hills near Madikeri in Coorg.** The tributaries of the Kaveri include: Harangi, Hemavathi (origin in western Ghats

joins the river Kaveri near Krishnarajasagar), Lakshmana tirtha, Kabini (originates in Kerala and flows eastward and joins the Kaveri at Tirumakudalu, Narasipur), Shimsha, Arkavati, Suvarnavathi or Honnuholé, Bhavani, Lokapavani, Noyyal, Amaravati.

**4) Vishwakarma Scheme:** It aims to provide subsidised loans to traditional artisans and craftsmen including weavers, goldsmiths, blacksmiths, laundry workers, and barbers. Artisans and craftspeople will be provided a recognition through PM Vishwakarma certificate and ID card. The craftsmen will be provided a subsidized loan of Rs. 1 lakh in the first tranche, and another Rs. 2 lakh in the second tranche, at a concessional interest rate of 5%. It also has a provision to provide skill upgradation, incentive for toolkit as well as digital transactions and marketing support. Skilling programme will take place at both basic and advanced types. Participants will get a stipend of ₹500 per day while undergoing training. Beneficiaries will also receive up to ₹15,000 to buy modern tools.

#### 16<sup>th</sup> August

**1) Prime Ministers' Museum and Library (PMML) Society:** It is an autonomous institution under the Ministry of Culture, Government of India. It is housed in the historic Teen Murti campus located south of Rashtrapati Bhavan in New Delhi. PMML is dedicated to the objective of promoting advanced research on Modern and Contemporary India. Designed by Robert Tor Russel and built in 1929-30 as part of Edwin Lutyens' imperial capital, Teen Murti House was the official residence of the Commander-in-Chief in India. In August 1948, after the departure of the last British Commander-in-Chief, Teen Murti House became the official residence of independent India's first Prime Minister, Jawaharlal Nehru. On Jawaharlal Nehru's 75th birth anniversary on November 14, 1964 Dr. Sarvapalli Radhakrishnan, President of India, formally dedicated the Teen Murti House to the nation and inaugurated the Nehru Memorial Museum. On 1 April 1966, the Government set up the Prime Ministers Museum and Library (PMML) Society to manage the institution. PMML has four major constituents, namely- Memorial Museum; Library on modern India; Centre for Contemporary Studies; Nehru Planetarium. The General Council and the President and the Vice-President of the PMML Society are nominated by the Central Government.

**2) One District One Product wall:** The One District One Product (ODOP) program is an initiative under the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry.

Under this Collaboration- products are being identified from all districts to be promoted for their unique qualities and cultural significance which include various handicrafts, handloom, and agricultural products that have been associated with the identity of their place of origin.

**Objectives of ODOP:** To help districts reach their full potential, foster economic and socio-cultural growth, and create employment opportunities, especially, in rural areas. This initiative aims to turn every district in India, into an export hub through promotion of the product in which the district specialises. The initiative plans to accomplish this by scaling manufacturing, supporting local businesses, finding potential foreign customers and so on, thus helping to achieve the 'Atmanirbhar Bharat' vision.

**3) Deendayal Antyodaya Yojana-National Rural livelihood Mission:** It is one of the flagship poverty alleviation program. It aims at creating efficient and effective institutional platforms for the rural poor, enabling them to increase household income through sustainable livelihood enhancements and improved access to financial services.

#### Key Features:

- **Universal Social Mobilisation:** At least one woman member from each identified rural poor household, is to be brought under the Self Help Group (SHG) network in a time bound manner.
- **Participatory Identification of Poor (PIP):** All households identified as poor through the PIP process is the NRLM Target Group and is eligible for all the benefits under the programme.
- **Community Funds as Resources in Perpetuity:** NRLM provides Revolving Fund (RF) and Community Investment Fund (CIF) as resources in perpetuity to the institutions of the poor, to strengthen their institutional and financial management capacity.

#### 17<sup>th</sup> August

**1) Technology Development Fund (TDF) Scheme:** TDF Scheme has been established to promote self-reliance in defence technology as a part of the 'Make in India' initiative. It is a programme Ministry of Defence executed by the DRDO meeting the requirements of Tri-Services, Defence Production and DRDO. The scheme encourages participation of public/private industries especially MSMEs to create an ecosystem for enhancing cutting edge technology capability for defence application. It supports indigenous development of components, products, systems and technologies by MSMEs and start-ups.



**Eligibility: MSMEs and Start-ups registered in India.** Public limited company, private limited company, partnership firms, limited liability partnership, one-person company, sole proprietorship registered as per applicable Indian laws. **The industry has to be owned and controlled by an Indian citizen. Industries with foreign investments of 49% or less.** The funding will be through provision of grants to the Industry. The project cost of up to INR 10 Cr will be considered for funding, subject to a maximum of 90% of the total project cost. Maximum development period will be two years.

**2) PM-eBus Sewa' Scheme:** Under the PM-eBus Sewa Scheme, 10,000 e-buses will be deployed across cities in the country. **Under this scheme, city bus operations will be done on a Public Private Partnership (PPP) model. This scheme will support bus operations for 10 years.** States/Cities shall be responsible for running the bus services and making payments to the bus operators. **The Central Government will support these bus operations by providing subsidy to the extent specified in the proposed scheme.** The central government will contribute Rs. 20,000 crore, while the remaining portion will be covered by the state governments. The scheme will cover cities with 3 lakhs and above population and priority will be given to cities not having organised bus services.

**There are two segments of the scheme-**

- **Augmenting the city bus services:** Under this, the e-buses will operate under the PPP model and the government will help develop associated infrastructure to provide support for development/up-gradation of depot infrastructure. It will also help cities create behind-the-meter power infrastructure for the e-buses.
- **Green Urban Mobility initiatives:** Bus rapid transport projects would be developed along with non-motorised infrastructure like bike sharing, bicycle lanes. Innovative projects like National Common Mobility Card, Intelligent Transit Management System, Multimodal Interchange facilities would also be developed.

**3) A-HELP' Programme:** It is an initiative of the Union Ministry of Fisheries, Animal Husbandry & Dairying and the Ministry of Rural Development. **'A-HELP' are community-based women activists, who assist veterinarians in local departmental activities help livestock farmers to take loans for entrepreneurship development, fill out applications, mark the ear tagging of animals and register them in the INAF portal and help with insurance etc.**

They assist in implementing various schemes and in providing information to the farmers at the grassroots level. They will give vital contributions to preventing various infectious diseases of animals, artificial insemination under the Rashtriya Gokul Mission (RGM), tagging animals and animal insurance.

**18<sup>th</sup> August**

**1. Floodwatch App:** This app gives information related to the flood situation and forecasts up to 7 days on a real-time basis to the public. The in-house developed user-friendly app has readable and audio broadcast and all the information is available in 2 languages, viz. English and Hindi. Other feature of the app includes real-time flood monitoring. The app also provides flood forecast at nearest location where users can check the flood advisory at the station nearest to them on the Home Page itself. **The app will also provide State-wise/Basin-wise Flood Forecast (up to 24 hours) or Flood Advisory (up to 7 days) which can be accessed by selecting specific stations,** state wise or basin wise from the dropdown menu.

**2. UDGAM Portal:** The Reserve Bank of India (RBI) recently launched a Centralised Web Portal, UDGAM (Unclaimed Deposits – Gateway to Access inforMation), for the public to search for their unclaimed deposits across multiple banks at one place. Reserve Bank Information Technology Pvt Ltd (ReBIT), Indian Financial Technology & Allied Services (IFTAS), and participating banks have collaborated on developing the portal. The portal will enable users to either claim the deposit amount or make their deposit accounts operative at their respective banks. Customers can register on the 'Udgam' platform using their mobile number.

**3. SAMUDRA App:** Indian National Centre for Ocean Information Services (INCOIS) launched a new mobile application called SAMUDRA for seafarers and the fishing community. **Smart Access to Marine Users for Ocean Data Resources and Advisories (SAMUDRA) application offers comprehensive information on all ocean related services. It is a cutting-edge tool helping users to navigate the marine domain with confidence on their safety, and profitable fishing operations.** It embodies the institute vision and mission in serving the nation with ocean data, information, and advisory



services. It will catalyse sustainable ocean activities, thus enabling a way forward for the Blue Economy, It empowers users with real-time updates and critical alerts on oceanic disasters such as tsunamis, storm surges, high waves, and swell surge alerts, for the individuals and communities to stay informed and take necessary precautions towards the protection of lives and property. It will be especially beneficial to the fishing community as it disseminates Potential Fishing Zone (PFZ) advisories which will guide them to the probable fish aggregation locations. It is currently serving in English, soon eight coastal languages are proposed to be included soon.

**4. Urban 20 Summit:** The U20 was established in 2018 to generate discussions among G20 members on urban issues and was first chaired and hosted by the city of Buenos Aires, Argentina. U20 is a city diplomacy initiative and strives to establish a lasting practice of engagement among cities to develop a collective message that emphasises the role of cities in taking forward the sustainable development agenda. U20 is an engagement group under the larger intergovernmental forum of G20 and plays a vital role in contributing perspectives, concerns, and ideas from cities to inform and enrich the overall G20 negotiations. The U20 brings together mayors from G20 cities under a common framework and coordinates a joint position to inform the discussions of national leaders. For this year, the leadership was handed over to Ahmedabad as the 2023 Chair from the city of Jakarta (Indonesia) - the Chair for 2022.

**19<sup>th</sup> August**

**1) TAPAS UAV:** The Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 or Tapas BH-201 is a long-endurance unmanned aerial vehicle. It was previously used to be referred as Rustom-II. It can cover a range of 250+ km using the C Band frequency data link developed by Defence Electronics Application Laboratory (DEAL) at DRDO. It can also cover 1000+ km via SATCOM using the Ku Band frequency and GAGAN system. The medium-altitude, long-endurance drone has an impressive flight endurance of several hours and successfully completed its maiden flight in November 2016. Its compact, lightweight design makes it easily transportable and deployable to remote locations. Its real-time data collection and transmission provide valuable intelligence for decision-making. It has a range of over

18 hours and altitude capabilities of up to 28,000 feet. It is being developed in India by Aeronautical Development Establishment.

**2) Anti-Ragging Laws in India:** While ragging is not a specific offence, it could be penalised under several other provisions of the Indian Penal Code (IPC). For example, the offence of wrongful restraint is criminalised under Section 339 of the IPC which is punished with simple imprisonment up to 1 month, or with fine up to Rs. 500, or with both. Wrongful restraint is an offence when a person is prevented from proceeding in any direction in which that person has a right to proceed. Section 340 criminalises wrongful confinement which is defined as wrongfully restraining any person in such a manner as to prevent that person from proceedings beyond certain circumscribing limits. Several states have special laws for anti-ragging. For example, The Kerala Prohibition of Ragging Act 1998 provides for suspension or dismissal of the student accused of ragging and mandatorily requires the college administration to inform the nearest police station. If an educational institution fails to do so, it would be "deemed abetment" to commit the offence.

**3) Artemis 2 Mission:** It will be the first mission to carry humans to the moon's vicinity since 1972. It is the second scheduled flight of the Artemis program and the first crewed Artemis mission. During Artemis II, four astronauts will fly around the moon before returning to Earth. It will use the huge Space Launch System (SLS) mega-rocket and Orion spacecraft to launch the crew on the lunar flyby mission. It will include three astronauts from NASA and one from the Canadian Space Agency. The astronauts and mission controllers will collect data on Orion and the crew's performance to assess how ready the Artemis program is to send people to the moon's surface.

**4) Green Hydrogen Standard:** In a significant move for the progress of the National Green Hydrogen Mission, the government has notified the Green Hydrogen Standard for India. The Ministry of New & Renewable Energy has decided to define Green Hydrogen as having a well-to-gate emission (i.e., including water treatment, electrolysis, gas purification, drying and compression of hydrogen) of not more than 2 kg CO<sub>2</sub> equivalent / kg H<sub>2</sub>. The Bureau of Energy Efficiency (BEE), Ministry of Power shall be the Nodal Authority for accreditation of agencies for the monitoring, verification and certification for Green Hydrogen production projects. The scope of the

definition encompasses both electrolysis-based and biomass-based hydrogen production methods.

## 21<sup>st</sup> August

**1) Sanchar Saathi portal:** The portal aims to provide various reforms and services related to mobile connections and telecommunications.

It has been developed by C-DoT under the Department of Tele-communications (DoT) to prevent frauds such as identity theft, forged KYC, banking frauds etc. The portal allows mobile phone users to:

- Check the connections registered on their names.
- Report fraudulent or unrequired connections.
- Block the mobile phones which are stolen/lost
- Check IMEI genuineness before buying a mobile phone.

**2) Likaru-Mig La-Fukche road:** Border Roads Organisation (BRO) recently started the construction of the Likaru-Mig La-Fukche road close to Hanle in Eastern Ladakh's Demchok sector. It is located close to Hanle in Eastern Ladakh. The 64-km long road will connect Likaru to Fukche, situated 3 km from the Line of Actual Control (LAC). Once completed, it will be the world's highest motorable road at a height of 19,400 ft in Mig La. This would also provide an alternate land connectivity route to the Fukche advanced landing pad, which is only 2.5 km away from the LAC. It is the first project in India to be carried out entirely by an All Woman Road Construction Company. It is led by a five-member All Woman Border Road Task Force.

**3) Madan Lal Dhingra:** He was an Indian revolutionary freedom fighter. He was born on 18 February 1883 in Amritsar. Dhingra received his early education in Amritsar and later moved to England for further studies. He enrolled at University College, London, where he studied engineering. While in England, Dhingra became deeply involved in the activities of the Indian independence movement. He came in contact with the revolutionaries like Vinayak Damodar Savarkar, Shyamji Krishna Varma, the founder of Indian House, and several others.

**Curzon Wylie's assassination:** On July 1, 1909, Madan Lal Dhingra assassinated Sir William Hutt Curzon Wylie, a retired British Indian Army officer and a prominent official, during a public meeting in London's Imperial Institute. During the trial, he claimed that he had murdered Curzon-Wylie as a patriotic act and in revenge for the inhumane killings of Indians by the

British Government in India. He was found guilty and sentenced to death. He was hanged to death on August 17, 1909, at the age of only 24. He was disowned by his family for his anti-British leanings – so much so that even after his death his family refused to take his body.

**4) Indira Gandhi Memorial Tulip Garden:** Indira Gandhi Memorial Tulip Garden, previously Model Floriculture Centre, is a tulip garden in Srinagar, Jammu and Kashmir. It is the largest tulip garden in Asia, spread over an area of about 30 hectares. It is situated on the foothills of the Zabarwan Range with an overview of Dal Lake. The garden was opened in 2007 with the aim to boost floriculture and tourism in Kashmir Valley. The garden is built on a sloping ground in a terraced fashion consisting of seven terraces. The garden houses about 48 varieties of tulip flowers. The garden also has several types of other flowers, including daffodils, hyacinths, roses, narcissus, and other ornamental plants.

**Tulip festival:** It is an annual celebration that aims to showcase the range of flowers in the garden as a part of tourism efforts by the Government of Jammu and Kashmir. It is organized during the onset of the spring season in Kashmir valley.

## 22<sup>nd</sup> August

**1) 15th BRICS Summit:** The 15th BRICS Summit is being hosted by South Africa. Theme – BRICS in Africa: Partnership for Mutually Accelerated Growth, Sustainable Development and Inclusive Multilateralism. A major item on the agenda is on the expansion of BRICS. More than 40 countries have shown an interest in joining BRICS, and around 23 countries have applied formally for membership. Of these, consensus appears to be developing around four countries: Argentina, Saudi Arabia, the UAE and Iran.

**Significance:** First in-person summit since 2019 and the COVID-19 pandemic. First in-person meeting since the Russian invasion of Ukraine in 2022. It will be of importance as the U.S. and EU still hope to try and isolate Russia over the conflict.

**India:** This will be the first in-person summit since the military standoff with China at the Line of Actual Control began in 2020. Also, India wants more cooperation from China and Russia that are blocking discussions on a common language for the Leader's declaration to be released at the G20 summit.

**2) Advisory Board on Banking and Financial Frauds:** It conducts the first level examination of bank frauds before recommendations or references are made to

investigate by agencies such as the CBI. **It consists of the Chairman and four other members, and the tenure of the Chairman/ Members would be for two years.** It has been empowered to examine the role of officials/whole-time directors in public sector banks, public sector insurance companies, and public sector financial institutions in case of frauds amounting to ₹3 crore and above. **The CVC and CBI can also refer any case or technical matter to the board for its advice, the order stated.** The board can also give inputs for policy formulation related to fraud to the RBI and CVC. It will ordinarily, within a month of receipt of the initial reference, tender its advice as may be requisitioned by ministries, departments, the CVC and CBI.

**3) Dibang Multipurpose Project:** It is a flood control and hydroelectric power project planned to be developed on the Dibang River, a tributary of the Brahmaputra River, in Arunachal Pradesh. **At 2,880 MW of installed capacity, it will be the country's biggest hydropower facility.** It is being developed by India's state-run National Hydroelectric Power Corporation (NHPC). **The project envisages the construction of a 278m-high and 375m-long concrete gravity dam,** which will be the highest dam structure in the country. It includes six horseshoe-shaped head race tunnels of length an underground Power House, and six horseshoe-shaped tail race tunnels.

**4) Indian Council of Social Science Research:** It was established in the year of 1969 by the Government of India to promote research in social sciences in the country on the recommendation of Prof. V. K. R. V. Rao Committee. It is an autonomous organization funded by the Ministry of Education. It provides grants for projects, fellowships, international collaboration, capacity building, surveys, publications etc., to promote research in social sciences in India.

**The Council aims to:**

- Review the progress of social science research and give advice to its users;
- Sponsor social science research programmes and projects and administer grants to institutions and individuals for research in social sciences.

**23<sup>rd</sup> August**

**1) Lunar Polar Exploration Mission (LUPEX):** It is a collaborative venture between Japan Aerospace Exploration Agency (JAXA) and the Indian Space Research Organisation (ISRO). **The mission is scheduled to launch in 2025.** LUPEX will use a rover and lander to study the possibility of establishing a base on

the Moon, the availability of water ice, and surface exploration technologies. **JAXA and ISRO are developing the rover and lander, respectively.**

The rover will carry not only the instruments of ISRO and JAXA but also those of the US space agency NASA and the European Space Agency (ESA).

**Proposed instruments onboard LUPEX:**

- **Permittivity and Thermo-physical investigation for Moon's Aquatic Scout (PRATHIMA) — is in-situ detection and quantification of water-ice mixed with lunar surface and sub-surface soil using a rover/lander platform.**
- **The aim of another proposed instrument — the Lunar Electrostatic Dust Experiment (LEDEX) — is to detect the presence of charged dust particles and to confirm the dust levitation process in the volatile-rich polar region, and to estimate the approximate dust size and flux of charged levitated dust particles.**

**2) Maitri Setu:** It has been built over the Feni River, which flows between the Indian boundary in Tripura and Bangladesh.

**Length:** It spans 1.9 kilometres joining Sabroom (in Tripura) with Ramgarh in Bangladesh. **The name 'Maitri Setu' symbolises growing bilateral relations and friendly ties between India and Bangladesh.** The construction of the bridge has been overseen by National Highways and Infrastructure Development Corporation Ltd. It is a pre-stressed concrete bridge. It has a single-span structure that allows for the smooth flow of traffic and cargo.

**Feni River:** It forms part of the India-Bangladesh border. It originates in the South Tripura district, passes through Sabroom town on the Indian side, and meets the Bay of Bengal after it flows into Bangladesh. **Some of the notable tributaries of the Feni River include the Muhuri River, Raidak River, Chandkhira River, Ryang River and Kushiara River.**

**3) Bharat NCAP (New Car Assessment Programme):** Under this programme, car manufacturers can voluntarily offer their cars tested as per Automotive Industry Standard (AIS) 197. **Based on the performance of the car in the tests, the car will be awarded star ratings for Adult Occupants (AOP) and Child Occupants (COP).** To receive a 5-star rating, a vehicle needs at least 27 points in adult occupant protection and requires 41 points in child occupant protection. **These protocols are in line with Global NCAP norms when it comes to crash testing.** Three tests, including offset deformable barrier frontal



**impact test, side impact test, and pole side impact test — would determine the crashworthiness of the vehicles.** It would also mandate the installation of six airbags, electronic stability control (ESC), three-point seatbelts for every passenger, improved emergency braking systems, etc.

These norms will also be applicable for testing and rating CNG and EVs based on their performance. Unlike Global NCAP, Bharat NCAP will give a unified rating for the vehicles, combining crash test results for adults and children alike.

#### 24<sup>th</sup> August

**1) Mera Bill Mera Adhikar Scheme:** It is a **Goods and Services Tax (GST) invoice incentive programme that offers cash incentives for uploading invoices.** It would initially be introduced in the states of Assam, Gujarat, and Haryana, as well as the UTs of Puducherry, Daman & Diu, and Dadra & Nagar Haveli.

**Objective:** To encourage customers to request a bill whenever they make purchases. All invoices issued by GST-registered suppliers to consumers will be eligible for the scheme.

A monthly and quarterly draw of lots will be made, and winners will be eligible for cash reward prizes beginning from Rs. 10,000 to up to Rs. 1 crore. The minimum purchase value for the invoice to be considered for the lucky draw is Rs. 200, and individuals can upload a maximum of 25 invoices in a month. **The 'Mera Bill Mera Adhikar' mobile app will be made available on both IOS and Android platforms.** The invoice uploaded on the app should have the GSTIN of the seller, invoice number, amount paid and tax amount.

**2) Microsites project:** These are defined geographical regions where focused outreach efforts would be made to on-board small and medium-scale private healthcare providers. They will provide Private facilities such as standalone clinics, polyclinics, nursing homes, small hospitals (preferably <10 beds), labs, pharmacies, and any other healthcare facilities wherein health records are generated. Health Facilities and Health Professionals from all the systems of medicine. **These Microsites would be majorly implemented by State Mission Directors of ABDM, while the financial resources and overall guidance would be provided by NHA.** An interfacing agency under this program will have an on-ground team to reach out to the healthcare providers in the area. Patients will be able to link the health records generated at these facilities with their Ayushman Bharat Health Accounts (ABHAs). They will be able to

view and share these records using any ABDM-enabled Personal Health Record (PHR) application on their phones.

**3) Khanan Prahari App:** It allows citizens to report incidents of illegal coal mining through geo-tagged photographs and textual information. The corresponding web portal, called as **Coal Mine Surveillance & Management System (CMSMS), has been developed in association with the Bhaskaracharya Institute of Space Application & Geoinformatics, Gandhinagar, and CMPDI, Ranchi.** To encourage public participation through reporting about illegal coal mining.

The government aims to take transparent action against illegal mining, using space technology as an e-governance initiative.

- Users can easily report incidents of illegal mining by taking photographs and providing comments on the incident. **The app allows for the geo-tagging of photographs by enabling the GPS location feature.**
- Confidentiality and Complaint Tracking

**4) SANKALP Programme:** The Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) programme was launched in 2018.

**Nodal Ministry: Ministry of Skill Development and Entrepreneurship (MSDE).** It is a World Bank loan-assisted project and is aligned with the overall objectives of the National Skill Development Mission (NSDM). The project focuses on transforming the overall skilling ecosystem of India, covering both central and state-level agencies for improved outcomes.

#### 25<sup>th</sup> August

**1) Asian Development Bank (ADB):** ADB (founded in 1966) is an international development finance institution. **Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people.** Headquartered in Manila, ADB is owned and financed by its 68 members, of which 49 are from the region and 19 are from other parts of the globe. **The two largest shareholders of the Asian Development Bank are the United States and Japan.** ADB is an official United Nations Observer. Voting rights in ADB are distributed in proportion with members' capital subscriptions.



**2) Grand Cross of the Order of Honour:** The Indian Prime minister was recently conferred with the Grand Cross of the Order of Honour by the Greek President in Athens. It is **the second-highest civilian honour in Greece**. It is conferred to “eminent personalities who, by reason of their distinguished position, have contributed to enhancing the stature of Greece”. **The Order of Honour was established in 1975**. The head of the goddess Athena is depicted on the front side of the Star with the inscription “ONLY THE RIGHTEOUS SHOULD BE HONOURED”.

**Greece:** It is located in south-eastern Europe, on the southern tip of the Balkan Peninsula.

**Official Name:** Hellenic Republic.

**Bordering Countries:** The country is bordered by Albania, Bulgaria, Turkey, and North Macedonia. Greece shares maritime borders with Cyprus, Egypt, Italy, and Libya. The country is well known for the thousands of islands dotting the blue Aegean Sea to the east, the Mediterranean Sea to the south, and the Ionian Sea to the west. **The largest Greek island is Crete. Capital: Athens. Greece is often referred to as the “cradle of Western civilisation” because of its contributions to philosophy, democracy, and literature.** It was the home of famous ancient philosophers like Socrates, Plato, and Aristotle. During ancient times, the country was divided into city-states, which were ruled by noblemen. The largest were Athens, Sparta, Thebes, and Corinth. **Greece gained its independence from the Ottoman Empire in the early 19th century, following a war of independence that began in 1821.** It is a parliamentary republic with a head of government – the prime minister – who has the most political power, and the head of state – the president – whose duties are largely ceremonial. The executive power is exercised by the government. **Spoken languages are Greek (official) and Turkish** (predominantly spoken by a minority of Turks in Western Thrace). **The Olympic Games have their origins in ancient Greece, where the first Olympic Games were held in Olympia in 776 BC.** Greece also hosted the first modern Olympic Games in Athens in 1896.

**2) Smart City Mission Ranking;** The Union Housing and Urban Affairs Ministry named **Indore the best city and Madhya Pradesh the best state in the Smart Cities Mission in its India Smart Cities Awards 2022.** **Surat and Agra were named second and third best among cities and Tamil Nadu second in states, with the third prize being shared by Rajasthan and Uttar Pradesh.** The cities were selected based on their ranking in terms of progress of projects, project outcomes and presentations submitted for the awards.

**26<sup>th</sup> August**

**1. National Environmental Engineering Research Institute (NEERI):** It is a premier research institute created and funded by the Government of India dedicated to environmental science and engineering. The institute's primary mission is to conduct research and development activities related to various aspects of environmental management, pollution control, and sustainable development. **NEERI falls under the Ministry of Science and Technology of the central government. It was established in Nagpur in 1958 with a focus on water supply, sewage disposal, and communicable diseases,** and to some extent on industrial pollution and occupational diseases found common in post-independent India. **Headquarters: Nagpur. NEERI has five zonal laboratories at Chennai, Delhi, Hyderabad, Kolkata and Mumbai.**

**2. Council of Scientific and Industrial Research (CSIR):** It is one of India's premier scientific and industrial research organisations. **It was established as an autonomous body by the government of India in 1942 to promote scientific knowledge and boost industrialisation and economic growth. It is now one of the largest publicly funded R&D organisations in the world.**

**Headquarters: New Delhi.** CSIR maintains a large network of national laboratories and field stations and employs thousands of scientists, researchers, and support staff.

**Prominent laboratories:** Cellular and Molecular Biology (Hyderabad), the Central Electronics Engineering Research Institute (Pilani), the Central Institute of Mining and Fuel Research (Dhanbad), the National Aerospace Laboratories (Bengaluru), the National Institute of Oceanography (Goa), and the National Botanical Research Institute (Lucknow).

**3. AUSINDEX-23:** It is a major biennial maritime exercise, being conducted since 2015. The exercise will provide an opportunity for both Navies to further bolster inter-operability, gain from best practices and develop a common understanding of procedures for Maritime Security Operations. **This year's edition was held in Australia. INS Sahyadri and INS Kolkata participated in the exercise along with HMAS Choules and HMAS Brisbane from RAN.** Besides ships and their

integral helicopters, the exercise also witnessed the participation of fighter aircraft and maritime patrol aircraft. **Other Exercises conducted between Australia and India** Ex AUSTRA HIND (Bilateral Exercise with Army), EX PITCH BLACK (Australia's multilateral air combat training exercise), Malabar Naval Exercise, Quad (Multilateral Naval Exercise)

**4. Tele-Law 2.0:** Recently, the **Tele-Law 2.0 initiative was launched by the Department of Justice, Ministry of Law & Justice.** This version entails the fusion of Tele-Law Services with Nyaya Bandhu pro bono legal services, a merger to further enhance citizen accessibility to legal aid. The integration of legal guidance, support, and representation through a single registration process stands as a testament to the commitment to nurture a digitally literate and empowered populace.

**Tele-Law programme:** This was launched by the Department of Justice, Ministry of Law and Justice in 2017. **This is operating under the DISHA Scheme. Legal advice is made available to everyone under the Tele-Law service. Advice is free of Cost to those who are eligible for free legal aid under Section 12 of the LSA Act, 1987.**

**Legal matters in which advice can be taken through Tele-Law service include:** Dowry, family dispute, divorce, protection from domestic violence, Sexual harassment, sexual abuse, eve teasing at the workplace, Maintenance of women, children and senior citizens, Rights regarding property and land.

**28<sup>th</sup> August**

**1) EXERCISE BRIGHT STAR-23:** It is a **biennial multilateral tri-service exercise. This multinational exercise was launched in 1980 as part of the US-brokered peace treaty between Egypt and Israel.** This is the first time that IAF is participating in Ex BRIGHT STAR-23.

**Participating countries:** United States of America, Saudi Arabia, Greece and Qatar. **The Indian Air Force contingent will consist of five MiG-29, two IL-78, two C-130 and two C-17 aircraft.**

**Objective:** To practice planning and execution of joint operations. Besides leading to the formation of bonding across borders, such interactions also provide a means to further strategic relations between participating nations.

**2) C-DOT's TRINETRA:** Recently, the Minister of State for Communications, launched the TRINETRA Security system at the Centre for Development of Telematics (C-DOT) campus in New Delhi. It is a **combination of multiple Security systems like Security Information and Event Management (SIEM), Security Orchestration and Automated Response (SOAR), Data Loss Prevention (DLP), User Entity and Behaviour Analytics (UEBA), Multi-Source Threat Intelligence and others. The solution provides 24x7 near real-time actionable cyber-security status** and detection and resolution of cyber-threats (Virus, Malware, Ransomware, Spyware, etc.). It also performs security evaluation of the organisation's IT assets by protecting endpoints, including PCs, laptops, Servers and VMs, by detection, analyses and mitigation of vulnerabilities and giving AI-enabled automated responses to cyber threats, ensuring the protection of sensitive data.

**3) XRISM Mission:** The X-Ray Imaging and Spectroscopy Mission (XRISM) is a **joint mission of the Japan Aerospace Exploration Agency (JAXA) and the National Aeronautics and Space Administration (NASA), involving contributions from the European Space Agency (ESA) and Canadian Space Agency as well.** The mission aims to observe X-rays coming from deep space and to identify their wavelengths with unprecedented precision. **It will use state-of-the-art spectroscopy to measure changes in the brightness of celestial objects at different wavelengths. It detects X-rays with energies ranging from 400 to 12,000 electron volts.** (For comparison, the energy of visible light is 2 to 3 electron volts.). This range will provide astrophysicists with new information about some of the universe's hottest regions, largest structures, and objects with the strongest gravity.

**Instruments onboard:** The mission has two instruments, **Resolve and Xtend.**

**4) UN Commission on International Trade Law (UNCITRAL):** India and Iran have agreed to pursue arbitration under rules framed by the UN Commission on International Trade Law (UNCITRAL) and will not go for commercial arbitration in foreign courts. It is a **subsidiary body of the UN General Assembly, established in 1966.**

**Mandate:** To further the progressive harmonisation and unification of the law of international trade. **The Commission is composed of 60 member States elected by the General Assembly.** The 60 member States include 14 African States, 14 Asian States, 8 Eastern European States, 10 Latin American and Caribbean States and 14 Western European and other States. **The General Assembly elects members for**

terms of six years; every three years, the terms of half of the members expire. India is a founding member of this organisation.

### 29<sup>th</sup> August

**1) Wrestling Federation of India (WFI):** Wrestling Federation of India (WFI) is a governing body of wrestling based in New Delhi. It promotes wrestling players for the Olympics, Asian Games, National Wrestling Championships, and World Wrestling Championships.

**WFI's Contract System for Wrestlers:** In 2018, the WFI rolled out its revolutionary contracts system for the grapplers. Under the system, the wrestlers have been placed in four grades –

- **Grade A** offers financial assistance of 30 lakh rupees;
- **Grade B** offers a financial assistance of 20 lakh rupees;
- **The C category** offers support of 10 lakh rupees;
- **The D category** offers support of 5 lakh rupees.

The contracts are reviewed after one year.

**2) Article 35A:** Article 35A gives the J&K Legislature a carte blanche/ complete freedom to decide who will be the 'permanent residents' of the State. **'Permanent residents' included people who were hereditary State subjects as in 1927, when J&K was a princely state prior to its accession to the Indian Dominion in 1947.** Article 35A confer on them special rights and privileges in Public sector jobs, Acquisition of property in the State, Scholarships and Other public aid and welfare. **It was incorporated into the Constitution of India in 1954 by a Presidential Order, following the 1952 Delhi Agreement [between the then central Govt., and the then PM of J&K Sheikh Abdullah]. The Delhi Agreement extended Indian citizenship to the 'State subjects' of J&K.** The Presidential Order was issued under Article 370 (1) (d) of the Constitution, allowing the President to make certain "exceptions and modifications" to the Constitution for the benefit of 'State subjects' of J&K. **Article 35A was added to the Constitution as a testimony of the special consideration the Indian government accorded to the 'permanent residents' of J&K.**

**3) ORON Aircraft:** It is an Intelligence, Surveillance & Reconnaissance (ISR) mission aircraft. It was **developed by the Israeli Defence Ministry's Directorate of Defence Research and Development (DDR&D), the Israel Air Force and the Israel Defence Force (IDF)**

**Intelligence unit's naval arm and Israel Aerospace Industries (IAI).** It is based on the Gulfstream G550 executive jet platform, which has been outfitted with a bevy of sensors and data collection equipment that allows it to rapidly locate targets in all weather conditions. **The aircraft combines several capabilities, including aerial imaging, control and radar, and maritime intelligence gathering for the Navy.** It will be equipped with layers of automatic data systems based on advanced algorithms and AI. It will enable the IDF to create a real-time comprehensive intelligence picture, including deployment of ground forces, near and far, in routine times and during warfare.

**4) Lagrange point 1:** A Lagrange point is a **position in space where the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them.** i.e., at that point, the gravitational attraction and repulsion between two heavenly bodies is such that an object placed between them will effectively stay in the same relative position while moving with them. **These points in space can be used by spacecraft to reduce fuel consumption needed to remain in position. The Lagrange points are named in honour of Italian-French mathematician Josephy-Louis Lagrange, and there are five of them: L1, L2, L3, L4, and L5.** L1 point of the Earth-Sun system affords an uninterrupted view of the Sun.

### 30<sup>th</sup> August

**1) The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES):** It is an **independent intergovernmental body established in 2012.** It provides policymakers with objective scientific assessments about the state of knowledge regarding the planet's biodiversity, ecosystems and the benefits they provide to people, as well as the tools and methods to protect and sustainably use these vital natural assets. **This independent body was inspired by the Intergovernmental Panel on Climate Change (IPCC) and the Millennium Ecosystem Assessment.** It is not a United Nations body. However, at the request of the IPBES Plenary and with the authorisation of the UNEP Governing Council in 2013, the United Nations Environment Programme (UNEP) provides secretariat services to IPBES. India is a member country of this organisation.

**Stakeholders:** All contributors to and end-users of the IPBES outputs. Selected scientists and knowledge holders carrying out the IPBES assessments and other deliverables.

**Secretariat (Includes Technical Support Units):** Ensures the efficient functioning of IPBES through support to the Plenary, Bureau and MEP, as well as



implementing the Platform's work and administrative functions.

**2) Mahendragiri Frigate:** It is the seventh and last stealth frigate of Project 17A Frigates. It is named after a mountain peak in Eastern Ghats located in Odisha. The ship is being built by the Mazagon Dock Shipbuilders Limited (MDL) in Mumbai.

**Project 17A:** The project was launched by the defence forces of India to construct a series of stealth guided-missile frigates. **Under the Project 17A programme, four ships by Mumbai-based Mazagon Dock Shipbuilders Limited (MDL) and three by Garden Reach Shipbuilders and Engineers Limited (GRSE) are being built.** These warships follow the Project 17 Class Frigates (Shivalik Class) and boast enhanced stealth features, advanced weapons, sensors, and platform management systems. **Project 17A ships have been designed in-house by the Indian Navy's Warship Design Bureau WDB.** As much as 75% of the orders for equipment and systems of Project 17A ships are from indigenous firms, including MSMEs. **The first six ships of the project have been launched so far by MDL & GRSE between 2019-2023.**

**3) Millennium Challenge Corporation:** MCC is an independent S. foreign assistance agency that has the goal of reducing poverty in developing countries. It was **created by the S. Congress in 2004 to promote economic growth, open markets, and increased living standards in select countries.** MCC forms partnerships with countries that are committed to good governance, economic freedom and investing in their citizens. **MCC provides selected countries with large-scale grants to fund projects for reducing poverty through sustainable economic growth.** These projects include building infrastructure, reforming institutions, and promoting access to **healthcare and education.** **MCC grants may complement other U.S. and international development programs.** **MCC utilises two primary types of grants: compacts and threshold programs.** Compacts are large, 5-year grants for countries that pass MCC's eligibility criteria. Threshold Programs are smaller grants awarded to countries that come close to passing these criteria and are committed to improving their policy performance.

### 31<sup>st</sup> August

**1) Organised Crime and Corruption Reporting Project:** The Organized Crime and Corruption Reporting Project is a **global network of investigative journalists with staff on six continents. Founded in 2006, it specializes in organized crime and corruption.** It publishes its stories through local media and in English and Russian through its website. The entity was

involved in the coverage of Pegasus spyware as well as Panama Papers leak.

**2) Production Linked Incentive scheme for IT Hardware:** It was first announced in February 2021 over a period of four years. Domestic players investing Rs. 20 crore and clocking sales of Rs. 50 crore in the 1st year, Rs. 100 crore in the 2nd, Rs. 200 crore in the 3rd, and Rs. 300 crore in the final year, would pocket incentives of 1-4% on incremental sales over 2019-20. **The first version of the scheme was a laggard with only two companies – Dell and Bhagwati – managing to meet first year's (FY22) targets, and the industry calling for a renewed scheme with an increased budgetary outlay.** As a result, the Union Cabinet cleared a revised PLI scheme for IT hardware (in May, 2023). The PLI 2.0 could attract big global IT hardware manufacturers to shift their production base to India and give a boost to local production of laptops, servers, personal computers, etc. The average incentive over six years will be about 5% compared with the 2% over four years offered earlier. As the IT hardware industry is targeted to reach a production of \$24 billion by 2025-26 (and exports ~\$12-17 billion), this scheme will play a key role in achieving the \$1 trillion digital economy goal, including \$300 billion of electronics manufacturing by 2025-26.

**3) PRIP Scheme:** The Union Cabinet recently approved the Promotion of Research & Innovation in Pharma-MedTech sector (PRIP) scheme for five years. **The objective is to transform the Indian Pharma MedTech sector from cost-based competitiveness to innovation-based growth by strengthening the research infrastructure in the country.** The aim of the scheme is **to promote industry-academia linkage for R&D in priority areas to inculcate a culture of quality research and nurture our pool of scientist.** **The six focus areas of the scheme are:** new chemical entities, including biological and phytopharmaceuticals; complex generics and biosimilars; precision medicines such as gene therapy and stem cells; medical devices using artificial intelligence and machine learning; orphan drugs; anti-microbial resistance.

**4) GREAT Scheme:** Grant for Research and Entrepreneurship across Aspiring Innovators in Technical Textiles (GREAT) Scheme focuses on supporting individuals and companies to translate prototypes to technologies & products, including commercialisation. **The aim is to provide much-needed impetus for the development of the technical textiles start-up ecosystem in India, especially in niche sub-segments such as bio-degradable and sustainable textiles, high-performance and speciality fibres, and smart textiles.** Under this scheme, a grant-in-aid of up to Rs. 50 lakh for up to a period of 18 months will be provided. The textile ministry will additionally provide



10 per cent of the total grant-in-aid to incubators. Only a minimum of 10 per cent contribution has to be made by the incubate. All of this is being done by incubators like IITs, NITs, Textiles Research Associations, and Centres of Excellence. **The scheme will be commensurate with the National Technical Textiles Mission.**



## PLACES IN NEWS

### 1) Niger (Capital: Niamey)

- The military seized power in Niger.
- **Political Boundaries**
  - Landlocked western African country.
  - Bounded by **Algeria** (northwest), **Libya** (northeast), **Chad** (east), **Nigeria and Benin** (south), **Burkina Faso and Mali** (west).
- **Geographical features**
  - **Highest Peak:** Mont Idoukal-n-Taghès in Bagzane Plateau.
  - **Longest river:** Niger River (3<sup>rd</sup>-longest river in Africa after the Nile and Congo rivers).
  - **Lake Chad (freshwater lake):** A west-central African region shared by Chad, Cameroon, Nigeria, and Niger.
  - **Climate type:** Hot Climate (it is part of the West Africa Sahel region).

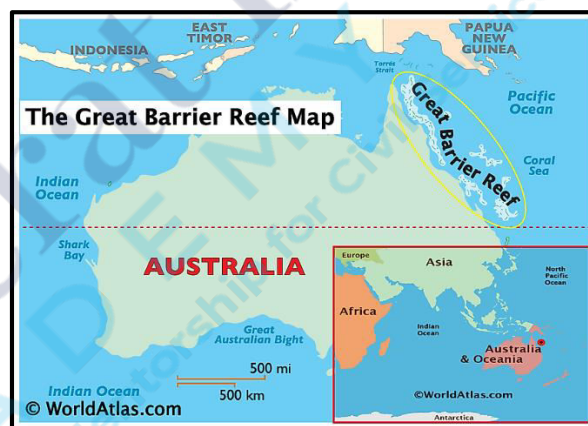


### 2) Malawi (Capital: Lilongwe)

- A parliamentary delegation from Malawi is visiting India.
- **Political Boundaries**
  - A landlocked country in south-eastern Africa.
  - Bounded by **Tanzania** (north), **Lake Malawi** (east), **Mozambique** (east and south), and **Zambia** (west).
- **Geographical features**
  - **Highest point:** Sapitwa (Mount Mulanje).
  - **Lowest point:** Junction of Shire River and international boundary with Mozambique
  - **Major lakes:** **Lake Malawi** (aka Lake Nyasa in Tanzania) (largest), **Lake Chilwa**.
  - **Major rivers:** The Shire River (largest), Lilongwe River, North and South Rukuru, Dwangwa, etc.

**3) Great Barrier Reef (GBR):** A UNESCO heritage committee have recommended the Great Barrier Reef not be placed on a list of world heritage sites “in danger”.

- However, they warned that **the world’s biggest coral reef ecosystem remains under “serious threat” from pollution and the warming of oceans.**
- The GBR, which extends for over 2,300 kilometres along the north-eastern coast of Australia, is home to over 9,000 known species.
- **They are home to a quarter of the ocean’s marine life,** generate clean air and protect vulnerable coastlines from erosion, flooding and storms.
- It was **declared as a UNESCO World Heritage Site in 1981.**



**4) Similipal Tiger Reserve (STR):** The Odisha government has set up a joint task force of armed police and forest personnel to protect STR.

#### About STR

- **Location:** Mayurbhanj district (Odisha)
- Declared as a **biosphere reserve in 1994**
- Added to **UNESCO’s Man and Biosphere Program in 2009.**
- **Flora:** Northern Tropical Moist Deciduous with some evergreen patches (Sal is the dominant tree species)
- **Fauna:** Tiger, Elephant, Hill Mynah, Leopard, Sambar, wild boar, giant squirrel, etc.
- **Rivers:** Budhabalanga, Salandi and many tributaries of the Baitarani River.

### 5) Iberian Peninsula:

- **Political Features**
  - Located in **Southwestern Europe.**
  - **Mainly occupied by Spain & Portugal,** also comprises Andorra, Gibraltar (British overseas territory) and part of Southern France (part of

the French department of Pyrénées-Orientales).

- Pyrenees mountain range in the northeast separates it from the rest of Europe; the Strait of Gibraltar in the South separates it from Africa.
- The peninsula lies between the Mediterranean Sea and the Atlantic Ocean.
- **Geographical Features**
  - **Highest Peak:** Mulhacén Peak.
  - **Major River:** Tagus (longest), Douro, Ebro, and Guadiana



### 6) Ethiopia (Capital: Addis Ababa)

- Ethiopia's government has declared a state of emergency in its second-largest region, Amhara.
- **Political Boundaries**
  - Landlocked country on the **Horn of Africa**.
  - Bounded by **Eritrea** (north), **Djibouti** (northeast), **Somalia** (east), **Kenya** (south), and **South Sudan and Sudan** (west).
- **Geographical features**
  - **Highest point:** Mount Ras Dejen.
  - **Major rivers:** Blue Nile, Omo, Awash, etc.
  - **Major Lakes:** Lake Tana (Source of Blue Nile), Lake Ziway etc



**7) Adichanallur:** The Foundation stone laid for the establishment of a museum in Adichanallur, one of five sites declared to be developed as Iconic Sites in Union Budget 2020-21.

- Other sites are **Rakhigarhi (Haryana), Hastinapur (UP), Dholavira (Gujarat), and Shivsagar (Assam)**.
- Adichanallur is an **iron-age burial site located in the Thoothukudi District on the banks of the Thamirabarani River in Tamil Nadu**
- **Adichanallur also showcases megalithic culture.**
- Various objects dating back to 467 BCE and food grains such as millets and paddy dated 665 BCE have been unearthed here.
- **Korkai, an ancient seaport mentioned in Sangam literature, was near Adichanallur.**

**8) Red Sea:** The US have deployed new forces and warships to the Red Sea.

- **Political Boundaries**
  - It is an inlet of the Indian Ocean between **Africa and Asia**.
  - Boundary countries are **Egypt, Saudi Arabia, Yemen, Sudan, Eritrea and Djibouti**.
  - Connected to the Indian Ocean in the south through the Bab el Mandeb Strait and the Gulf of Aden.
- **Geographical features**
  - Occupies a part of the **Great Rift Valley (Afr- Arabian Rift Valley)**.
  - Lies in a fault depression that separates two great blocks of Earth's crust – **Arabia and North Africa**.
  - One of the **saltiest bodies of water in the world**.



**9) Mediterranean Sea:** Boat carrying migrants sank in the Mediterranean Sea

• **Political Boundaries:**

- Intercontinental sea that stretches from the **Atlantic Ocean (west) to Asia (east) and separates Europe from Africa**
- **Bordering countries include**
  - Europe (West to East): Spain, France, Monaco, Italy, Malta, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, Greece and Cyprus
  - Asia (north to south): Turkey, Syria, Lebanon and Israel
  - Africa (east to West): Egypt, Libya, Tunisia, Algeria and Morocco
    - **Bordering Cities:** Athens, Haifa, Tel Aviv, Beirut, Venice, Rome

• **Geographical features:**

- Connected to the **Atlantic Ocean by the Strait of Gibraltar** and the **Red Sea by the Suez Canal**.
- Sea of Marmara (part of the Mediterranean Sea) connected to the Black Sea via the Bosphorus Strait, and the Aegean Sea via the Dardanelles Strait.
- **Climate:** Wet winters and hot, dry summers.
- **The largest island:** is Sicily.
- **Marginal Seas within the Mediterranean:** Aegean Sea, Ionian Sea, Adriatic Sea, Sea of Marmara



**10) Ecuador (Capital: Quito)**

- Emergency has been imposed due to the assassination of a political leader.
- **Political Boundaries:**
  - Located in **northwestern South America**.
  - It shares borders with Colombia to the north, Peru to the east and the south, and the Pacific Ocean to the west.
  - Galapagos Islands come under its jurisdiction.
- **Geographical Features:**
  - **The mainland is divided into three main physical regions: the Costa (coastal region),**

**the Sierra (highland region), and the Oriente (eastern region).**

- Occupies part of the Amazon basin and is situated on the Equator.
- **Rivers:** Guayas and Napo
- **Highest Peak:** Chimborazo, part of Andes



**11) Nagzira tiger reserve:**

- **Location:** Bhandara and Gondia districts of Maharashtra.
- It is a **part of Navegaon Nagzira National Park**.
- **Flora:** Dry deciduous, Moist deciduous and Bamboo forests. Teak, bamboo, tendu, and mahua (dominant tree species).
- **Fauna:** Tigers, leopards, sloth bears, gaur (Indian bison), sambar deer, spotted deer, wild boar, and langur.
- **Water Bodies:** Navegaon Lake, Nagzira Lake, and the Itiadh Dam.

**12) Gwadar Port:** Gwadar Port is situated in the southwestern Balochistan province of Pakistan.

- It is an **important part of the China-Pakistan Economic Corridor (CPEC)** and the **Belt and Road Initiative (BRI)**.
- Gwadar port is located on the Arabian Sea, close to the entrance of the Persian Gulf.

**13) Libya (Capital: Tripoli)**

- Clashes between two leading armed groups in Tripoli, the only civilian airport, have led to its closure.
- **Political Boundaries.**
  - Country located in North Africa.



- Bounded by the **Mediterranean Sea** (north), **Egypt** (east), **Sudan** (southeast), **Niger and Chad** (south), and **Tunisia and Algeria** (west).
- **Geographical features**
  - **The highest mountain:** is Bikku Bitti.
  - **Rivers:** There are no permanent rivers, only ephemeral rivers or wadis like **Zamzam**.
  - **Climate:** **Hot arid which is exacerbated by Ghibli** (a hot arid wind that blows from south over the entire country).



**14) Pong Dam (aka Maharana Pratap Sagar or Pong reservoir):** Pong Dam is a manmade reservoir. It was constructed in 1975 on river Beas in the wetland of Shivalik hills of Kangra district of Himachal Pradesh.

- **In 1983, the entire reservoir was declared a Wildlife Sanctuary.**
- It is the **highest earthfill dam in India.**
- Pong Dam Lake has been **declared a Ramsar Site in 2002.**
- There is a Vulture café in Pong wherein cattle carcass is dumped inviting the Vultures to scavenge upon them.

**15) Lake Titicaca:** Water levels in Lake Titicaca fall to historic lows due to climate change.

- **Political Boundaries:**
  - Situated between **Peru (west) and Bolivia (east).**
- **Geographical features:**
  - Located in the **Andes Mountains of South America.**
  - At 3,800 meters above sea level, it is the **world's highest navigable body of water.**
  - **Largest freshwater lake in South America.**
  - It has been on **UNESCO's World Heritage tentative list since 2005.**

**16) Gaganachukki waterfalls:** Gaganachukki waterfalls are formed by the **River Kaveri in the Mandya district of Karnataka.**

- It is shaped like a **huge horsetail and has of height of 90 mts.**

**17) Lithuania (Capital: Vilnius)**

- Lithuania will temporarily close two checkpoints with Belarus amid tensions on the border.
- **Political Boundaries**
  - Located in north-eastern Europe, the southernmost and largest of the three Baltic states (other two Estonia, Latvia)
  - Lithuania is bounded by Latvia to the north, Belarus to the east and south, Poland and the detached Russian oblast of Kaliningrad to the southwest, and the Baltic Sea to the west.
- **Geographical Boundaries:**
  - **Important Rivers:** Nemunas River
  - **Largest lake:** Lake Drūkšiai
  - **Highest Point:** Mount Juozapinė
  - **Language:** Lithuanian is the oldest surviving Indo-European language in the world

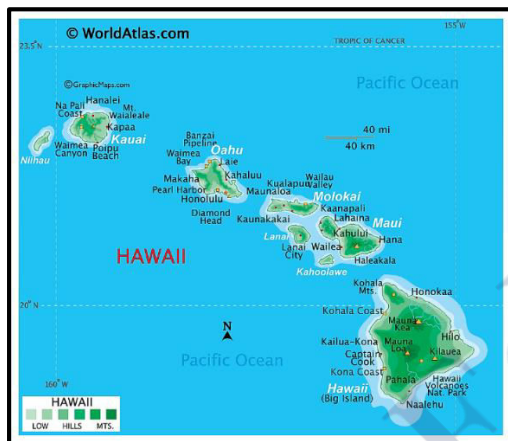


**18) Sulina Channel:** Sulina Channel – a distributary of the **Danube River**, connects major Ukrainian ports on the river to the Black Sea.

- **Chilia, Sulina and St George are major channels in the Danube Delta.**
- Of these three, **Sulina Channel is the only one deep and wide enough for freight transport.**
- It lies completely within Romania, a NATO member.
- Danube Delta has provided Ukraine with an alternative passage after Russia withdrew from the Black Sea grain deal.

**19) Hawaii (Capital Honolulu)**

- **Maui wildfires are considered one of the worst natural disasters in Hawaii's history.**
- **Hawaii is a group of volcanic islands** (an example of Shield volcanoes – made up of basalt, a type of lava that is very fluid).
- Lavas, particularly basaltic ones, come in two primary types: **pahoehoe and aa.**
- A third type, pillow lava, forms during submarine eruptions.
- **Location:** Central Pacific Ocean and lies southwest of the continental United States.
- **World Heritage Sites:** Hawaii Volcanoes National Park and Papahānaumokuākea Marine National Monument
- **Geographical Features**
  - It consists of **emerged volcanic mountains.**
  - **Highest point:** Mauna Kea.
    - It is 10,203 m high from its base, making it the highest mountain on Earth measured from the base.
  - **Rivers:** Wailuku, Hanalei, Wailua, Kolekole etc.



## 20) Katchatheevu:

- Katchatheevu is **an uninhabited island in the Palk Strait**, between India and Sri Lanka.
- It lies **northeast of Rameswaram (India) and southwest of Jaffna (Sri Lanka).**
- It is important to the fisherfolks of the two countries who have been traditionally using the islet for fishing.
- In 1974, as part of the '**Indo-Sri Lankan Maritime Agreement**', India ceded Katchatheevu to Sri Lanka.

## 21) Ecuador (Capital: Quito)

- Ecuador voters reject oil drilling in Yasuni National Park, a protected area under the Amazon rainforest.
- **Political Boundaries**
  - Country of north-western South America.
  - Borders **Colombia** (north), **Peru** (east and south), and the **Pacific Ocean** (west).

- It includes the **Pacific archipelago of the Galapagos Islands.**
- **Geographical features**
  - Situated on Equator.
  - The highest point above Earth's centre: is **Mt. Chimborazo.**
  - **Major rivers:** Amazon, Marañón, Putu-mayo etc.



## 22) Greece (Capital: Athens)

- Indian Prime Minister is visiting Greece.
- **Political Boundaries:**
  - Greece is the **southernmost of the countries of the Balkan Peninsula.**
  - **Bordering countries:** Albania, Bulgaria, Turkey, Republic of Macedonia.
- **Geographical features:**
  - **Highest Peak:** Mount Olympus.
  - **Major Rivers:** Haliacmon, Achelous, Marita, etc.
  - **Major water bodies:** Aegean Sea (east), Mediterranean Sea (south), and Ionian Sea (west).



**23) Near side of the moon:** Vikram lander of Chandrayaan-3 landed on the near side of the moon.

- The near side refers to the portion of the moon – about **60%** – **that is visible to us.**
- This is because the **Moon has the same rotational period around its axis** as its orbital period around the Earth (tidal locking).
- It has a **relatively smoother, thinner crust** and has **large volcanic plains** compared to the far side.
- **The far side refers to the invisible portion of the Moon.** It has huge craters which make it non-conducive for space missions.
- **Chinas Chang é-4 lander** is the **only one to have successfully landed on the far side.**

**24) Zimbabwe (Capital: Harare)**

- The current President was re-elected in the recently concluded election.
- **Political boundaries:**
  - A **landlocked country in south-central Africa.**
  - Bordered by Botswana, Zambia, Mozambique, and South Africa.
- **Geographical Features:**
  - **Highest Point:** Mt. Nyangani
  - Lake Kariba, located on the border between Zambia and Zimbabwe, is **the world's largest man-made lake by volume.**
  - **Major rivers:** Zambezi, Pungwe, Buzi, Save, Limpopo etc.





## EDUFACTS

### 1st August

- 1) 17422 people died in India between 2012-2021 due to floods: **Ministry of Jal Shakti**.
- 2) GST evasion of 14000 Crores detected in **April-May 2023-24**.
- 3) On an average, **women do 7 hours of housework** while **men's contribution is under 3 hours**.

### 2nd August

- 1) Total assets of **223 MLAs in Karnataka stand at Rs. 14000 crore**, the highest in the country: **ADR report**.
- 2) Climate investment as part of GDP: while **USA and Canada spend only 0.3% of GDP on climate activities**, **Sub-Saharan Africa has the highest investment (1.3% of GDP)**.
- 3) 20% of tiger area spanning 16 tiger reserves harbour less than 1% tigers- **AITE records**.

### 3rd August

- 1) **NFHS 5**: 19% of surveyed households did not have access to toilet facilities.
- 2) 57% of households did not have access to LPG: **NFHS 5**.
- 3) Out of 20 cheetahs brought in from Namibia and South Africa, 6 have died. 3 cheetah cubs born to these translocated cheetahs also died
- 4) Only 2000 out of 10,000 pharma manufacturing units in the country have been found to be compliant with WHO GMP standards.

### 4th August

- 1) 9 lakh trees to be axed for the Nicobar project.
- 2) More than **1300 seats vacant in IAS and 700 in IPS**: Union minister of state for personnel.

### 7th August

- 1) 1300 railway stations to be redeveloped under **Amrit Bharat Station scheme**.
- 2) India is the **world's largest producer and consumer of sugar**.
- 3) **5% of birds in India are endemic**: Zoological Survey of India.

### 8th August

- 1) 3 lakh hectares of forest land diverted in 15 years. 34% of diverted land is used for mining and road construction projects.
- 2) 3682 tigers in India in 2022 from 1411 in 2006.

### 9th August

- 1) **July 2023** was **the Earth's hottest month on record**.
- 2) In a randomized trial conducted by Lancet involving households with TB patients, it was found nutritional support led to a 39-48% decline in TB.
- 3) **CAG report**: irregularities in implementation of PMJAY. Nearly 7.5 lakh beneficiaries are linked with a single cellphone.
- 4) The government lost 1 lakh crore revenue in FY21 after the corporation tax rate cut.

### 10th August

- 1) The NEP 2020 aims at making **"India a global knowledge superpower"**. It is only the 3rd major revamp of the framework of education in India since independence.
- 2) Like an X-ray, a **Computed Tomography (CT) scan shows structures inside the body**. But instead of creating a flat, 2D image, a CT scan takes dozens to hundreds of images of the body to see things that regular X-rays can't show.
- 3) CBI's establishment was recommended by the **Santhanam Committee on Prevention of Corruption**.

### 11th August

- 1) **Top Cotton Producing Countries**: India > China > USA; **Top Cotton Producing States in India**: Gujarat > Maharashtra > Telangana > Rajasthan > Andhra Pradesh.
- 2) Under the **Namami Gange Programme**, the **government is promoting chemical-free organic farming along the banks of the Ganga River**. Since 2017-18, approximately 1.23 lakh hectares of land have been covered under this initiative.
- 3) Created through the Lagos Treaty in 1975, **ECOWAS (Economic Community of West African States)** aims to foster **economic integration, cooperation, and development among West African nations**.



### 12th August

1) The National Water Mission launched the '**SahiFasal**' campaign in 2019, which encourages farmers in water-stressed regions to cultivate crops that are **economically viable, water-efficient, and aligned with agro-climatic conditions**.

2) Currently, there is no specific legislative process defined in the Constitution for the appointment of the CEC and ECs. There are just **five Articles (324-329) in Part XV (Elections) of the Constitution**.

3) **India ranks 4th globally after China**, the United States and Germany, in terms of **installed wind energy capacity**, with 42.8 GW (onshore wind) as of April 2023.

### 14th August

1) **China remains one of the biggest importers of iron ore from India**. The East Asian country imports almost 70% of Iron-ore from India.

2) **14 States and Union Territories** are yet to sign a Memorandum of Understanding (MoU) with the **Ministry of Education, mandating the implementation of the National Education Policy (NEP)** to avail funds for the next three years, under the Pradhan Mantri Uchchatar Shiksha Abhiyan (PM-USHA).

3) **The Indian Penal Code (IPC) is the official criminal code of India drafted in 1860** in the wake of the first law commission established in 1834 under the Charter Act of 1833. **CrPC was enacted in 1973 and became effective on 1 April 1974**. The Indian Evidence Act was originally passed in India by the Imperial Legislative Council in 1872, during the British Raj.

### 16th August

1) Bail appeals have risen from approximately 3.2 lacks to 3.5 lacks annually before 2020, to 4 lacks to 4.3 lacks thereafter from July 2021 to June 2022.

2) The ISFR (India State of Forest Report) 2021 estimates that more than **36% of the country's forest cover is prone to frequent forest fires, 6% is 'very highly' fire-prone, and almost 4% is 'extremely' prone**.

3) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, commonly referred to as the BOCW Act, plays a significant role in safeguarding the rights and interests of workers in the construction sector.

### 17th August

1) **Urea is India's most widely used fertiliser**, with its consumption/sales rising from 26.7 million tonnes (mt) to 35.7 mt between 2009-10 and 2022-23.

2) In 2016, during the time of demonetisation, a 100% I-CRR (Incremental Cash Reserve Ratio) was employed.

3) Print media is regulated mostly through two major Acts, namely, the **Press and Registration of Books Act of 1867, and the Press Council Act, of 1978**. Cinema is regulated through the **Cinematographic Act of 1952**. The telecommunication sector is regulated through the **Telecom Regulatory Authority of India Act, 1997**.

### 18th August

1) **Babur, the founder of the Mughal dynasty, termed Delhi the 'capital of all Hindustan' in the 16th century**. Despite brief relocations (Akbar shifted his capital to Agra) the **Mughals, under Shah Jahan, re-established Delhi as their capital with Shahjahanabad in 1648, known today as Old Delhi**.

2) The **PM e-Bus Sewa scheme** is projected to **create a direct employment opportunity surge**, with an estimated range of 45,000 to 55,000 jobs.

3) India does not have a specific law to deal with organized crime at the national level. Some states, such as Gujarat (Gujarat Control of Organised Crime Act, 2015), Karnataka (Karnataka Control of Organised Crime Act, 2000), and Uttar Pradesh (Uttar Pradesh Control of Organised Crime Act, 2017), have enacted their own laws to combat organized crime.

### 19th August

1) **The Indian Pharmacopoeia Commission (IPC) was created to set standards for drugs in India**. Its basic function is to regularly update the standards of drugs commonly required for the treatment of diseases prevailing in this region.

2) In 2011, the Union government undertook a Socio-Economic and Caste Census (SECC); however, due to data inaccuracies, the raw data collected from almost 1.3 billion Indians was never disclosed

3) The **Archaeological Survey of India (ASI) was founded in 1861 by Alexander Cunningham**- the first Director-General of ASI. Alexander Cunningham is also known as the "Father of Indian Archaeology".

### 21st August

1) In Uttarakhand, merely **31.7% of households are connected to sewerage systems**, leaving the majority reliant on on-site sanitation facilities.

2) As per WHO, India accounts for 27% of the global TB incidence and 35% of total TB-related deaths.

3) **Agnibaan SOrTeD** will be the first step towards launching the **world's first 3D-printed rocket into space**.

#### 22nd August

1) Over **90% of wildfires in coastal California** are ignited by human activities such as **downed power lines and campfires**.

2) Between 2018 and 2021, defence trade between India and Russia amounted to approximately USD 15 billion, encompassing significant deals including S-400, frigates, AK-203 assault rifles, and emergency procurements.

3) **Uttar Pradesh** accounted for the highest share of 16.2% in the total cost of projects sanctioned by banks and financial institutions in 2022-23.

#### 23rd August

1) The **North East Special Infrastructure Development Scheme (NESIDS)** aims to foster infrastructure development, especially connectivity, in identified sectors across the North Eastern States.

2) The UK emphasized that even after achieving Net-Zero Emissions by 2050, a significant portion of the U.K.'s energy needs, about a quarter, would still be reliant on oil and gas.

3) The **Umiam Lake** is a reservoir that was **created as part of a dam construction project on the Umiam River** (also known as Barapani River) in Meghalaya.

#### 24th August

1) The NCF (National Curriculum Framework) has undergone four revisions in the past – in **1975, 1988, 2000, and 2005**. The proposed revision, if implemented, would be the fifth iteration of the framework.

2) As of January 3, 2023, the count of rural households having access to tapped water connections had risen to 108.7 million, equivalent to 56.14%.

3) In **1974**, Prime Ministers Indira Gandhi of India and Sirima R.D. Bandaranaike of Sri Lanka signed an agreement that **recognized Katchatheevu as part of Sri Lanka's territory, resulting in a change of ownership**.

#### 25th August

1) The bilateral trade between India and ASEAN in 2022-23 amounted to USD 131.5 billion, constituting 11.3% of India's global trade for the same period.

2) The **Shantilal Shah Committee** was set up in the mid-1960s **to investigate the need for abortion regulations and recommended the Medical Termination of Pregnancy (MTP) Act, 1971**.

3) So far, out of over 1 lakh identified Amrit Sarovars, the work has been started for over 81,000 Amrit Sarovars and a total of over 66,000 Amrit Sarovars have been constructed/ rejuvenated.

#### 26th August

1) Currently, **the BRICS brings together five of the largest developing countries of the world**, representing 41% of the global population, 24% of the global GDP and 16 % of the global trade.

2) According to the India Tourism Statistics Report 2022 of the Ministry of Tourism, **Bangladesh has been the second-largest the tourist-generating market for India in the year 2021**.

3) **Superconductors exhibit the Meissner effect**, which is the expulsion of a magnetic field from the interior of a material during the process of becoming a superconductor.

#### 28th August

1) The share of the age group of 15-29 years in the total workforce has decreased from 25% in 2016-17 to 17% in the financial year 2022-23 as per CMIE's Economic Outlook.

2) A significant portion of domestic raw coal dispatch, around 75%, is attributed to major coal-producing states like **Odisha, Chhattisgarh, and Jharkhand**.

3) **Eastern Equine Encephalitis (EEE) is a viral disease** that causes inflammation of the brain (encephalitis). It spreads to people and animals by the bite of an infected mosquito.

#### 29th August

1) India's Ultra-Processed Food Sector grew at a Compound Annual Growth Rate (CAGR) of 13.37 % in retail sales value from 2011 to 2021.

2) At present, more than 3 lakh complaints or appeals are pending with various information commissions across India.

3) **India is the world's second-largest coal producer and 5th largest country in terms of coal deposits**.

### 30th August

1) July 2023 witnessed a notable increase in Retail Inflation, reaching 7.44%, creating a Goldilocks scenario for India, making investors and savers uncertain about the economic situation.

2) The **human genome consists of 23 pairs of chromosomes**, inherited from each parent, forming the blueprint of our genetic identity.

3) In **FY 2022-23, India** recorded an unprecedented **8,371 crore UPI transactions**.

### 31st August

1) China's government recently unveiled the "**2023 edition of the standard map of China**," reaffirming its territorial claims over disputed regions. The map also shows the **tenth dash line** which **underlines Beijing's claims over Taiwan island**.

2) **The north Indian Ocean (NIO) in the post-monsoon season** (Oct-Nov-Dec) is a hotbed for LLCs (Low Latitudes Cyclones) that constitute about 60% of all Tropical Cyclones formed in the NIO (since 1951) but has received relatively less attention.

3) **Long-read sequencing, also called third-generation sequencing, is a DNA sequencing technique** that enables the sequencing of much longer DNA fragments than traditional short-read sequencing methods.



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## Practice MCQs on Current Affairs

### Subjects

1. Consider the following statements, with reference to Biosimilars:

1. Biosimilar is a biologic medical product that is almost an identical copy of an original product that is manufactured by a different company.
2. Biosimilars are the generic versions of biologics medicines made from chemicals as opposed to animal or plant proteins.
3. They are less sensitive to temperature, easy to maintain and do not require cold chain network.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation:

- **Biosimilar is a biologic medication that is similar to another biologic drug.** Biosimilar is a biologic medical product that is almost an identical copy of an original product that is manufactured by a different company. **Biosimilars are officially approved versions of original "innovator" products** and can be manufactured when the original product's patent expires. **Hence, statement 1 is correct.**
- **Biosimilars are the generic versions of biologics medicines made from animal or plant proteins** as opposed to chemicals. Biologics, or biological products, are medicines made from living organisms. **Hence, statement 2 is incorrect.**
- Biosimilars are prescribed medications and **serve as lower-cost alternatives to their original biologic counterparts.** The temperature has a significant impact on the maintenance of biosimilars because of their great sensitivity. They must therefore be distributed via a cold chain network. **Hence, statement 3 is incorrect.**

2. Dongria Kondh Tribe, recently seen in news, belongs to which state?

- (a) Chattisgarh
- (b) Jharkhand
- (c) Telangana
- (d) Odisha

Answer: (D)

Explanation: The Dongria Kondh Tribe is an indigenous community belonging to the Munda

ethnic group, residing in the Niyamgiri hills of Odisha, India. Their name is derived from "dongar," meaning 'hill,' and they refer to themselves as Jharnia, meaning 'protector of streams.' They use the Kui language, primarily spoken without a script. Hence, option (d) is correct.

3. With reference to Free Movement Regime (FMR), consider the following statements:

1. FMR is a mutually agreed arrangement between two countries that allows tribes living along the border on either side to travel up to 25 km inside the other country without a visa.
2. The FMR was implemented in 2021 as part of India's Act East policy.

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:

- The **FMR is a mutually agreed arrangement between the 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. **Hence, statement 1 is incorrect.**
- The **FMR was implemented in 2018 as part of India's Act East policy** at a time when diplomatic relations between India and Myanmar were on the upswing. **Hence, statement 2 is incorrect.**

4. Consider the following statements regarding Qila Rai Pithora:

1. It was constructed in the 12th century by Rajput ruler Prithviraj Chauhan.
2. The complex of the Qila Lal Pithora also includes the Lal Kot, which had been built in the 8th century by Tomar ruler Anang Pal I.

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: Qila Rai Pithora (literally "Rai Pithora's Fort") is a fortified complex in present-day Delhi, including the Qutb Minar complex. **The term was first used by the 16th century historian Abu'l-Fazl in his Ain-i-Akbari, who presents Delhi as the Chahamana capital.** It was constructed in the 12th century by Rajput ruler Prithviraj Chauhan. **The complex of the Qila Lal Pithora also includes the Lal Kot, which had**



been built in the 8th century by Tomar ruler Anang Pal I. Hence, both statements are correct.

5. Parkachik Glacier, recently seen in news, is situated in:

- (a) Arunachal Pradesh
- (b) Ladakh
- (c) Sikkim
- (d) Uttarakhand

Answer: (B)

**Explanation:** According to a new study conducted by scientists at the **Wadia Institute of Himalayan Geology**, three glacial lakes are projected to form around the Parkachik Glacier in Ladakh due to rapid ice melt. The Parkachik glacier is one of the largest glaciers in the Suru River basin, encompassing 53 square kilometres and stretching 14 kilometres. The Suru River valley is located in the western Himalayas' southern Zaskar Ranges. Main reasons for rapid melting of glacier are global warming and increasing temperatures, and a lower altitude than other glaciers in Zaskar region. Hence, option (b) is correct.

6. Consider the following statements regarding black hole:

- 1. A stellar black hole is generated by the collapse of a single massive star.
- 2. Most galaxies, including our own, have supermassive black holes at their cores.

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:** Black holes are regions of space-time with so much gravity that nothing, not even light, can escape. They are generated when a huge star collapses in on itself at the end of its life, resulting in an extremely dense object with such a powerful gravitational attraction that it warps space-time around it. A stellar black hole is generated by the collapse of a single massive star. Intermediate black holes have masses ranging from 100 to 100,000 times that of the sun. Supermassive black holes are found at the centre of most galaxies, including our own Milky Way galaxy, and have masses ranging from millions to billions of times that of the sun. Hence, both statements are correct.

7. Consider the following statements regarding Akira Ransomware:

**Statement I** - Akira is a ransomware targeting only Windows-based systems.

**Statement II** - The primary objective of Akira ransomware is to steal sensitive data from victims and conduct double extortion for ransom.

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: (D)

**Explanation:**

- Akira is a ransomware targeting Windows and Linux devices, encrypting data and demanding double ransom for decryption and recovery. Akira spreads through spear phishing emails, drive-by-downloads and insecure remote desktop connections. Akira deletes Windows Shadow Volume copies, hindering data recovery and backup. Hence, statement 1 is incorrect.
- Akira adopts a double extortion scheme to maximize its impact and financial gains. The ransomware first infiltrates the victim's system to steal sensitive information. Following this, it encrypts the victim's data, rendering it inaccessible. Finally, the hackers demand a ransom from the victim to restore access to their data. Hence, statement 2 is correct.

8. Consider the following statements regarding Gross Fixed Capital Formation (GFCF):

- 1. GFCF measures investments in fixed assets by businesses, governments, and households.
- 2. It includes both tangible and intangible assets.
- 3. GFCF calculates the total investments in the country after adjusting for depreciation.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:**

- Gross Fixed Capital Formation (GFCF) in the Indian economy has increased significantly. It rose from Rs. 32.78 lakh crore (constant 2011-12 prices) in 2014-15 to Rs. 54.35 lakh crore in 2022-23 (Provisional Estimates). GFCF measures investments in fixed assets by businesses, governments, and households. It includes tangible and intangible assets. Hence, statement 1 and 2 are correct.

- **GFCF is a key indicator of economic growth and investment activity.** GFCF is not a measure of total investment, because only the value of net additions to fixed assets is measured, and all kinds of financial assets are excluded, as well as stocks of inventories and other operating costs. **Hence, statement 3 is incorrect.**

**9. Consider the following statements regarding Direct Methanol Fuel Cells (DMFCs):**

1. DMFC is an electrochemical energy conversion device that converts chemical energy of liquid methanol into electrical energy directly.
2. It functions as a battery charger for laptops, digital cameras, and mobile phones.
3. It is highly effective and low in energy density.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

- DMFC is an **electrochemical energy conversion device that converts chemical energy of liquid methanol into electrical energy directly.** An alloy of Cobalt and Platinum when doped with Manganese has been found as an effective catalyst in DMFCs. **Hence, statement 1 is correct.**
- Among the several fuel cell classes put forth, **DMFCs have long been seen as a desirable alternative power source for small vehicles like forklifts** and as battery chargers for cell phones, digital cameras, laptops, and other small electronic devices. **Hence, statement 2 is correct.**
- DMFCs have high **energy density, high efficiency and low operating temperature** and are safer to operate as they deal with liquid fuel (methanol). **Hence, statement 3 is incorrect.**

**10. Which of the following statements most accurately describes the Pedicularis Revealiana?**

- (a) A bacterial disease.
- (b) A recently discovered virus.
- (c) It is a brand-new species of millipede.
- (d) The plant species is hemiparasitic.

**Answer: (D)**

**Explanation:** It is exclusive to the Pedicularis genus. It has thick, woody stems and tiny, pinkish-purple flowers on them. It is a **species of hemiparasitic plant.** In addition to producing its own food, it has the capacity to collect nutrients from adjacent trees and plants' roots. **Hence, option (d) is correct.**

**11. Consider the following statements, with reference NAMASTE scheme:**

1. It is a centrally sponsored scheme of the Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs (MoHUA).
2. Its main aim is to eradicate unsafe sewer and septic tank cleaning practices.

**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: (B)**

**Explanation:**

- NAMASTE (National Action for Mechanized Sanitation Ecosystem) is a **Central Sector Scheme of the Ministry of Social Justice and Empowerment (MoSJE)** as a joint initiative of the MoSJE and the Ministry of Housing and Urban Affairs (MoHUA). Hence, statement 1 is incorrect.
- It aims to achieve outcomes like **zero fatalities in sanitation work in India, no sanitation workers come in direct contact with human faecal matter** and all Sewer and Septic tank sanitation workers have access to alternative livelihoods. **It will replace the previous scheme, Self Employment Scheme for Rehabilitation of Manual Scavengers.** Skill Development and training of Safai Mitras are being taken up with the support of the Ministry of Social Justice and Empowerment through the National Safai Karamchari Finance Development Corporation. **Hence, statement 2 is correct.**

**12. With reference to TransLunar Injection (TLI), consider the following statements:**

1. It is a critical maneuver performed during space missions to send spacecraft from Earth's orbit to a trajectory that will take them to the Moon.
2. It is a key step in lunar missions, enabling spacecraft to escape Earth's gravitational pull and travel to the Moon.
3. The TLI is performed when the spacecraft is at a specific point in its orbit known as the 'perigee' or the closest point to Earth.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** ISRO has successfully executed the **TransLunar Injection (TLI) to propel Chandrayaan-3 towards the moon.** It is a critical maneuver performed

during space missions to send spacecraft from Earth's orbit to a trajectory that will take them to the Moon. It is a **key step in lunar missions, enabling spacecraft to escape Earth's gravitational pull and travel to the Moon.** The TLI is performed when the spacecraft is at a specific point in its orbit known as the 'perigee' or the closest point to Earth. During a TLI, the spacecraft's propulsion system fires its engines to accelerate the spacecraft. The spacecraft gains enough speed to break free from Earth's gravitational pull and embark on its journey toward the moon. The amount of thrust and duration of the TLI burn depends on various factors, including the spacecraft's mass, its velocity in Earth's orbit, and the specific mission objectives. The TLI burn has been performed successfully on many missions to the Moon, including the **Apollo missions, the Chang'e missions, and the Artemis missions.** Hence, all the statements are correct.

13. Consider the following pairs:

GI Tag	State
1. Mankurad Mango	Bihar
2. Bebinca	Goa
3. Jalesar Dhatu Shilp	Uttar Pradesh
4. Usta Kala Craft	Gujarat

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

**Explanation:** Recently, the Geographical Indications Registry in Chennai granted the GI tag to seven products from different regions of India, with four originating from Rajasthan. A Geographical Indication (GI) tag is a form of intellectual property right granted to products with specific geographical origins and distinct qualities, reputation, or characteristics closely linked to that region. **The GI tags were secured by 'Jalesar Dhatu Shilp' (a metal craft) (Uttar Pradesh), 'Goa Mankurad Mango', 'Goan Bebinca', 'Udaipur Koftgari Metal Craft', 'Bikaner Kashidakari Craft', 'Jodhpur Bandhej Craft', and 'Bikaner Usta Kala Craft'.** Hence, option (b) is correct.

14. Keeling Islands, recently seen in news is located in which of the following ocean of the world?

- (a) Atlantic ocean
- (b) Pacific ocean
- (c) Indian ocean
- (d) Arctic ocean

Answer: (C)

**Explanation:** The **Cocos (Keeling) Islands** lie in the eastern Indian Ocean, about 2,900 kilometers (1,800 miles) northwest of the Australian city of Perth. It comprises of coral atolls and islands, the archipelago includes North Keeling Island and the South Keeling Islands. The territory's administrative headquarters are on West Island in the southern atoll. **Hence, option (c) is correct.**

15. Consider the following statements, with reference to Trilateral Highway project:

1. The project spans 1,400 kilometres connecting Manipur in India with Bangladesh and Thailand.
2. The project was first proposed by former Prime Minister Atal Bihari Vajpayee in 2002.

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: (A)

**Explanation:** It is also referred as "The Road to East" which connects India, Myanmar and Thailand. The project spans 1,400 kilometres and will connect Moreh in Manipur with Mae Sot in Thailand, while passing through Myanmar. **It will be a gateway to ASEAN countries.** The project has the power to revolutionise tourism, cultural interchange and improve regional trade among India, Myanmar and Thailand. **The project was first proposed by former prime minister Atal Bihari Vajpayee** and was approved at ministerial-level meeting between India, Myanmar and Thailand in 2002. **Hence, statement 1 is incorrect.**

16. With reference to Pradhan Mantri Street Vendors Atmanirbhar Nidhi (PM SVANidhi) scheme, consider the following statements:

1. It is a micro credit scheme, facilitating a working capital collateral free loan without any interest.
2. It is launched by the Ministry of Housing and Urban Affairs in 2020 and covers whole India.
3. Recently, lending period of this scheme has been extended till December 2025.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

**Explanation:**

- It is a **micro credit scheme**, facilitating a working capital collateral free loan of ₹10,000, with

subsequent loans of ₹20,000 and ₹50,000 with 7% interest subsidy. **Hence, statement 1 is incorrect.**

- It is **launched by the Ministry of Housing and Urban Affairs in 2020**. The Scheme is available for beneficiaries belonging to only those States/UTs which have notified Rules and Scheme under Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014. **Hence, statement 2 is incorrect.**
- The scheme incentivizes digital transactions by vendors through cash back facility. **Recently lending period extended till December 2024. Hence, statement 3 is incorrect.**

**17. Consider the following statements, with reference to HeLa Cells:**

**Statement I** - HeLa cells are used by scientists to develop a cancer research method that tests whether a cell line is cancerous or not.

**Statement II** - HeLa cells can continuously grow and reproduce in lab cultures.

**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: (B)**

**Explanation:** HeLa is an immortal cell line used in scientific research. It is the **oldest and most commonly used human cell line**. The line is named after and derived from cervical cancer cells taken on February 8, 1951, from Henrietta Lacks, a 31-year-old African-American mother of five, who died of cancer on October 4, 1951. **HeLa cells are used by scientists to develop a cancer research method that tests whether a cell line is cancerous or not.** This method proves so reliable that scientists use it to this day. HeLa cells can continuously grow and reproduce in lab cultures. **Hence, both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.**

**18. With reference to Paleo Proxies, consider the following statements:**

- 1. Paleo Proxies are indirect evidence or indicators that scientists use to reconstruct past environmental conditions, such as climate, vegetation, or ocean conditions.
- 2. They can only provide a larger scale or seasonal

timescale temperature anomaly estimates of a past era.

**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:** Paleo Proxies are indirect evidence or indicators that scientists use to reconstruct past environmental conditions, such as **climate, vegetation, or ocean conditions**. They can only provide a larger scale or seasonal timescale temperature anomaly estimates of a past era. They cannot estimate daily temperatures or short-term changes, and global estimates based on averaging local proxies have higher uncertainties. **Paleo Proxies offer valuable insights into climate responses over longer timescales, like the Holocene epoch.** Examples: Tree rings, ice cores, sediment layers, fossilised pollen, coral data etc. **Hence, both statements are correct.**

**19. LK-99, sometimes seen in the news is related to:**

- (a) A tool to analyse lightweight minerals
- (b) An instrument to convert lightning into electricity
- (c) A superconductor at room temperature
- (d) A procedure to produce Nano particles at low cost

**Answer: (C)**

**Explanation:** LK-99 is a **lead-based compound, is purportedly a room-temperature, ambient-pressure superconductor**. The material is a copper-doped lead apatite, a type of phosphate mineral. **The labels 'L' and 'K' are traced to the initials of the 3 South Korean scientists – Sukbae Lee, Ji-Hoon Kim, and Young-Wan Kwon** who have discovered this material. Elemental mercury, a liquid metal at ambient conditions, becomes a superconductor at an unimaginably cold temperature of -268 degrees Celsius. **Hence, option (c) is correct.**

**20. Consider the following statements with reference, to PM Young Achievers Scholarship Award Scheme for Vibrant India (PM –YASASVI):**

- 1. It is a Centrally Sector Scheme that provides scholarship for Other Backward Class (OBCs) students only.
- 2. The scheme is implemented by the Ministry of Social Justice and Empowerment.
- 3. Scholarship under the Scheme will be available for studies in India only.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two



- (c) All three  
(d) None

**Answer: (B)**

**Explanation:**

- PM –YASASVI is **Centrally Sponsored Schemes for vulnerable groups** comprising of Other Backward Class (OBCs), Economically Backward Class (EBC) and De-notified, Nomadic and Semi-Nomadic Tribes (DNT/S-NT). **Hence, statement 1 is incorrect.**
- Scholarship under the Scheme will be available for studies in India only and will be awarded by the Government of the State/Union Territory to which the applicant belongs. The scholarship will be provided for students studying in Government Schools only. The students should be studying in class IX and X on a full-time basis in Government Schools only. The students shall be given a consolidated academic allowance of Rs. 4000 per annum. **The scheme is implemented by the Ministry of Social Justice and Empowerment. Hence, statement 2 and 3 are correct.**

**21. “Naya Savera scheme” often seen in news is related to which of the following?**

- (a) Scheme for financial support for minority students clearing prelims stage of UPSC, SSC, and State PCS.  
(b) Scheme for development of women belonging to minority communities.  
(c) Scheme for free coaching to the minority students for various competitive exams.  
(d) Scheme for formal school education & skilling of school dropouts.

**Answer: (C)**

**Explanation:** Naya Savera Scheme is a government initiative that offers free coaching and support to students for minority communities. Its **objective is to provide special coaching for minority students to qualify for professional courses & government competitive exams** (Group ‘A’, ‘B’, & ‘C’ services). Hence, option (c) is correct.

**22. With reference to Sovereign credit ratings, consider the following statements:**

1. Sovereign credit rating is an independent assessment of a country's creditworthiness, indicating its ability to repay debt without default.
2. CRISIL is an international credit rating agency.
3. Loss of Biodiversity will downgrade the sovereign credit ratings of countries.

**How many of the above statements is/are correct?**

- (a) Only one  
(b) Only two

- (c) All three  
(d) None

**Answer: (B)**

**Explanation:**

- Sovereign credit rating is an **independent assessment of a country's creditworthiness, indicating its ability to repay debt without default.** Governments issue debt instruments like bonds to raise funds, and creditworthiness reflects the government's repayment capability. These ratings help investors gauge risk when investing in a country's debt instruments, considering factors like political stability. **Hence, statement 1 is correct.**
- Credit assessment and evaluation for companies and governments is generally done by a credit rating agency such as **S&P Global, Moody's, or Fitch Ratings.** These rating agencies are paid by the entity that is seeking a credit rating for itself or one of its debt issues. CRISIL is India's first credit rating agency. **Hence, statement 2 is incorrect.**
- Loss of biodiversity will downgrade the credit ratings of several countries, including India, increasing their bankruptcy risk, according to a study by British economists. **Hence, statement 3 is correct.**

**23. Consider the following statements, with reference to PEHCHAN scheme:**

1. It was launched in 2021 to provide new identity to handicraft artisans.
2. Pehchan card holders can avail the benefits of all the handicrafts schemes implemented by the Ministry of Textiles.

**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: (B)**

**Explanation:**

- **PEHCHAN scheme was launched in 2016** to provide new identity to handicraft artisans so that the benefits of various schemes are provided to the deserving artisans. Hence, statement 1 is incorrect.
- Pehchan card holders can avail the benefits of all the handicrafts schemes implemented by the Ministry of Textiles. **The scheme includes:**
  - National Handicraft Development Programme (NHDP) and Comprehensive
  - Handicrafts Cluster Development Scheme (CHCDS).

**Hence, statement 2 is correct.**

**24. Consider the following statements, with reference to the Kuril Islands:**

1. The Kuril Islands are a group of four islands located between the Sea of Okhotsk and the Pacific Ocean.
2. They are administered as part of the Sakhalin Oblast in the Russian Far East.
3. These islands are claimed by Russia but occupied by Japan.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

- These are a **set of four islands situated between the Sea of Okhotsk and the Pacific Ocean** near the north of Japan's northernmost prefecture, Hokkaido. Japan refers to them as Northern territories, Russia calls them the Kuril Islands and South Korea named them as Dokdo islands. **Hence, statement 1 is correct.**
- The Kuril Islands dispute between Russia and Japan has gained attention amid the ongoing conflict between Russia and Ukraine. **The Kuril Islands are a volcanic archipelago administered as part of the Sakhalin Oblast in the Russian Far East.** The islands stretch approximately 1,300 km northeast from Hokkaido in Japan to Kamchatka Peninsula in Russia, separating the Sea of Okhotsk from the North Pacific Ocean. **Hence, statement 2 is correct.**
- These islands are claimed by Japan but occupied by Russia as the successor state of the Soviet Union. **Hence, statement 3 is incorrect.**

**25. Aadi Perukku festival, recently seen in news, is celebrated in which of the following states?**

- (a) Tamil Nadu
- (b) Kerala
- (c) Karnataka
- (d) Andhra Pradesh

**Answer: (A)**

**Explanation:** The Tamil Cultural community celebrates **Aadi Perukku, also known as Pathinettam Perukku**, as an auspicious festival **to honor the monsoon season and the fertility of the soil.** Aadi Perukku is celebrated on **August 3rd**, coinciding with the **18th day of the Tamil month of Aadi.** Traditionally observed in late July or early August, this festivity centers around expressing gratitude to water bodies, as the entire month of **Aadi is considered to herald the onset of the monsoon season. Hence, option (a) is correct.**

**26. It is proposed as a Reserve Forest in 1905, designated a Wildlife Sanctuary in 1928, and a National Park in 1990. It was included in India's First**

**Tiger Reserves under Project Tiger in 1973. It honored as a World Heritage Site (Natural) by UNESCO in 1985 for its exceptional conservation value. It is a part of Indian Rhino Vision 2020, successfully reintroduced One-Horned Rhinoceros in 2006.**

**Which Tiger Reserve is discussed in the above passage?**

- (a) Manas Tiger Reserve
- (b) Kaziranga Tiger Reserve
- (c) Nameri Tiger Reserve
- (d) Orang Tiger Reserve

**Answer: (A)**

**Explanation:** Manas Tiger Reserve is a protected area and wildlife sanctuary located in Assam, India. **It is proposed as a Reserve Forest in 1905, designated a Wildlife Sanctuary in 1928, and a National Park in 1990.** It was included in **India's First Tiger Reserves under Project Tiger in 1973. It honored as a World Heritage Site (Natural) by UNESCO in 1985** for its exceptional conservation value. It is a **part of Indian Rhino Vision 2020**, successfully reintroduced One-Horned Rhinoceros in 2006. It was **declared a Biosphere Reserve in 1989**, covering a substantial area. **Hence, option (a) is correct.**

**27. Consider the following statements regarding Spike missile:**

1. It is a fire-and-forget anti-tank guided missile (ATGM).
2. It is indigenously built in India by the Defence Research and Development Organisation (DRDO).
3. It can work in non-line-of-sight (NLOS) mode allowing the gunner to operate from a covered position.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** The Spike missile is indeed a fire-and-forget anti-tank guided missile (ATGM). **It is designed to be launched from various platforms such as ground vehicles, helicopters, and naval vessels.** The missile is capable of engaging and destroying armored targets, including tanks, with high precision and effectiveness. It has advanced guidance systems that allow it to be fired and then autonomously track and hit the target without the need for continuous operator control. **Hence, statement 1 is correct.**

**The Spike missile is not indigenously built in India by the Defence Research and Development Organisation (DRDO). The Spike missile is actually a product of the**

**Israeli defense company Rafael Advanced Defense Systems. It was developed and manufactured in Israel.** However, the Indian Army has acquired and integrated the Spike missile system into its arsenal to enhance its anti-tank capabilities. **Hence, statement 2 is incorrect.**

It can work in **non-line-of-sight (NLOS) mode** allowing the gunner to operate from a covered position. It is available in man-portable, vehicle-launched, and helicopter-launched variants. It can hit targets from distances of up to 30 kilometres. **Hence, statement 3 is correct.**

**28. With reference to Yellow Bellied Sea Snake, consider the following statements:**

1. It is a non-venomous snake species widely distributed across the Bay of Bengal.
2. The conservation status of this snake is categorized as "Near Threatened" by the International Union for Conservation of Nature (IUCN).

**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:** It is widely distributed across the warm tropical and subtropical waters of the Indian and Pacific Oceans. This species is typically found in the Arabian Sea. The Bay of Bengal is not a known habitat for this species. **This snake, known scientifically as 'Pelamis platurus,' is typically found in the Arabian Sea and is renowned for its highly poisonous venom. Hence, statement 1 is incorrect.**

**The conservation status of this snake is categorized as "Least Concern" by the International Union for Conservation of Nature (IUCN).** Its wide distribution and relatively stable population in its natural habitat contribute to this status. **Hence, statement 2 is incorrect.**

**29. Recently, Novorossiysk Sea Port is in news, it is located on the coast of which sea?**

- (a) Red Sea
- (b) Mediterranean Sea
- (c) Black Sea
- (d) Caspian Sea

**Answer: (C)**

**Explanation:** An unmanned Ukrainian maritime drone collided with a Russian naval vessel at Novorossiysk port. **Novorossiysk is a major port city located on the northeastern coast of the Black Sea in Krasnodar Krai, Russia.**

Novorossiysk is one of the largest and busiest ports in Russia and the Black Sea region, serving as a crucial gateway for trade and transportation. **Novorossiysk is a key outlet for Russia's oil exports.** It is connected to major oil-producing regions like **the Caspian Sea and Siberia** through pipelines, making it vital for energy trade. **Hence, option (c) is correct.**

**30. With reference to eSanjeevani application, consider the following statements:**

1. The application offers a comprehensive solution for medical insurance and its related advantages, making it a convenient platform for users.
2. It is being designed, developed, deployed and maintained by The Centre for Development and Advanced Computing (C-DAC).

**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: (B)**

**Explanation:** eSanjeevani application is a **telemedicine app that provides both doctor-to-doctor and doctor-to-patient telecommunication.** The app is being designed, developed, deployed and maintained by **The Centre for Development and Advanced Computing (C-DAC).** Hence, statement 1 is correct.

**31. With reference to Bhu-Vision, consider the following statements:**

1. Bhu-Vision is an automated soil testing and advisory platform that is backed by artificial intelligence (AI).
2. It has been jointly developed by ICAR-IIRR (Indian Council of Agricultural Research -Indian Institute of Rice Research) and KrishiTantra.
3. It provides quick and accurate results directly to farmers and stakeholders through a soil health card on their mobile devices.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** Recently, a revolutionary IoT-based automated soil testing and agronomy advisory platform, **Bhu-Vision was officially launched at AICRP (ICAR-IIRR), Hyderabad.** It is **also known as KRISHI-RASTAA Soil Testing System.** It has **been jointly developed by ICAR-IIRR (Indian Council of Agricultural Research -Indian Institute of Rice Research) and KrishiTantra.** This system seamlessly conducts **12 key**

**soil parameter tests in just 30 minutes.** It provides quick and accurate results directly to farmers and stakeholders through a soil health card on their mobile devices. Hence, all statements are correct.

**32. Consider the following statements, with reference to Clouded leopard:**

1. It is the State animal of Tripura and listed as Endangered on the IUCN Red List.
2. It prefers grassland, shrubs, subtropical and dense tropical forests.

**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: (B)**

**Explanation:**

- The clouded leopard (*Neofelis nebulosa*) is a wild cat species inhabiting dense forests in the Himalayas, mainland Southeast Asia and South China. **It is the State animal of Meghalaya.** It is **listed as Vulnerable on the IUCN Red List.** Hence, statement 1 is incorrect.
- Clouded Leopard prefers grassland, shrubs, subtropical and dense tropical forest up to a height of 7,000 feet occurring from the Himalayan foothills through mainland Southeast Asia into China. It has been **added to India's Recovery Programme for Critically Endangered Species** to aid more research and strengthen conservation efforts. **Hence, statement 2 is correct.**

**33. Lampedusa Island, recently seen in news, is located in which of the following water bodies?**

- (a) Mediterranean Sea
- (b) Caribbean Sea
- (c) South China Sea
- (d) Caspian Sea

**Answer: (A)**

**Explanation: Lampedusa is a part of Italy and falls under the administrative region of Sicily.** It is located in the Mediterranean Sea, specifically within the Province of Agrigento in Sicily. **It is the largest island in the Pelagie Islands group.** Lampedusa is known for its rugged coastline, featuring cliffs, rocky shores and sandy beaches. Hence, option (a) is correct.

**34. Consider the following statements, with reference to BharatNet Project:**

1. It is an ambitious project of the Government of India to provide broadband connectivity to all village panchayats in the country.
2. It aims to provide a minimum bandwidth of 2gbps to

each of the 2.5 lakh Gram Panchayats. 3. It is being funded by the Universal Service Obligation Fund (USOF).

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

- The National Optical Fibre Network (NOFN), launched in October 2011, was renamed the **Bharat Net Project in 2015.** It is an ambitious project of the Government of India to **provide broadband connectivity to all village panchayats in the country.** Hence, statement 1 is correct.
- It **aims to provide affordable broadband connectivity of 2 Mbps to 20 Mbps for all households** and on-demand capacity to all institutions to **realize the vision of Digital India,** in partnership with States and the private sector. Hence, statement 2 is incorrect.
- The **entire project is being funded by the Universal service Obligation Fund (USOF),** which was set up to improve telecom services in rural and remote areas of the country. **The project is being executed by a Special Purpose Vehicle (SPV), namely Bharat Broadband Network Limited (BBNL),** which was incorporated on 25.02.2012 under Indian Companies Act 1956. Hence, statement 3 is correct.

**35. Consider the following statements about Trachoma disease:**

**Statement I** - Trachoma is a bacterial infection caused by *Chlamydia trachomatis*.

**Statement II** - This disease is basically seen in subtropical and Polar regions due to cold climates.

**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: (C)**

**Explanation:** Trachoma is a bacterial infection caused by *Chlamydia trachomatis*. **Trachoma is the world's leading infectious cause of blindness** and is one of the conditions known as neglected tropical diseases.



**Blindness from trachoma is irreversible.** It is a neglected tropical disease and the world's leading infectious cause of blindness. **To eliminate trachoma as a public health problem, the WHO recommends the SAFE strategy,** a comprehensive approach to reducing transmission of the causative organism, clearing existing infections and dealing with their effects. **Hence, Statement-I is correct but Statement II is incorrect.**

**36. With reference to Central Registrar of Cooperative Societies (CRCSs), consider the following statements:**  
**Statement I** - It is a statutory body under the Multi-State Cooperative Societies (MSCS) Act, 2002.  
**Statement II** - It is responsible for the registration of MSCSs, amendment to by-laws of MSCSs, arbitration, etc.

**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:** (B)

**Explanation:** The Union Ministry of Cooperation launched the digital portal of the CRCS. **This Portal aims to digitize various activities of CRCS like registration, audit, election, vigilance, training, etc.** It is a **statutory body under the Multi-State Cooperative Societies (MSCS) Act, 2002.** It is responsible for the registration of MSCSs, amendment to by-laws of MSCSs, arbitration, etc. Cooperative societies confined to one state only and are governed by cooperative laws of respective state governments.

**37. 'Neerakshi', recently seen in news, is associated with which of the following?**

- (a) Torpedo recovery and launch vessel
- (b) An icebreaker driven by nuclear energy
- (c) Smog air Purifier
- (d) Unmanned underwater vehicle

**Answer:** (D)

**Explanation:** India launched its first of its kind **Autonomous Underwater Vehicle (AUV) named 'Neerakshi.** It can be used for mine detection, mine disposal, underwater surveys etc. It has an endurance of four hours and can go up to 300 metres deep. It is a **collaboration of Garden Reach Shipbuilders and Engineers (GRSE) Ltd and MSME entity Aerospace**

**Engineering Private Ltd (AEPL).** Hence, option (d) is correct.

**38. Consider the following statements, with reference to Havana Syndrome:**

- 1. It refers to a set of mental health symptoms experienced by US intelligence and embassy officials in various countries.
- 2. It involves symptoms such as hearing certain sounds without any outside noise being present, nausea, vertigo and headaches, memory loss.
- 3. It is result of unregulated mining activities in particular region.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- The **Havana syndrome is a set of medical signs and symptoms reported by US and Canadian embassy staff first in Havana, Cuba dating to late 2016,** and subsequently in other countries. The symptoms included nausea, severe headaches, fatigue, dizziness, sleep problems, and hearing loss. **Hence, statement 1 and 2 are correct.**
- No exactly reason for the Havana syndrome is known till now. **Hence, statement 3 is incorrect.**

**39. With reference to Swathi Weapon Locating Radar (WLR), consider the following statements:**

- 1. It automatically locates hostile artillery, mortars and rocket launchers and tracks friendly fire to locate the impact point of friendly artillery fire to issue necessary corrections.
- 2. The radar is designed to detect projectiles with small cross section across the battle space horizon, and has the capability to handle simultaneous fire from weapons deployed at multiple locations.
- 3. Swathi WLR was indigenously developed by DRDO and manufactured by BEL.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** Swathi WLR was indigenously developed by DRDO and manufactured by BEL. It is electronically scanned phased array radar. It automatically locates hostile artillery, mortars and rocket launchers and tracks friendly fire to locate the impact point of friendly

artillery fire to issue necessary corrections. **The radar is designed to detect projectiles with small cross section across the battle space horizon**, and has the capability to handle simultaneous fire from weapons deployed at multiple locations. **The radar uses advanced signal processing techniques for detection and tracking projectiles in the presence of ground, weather clutter and other forms of interference in Electronic Warfare scenario.** Hence, all statements are correct.

40. **NIDHI Program, recently seen in news is an initiative of which of the following ministry?**

- (a) Ministry of Micro, Small and Medium Enterprises
- (b) Ministry of Finance
- (c) Ministry of Science and Technology
- (d) Ministry of Commerce and Industry

**Answer:** (C)

**Explanation:** National Initiative for Developing and Harnessing Innovations (NIDHI) is an end-to-end plan for startups to double the number of incubators and startups in the duration of five years. **The NIDHI Program, initiated by the Department of Science & Technology (DST) in 2016, aims to foster innovation and startup culture in India. Its objective is to promote S&T-based entrepreneurship and startup ecosystem across the country and nurture start-ups through scouting, supporting, and scaling innovations.** Hence, option (c) is correct.

41. **With reference to Government of National Capital Territory of Delhi (GNCTD) (Amendment) Bill, 2023, consider the following statements:**

- 1. It establishes National Capital Civil Services Authority (NCCSA), which consists of CM, Chief Secretary of Delhi and Principal Home Secretary of Delhi.
- 2. It empowers Central Government to make rules in connection with the affairs of GNCTD including the functions, terms and other conditions of service of officers and employees.

**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:** Parliament has passed GNCTD (Amendment) Bill 2023. It **establishes National Capital Civil Services Authority (NCCSA)**, which consists of CM, Chief Secretary of Delhi and Principal Home Secretary of Delhi. It empowers Central Government to make rules in connection with the affairs of GNCTD including the functions, terms and other conditions of service of officers and employees. **Hence, both statements are correct.**

42. **Consider the following statements, with reference to 2023 IMO Greenhouse Gas Strategy:**

- 1. The strategy aims to reduce Green House Gas (GHG) emissions from international shipping by at least 50% by 2030.
- 2. The strategy pushes use of biofuel and bio-blends in the shipping industry.
- 3. The strategy was not backed by India as it imposes more restriction on developing countries.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) None

**Answer:** (A)

**Explanation:** Recently United Nations International Maritime Organization (IMO) adopted 2023 IMO Greenhouse Gas Strategy which was backed by India. **2023 IMO GHG Strategy aims to reduce the total annual GHG emissions from international shipping by at least 20% by 2030**, compared to 2008. Shipping industry to reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008. **The strategy pushes use of biofuel and bio-blends in the shipping industry.** This Strategy was backed aggressively by India. **According to the Intergovernmental Panel on Climate Change 2022 report, maritime shipping is responsible for 3 % of global anthropogenic GHG emissions and these emissions are continuing to grow rapidly. Hence, only statement 2 is correct.**

43. **Consider the following statements:**

- Statement I** - International Day of the World's Indigenous Peoples is observed on 9 **August** each year to raise awareness and protect the rights of the world's indigenous population.
- Statement II** - The United Nations General Assembly proclaimed the period between 2022 and 2032 as the International Decade of Indigenous Languages.

**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:** (B)

**Explanation:** Every year, **9 August is commemorated as the International Day of the World's Indigenous Peoples, chosen in recognition of the first meeting of the UN Working Group on Indigenous Populations held in Geneva in 1982.** The United Nations General Assembly proclaimed the period between **2022 and 2032 as the International Decade of Indigenous Languages (IDIL 2022-2032),** to draw global attention on the critical situation of many indigenous languages and to mobilize stakeholders and resources for their preservation, revitalization and promotion. **The theme for this year is "Indigenous Youth as Agents of Change for Self-determination."** Hence, both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.

**44. Consider the following statements regarding Vaquita porpoise:**

1. It is the world's rarest and the smallest marine mammal found only in the northern Gulf of California in Mexico.
2. It is categorized as Critically Endangered in IUCN Red List.

**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:** Vaquita porpoise is the world's rarest and the smallest marine mammal. It is also **known as the panda of the sea for the distinctive black circles around its eyes.** This porpoise was discovered in 1958. It is unique among the porpoises as it is the only species of that family found in warm waters, and the size of the dorsal fin is believed to be an adaptation to that, allowing for extra body heat to dissipate. **It is found only in the northern Gulf of California (Sea of Cortez) in Mexico.** They are found most commonly seen in shallow waters up to 50 metres deep. **It is categorized as Critically Endangered in IUCN Red List. Hence, both statements are correct.**

**45. The publication '75 Endemic Birds of India' recently seen in news is released by which of the following?**

- (a) Zoological Survey of India;
- (b) World Wide Fund for Nature;
- (c) United Nations Environment Programme;
- (d) National Biodiversity Authority.

**Answer: (A)**

**Explanation:** The publication **'75 Endemic Birds of India' was recently released by Zoological Survey of India (ZSI).** The Zoological Survey of India (ZSI) was

established on 1916 to promote survey, exploration and research leading to the advancement in our knowledge of various aspects of exceptionally rich life of the erstwhile 'British Indian Empire'. **The survey has its genesis in the establishment of the Zoological Section of the Indian Museum at Calcutta in 1875.** Hence, option (a) is correct.

**46. With reference to Compulsory Convertible Debentures (CCD), consider the following statements:**

1. CCDs are debentures with an underlying characteristic of compulsory conversion into equity after a certain period of time.
2. CCDs are a type of hybrid instrument, i.e. it is neither considered a pure debt nor pure equity.

**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:** Foreign investors from **Mauritius, Cyprus and Singapore** are issued notices for gains from investment in CCDs issued by Indian companies. **CCDs are debentures with an underlying characteristic of compulsory conversion into equity after a certain period of time. CCDs are a type of hybrid instrument, i.e. it is neither considered a pure debt nor pure equity. CCDs include a convertibility feature** which acts as an incentive for the investors over and above the interest income. Hence, both statements are correct.

**47. With reference to Ayushman Bharat Pradhan Mantri Jan Arogya Yojna (AB-PMJAY) consider the following statements:**

1. It is the world's largest health assurance scheme fully financed by the government and the cost of implementation is shared between the Central and State Governments.
2. It provides a cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization across public and private empaneled hospitals in India.
3. It is only applicable to the economically weaker sections of the society.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** Ayushman Bharat Pradhan Mantri Jan Arogya Yojna (AB-PMJAY) was launched in 2018 to achieve Universal Health Coverage. It is the **world's**

**largest health assurance scheme fully financed by the government and the cost of implementation is shared between the Central and State Governments.** This yojna does not provide any restriction in family size, age or gender. It provides a cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization across public and private empaneled hospitals in India. **Hence, only statement 3 is incorrect.**

**48. Consider the following statements, with reference to Select Committee in the Parliament of India:**

**Statement I** - Select Committee is an adhoc or temporary committees, which are set up for a specific purpose, such as examining a particular Bill and are dissolved after it.

**Statement II** - The committee is entirely made of MPs of the opposition headed by the leader of opposition.

**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: (C)**

**Explanation:** Recently Raghav Chadha, Member of the Parliament proposed to refer the Delhi Services Bill to Select Committee. **Select Committee is an ad hoc or temporary committees, which are set up for a specific purpose**, such as examining a particular Bill and are dissolved after it. According to the Rajya Sabha rules, "The Select Committees on Bills are constituted by the House(s) on specific motion moved by the Minister in-charge of the Bill or any member. The actual number of membership of the Select Committee is not fixed. It varies from Committee to Committee. **The report of the committee is of a recommendatory nature.** Hence, **Statement-I is correct but Statement II is incorrect.**

**49. The term 'Harmonised System of Nomenclature' often seen in news is related to which of the following?**

- (a) The system that issues a unique code to each foreign goods traded.
- (b) The system is used to categorize animals and plants based on genetic traits.
- (c) A classification system for books and publications based on their topic matter.
- (d) The system is used in a certain country to assign licence plate numbers to automobiles.

**Answer: (A)**

**Explanation:** Recently, India's Directorate General of Foreign Trade (DGFT) declared that beginning November 1, 2023, it will prohibit the import of laptops, PCs, and their components, with a concentration on items with HSN Code 8471. **The HSN is a system that issues a unique code to each foreign product traded.** Customs authorities all across the world use the HSN code to identify and assess duties on imported products. It is also used by dealers and exporters to declare items and comply with origin requirements. **The World Customs Organization (WCO) created the HSN code in 1988, and it is updated every five years.** Hence, **option (a) is correct.**

**50. 'Maya operating system' recently seen in news is implemented by which of the following ministries?**

- (a) Department of Science and Technology
- (b) Ministry of Commerce and Industry
- (c) Ministry of New & Renewable Energy
- (d) Ministry of Defence

**Answer: (D)**

**Explanation:** Amid increasing cyber and malware attacks on defence as well as critical infrastructure, the **Ministry of Defence to replace Windows OS with Maya OS. New OS is based on an open-source platform Ubuntu.** Unlike proprietary software, everyone has the freedom to edit, modify and reuse open-source code. In addition, an end-point detection and protection system, **Chakravyuh, is also being installed in these systems.** Hence, option (d) is correct.

**51. Consider the following statements:**

- 1. A debenture is a debt security issued by companies to borrow money at a fixed interest rate.
- 2. Convertible debentures can be converted into equity shares after a specified period.

**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

**Answer: (C)**

**Explanation:** A **debenture is a type of long-term debt instrument that companies issue to raise funds from the public or investors.** When a company issues a debenture, it is essentially borrowing money from investors and agreeing to pay them back with interest over a specified period. **Unlike shares, debentures do not confer ownership in the company.** Instead, they represent a loan made by the debenture holder to the company. The company agrees to pay interest on the debenture's principal amount at a fixed rate, usually on



a periodic basis (such as annually or semi-annually). Hence, statement 1 is correct.

**Convertible debentures are a specific type of debenture that comes with an added feature – the ability to convert them into equity shares of the issuing company.** This conversion typically occurs after a predetermined period or when certain conditions are met. This means that if an investor holds convertible debentures, they have the option to convert those debentures into a predetermined number of equity shares of the company. This can provide an opportunity for the debenture holder to participate in the company's potential future growth and profit, as they become shareholders with ownership rights. Hence, statement 2 is correct.

**52. In the context of 'Belem Declaration' consider the following statements:**

1. It recognizes Indigenous knowledge as a condition for biodiversity conservation.
2. It emphasizes involving Indigenous Peoples in decision-making and policy formulation.
3. It promotes sustainable use of biodiversity resources in the Amazon

**How many of the above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:**

- **The 'Belem Declaration' recognizes the significance of Indigenous knowledge in the realm of biodiversity conservation.** Indigenous communities often possess a deep understanding of their local ecosystems, traditional practices, and interactions with nature. This knowledge can offer valuable insights into sustainable resource management and conservation efforts. **By acknowledging Indigenous knowledge, the declaration highlights the importance of integrating traditional wisdom with modern conservation strategies. Hence, statement 1 is correct.**
- **The 'Belem Declaration' underscores the need to involve Indigenous Peoples in the processes of making decisions and forming policies that affect their lives and territories.** Including Indigenous perspectives and voices in decision-making ensures that policies and actions are more well-rounded and sensitive to the unique needs, rights, and concerns of these communities. This approach also supports the principle of self-determination, allowing Indigenous Peoples to actively participate

in shaping their own futures. Hence, statement 2 is correct.

- **The 'Belem Declaration' promotes the responsible and sustainable utilization of biodiversity resources within the Amazon region.** This means that while utilizing these resources for various purposes such as economic development or cultural practices, there is a commitment to do so in a way that does not harm the environment, deplete resources, or disrupt the delicate balance of ecosystems. Sustainable use aims to ensure that future generations can also benefit from these resources. Hence, statement 3 is correct.

**53. Consider the following statements:**

1. Mauna Loa is the tallest peak on the island of Maui.
2. Kilauea is an inactive shield volcano in Hawaii.

**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

**Answer: (D)**

**Explanation:**

- **"The island of Hawaii, commonly referred to as the Big Island, is one of the eight main islands of the Hawaiian archipelago.** It falls within the state of Hawaii, which is part of the United States of America. "Mauna Kea is the tallest peak in Hawaii, standing at an elevation of about 13,796 feet (4,205 meters) above sea level. It is known for its observatories located at its summit. Hence, statement 1 is incorrect.
- **Kilauea is an active shield volcano located on the Big Island of Hawaii.** It is known for its continuous volcanic activity, including frequent eruptions. Hence, statement 2 is incorrect.

**54. Consider the following statements:**

**Statement-I:** UNESCO was established with the aim of promoting international collaboration in education, science, culture, and communication.

**Statement-II:** The founders of UNESCO believed that fostering mutual understanding and knowledge-sharing among nations would contribute to world peace and security.

**Which 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:** (B)

**Explanation:**

- UNESCO, the United Nations Educational, Scientific and Cultural Organization, was indeed established with the primary aim of promoting international collaboration in the fields of education, science, culture, and communication. **Its purpose is to contribute to peace and security by advancing mutual understanding and knowledge-sharing among nations in these key areas. Hence, statement-I is correct.**
- The founders of UNESCO did believe that fostering mutual understanding and knowledge-sharing among nations would contribute to world peace and security. This principle is in line with the broader goals of UNESCO to promote international cooperation in the fields of education, science, culture, and communication. **The exchange of knowledge and ideas between different countries is seen as a way to reduce conflicts and promote peaceful relations by enhancing understanding and cooperation. Hence, statement-II is correct.**
- However, while Statement-II aligns with the overall goals and philosophy of UNESCO, it is not a direct and complete explanation of Statement-I. **While promoting mutual understanding and knowledge-sharing can contribute to world peace and security, this concept doesn't fully encompass all the areas of education, science, culture, and communication that UNESCO aims to collaborate on.**

**55. Consider the following district of Uttar Pradesh:**

- Agra
- Aligarh
- Lucknow
- Kanpur
- Chitrakoot
- Jhansi

**How many of the above are nodes of Uttar Pradesh Defence Industrial Corridor (UPDIC)?**

- Only Three
- Only Four
- Only Five
- All six

**Answer:** (D)

**Explanation:** The **Uttar Pradesh Defence Industrial Corridor (UPDIC)** is a transformative initiative led by **Chief Minister of Uttar Pradesh**. Originating from an investors' summit in 2018, UPDIC aims to establish Uttar Pradesh as a global hub for defence and aerospace manufacturing.

**Objectives & Features:**

- Empower India in defence and aerospace.
- 6 strategic nodes:** Agra, Aligarh, Lucknow, Kanpur, Chitrakoot, Jhansi.
- Infrastructure, technology, agriculture focus.
- Connects western, central, Bundelkhand regions.
- 6 expressways, 16 domestic, 5 international airports

**56. Consider the following pairs:**

1. Indian Penal Code, 1860	Bhartiya Nagarik Suraksha Sanhita Bill, 2023
2. Criminal Procedure Code, 1898	Bharatiya Nyaya Sanhita Bill, 2023
3. Indian Evidence Act, 1872	Bharatiya Sakshya Bill, 2023

**How many of the above pairs are correctly matched?**

- Only one
- Only two
- All three
- None

**Answer:** (A)

**Explanation:** One of the five PRAN taken by the Prime Minister Shri Narendra Modi before the country on **August 15** was – **to end all signs of slavery** – today's three bills are going to fulfil this one vow of Shri Modi. **Indian Penal Code, 1860 will be replaced by Bharatiya Nyaya Sanhita Bill, 2023, the Criminal Procedure Code, 1898 will be replaced by the Bhartiya Nagarik Suraksha Sanhita Bill, 2023 and the Indian Evidence Act, 1872 will be replaced by the Bharatiya Sakshya Bill, 2023.** These three outgoing laws were made to strengthen and protect the British rule and their purpose was to punish, not to give justice. These three laws made with Indian thought process will bring a huge change in our criminal justice system. **Hence, only pair 3 is correctly matched.**

**57. With reference to EG.5 or Eris, consider the following statements:**

- EG.5 or Eris is a variant of SARS-CoV-2.
- No case of EG.5 has been reported in India till now.
- The World Health Organisation (WHO) has classified the EG.5 as “variant of high consequence”.

**How many of the above statements is/are correct?**

- Only one
- Only two
- All three
- None

**Answer:** (A)

**Explanation: EG.5 or Eris is a variant of SARS-CoV-2 was first reported on February 2023** and designated as a variant under monitoring (VUM) on July 2023 by the World Health Organisation (WHO). **In August 2023, the WHO designated EG.5 and its sub-lineages as a variant of interest (VOI).** Variants are broadly categorised by WHO into 3 categories:

- “variants of interest”
- “variants of concern”
- “variants of high consequence”

**The World Health Organisation (WHO) has classified the EG.5 as a "variant of interest".** EG.5 is a descendent lineage of Omicron sub-variant XBB.1.9.2. It carries an additional mutation in the spike protein which the SARS-CoV-2 uses to enter and infect the human cells compared to the parent sub-variant. **In India, only one case of EG.5 has been reported so far from Pune in May this year.** Globally, there has been a steady increase in the proportion of EG.5. **Hence, only statement 1 is correct.**

58. Consider the following statements regarding Sarus crane:

1. It is a large non-migratory crane found only in India.
2. It is classified as 'vulnerable' under the IUCN Red List.
3. It has been declared as the state bird of Uttar Pradesh in 2014.

**Which of the above statements is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 2 only
- (d) 1, 2 and 3

**Answer: (B)**

**Explanation:**

- The Sarus crane (*Grus antigone*) is a large bird belonging to the crane family, **Gruidae**. It is known for its distinctive appearance, with a tall stature, long legs, and a red crown on its head. **Sarus cranes are found in various parts of the Indian subcontinent, Southeast Asia and Australia.** Hence, statement 1 is incorrect.
- It is **classified as 'vulnerable' under the IUCN Red List** and listed under Schedule IV of Wildlife (Protection) Act 1972. It has been **declared as the state bird of Uttar Pradesh in 2014.** Hence, statement 2 and 3 are correct.

59. Consider the following statements regarding Small Modular Reactors (SMRs), a type of nuclear reactor design:

1. SMRs are generally larger than traditional nuclear reactors and are primarily used for large-scale power generation in megawatt-class capacities.
2. SMRs are only suitable for deployment in remote

areas with limited grid access and are not suitable for integration into existing power grids.

**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:**

- SMRs are designed to be smaller than traditional nuclear reactors, and they are often used for applications with smaller power generation needs, such as remote areas or grid support. **Hence, statement 1 is incorrect.** SMRs are suitable for a range of applications, **including remote areas with limited grid access,** but they can also be integrated into existing power grids to provide additional capacity or support. **Hence, statement 2 is incorrect.**
- **One of the advantages of SMRs is their potential for enhanced safety.** They often incorporate inherent safety features and passive cooling mechanisms, which can improve their safety profile. **They are designed to be more scalable,** and their smaller size allows for easier manufacturing and assembly. This is one of the advantages of SMRs. **SMRs typically use the same or similar types of fuel as traditional nuclear reactors,** and they are designed to be efficient in terms of energy output.

60. Which statement accurately describes China's "sponge city" initiative?

- (a) The initiative aims to promote water-intensive industries in major cities.
- (b) "Sponge City" projects focus solely on using impermeable concrete to manage rainfall.
- (c) The primary goal of the initiative is to address traffic congestion in urban areas.
- (d) The initiative aims to improve flood resilience and water management through nature-based solutions.

**Answer: (D)**

**Explanation:** China's "sponge city" initiative is a **significant urban development strategy introduced by the Chinese government** to tackle pressing water management and flooding challenges in urban areas. **The initiative takes a nature-based approach** to enhance the resilience of cities against flooding and to improve overall water management. Hence, option (d) is correct.

61. With reference to United Nations Population Fund (UNFPA) consider the following statements:

1. Its aim is to count the world's growing populations and suggest measures to allocate resources efficiently.
2. It focuses on improving the lives of youths and women by advocating for human rights and gender equality and by promoting the understanding of population dynamics.
3. It was created in 1969 to deliver a world where every pregnancy is wanted.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** UNFPA is the United Nations sexual and reproductive health agency. The organization was created in 1969. Its mission is to deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled. UNFPA partners with governments, other agencies and civil society to advance its mission. It also focuses on improving the lives of youths and women by advocating for human rights and gender equality and by promoting the understanding of population dynamics. Hence, only statement 1 is incorrect.

**62. Consider the following statements regarding National Automated Fingerprint Identification System:**

1. It is a country-wide searchable database of crime and criminal related fingerprints developed by National Crime Records Bureau.
2. NAFIS assigns a unique 10-digit National Fingerprint Number (NFN) to each person arrested for a crime.
3. This unique ID will be used for the person's lifetime, and different crimes registered under different FIRs will be linked to the same NFN.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** National Automated Fingerprints Identification System (NAFIS) project is a country-wide searchable database of crime- and criminal-related fingerprints developed by National Crime Records Bureau. The web-based application functions as a central information repository by consolidating fingerprint data from all states and Union Territories. NAFIS assigns a unique 10-digit National Fingerprint Number (NFN) to each person arrested for a crime. This unique ID will be used for the person's lifetime,

and different crimes registered under different FIRs will be linked to the same NFN. **Recently, in April of this year, Madhya Pradesh gained distinction as the first Indian state to successfully identify a deceased person using the NAFIS system.** Hence, all statements are correct.

**63. Mushkbudji Rice, recently seen in news, is grown in:**

- (a) Bihar
- (b) Jammu and Kashmir
- (c) Assam
- (d) Uttar Pradesh

**Answer: (B)**

**Explanation:** Mushkbudji Rice just earned the Geographical Indication (GI) label. It is short, robust, aromatic rice grown in Kashmir's higher elevations. The cooked rice is one-of-a-kind, with a harmonious blend of flavour, aroma, and rich organoleptic qualities. It is primarily grown in the districts of Anantnag's Sagam, Panzgam, and Soaf Shali, as well as Budgam's Beerwah belt. Aromatic rice is now only consumed on rare occasions, such as weddings and festivals, in Kashmir. Hence, option (b) is correct.

**64. With reference to Indian Flying Fox bat, consider the following statements:**

1. It is a species of flying fox native to the Indian subcontinent.
2. It is listed as endangered on the IUCN Red List.

**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:**

- It is a species of flying fox native to the Indian subcontinent. It is **one of the largest bats in the world**. The nectar and fruit-eating flying fox (*Pteropus giganteus*) is generally considered vermin as they raid orchards. It is a **keystone species causing seed dispersals of many plants in tropical systems**. Hence, statement 1 is correct.
- It is **listed as least concern on the IUCN Red List**. It is **highly social creatures, forming large roosts of several hundred animals**. These bats are endemic to South Central Asia, found from Pakistan and China to the Maldives Islands. Hence, statement 2 is incorrect.

**65. Exercise Zayed Talwar, recently is news was a bilateral exercise conducted between India and which of the following country?**



- (a) Oman
- (b) Indonesia
- (c) Saudi Arabia
- (d) UAE

**Answer:** (D)

**Explanation:** Indian Navy and United Arab Emirates conducted bilateral exercise 'Zayed Talwar'. **The exercise aims to enhance interoperability and cooperation between the two naval forces.** The visit seeks to strengthen the maritime partnership, share best practices, and foster a common understanding of security challenges in the region. **Hence, option (d) is correct.**

**66. In the context of Gallantry Awards in India Consider the following statements:**

1. Ashok Chakra can be awarded to members of the Army, Navy, and Air Force only.
2. The first three gallantry awards were established in 1950.
3. The Investiture Ceremony for these awards is held on both Republic Day and Independence Day.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** The following categories of personnel shall be eligible for the Ashok Chakra:

- Officers, men and women of all ranks of the Army, the Navy and the Air Force, of any of the Reserve Forces, of the Territorial Army, Militia and of any other lawfully constituted Armed Forces.
- Members of the Nursing Services of the Armed Forces.
- Civilian citizens of either sex in all walks of life and members of Police Forces including Central Para-Military Forces and Railway Protection Force.

**Hence, statement 1 is incorrect.**

Post-independence, **first three gallantry awards namely Param Vir Chakra, Maha Vir Chakra and Vir Chakra were instituted by the Government of India on 26th January, 1950** which were deemed to have effect from the 15th August, 1947. **Hence, statement 2 is correct.**

**Gallantry awards are conferred to the awardees/Next-of-Kins (NoKs) by the President at the Defence Investiture Ceremony** held every year at the Rashtrapati Bhawan. The Param Vir Chakra and the Ashoka Chakra are conferred by the President to the awardees/ on the occasion of the Republic Day Parade at the Rajpath. **Hence, statement 3 is incorrect.**

**Hence, option (a) is the correct answer.**

**67. Consider the following statements regarding the Vishwakarma Yojana:**

1. It provides financial support to skilled artisans from OBC communities for traditional crafts.
2. It is intended to support individuals with expertise in modern technology fields.

**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

**Answer:** (A)

**Explanation:**

- The Vishwakarma Yojana is a **scheme launched by the Government of India to provide financial support to individuals skilled in traditional crafts, particularly those from the OBC community.**

**The following are the objectives of the Vishwakarma Yojana:**

- To promote traditional crafts and help preserve them.
- To provide financial assistance to skilled artisans to upgrade their skills and set up their own businesses.
- To create employment opportunities for skilled artisans.
- To help reduce poverty among the OBC community.

**Hence, statement 1 is correct**

The Vishwakarma Yojana is not intended to support individuals with expertise in modern technology fields. The scheme specifically targets individuals skilled in traditional crafts, particularly those from the OBC community. **Hence, statement 2 is incorrect.**

**Hence, option (a) is the correct answer.**

**68. With reference to the Aditya-L1 mission, consider the following statements:**

1. Its primary objective is to observe the layers of the Sun
2. The mission carries ten payloads.
3. It aims to provide insights into various solar phenomena and their impact on space weather.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- The Aditya-L1 mission is India's space endeavour by ISRO to study the Sun using a space-based observatory. **Its primary objective is to observe**

the layers of the Sun, particularly its corona, and analyse solar activity. The spacecraft is placed in a halo orbit around Lagrange point 1 (L1) of the Sun-Earth system. Hence, statement 1 is correct.

- L1 is located about 1.5 million km from Earth and provides a stable platform for observing the Sun. The mission carries seven payloads designed for different observations of the Sun's layers. These payloads include instruments for electromagnetic, particle, and magnetic field observations. Among the payloads, four are dedicated to directly studying the Sun and its various phenomena. The remaining three payloads are focused on conducting in-situ studies of particles and fields at the L1 point. Hence, statement 2 is incorrect.
- The mission's scientific goals include investigating coronal heating, coronal mass ejections, flare activities, space weather dynamics, and particle-field propagation. It aims to provide insights into various solar phenomena and their impact on space weather. Hence, statement 3 is correct.

Hence, option (b) is the correct answer.

69. Consider the following statements about the Perseid Meteor Shower:

1. It is an annual event caused by debris from the Swift-Tuttle comet.
2. It occurs in October, mainly around 11th to 13th October.
3. Perseid meteors are fast-moving, bright, and leave visible trails of light.
4. It is known for producing fireballs.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (C)

Explanation:

- Perseid Meteor Shower is an annual event when Earth passes through debris from the Swift-Tuttle comet, resulting in a display of bright meteors. Meteors appear to originate from the Perseus constellation, Hence the name "Perseid." Hence, statement 1 is correct.
- The shower typically occurs in August, specifically around August 11th to 13th. The most intense meteor activity happens around August 12th. Hence, statement 2 is incorrect.
- Perseid meteors are fast-moving and bright, often leaving visible trails of light as they streak across the sky. During the peak, observers can witness around 50 to 100 meteors per hour. Hence, statement 3 is correct.

- The Perseid Meteor Shower is known for producing fireballs, larger bursts of light and colour caused by bigger comet fragments. A popular event among stargazers and astronomy enthusiasts due to its vibrant and impressive meteor display. Hence, statement 4 is correct.

Hence, option (c) is the correct answer.

70. Consider the following statements:

1. Kubu Raya Regency is located in the province of East Kalimantan.
2. Charcoal production from mangroves has led to environmental degradation in the region.

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

Answer: (B)

Explanation:

- Kubu Raya Regency is located in West Kalimantan, Indonesia, bordering the South China Sea. It boasts the largest mangrove forest in the western part of Indonesian Borneo. Indonesia holds 20% of global mangroves, with this area contributing significantly. Hence, statement 1 is incorrect.
- Deforestation concerns arise due to mangrove charcoal production, a traditional industry since the 1940s, impacting resources. Escalating activities intensify pressure, causing visible deforestation and reducing dense mangrove areas. The region's significance hinges on biodiversity, carbon sequestration and coastal protection. Hence, statement 2 is correct.

Hence, option (b) is the correct answer.

71. With reference to Vishwakarma Yojana, consider the following statements:

1. This scheme aims to benefit individuals skilled in traditional craftsmanship, especially from the Other Backward Classes (OBC) community.
2. The scheme will encompass various elements such as financial aid, modern and green technology training, brand promotion, market connectivity, digital payments, and social security.

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:

- On India's 77th Independence Day, **Prime Minister announced the upcoming launch of the 'Vishwakarma Yojana' which is set to be introduced on Vishwakarma Diwas (September 17).**
- **This scheme aims to benefit individuals skilled in traditional craftsmanship, especially from the Other Backward Classes (OBC) community.** Skilled artisans like weavers, goldsmiths, blacksmiths, laundry workers, and barbers, among others, will be empowered through this scheme. The scheme will encompass various elements such as financial aid, modern and green technology training, brand promotion, market connectivity, digital payments, and social security.

Hence, both statements are correct.

72. Consider the following statements, with reference to PM-eBus Sewa scheme:

1. It is augmenting city bus operation by 10,000 e-buses on PPP model.
2. The scheme will cover cities of five lakh and above population as per census 2011 including all the Capital cities of states and Union Territories

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

Answer: (A)

Explanation:

- **The Cabinet has given its approval for "PM-eBusSewa," a scheme aimed at enhancing urban bus operations.** Priority will be given to cities that currently lack organized bus services for augmenting city bus operation by 10,000 e-buses on PPP model. The Scheme would have an estimated cost of Rs.57,613 crore, out of which support of Rs.20,000 crore will be provided by the Central government. **The Scheme will support bus operations for 10 years. Hence, statement 1 is correct.**
- **The scheme will cover cities of three lakh and above population as per census 2011** including all the Capital cities of Union Territories, North Eastern Region and Hill States. Under this scheme priority will be given to cities having no organized bus service. **Hence, statement 2 is incorrect.**

73. Consider the following statements, with reference to Graphene-Aurora Program:

1. The program aims to foster innovation of graphene technologies.
2. The program is implemented by Ministry of Mines.
3. India Innovation Centre Graphene (IICG) is set under

the program to boost Research and Development in graphene.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation:

- **Recently 'Graphene-Aurora Program' was launched by Ministry of Electronics & Information Technology (MeitY) Secretary Shri Alkesh Kumar Sharma.** The program aims to foster innovation of graphene technologies.
- **This program is implemented by Digital University Kerala with joint funding from MeitY, Government of India and Government of Kerala and Industry partners.** India Graphene Engineering and Innovation Centre (I-GEIC) shall be set up under the program. It shall fill the gap between R&D and commercialization by providing a complete facility to start-up and industry. Hence, only statement 1 is correct.

74. 'Pibot' that was recently seen in the news, is related to which of the following?

- (a) It is a submersible vehicle.
- (b) It is a humanoid pilot.
- (c) It is a next generation spacecraft.
- (d) It is a satellite for Earth observation.

Answer: (B)

**Explanation:** A team of engineers and researchers from Korea Advanced Institute of Science and Technology (KAIST) is now working on a humanoid robot called 'Pibot' that can fly aircraft without the need for cockpit modifications. It is the first humanoid pilot in the world. It can fly an aeroplane like a human pilot by operating all of the individual controls in the cockpit designed for humans. It integrates artificial intelligence and robotics technology, and it can process the natural language of the flight manual and operate the aircraft in real time. Hence, option (b) is correct.

75. Recently an island named Katchatheevu was in the news. In which of the following strait is the island located?

- (a) Sunda strait
- (b) Malacca strait
- (c) Palk strait
- (d) Bass strait

Answer: (C)

Explanation:

- **Katchatheevu is an uninhabited off-shore island in the Palk Strait.** The island is located between Neduntheevu, Sri Lanka and Rameswaram, India. In 1974, then Prime Minister of India, Indira Gandhi accepted
- **Katchatheevu as Sri Lankan area under the "Indo-Sri Lankan Maritime Agreement" aimed at resolving the maritime boundaries in the Palk Strait.** Hence, option (c) is correct.

76. With reference to Aatmanirbhar Bharat Rojgar Yojana (ABRY), consider the following statements:

1. ABRY has been launched in 2022 by Ministry of Labour & Employment as part of Atmanirbhar Bharat package 3.0.
2. It aims to incentivize employers for creation of new employment and restoration of loss of employment during Covid-19 pandemic.
3. It was being implemented through Employees' Provident Fund Organisation (EPFO).

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

- Government has fallen short of its target for employment generation in formal sector under ABRY. **ABRY has been launched in 2020 by Ministry of Labour & Employment as part of Atmanirbhar Bharat package 3.0.** Hence, statement 1 is incorrect.
- **It aims to incentivize employers for creation of new employment and restoration of loss of employment during Covid-19 pandemic.** It intends to reduce the financial burden of employers and encourages them to hire more workers. It was being implemented through Employees' Provident Fund Organisation (EPFO). Hence, statement 2 and 3 are correct.

77. Consider the following statements, with reference to Pong Dam:

1. It is the highest earth fill dam in India that has been declared as Ramsar Site in 2002.
2. Pong Dam is a manmade reservoir. It was constructed in 1975 on river Beas in wetland of Shivalik hills of Kangra district of Himachal Pradesh.

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: Pong Dam is a manmade reservoir.** It was constructed in 1975 on river Beas in wetland of Shivalik hills of Kangra district of Himachal Pradesh. **In 1983, entire reservoir was declared as Wildlife Sanctuary. It is the highest earth fill dam in India.** Pong Dam Lake has been declared as Ramsar Site in 2002. Hence, both statements are correct.

78. Recently, President Droupadi Murmu launched Vindhyagiri for Indian navy, which one of the following is the best description of 'Vindhyagiri'?

- (a) Stealth frigates
- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel
- (d) Nuclear-powered aircraft carrier

Answer: (A)

**Explanation: Recently, President Droupadi Murmu launched the advanced stealth frigate 'Vindhyagiri' for the Indian Navy in Kolkata** and said its rollout was a step towards achieving the goal of an 'atmanirbhar Bharat' (self-reliant India) through indigenous shipbuilding. **The ship was built by Garden Reach Shipbuilders and Engineers Ltd's (GRSE) facility at Kolkata under Project 17A frigate. According to officials, the P17A ships are guided missile frigates.** "They are 149 metres long, with a displacement of approximately 6,670 tonnes and a speed of 28 knots. These ships are capable of neutralising threats in all three dimensions of air, surface and sub-surface. Hence, option (a) is correct.

79. Operation Jericho, recently seen in the news is related to:

- (a) Operation by Mizo National Front (MNF) to take control of Aizawl
- (b) Operation by Indian Air Force (IAF) that quelled the rebels in Mizoram
- (c) Operation by Assam Rifles (AR) to quell Manipur violence
- (d) Operation by Indian Army to save border people in Gujarat

Answer: (A)

**Explanation: The Mizo National Front uprising was a revolt against the government of India aimed at establishing a sovereign nation state for the Mizo people,** which started on February 1966. **Operation Jericho was launched by Mizo National Front (MNF) to take control of Aizawl** during a separatist movement led by Mizo National Front (MNF) in 1966. Mizo National Front (MNF) captured the Aizawl. **Operation Jericho was quelled by Indian Air Force after the failure of Assam Rifles and Indian Army.** Hence, option (a) is correct.



80. Consider the following statements, with reference to Kola Peninsula:

1. The Kola Peninsula is a landlocked region located within the African continent.
2. Murmansk port is situated in southern Russia, along the Black Sea coast.
3. The Northern Sea Route (NSR) is a waterway that runs along the southern coast of Africa, connecting the Indian Ocean to the Atlantic Ocean.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

**Explanation:** Kola Peninsula is a peninsula in the extreme northwest of Russia and one of the largest peninsulas of Europe. Murmansk port is located in north-western Russia, on the Kola Peninsula, near the Barents Sea and the Arctic Ocean. NSR connects the eastern and western parts of the Arctic Ocean. It is the shortest shipping route connecting the western part of Eurasia and the Asia-Pacific region. Hence, all statements are incorrect.

81. Consider the following statements with reference to 'Floodwatch' Mobile App:

1. The App provides real time information of flood like situation up to 5 days.
2. The App is launched by Ministry of Electronics and Information Technology.
3. The App is inclusive as it is available in all the 22 scheduled languages.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Answer: (D)

**Explanation:** The App aims to disseminate information related to the flood situation and forecasts up to 7 days on a real-time basis to the public. The App has readable and audio broadcast and all the information is available in 2 languages that is English and Hindi. The App utilizes near real-time river flow data from various sources. The App also provides flood forecast at nearest location where users can check the flood advisory at the station nearest to them on the App. The App is launched by Central Water Commission (CWC). It utilizes advanced technologies such as satellite data analysis, mathematical modelling and real-time monitoring to deliver

accurate and timely flood forecasts. Hence, all statements are incorrect.

82. Consider the following statements regarding INS Vindhyagiri:

1. It is an advanced stealth frigate, named after the mountain range in Kerala.
2. This ship was built under Project 17A.

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: (B)

**Explanation:** It is named after the mountain range in Karnataka; Vindhyagiri is the 6th ship of the Project 17A Frigates. It was built by Garden Reach Shipbuilders & Engineers. Over 75% of the orders of Project 17A have been placed on indigenous firms including Ministry of Micro, Small and Medium Enterprises (MSMEs), in line with 'Aatma Nirbhar Bharat'. P17A ships are guided missile frigates, each 149 metres long, with a displacement of approximately 6,670 tonnes and a speed of 28 knots. Hence, statement 1 is incorrect while statement 2 is correct.

83. Gandhinagar Declaration, recently seen in the news, is associated with which of the following?

- (a) Tuberculosis (TB) eradication.
- (b) Changes in the Climate.
- (c) Crops that have been genetically modified.
- (d) Artificial Intelligence (AI).

Answer: (A)

**Explanation:** The WHO South-East Asia Region recently pledged to accelerating efforts to eradicate tuberculosis by 2030 by adopting the Gandhinagar Declaration. It was agreed after a two-day meeting in Gandhinagar, Gujarat, to track the progress made by WHO South-East Asia Region nations in eradicating tuberculosis (TB). The Declaration calls for the establishment of high-level multi-sectoral commissions reporting to the highest political level in each country to coordinate efforts among diverse stakeholders and track progress toward the abolition of tuberculosis and other priority diseases. Hence, option (a) is correct.

84. Consider the following statements regarding Technology Development Fund (TDF) Scheme:

1. It is a Ministry of Science and Technology programme carried out by the Council of Scientific and Industrial Research (CSIR).
2. It was established as part of the 'Make in India' effort

to encourage self-reliance in semiconductor manufacturing.

**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:** The Technology Development Fund (TDF) Scheme has so far assisted 41 MSMEs and 20 start-ups, according to a Minister of State in the Defence Ministry. **As part of the 'Make in India' drive, the TDF Scheme was designed to foster self-reliance in defence technology. It is a MoD (Ministry of Defence) programme carried out by the Defence Research and Development Organisation (DRDO) to suit the requirements of the Tri-Services, Defence Production, and DRDO. It encourages MSMEs and start-ups to produce indigenous components, products, systems, and technology.** The plan fosters public/private industry cooperation, particularly MSMEs, to develop an eco-system for enhancing cutting-edge technical capabilities for defence applications. Hence, both statements are incorrect.

**85. Barachukki and Gaganachukki waterfalls are associated with which of the following rivers?**

- (a) Narmada
- (b) Krishna
- (c) Kaveri
- (d) Tungabhadra

**Answer:** (C)

**Explanation:** Barachukki and Gaganachukki waterfalls are situated near the island town of Shivanasamudra in the Mandya district of Karnataka. The waterfalls are created by river Cauvery that runs down a 75 metre gorge before it divides into two branches that flows around the island of Shivanasamudra. Hence, option (c) is correct.

**86. With reference to Agnibaan SubOrbital Technological Demonstrator (SOrTeD), consider the following statements:**

1. It is a single-stage launch vehicle powered by Agnilet engine, which is an entirely 3D-printed, single-piece, semi-cryogenic engine.
2. Agnibaan can carry payloads of up to 100 kg to a low Earth orbit (LEO) of up to 700 km.

**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:** Agnikul Cosmos, an Indian space-tech startup, to carry out a sub-orbital test flight of its launch vehicle called Agnibaan SOrTeD. It is a **single-stage launch vehicle powered by Agnilet engine**, which is an entirely 3D-printed, single-piece, semi-cryogenic engine. Agnibaan can carry payloads of up to 100 kg to a low Earth orbit (LEO) of up to 700 km. **Unlike traditional sounding rockets that launch from guide rails, Agnibaan SOrTeD will lift off vertically and follow a predetermined trajectory.** Hence, both statements are correct.

**87. Matti Banana, recently seen in news, has been granted GI tag. It belongs to which state?**

- (a) Tamil Nadu
- (b) Uttar Pradesh
- (c) Bihar
- (d) Andhra Pradesh

**Answer:** (A)

**Explanation:** Matti Banana of Kanyakumari (Tamil Nadu) was granted the Geographical Indication (GI) tag. **Matti Banana is commonly known as 'Baby Banana' and is known for its distinct fragrance and honey-like taste.** Its low total soluble solids content (TSSC) recommends it as a baby food. **Unlike typical banana bunches that grow straight, the Matti's fingers exhibit a distinct wind-blown appearance.** Hence, option (a) is correct.

**88. With reference to Haliaeetus leucogaster, consider the following statements:**

1. It is a White-Bellied Sea Eagle that is found throughout Southeast Asia.
2. They exhibit sexual dimorphism, with males being slightly larger than females.
3. It is listed as Least Concern on IUCN red list.

**Which of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- White-Bellied Sea Eagle is a large diurnal bird of prey. **It's Scientific Name is Haliaeetus leucogaster.** They are found throughout Southeast Asia. **They range from north to south from southern China to Australia and Tasmania, and west to east from India to New Guinea.** Hence, statement 1 is correct.
- **They exhibit sexual dimorphism**, with females being slightly larger than males. **White-bellied Sea Eagles are primarily piscivorous**, meaning they

primarily feed on fish. They may also prey on water birds, small mammals, and carrion (dead animals). Hence, statement 2 is incorrect.

It is listed as Least Concern on IUCN red list. Hence, statement 3 is correct.

89. NBRI-Nihar recently seen in news, is related to which of the following?

- (a) A variety of Lotus developed by CSIR.
- (b) A variety of Aloe Vera.
- (c) A variety of transgenic plant.
- (d) A plant derived Vaccine.

**Answer:** (B)

**Explanation:** Dr Jitendra Singh unveils new variety "Lotus" flower developed by Lucknow Institute CSIR-NBRI (National Botanical Research Institute): **Named 'Namoh 108', the new Lotus has 108 petals.** S&T Minister also launches and releases a slew of initiatives and publications including the new variety of **Aloevera** named '**NBRI-Nihar**', having approximately 2.5 times high gel yield in comparison to **Aloevera**. Hence, option (b) is correct.

90. Consider the following statements, with reference to Debt-for-Nature Swaps:

- 1. They are financial transactions that reduce a country's debt in exchange for environmental conservation.
- 2. The world's first and largest debt swap was signed by Japan.

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:** Debt-for-nature swaps are financial transactions in which a portion of a developing nation's foreign debt is forgiven in exchange for local investments in environmental conservation measures. **The world's first and largest debt swap to conserve oceans was signed by Ecuador. Gabon's Debt-for-nature swap is the world's second-largest deal signed under blue bond to refinance the country's debt and conserve marine resource.** Hence, statement 2 is incorrect.

91. Consider the following statements regarding Magnetar:

- 1. It is a rare type of neutron star.
- 2. It emits a tremendous quantity of energy in the form of flares and X-rays.
- 3. It has a weak magnetic field compared to the Earth.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Answer:** (B)

**Explanation:** According to a new study, measurements and stellar development models of a hot, helium-rich Wolf-Rayet star indicate that when it bursts as a supernova, it will form a magnetar. **Magnetars emit massive amounts of energy in the form of flares, X-rays, and gamma-ray bursts**, in addition to extremely high magnetic fields. **A magnetar's magnetic field may be created by the inside of a neutron star**, which is thought to be made up of neutrons, quarks, and exotic states of matter such as Bose-Einstein condensates, forming a superconducting fluid. As a result, when the star rotates, it acts like a massive dynamo, producing a massive magnetic field. **A magnetar is a rare form of neutron star distinguished by an extremely high magnetic field.** Hence, only statement 3 is incorrect.

92. Piripkura Tribe, sometimes seen in the news belongs to which of the following regions?

- (a) Amazon Rainforest of South America
- (b) Congo Rainforest of Africa
- (c) Tropical Rainforest of Myanmar
- (d) Tropical rainforest of the Andaman and Nicobar Islands

**Answer:** (A)

**Explanation:** Brazil recently found the last survivors of Piripkura tribe who are in the verge of complete extinction. **Piripkura Tribe belongs to Amazon Rainforest of South America.** They are offshoot of a larger Indigenous group that once spread across a large swath of the forest. **Piripkura protected area are being given to people for commercial exploitation.** Hence, option (a) is correct.

93. Recently, Supreme Court appointed a committee to oversee relief and rehabilitation in Manipur, the committee is chaired by:

- (a) Gita Mittal
- (b) Shalini Phansakar Joshi
- (c) Asha Menon
- (d) Indu Malhotra

**Answer:** (A)

**Explanation:** Recently, the committee of former high court judges appointed by the Supreme Court to oversee relief and rehabilitation in Manipur has submitted three reports — **on loss and reconstruction of "essential documentation"; upgrading the compensation; and appointment of domain experts to facilitate its work.** The panel is headed by former

Jammu and Kashmir High Court Chief Justice Gita Mittal and includes former Bombay High Court judge Justice Shalini Phansakar Joshi and former Delhi High Court judge Justice Asha Menon. **Hence, option (a) is correct.**

94. Consider the following statements:

**Statement I** - IMEI numbers are fixed for a mobile device throughout its lifetime and cannot be changed.

**Statement II** - IMEI numbers are hard coded into the hardware of the device during production, making them unique and unchangeable.

Which of the following is correct in respect of the above statement?

(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)**

**Explanation:** The IMEI (International Mobile Equipment Identity) number is a one-of-a-kind identifier assigned to mobile devices such as smartphones, tablets, and other cellular-enabled gadgets. **It has 15 digits and serves as a phone's unique identifier. It acts as a digital fingerprint for each individual.** It is used to uniquely identify devices on mobile networks. The telecom and customs departments collaborate to check and record the IMEI numbers of handsets that arrive into India. **The IMEI number is required for a variety of applications, including device authentication and network connectivity.** IMEI numbers are permanent for the life of a mobile device and cannot be changed. **IMEI numbers are hard coded into the hardware of a mobile device during manufacturing, making them unique identifiers that remain fixed throughout the device's lifetime.** This procedure assures that each mobile device has a unique and unchanging IMEI number. **Hence, both Statement-I and Statement-II are correct, and Statement-II is the correct explanation for Statement-I.**

95. Consider the following statements, with reference to 'Gene-edited mustard':

1. It is based on CRISPR/Cas9 gene editing while being non-genetically modified.

2. It is India's first ever low pungent mustard that is pest and disease resistant.

Which of the above statement(s) is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

**Answer: (C)**

**Explanation:** CRISPR/Cas9 – a gene-editing tool deploying an enzyme was used, which acts as a “molecular scissors” to cut the DNA at precise targeted locations of the gene, and then letting the natural DNA repair process to take over. **The new GTR genes-edited mustard lines are transgene-free or non-genetically modified (GM).** Indian scientists have developed the first ever low-pungent mustard that is pest and disease-resistant. **Hence, both statements are correct.**

96. Consider the following statements, with reference to Shadow Banking:

1. Shadow banks are non-bank financial companies (NBFCs) that can operate with little to no oversight from regulators.

2. They are generally unregulated and are not subject to the same kinds of risk and capital restrictions as traditional banks.

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:** Shadow banking is generally unregulated and not subject to the same kinds of risk, liquidity, and capital restrictions as traditional banks. **Shadow banks are non-bank financial companies (NBFCs) that can operate with little to no oversight from regulators.** They are financial intermediaries that participate in creating credit but are not subject to regulatory oversight. **The shadow banking system can also refer to unregulated activities by regulated institutions, which include financial instruments like credit default swaps.** The shadow banking system consists of lenders, brokers, and other credit intermediaries who fall outside the realm of traditional regulated banking. **Hence, both statements are correct.**

97. Mylara cult, recently seen in the news belongs to which region?

(a) Karnataka and Maharashtra

(b) Foot hills of Aravalli Range

(c) Coastal region of Odisha

(d) Tibetan Plateau and Nepal

**Answer: (A)**

**Explanation:** Recently two sculptures belonging to Mylara cult, which resembles one belonging to 15th century A.D. and another to 17th century A.D. were discovered at Basrur in Udipi district of Karnataka. **The**



discovered sculpture has proved that the ancient Mylara cult existed in the coastal region of Karnataka. It shows a royal hero sitting on the horse, holding a sword and a bowl in his right and left hands respectively. **The horse shown in sitting posture is also a uniqueness of this sculpture which resembles belonging to the 15th century A.D.** This sculpture contains Mylara and Mylaladevi sitting on an ornate horse and both of them holding swords in their right hands. Hence, option (a) is correct.

98. With reference to Acoustic Side Channel Attack, consider the following statements:

1. It is a method of determining which keys are being pressed by listening to the noises produced by typing on a keyboard.
2. Hackers utilise it to obtain sensitive information such as passwords and personal messages.
3. The AI model employed to perform the attack has 100% accuracy without the use of a language model.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** A study titled "A Practical Deep Learning-Based Acoustic Side Channel Attack on Keyboards" discovered that **Artificial Intelligence (AI) can be used to decipher passwords by studying keystroke sounds.** The sounds made by typing on a keyboard are used in this technique to discern which keys are being pressed. Hackers with the correct tools can decrypt the specific letters and numbers being entered by examining these distinct noises. **The classifier attained an accuracy of 95% when trained on keystrokes from a nearby phone,** the best accuracy reported without the assistance of a language model, according to the study. Hence, statement 3 is incorrect.

99. Consider the following statements regarding Tomahawk Missiles:

1. It is a long-range cruise missile manufactured in the United States that is employed for deep land attack warfare.
2. It can transport both conventional and nuclear payloads.

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

Answer: (C)

**Explanation:** It is a long-range cruise missile manufactured in the United States that is employed for deep land attack warfare. It may be fired from a ship or submarine and deliver its warhead to a target across a considerable distance. **It is principally utilised by the navies of the United States and the United Kingdom.** It is designed to fly at subsonic speeds while keeping a low altitude, making radar detection difficult. It can twist and turns like a fighter plane to avoid radar detection. **It is capable of carrying both conventional and nuclear payloads.** Hence, both statements are correct.

100. Yasuni National Park is recently in the news. This park is situated in which of the following country?

- (a) Peru
- (b) Bolivia
- (c) Brazil
- (d) Ecuador

Answer: (D)

**Explanation:** Yasuni National Park is in Ecuador with an area of 9,823 km<sup>2</sup> between the Napo and Curaray Rivers in Napo, Pastaza, and Orellana Provinces in Amazonian Ecuador. **Yasuni National Park (YNP) is arguably the most biologically diverse spot on Earth and a convergence point for three unique regions, the Equator, Andes Mountains, and the Amazon rainforest.** The park is at the centre of a small zone where amphibian, bird, mammal, and vascular plant diversity all reach their maximum levels within the western hemisphere. Hence, option (d) is correct.

101. Consider the following statements with reference, to Bharat New Car Assessment Programme (Bharat NCAP):

1. Bharat NCAP is an indigenous programme for testing cars in which car manufacturers can volunteer to get a star rating indicating the safety of their models in a crash.
2. Under the programme, crash tests will evaluate vehicle performance and award ratings from 0 to 5 stars.
3. The programme is mandatory for the vehicles with gross weight exceeding 3,500 kg.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Answer: (A)

**Explanation:**

- **Recently Ministry of Road Transport and Highways unveiled the Bharat NCAP to increase the road safety.** Bharat NCAP is an indigenous

programme for testing cars in which car manufacturers can volunteer to get a star rating indicating the safety of their models in a crash. It is an indigenous programme which crash-test cars as per Automotive Industry Standard (AIS) 197. The programme is voluntary in nature. Hence, statement 1 is correct.

- A rating from 1 star to 5 stars will be assigned to a vehicle after an evaluation of 3 parameters which includes:
  - Adult occupant protection.
  - Child occupant protection.
  - Safety assist technologies present in the car.

Hence, statement 2 is incorrect.

The programme will be applicable to passenger vehicles with not more than eight seats in addition to the driver's seat with gross vehicle weight not exceeding 3,500 kg. The Bharat New Car Assessment Programme (Bharat NCAP) is modelled on the Global New Car Assessment Programme (Global NCAP). Hence, statement 3 is incorrect.

102. Consider the following statements regarding PHYGITAL Banking:

1. It replaces the traditional brick-and-mortar banking branches with digital platforms.
2. Through this bank can sell another product or service that the customer is not looking for.

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:** Phygital or Hybrid model is a combination of the phrases physical and digital banking. It is a service where traditional and digital models co-exist, and customers get best of both the worlds. A PHYGITAL approach can meet the needs of all end users. The significant advantage of phygital is increased efficiency and cost savings. India Post Payments Bank uses PHYGITAL Banking Service platform to attain inclusive banking. India Post Payments Bank at national scale has created a differential positioning, envisaged to operate where traditional banking failed to catch up owing to conventional barriers. Cross selling refers to the practice where bank associate attempts to sell an existing customer additional financial product. Hence, both statements are incorrect.

103. Which of the following relates to the recently identified 'Demon Particle'?

- (a) Artificial Intelligence (AI)
- (b) Block-chain innovation

- (c) Superconductivity
- (d) Exploration of space

Answer: (C)

**Explanation:** A "demon particle" is a theoretical concept predicted by physicist David Pines in 1956. Pines proposed that electrons passing through solids could lead to the formation of a new type of particle, the "demon particle." These particles are massless, chargeless, and transparent to light. Superconductivity allows electric charge to move through a material with zero resistance. Energy transfer between points becomes highly efficient, devoid of heat loss. In theory, this allows electrical energy to be transported between two sites with 100% efficiency and no heat loss. Hence, option (c) is correct.

104. Umiam lake, also known as Barapani Lake recently seen in news is located in which state?

- (a) Nagaland
- (b) Manipur
- (c) Meghalaya
- (d) Assam

Answer: (C)

**Explanation:** Umiam Lake is one of the largest artificial lakes in Meghalaya. It is locally known as Bara Pani or Large Water. The Sylvan Hills and Khasi Pine trees add to the beauty of this vast lake. It was initially established as a dam or reservoir for hydroelectric power generation, but currently it is a popular tourist destination. Hence, option (c) is correct.

105. Consider the following statements regarding Chandrayaan-3 mission:

1. It is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving on the lunar surface.
2. Chandrayaan-3 consists of an indigenous Lander module Propulsion module and a Rover.
3. India is the first nation in the world to accomplish soft landing on Moon's South Pole successfully.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Answer: (C)

**Explanation:** Chandrayaan-3 is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving on the lunar surface. It was launched by LVM3 from SDSC SHAR, Sriharikota. Chandrayaan-3 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. **Recently, Indian Chandrayaan-3 mission successfully landed the moon; it is one of the most defining moments in India's history.** With the landing on moon, **India became one of the four countries to accomplish a soft landing on the lunar surface, and the first to do so near the Moon's South Pole.** Hence, all statements are correct.

106. Consider the following statements with reference to Astra Missile:

1. ASTRA is an all-weather indigenous Beyond Visual Range (BVR) class of Air-to-Air Missile system.
2. It was developed by Defence Research and Development Organisation (DRDO) and capable of destroying the targets up to 1000 kilometre.

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:** Recently, Light Combat Aircraft (LCA) Tejas successfully test-fired ASTRA missile off the coast of Goa. **ASTRA is a Beyond Visual Range (BVR) class of Air-to-Air Missile (AAM) system designed to be mounted on fighter aircraft.** The missile is designed to engage and destroy highly manoeuvring supersonic aircraft. **It is jointly designed and developed by the Defence Research and Development Laboratory (DRDL), Research Centre Imarat (RCI) and other laboratories of DRDO.** The missile has all weather day and night capability. The ASTRA Mk-I Weapon System integrated with SU-30 Mk-I aircraft is being inducted into the Indian Air Force (IAF). **Its range varies from 80-110 kms for version Mk1 and 160kms for version Mk2.** Hence statement 2 is incorrect.

107. With reference to Mera Bill Mera Adhikar Scheme, consider the following statements:

1. It is a Goods and Services Tax (GST) invoice incentive programme that offers cash incentives for uploading invoices.
2. It will be introduced initially in the states of Kerala, Uttar Pradesh, Gujarat as well as the UTs of Puducherry, Daman & Diu, and Dadra & Nagar Haveli.
3. Its objective is to encourage customers to request a bill whenever they make purchases.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

- The government has announced the launch of the **"Mera Bill MeraAdhikaar" Invoice Incentive Scheme starting from September 1, 2023.** The "Mera Bill MeraAdhikaar" initiative has been introduced by the Government of India in collaboration with State Governments. It is a **Goods and Services Tax (GST) invoice incentive programme that offers cash incentives for uploading invoices.** Hence, statement 1 is correct.
- It would initially be introduced in the states of **Assam, Gujarat, and Haryana, as well as the UTs of Puducherry, Daman & Diu, and Dadra & Nagar Haveli.** Hence, statement 2 is incorrect.
- Its **objective is to encourage customers to request a bill whenever they make purchases.** All invoices issued by GST-registered suppliers to consumers will be eligible for the scheme. **A monthly and quarterly draw of lots will be made, and winners will be eligible for cash reward prizes beginning from Rs 10,000 to up to Rs 1 crore.** The 'Mera Bill Mera Adhikar' mobile app will be made available on both IOS and Android platforms. Hence, statement 3 is correct.

108. With reference to 'Methanotrophs', consider the following statements:

- Statement 1** – Methanotrophic microorganisms oxidize methane to harness energy under oxic and anoxic conditions.
- Statement 2** – They grow best when the methane concentration is around 5,000-10,000 parts per million (ppm).

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: (B)

**Explanation:** Methane-utilizing bacteria (methanotrophs) are a diverse group of gram-negative bacteria that are related to other members of the Proteobacteria. **Methanotrophic microorganisms oxidise methane to harness energy under oxic and anoxic conditions.** They grow best when the methane concentration is around 5,000-10,000 parts per million (ppm). **It can grow at low methane concentrations ranging from 200-1,000 ppm.** These features make this strain a promising candidate for methane removal technology. **Hence, both Statement-I and Statement-II**

**II are correct and Statement II is not the correct explanation for Statement-I.**

**109. The Lunar Polar Exploration Mission (LUPEX) is a joint initiative between the Indian Space Research Organisation (ISRO) and which of the following space agencies?**

- (a) Japan Aerospace Exploration Agency (JAXA)
- (b) Canadian Space Agency (CSA)
- (c) European Space Agency (ESA)
- (d) National Aeronautics and Space Administration (NASA)

**Answer: (A)**

**Explanation:** The Indian and Japanese space agencies are collaborating on the Lunar Polar Exploration Mission (LUPEX). It is a **joint project of the Japan Aerospace Exploration Agency (JAXA) and the Indian Space Research Organization (ISRO). The mission is set to take off in 2025.** LUPEX will explore the feasibility of building a base on the Moon, the availability of water ice, and surface exploration technology with a rover and lander. **The rover and lander are being developed by JAXA and ISRO, respectively.** The rover will carry not only ISRO and JAXA instruments but also those of NASA and the European Space Agency (ESA). **Hence option (a) is correct.**

**110. Consider the following statements, with reference to the Fujiwhara Effect:**

- 1. It is the interaction between two cyclones spinning in the opposite direction.
- 2. The effect occurs around their common centre of the two cyclones.
- 3. The occurrence of the Fujiwhara effect helps scientists in forecasting the cyclonic systems.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:** When two hurricanes or cyclones, spinning in the same direction, when brought close together, they begin 'an intense dance around their common centre, this interaction is called the Fujiwhara effect. The interaction could lead to changes in the track and intensity of either or both storms systems. **If one hurricane's intensity overpowers the other, then the smaller one will orbit it and eventually crash into its vortex to be absorbed.** If two storms of similar strengths pass by each other, they may gravitate towards each other until they reach a common centre and merge, or merely spin each other

around for a while before shooting off on their own paths. **In rare instances, the two 'dancing' cyclones, if they are intense enough, may merge with one another, leading to the formation of a mega cyclone capable of wreaking havoc along coastlines.** The occurrence of the Fujiwhara effect also makes cyclonic systems harder to predict. Hence, only statement 2 is correct.

**111. In the context of 'The International Lunar Research Station', consider the following statements:**

- 1. The station would be built on the lunar surface or in lunar orbit and would conduct scientific research such as lunar exploration and utilisation.
- 2. Russia and China will follow the principles of co-consultation, collaborative construction, and mutual gain.
- 3. Extensive cooperation inside the ILRS will be encouraged, and this chance will be available to all interested countries and international partners.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** The International Lunar Research Station, which would be established on the lunar surface or in lunar orbit, would conduct scientific research operations such as lunar exploration and utilisation, lunar-based observation, basic scientific experimentation, and technical verification. **Russia participates in the International Space Station, a liveable artificial satellite and the single largest man-made structure in low earth orbit. Russia and China will follow the principles of dialogue, cooperative construction, and mutual gain.** Extensive collaboration inside the ILRS will be encouraged, and this opportunity will be available to all interested countries and international partners. **Hence, all statements are correct.**

**112. Consider the following statements, with reference to Kumbhalgarh Wildlife Sanctuary (KWS):**

- 1. It is located on the fringes of the Aravalli mountain range in Rajasthan.
- 2. It is home to indigenous tribes like Bhil, Garasia and the nomadic Raika pastoralists.
- 3. Due to the abundance tiger population it is a part of tiger corridor.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two



- (c) All three  
(d) None

**Answer: (B)**

**Explanation:**

- Recently the **'in-principal' approval has been given to declare the Kumbhalgarh Wildlife Sanctuary (KWS) in Rajasthan as a Tiger Reserve.** The Kumbhalgarh Wildlife Sanctuary is located on the fringes of the Aravalli mountain range in Rajasthan. It is known for Indian wolves, four-horned antelope and leopards.
- It is also home to indigenous tribes like Bhil, Garasia and the nomadic Raika pastoralists. **Hence, statement 1 and 2 are correct.**
- There is **no documented history of the tiger population in the Kumbhalgarh forest** and KWS has never been part of any tiger corridor. **Hence, statement 3 is incorrect.**

113. Consider the following statements with reference to 'Minimum Export Price':

**Statement 1** – The government fixes MEP for the selected commodities to arrest domestic price rise under Foreign Trade (Development And Regulation) Act, 1992

**Statement 2** – The application of MEP helps farmers/exporters realize better and remunerative prices

**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: (C)**

**Explanation:**

- Minimum export price is imposed in view of the rising domestic retail/wholesale price or production disruptions in the country. **It is a kind of quantitative restriction to trade.** The government fixes MEP for the selected commodities to arrest domestic price rises and augment domestic supply under Foreign Trade (Development and Regulation) Act, 1992. **Hence, statement 1 is correct.**
- This is **intended to be imposed for short durations and is removed when situations change.** The removal of MEP helps farmers/exporters realize better and remunerative prices. **Hence, statement 2 is incorrect.**

114. Consider the following statements, with reference 'XV summit of BRICS':

1. It was hosted by India for the first time since the inception.
2. 'Foster High-quality BRICS Partnership, Usher in a New Era for Global Development' was the theme of the summit.

**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:** It was hosted by South Africa for the third time since the inception of BRICS. 'BRICS in Africa: Partnership for Mutually Accelerated Growth, Sustainable Development and Inclusive Multilateralism' was the theme of the summit. **15th BRICS Summit was held in Johannesburg from 22-24 August 2023.** Hence, both statements are incorrect.

115. 'Equal Contrast Technique' seen in news recently is mostly used for:

- (a) Medical imaging  
(b) 3D printing  
(c) Detect gravitational waves  
(d) Sun analysis

**Answer: (D)**

**Explanation:** A new methodology called **Equal Contrast Technique (ECT) developed to analyze images of the Sun** in white light can help obviate temporal and latitudinal variations in observations related to instrument and sky conditions. **It can help in accurate analysis of the historic time series of images of Sun and in understanding the dynamics of the sun, solar cycle variations,** dynamo processes in the convection zone and resulting long term climatic variations on the earth. Hence, option (d) is correct.

116. Consider the following statements, with reference to Tele-Law 2.0:

1. It uses communications and information technology for the delivery of legal information and advice.
2. It is an initiative of the Department of Justice, Ministry of Law & Justice.
3. It operates under the DISHA Scheme.

**How many of the statements given above are correct?**

- (a) Only one  
(b) Only two  
(c) All Three  
(d) None

**Answer: (C)**

**Explanation:** Tele-Law 2.0 was recently unveiled by Ministry of Law and Justice. **Tele-Law means the use of communications and information technology for the delivery of legal information and advice. This e-interaction between lawyers and people would be through the video-conferencing infrastructure available at the Common Services Centre (CSCs).** The concept of Tele-Law is to facilitate delivery of legal advice through a panel of lawyers stationed at the front office of Legal Services Authorities and CSC. Tele-Law 2.0 entails the fusion of Tele-Law Services with Nyaya Bandhu pro bono legal services, a merger to further enhance citizen accessibility to legal aid. It operates under the DISHA Scheme. **Hence, all statements are correct.**

117. Consider the following statements, with reference to Land to Landless Scheme:

1. Only Jammu and Kashmir domiciles are eligible for land to landless scheme.
2. It is a sub scheme under Pradhan Mantri Awas Yojana (Gramin).

**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:** Land to Landless Scheme is a **sub scheme under Pradhan Mantri Awas Yojana (Gramin). Only Jammu and Kashmir domiciles are eligible for land to landless scheme.** A person shall be eligible under the scheme only if he is a domicile of J&K having: a separate family and should not have land in his own name or in the name of any of his family members or is not entitled to inherit any more land. **PMAY-G is flagship mission by the Ministry of Rural Development and implemented by the Ministry of Housing and Urban Affairs. Hence, both statements are correct.**

118. Consider the following statements regarding 'Parboiled Rice':

1. It is also called converted rice, is partially precooked in its inedible husk before being processed for eating.
2. Parboiled rice is higher in fiber and protein than white rice.
3. It is more nutritious than brown rice.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- **Parboiled rice, also called converted rice, is partially precooked in its inedible husk before being processed for eating.** It happens before rice is milled, that is before the inedible outer husk is removed to yield brown rice but before brown rice is refined to make white rice. **Hence, statement 1 is correct.**
- **Parboiling changes the colour of rice to a light yellow or amber, which differs from the pale, white colour of regular rice.** Parboiling rice improves its texture, increases its shelf life, and provides health benefits. Parboiled rice is higher in fiber and protein than white rice. **Hence, statement 2 is correct.**
- It is **less nutritious than brown rice.** It takes a little longer to cook. **Hence, statement 3 is incorrect.**

119. With reference to 'Insurance Surety Bonds', consider the following statements:

**Statement 1** – These are instruments where insurance companies act as 'Surety' and provide the financial guarantee that the contractor will fulfill its obligation.  
**Statement 2** – If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.

**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)

**Explanation:** Insurance Surety Bonds can be defined in their simplest form as a written agreement to guarantee compliance, payment, or performance of an act. **These are instruments where insurance companies act as 'Surety' and provide the financial guarantee that the contractor will fulfil its obligation as per the agreed terms.** The insurance company or surety company that guarantees the obligation will be performed. **If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.** Hence, both Statement-I and Statement-II are correct and Statement II is the correct explanation for Statement-I.

120. With reference to Seethakali folk art, consider the following statements:

1. It is a traditional folk dance drama that is performed during the festival days of Onam in Kerala.

2. The performance was carried out by dalit artists belonging to the Veda and Pulaya communities.

**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: (D)**

**Explanation:** Seethakali is a traditional folk dance drama that was once performed during the festival days in erstwhile Desinganad (Kollam, Kerala), primarily during the Onam festivities. The performance was carried out by dalit artists belonging to the Veda and Pulaya communities, focusing on presenting episodes from the Ramayana from Sita's perspective. Vanayatra to Andardhanam: Seethakali portrays the journey from "vanayatra" (exile to the forest) to "andardhanam" (descend into the earth) of Sita, featuring a blend of songs, storytelling, and fast movements. Hence, both statements are correct.

121. Consider the following statements, with reference to Somatic Genetic Mutations:

- 1. It is an error that occurs in the DNA during cell division.
- 2. It is driven by the repeated copy-pasting of the genome.

**Which of the statements given above are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (C)**

**Explanation:** A somatic mutation describes any alteration at the cellular level in somatic tissues occurring after fertilization. These mutations do not involve the germline and consequently do not pass on to offspring. An error that occurs in the DNA after birth but during development is called a somatic genetic mutation. Their occurrence is driven by the repeated 'copy-pasting' of the genome. As the cells divide, the DNA is copied with extremely high accuracy due to proteins. A somatic genetic mutation can render a cell fitter than others, which lead to the formation of tumours. So these mutations are called driver mutations. Hence, both statements are correct.

122. Consider the following statements, with reference to Oceanic Nino Index (ONI):

- 1. The index measures the average sea surface temperature deviation from normal temperature in east-central equatorial Pacific region.
- 2. It is the primary indicator of National Oceanic and

Atmospheric Administration, USA to monitor El Nino-Southern Oscillation.

**Which of the statements given above are incorrect?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (D)**

**Explanation:** The Oceanic Niño Index (ONI) measures the average sea surface temperature deviation from the normal in the east-central equatorial Pacific region. ONI is National Oceanic and Atmospheric Administration (NOAA)'s primary indicator for monitoring the ocean part of the seasonal climate pattern called the El Nino-Southern Oscillation (ENSO). The ONI tracks the running 3-month average sea surface temperatures in the east-central tropical Pacific between 120°-170°W, near the International Dateline. El Nino conditions is said to be present in the ocean when the index is +0.5 or higher. Oceanic La Nina conditions exist when the ONI is -0.5 or lower, indicating the region is 0.5 degrees Celsius or more cooler than average. Recently, the NOAA has predicted a 66% probability of the ONI exceeding 1.5 degrees Celsius during October-December 2023 and a 75% chance of it remaining above 1 degree in January-March 2024. Hence, both statements are correct.

123. Bidri ware, recently seen in the news, is a form of metal handicraft from which one of the following states?

- (a) Kerala
- (b) Karnataka
- (c) Andhra Pradesh
- (d) Bihar

**Answer: (B)**

**Explanation:** Bidri pottery is a traditional Karnataka handicraft that started in Bidar. It entails the creation of metal goods using a unique technology that combines zinc and copper. Bidri ceramics have a long history dating back to the 14th century. During the reign of the Bahmani Sultans, Persian artisans introduced it to Bidar. The Indian government granted its Geographical Indication designation in 2006, recognizing its unique origin and traditional crafting processes. UNESCO has also designated Bidriware as an Intangible Cultural Heritage of Humanity. Hence, option (b) is correct.

124. Recently, space payloads ILSA, RAMBHA and ChaSTE are in news, these are related to which space mission

- (a) Voyager 2
- (b) Chandrayaan-3

- (c) Chang'e 3  
(d) Mars Orbiter Mission

**Answer: (B)**

**Explanation:** India's Chandrayaan-3 spacecraft has begun releasing important data from the scientific experiments being conducted by the instruments on board. **On Sunday, the Indian Space Research Organisation (ISRO) released first-of-its-kind data from the observations made by ChaSTE** (Chandra's Surface Thermophysical Experiment), one of the four instruments on the lander module. **ChaSTE is meant to study the heat conductivity of the Moon's surface and measure the differences in temperatures at different points on and below the surface, with the overall objective of creating a thermal profile of the Moon.** Lander module also has payloads ILSA and RAMBHA. Hence, option (b) is correct.

**125. Consider the following statements:**

1. Prime Minister declared August 23 as National Space Day to commemorate India's achievement of Chandrayaan-3 (Soft landing on moon's southern hemisphere).
2. The place where 'Vikram' lander touchdown on lunar surface is to be referred as "Shiv Shakti Point".
3. The place where Chandrayaan-2 lander crash-landed on Moon's surface in 2019 now named "Tiranga".

**Which of the above statements is/are correct?**

- (a) Only one  
(b) Only two  
(c) All three  
(d) None

**Answer: (C)**

**Explanation:** Prime Minister declared **August 23 as National Space Day to commemorate India's achievement of Chandrayaan-3 (Soft landing on moon's southern hemisphere).** The place where 'Vikram' lander touchdown on lunar surface is to be referred as "Shiv Shakti Point". **The place where Chandrayaan-2 lander crash-landed on Moon's surface in 2019 now named "Tiranga".** Meanwhile, Chandra's Surface Thermophysical Experiment (ChaSTE) payload, onboard Vikram Lander, has noticed a variation from 70 degree Celsius to minus 10 degree Celsius temperature on lunar surface. **Hence, all statements are correct.**

**126. Consider the following statements with reference to Article 35A:**

1. Article 35A empowered the legislature of Jammu and Kashmir to define the permanent residents of the state of J&K.
2. Article 35A falls outside the purview of the judicial review.

3. Article 35A is not defined in the original constitution.

**How many of the statements given above are correct?**

- (a) Only one  
(b) Only two  
(c) All three  
(d) None

**Answer: (C)**

**Explanation:** Article 35A empowered the Jammu and Kashmir Legislature to define "permanent residents" of the State and provide them special privileges. **'Permanent residents' included people who were hereditary State subjects as in 1927, when J&K was a princely state prior to its accession to the Indian Dominion in 1947.** Article 35A had enjoyed a status over and above the Ninth Schedule (laws outside the ambit of judicial review) of the Constitution. **Article 35A was introduced through the Constitution Order, 1954 issued by the President under Article 370. Hence, all statements are correct.**

**127. Consider the following statements regarding Nabhmitra:**

1. It is a two-way messaging services device that uses satellite-based communication to ensure safety of the fisherman.
2. The device is developed by Department of Fisheries.

**Which of the following statements is/are correct?**

- (a) 1 only  
(b) 2 only  
(c) Both 1 and 2  
(d) Neither 1 nor 2

**Answer: (A)**

**Explanation:**

- Nabhmitra is the **satellite-based communication system that enables two-way messaging services from and to the sea.** Nabhmitra is a device developed by ISRO-Space Applications Centre (Ahmedabad) for the safety of fishermen.
- **Weather and cyclone warnings will be communicated in the local language to the fishermen.** The boats can also send distress messages to the authorities. In emergency situations like capsizing and fire, fishermen can press a button on the device and get in touch with the control centre. **Apart from providing information about shipping channels and maritime boundaries, the device will also help to identify fishing fields.** Hence, statement 2 is incorrect.

**128. With reference to SVAMITVA Scheme, consider the following statements:**



1. It is a central sector scheme that aims to establish clear ownership of property in rural areas with issuance of legal ownership cards to the property owners.
2. It uses drone technology for mapping land parcels to 'Record of Rights' to village households.

**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:** SVAMITVA scheme under the Ministry of Panchayati Raj (MoPR) won the National Award for e-Governance 2023. **It is a central sector scheme that aims to establish clear ownership of property in rural areas with issuance of legal ownership cards to the property owners. It uses drone technology for mapping land parcels to 'Record of Rights' to village households.** Scheme covers multifarious aspects viz. facilitating monetisation of properties and enabling bank loan; reducing property related disputes; comprehensive village level planning etc. **Hence, both statements are correct.**

**129. With reference to Flex Fuel Vehicles (FFV), consider the following statements:**

1. These are a modified version of vehicles that could run on a blend of petrol and ethanol.
2. Engine damage is more in FFVs than in the normal vehicles.
3. Flex-fuel vehicles run on hybrid electric technology.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two

- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Flex-fuel vehicles (FFV) have **engines that can run on flexible fuel — a combination of petrol and ethanol, which can include up to 100% ethanol.** When FFV is integrated along with strong hybrid electric technology, it is referred as FFV-SHEVs. **Strong hybrid is another term for full hybrid vehicles, which have the capability to run solely on either electric or petrol modes.** Ethanol can also, unfortunately, cause corrosion and damage to the engine, mainly because it absorbs dirt easily. **FFVs differ from bi-fuel vehicles that use separate tanks for each fuel, like compressed natural gas (CNG) or liquefied petroleum gas (LPG).** Hence, only statement 2 is incorrect.

**130. Picoflare Jets, recently seen in the news is related to:**

- (a) The supersonic passenger jets that could fly from New York to London in only 90 minutes
- (b) The wind jets that emanate during collision of two alike cyclones
- (c) The jets that emanate from structures on the Sun's corona
- (d) The jets that emanate from the northern and southern lights of Auroras

**Answer:** (C)

**Explanation:** Picoflare Jets **emanate from structures on the corona called coronal holes** where the sun's magnetic field stretches into space rather than back into the star. **They are relatively small in size. These jets could actually be a major source of mass and energy to sustain the solar wind.** Hence, option (c) is correct.

## Practice MCQs on Conventional Subjects

### 1. Consider the following statements regarding the Bhakti Saint Ramananda:

1. He preached equality before God.
2. He founded his own sect based on the doctrine of love and devotion to Lord Krishna and Radha.
3. He was a disciple of bhakti saint Kabir.

### How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

### Explanation:

- Ramananda belonged to Ramanuja's philosophical thought. He visited the holy places of North India and preached Vaishnavism. **Ramananda introduced radical changes in Vaishnavism** by founding his own sect based on the doctrine of love and devotion to Rama and Sita. **Hence, statement 2 is incorrect.**
- He preached equality before God. He **rejected caste system, particularly the supremacy of Brahmins** as the sole custodians of the Hindu religion. **Hence, statement 1 is correct.**
- The people from the lower strata of the society became his followers. His twelve disciples included **Ravidas, Kabir and two women. Ramananda was the first to preach his doctrine of devotion** in Hindi, the vernacular language. **Hence, statement 3 is incorrect.**

### 2. Consider the following statements:

1. The administrative and military efficiency of the Mughal Empire led to great economic and commercial prosperity.
2. The Mughal emperors and their mansabdars spent a great deal of their income on salaries and goods.
3. The scale of revenue collection left very little for investment in the hands of the primary producers – the peasant and the artisan.

### How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** The **administrative and military efficiency of the Mughal Empire led to great economic and commercial prosperity.** International travellers described it as the fabled land of wealth. But these same visitors were also appalled at the state of poverty that existed side by side with the greatest opulence. The Mughal emperors and their mansabdars spent a great deal of their income on salaries and goods. This expenditure benefited the artisans and peasantry who supplied them with goods and produce. But the scale of revenue collection left very little for investment in the hands of the primary producers – the peasant and the artisan. The poorest amongst them lived from hand to mouth and they could hardly consider investing in additional resources – tools and supplies – to increase productivity. The wealthier peasantry and artisanal groups, the merchants and bankers profited in this economic world. **Hence, all statements are correct.**

### 3. With reference to the administration of Palas and Pratiharas, the term 'Uparika' refers to:

- (a) Head of a bhukti or province
- (b) Head of judicial system
- (c) Chief revenue officer
- (d) Military chief

**Answer:** (A)

**Explanation:** The Pala Empire's lands that were managed directly were divided into many provinces known as **Bhuktis** and governed by officials known as **Uparika**. Uparika collected the levy and preserved the province's law and order. **These Bhuktis (Provinces) were further segmented into Vishaya (Divisions) and Mandala (Districts).** Hence, option (a) is correct.

### 4. Which of the following Neolithic sites was known for pit-house dwelling?

- (a) Koldihwa
- (b) Hallur
- (c) Burzahom
- (d) Chirand

**Answer:** (C)

**Explanation:** In the Neolithic site **Burzahom (in present-day Kashmir)** people built **pit-houses**, which were dug into the ground, with steps leading into them. **These may have provided shelter in cold weather.** Hence, option (c) is correct.

### 5. After the Battle of Buxar (1764), the East India Company appointed Residents in Indian states. They were:

- (a) Heads of Contingent army units placed under Subsidiary alliance in the states.
- (b) Representative natives of the Princely states who were also a part of the British Legislative council.
- (c) Political and commercial agents of the company in

the states.  
(d) Ex-Governors of British Presidencies who controlled the states.

**Answer:** (C)

**Explanation:** They were **political or commercial agents and their job was to serve and further the interests of the Company. Through the Residents, the Company officials began interfering in the internal affairs of Indian states.** They tried to decide who was to be the successor to the throne, and who was to be appointed in administrative posts. Hence, option (c) is correct.

**6. Consider the following statements regarding the powers of the Lok Sabha Speaker:**

1. Speaker prorogues an ongoing session of the Lok Sabha.
2. Speaker approves all the bills before it is sent for Presidential assent.
3. Speaker heads the appointments committee of the Cabinet and the appointments committee of the Lok Sabha.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (D)

**Explanation:** President prorogues the session, i.e. ends it. **Speaker can only adjourn it for some time. Speaker only notifies whether a bill is money bill or not.** The PM heads the appointments committee of the Cabinet. There is no appointments committee in the Lok Sabha. **Hence, all statements are incorrect.**

**7. Which Act enabled the Governor General to associate representatives of the Indian People with the work of legislation by nominating them to his expanded council?**

- (a) Government of India Act, 1858
- (b) Indian Councils Act, 1861
- (c) Indian Councils Act, 1892
- (d) Government of India Act, 1935

**Answer:** (B)

**Explanation:** **Indian Councils Act, 1861, made a beginning of representative institutions by associating Indians with the law-making process.** It thus provided that the viceroy should nominate some Indians as non-official members of his expanded council. **In 1862, Lord Canning, the then viceroy, nominated three Indians to his legislative council—the Raja of Benaras, the Maharaja of Patiala and Sir Dinkar Rao.** Hence, option (b) is correct.

**8. Which of the following are devices of direct democracy?**

1. Referendum
2. Citizen's Initiative
3. Recall
4. Plebiscite

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1, 2 and 4 only
- (d) All of the above

**Answer:** (D)

**Explanation:** **Democracy is of two types—direct and indirect.** In direct democracy, the people exercise their supreme power directly as is the case in Switzerland. **There are four devices of direct democracy, namely, Referendum, Initiative, Recall and Plebiscite.** In indirect democracy, on the other hand, the representatives elected by the people exercise the supreme power and thus carry on the government and make the laws. **This type of democracy, also known as representative democracy, is of two kinds—parliamentary and presidential.** Hence, option (d) is correct.

**9. The Indian constitution is a written one unlike in some of the other democracies. What does it imply?**

1. The form of government in India has been codified in the constitution to reduce political and administrative conflicts.
2. All the laws made by Parliament are to be written down as a part of the constitution.
3. Only because of a written constitution, citizens are able to enjoy fundamental rights.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer:** (A)

**Explanation:** **Constitution specifies the structure, organisation, powers and functions of both the Central and state governments and prescribes the limits within which they must operate.** Thus, it avoids the misunderstandings and disagreements between the two. **All the laws made in India are codified separate from the constitution and maintained in a law book.** They need not be a part of the constitution. **Even in the UK where there is no written constitution, people enjoy several fundamental rights.** However, only because our fundamental rights are written in the constitution, it is difficult to amend and change them as per the wishes of the political executive. **Hence, only statement 1 is correct.**

10. Which principle among the following was added to the Directive Principles of Stat Policy by the 42nd Amendment to the Constitution?

- (a) Equal pay for equal work for both men and women.
- (b) Participation of workers in the management of industries.
- (c) Right to work, education and public assistance.
- (d) Securing living wage and human conditions of work to workers.

**Answer:** (B)

**Explanation:** 42nd Amendment to the Constitution Added three new Directive Principles viz., **equal justice and free-legal aid, participation of workers in the management of industries and protection of environment, forests and wild life.** Hence, option (b) is correct.

11. Consider the following statements:

- 1. The percentage of moisture present in the atmosphere as compared to its full capacity at a given temperature is known as absolute humidity.
- 2. The absolute humidity differs from place to place on the surface of the earth.
- 3. The ability of the air to hold water vapour depends entirely on its temperature.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Water vapor present in the air is known as humidity. It is expressed quantitatively in different ways. **The actual amount of the water vapour present in the atmosphere is known as the absolute humidity.** It is the weight of water vapour per unit volume of air and is expressed in terms of grams per cubic metre. The ability of the air to hold water vapour depends entirely on its temperature. The absolute humidity differs from place to place on the surface of the earth. **The percentage of moisture present in the atmosphere as compared to its full capacity at a given temperature is known as the relative humidity.** Hence, only statement 1 is incorrect.

12. The factors that cause variations in insolation are:

- 1. The length of the day
- 2. The configuration of land in terms of its aspect
- 3. The transparency of the atmosphere

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 1 and 3 only

- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer:** (D)

**Explanation:** The energy received by the earth is known as incoming solar radiation which in short is termed as insolation. The amount and the intensity of insolation vary during a day, in a season and in a year. **The factors that cause these variations in insolation are:**

- i. The rotation of earth on its axis
- ii. The angle of inclination of the sun's rays
- iii. The length of the day
- iv. The transparency of the atmosphere
- v. The configuration of land in terms of its aspect

**Thus, all the given factors cause variation in the amount of insolation. Hence, all are correct.**

13. The vertical pressure gradient force is much larger than that of the horizontal pressure gradient. But we do not experience strong upward winds, because of:

- (a) Strong frictional force in lower atmosphere
- (b) Strong Coriolis force
- (c) Strong Planetary winds
- (d) Strong Gravitational force

**Answer:** (D)

**Explanation:** The vertical pressure gradient force is much larger than that of the horizontal pressure gradient. But, it is generally balanced by a nearly equal but opposite gravitational force. Hence, we do not experience strong upward winds. **Due to gravity the air at the surface is denser and hence has higher pressure. Hence, option (d) is correct.**

14. Consider the following statements regarding the vertical distribution of ocean temperature:

- 1. The heat is transmitted from the surface of the ocean to the lower sections of the oceans through the process of convection.
- 2. A thermocline is the transition layer between warmer mixed water at the ocean's surface and cooler deep water below.
- 3. About 10 percent of the total volume of water is found below the thermocline in the deep ocean.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The temperature-depth profile for the ocean water shows how the temperature decreases with the increasing depth. The profile shows a boundary region between the surface waters of the



ocean and the deeper layers. **The boundary usually begins around 100 – 400 m below the sea surface and extends several hundreds of metres downward. This boundary region, from where there is a rapid decrease of temperature, is called the thermocline.** About 90 per cent of the total volume of water is found below the thermocline in the deep ocean. In this zone, temperatures approach 0° C.

**It is a well-known fact that the maximum temperature of the oceans is always at their surfaces** because they directly receive the heat from the sun and the heat is transmitted to the lower sections of the oceans through the process of convection. **Hence, statement 3 is incorrect.**

15. Consider the following statements:

1. High tides help in navigation as they raise the water level close to the shores.
2. More fish come closer to the shore during the Low tide.

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:** High tides help in navigation. They raise the water level close to the shores. This helps the ships to arrive at the harbour more easily. **The high tides also help in fishing.** Many more fish come closer to the shore during the high tide. This enables fishermen to get a plentiful catch. **The rise and fall of water due to tides is being used to generate electricity in some places.** Hence, statement 2 is incorrect.

16. Consider the following statements regarding Current Account Deficit (CAD):

1. The current account measures the flow of goods, services and investments into and out of the country.
2. Current Account Deficit may help a debtor nation in the short-term.
3. High software receipts and private transfers can lower current account deficit.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** Current Account Deficit or CAD is the shortfall between the money flowing in on exports, and the money flowing out on imports. Current Account Deficit (or Surplus) measures the gap between

the money received into and sent out of the country on the trade of goods and services and also the transfer of money from domestically-owned factors of production abroad. **Hence, statement 1 is incorrect.**

**The current account constitutes net income, interest and dividends and transfers such as foreign aid, remittances, donations among others.** A country with rising CAD shows that it has become uncompetitive, and investors are not willing to invest there. They may withdraw their investments. **Current Account Deficit may be a positive or negative indicator for an economy depending upon why it is running a deficit.** Foreign capital is seen to have been used to finance investments in many economies. **Current Account Deficit may help a debtor nation in the short-term, but it may worry in the long-term** as investors begin raising concerns over adequate return on their investments. High software receipts and private transfers can lower current account deficit. **Hence, statement 2 and 3 are correct.**

17. Consider the following statements:

1. The Monetary Policy Committee (MPC) has six members including the RBI Governor, where each member is nominated by the RBI.
2. The Monetary Policy Committee meets every three months to evaluate the current status and outlook for inflation and economic growth.
3. When the Monetary Policy Committee wants to contain inflation, it follows “dear money” policy.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- **The MPC has six members including the RBI Governor — three each nominated by the RBI and the government.** The MPC meets every two months to evaluate the current status and outlook for inflation and economic growth. **Based on that assessment, it tweaks the repo rate, which is the interest rate at which the RBI loans money to the banking system.** It is for this reason that movements in the repo rate influence the overall interest rates in the economy. **Hence, statement 1 and 2 are incorrect.**
- **Typically, when the MPC wants to contain inflation, it raises the repo rate.** Such a “dear money” policy makes all types of borrowing — both for consumers (say, car loans) and producers (say, fresh business investments) — costlier and effectively slows down economic activity in the economy. **Hence, statement 3 is correct.**

- When inflation outlook is benign but growth is stalling, the RBI can choose to lower the repo rate and promote economic activity; such a “cheap money” policy incentivises people to spend money instead of saving it.

**18. Consider the following statements regarding Treasury bills or T-bills in India:**

1. Treasury bills are short term debt instruments issued by the RBI.
2. Treasury bills are zero coupon securities that pay no interest.

**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:** (B)

**Explanation:** Treasury bills or T-bills, which are money market instruments, are short term debt instruments issued by the Government of India and are presently issued in three tenors, namely, 91-day, 182 day and 364 day. Treasury bills are zero coupon securities and pay no interest. Instead, they are issued at a discount and redeemed at the face value at maturity. For example, a 91 day Treasury bill of ₹100/- (face value) may be issued at say ₹ 98.20, that is, at a discount of say, ₹1.80 and would be redeemed at the face value of ₹100/-. Hence, statement 1 is incorrect.

**19. Consider the following statements regarding Prompt Corrective Action (PCA) of Reserve Bank of India:**

1. It aims to monitor the operation of weaker banks more closely to encourage them to conserve capital and avoid risks.
2. It imposes certain restrictions on dividend distribution and expansion of branches by banks that are financially weak.

**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:**

- Prompt Corrective Action or PCA is a framework under which banks with weak financial metrics are put under watch by the RBI. The PCA framework deems banks as risky if they slip below certain norms on three parameters — capital ratios, asset quality and profitability.
- It aims to monitor the operation of weaker banks more closely to encourage them to conserve capital and avoid risks.

- PCA framework is about imposing certain restrictions on expansion of branches and dividend distribution by banks that are financially weak as reflected in parameters like non-performing asset ratio and return on assets.

Hence, both statements are correct.

**20. Consider the following statements regarding classification of money market:**

1. Call Money – borrowing or lending in unsecured funds on overnight basis.
2. Notice Money – borrowing or lending in unsecured funds from 15 days to one year.
3. Term Money – borrowing or lending in unsecured funds for upto 14 days.

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 1 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer:** (B)

**Explanation:**

- “Call Money” means borrowing or lending in unsecured funds on overnight basis;
- “Notice Money” means borrowing or lending in unsecured funds for tenors up to and inclusive of 14 days excluding overnight borrowing or lending;
- “Term Money” means borrowing or lending in unsecured funds for periods exceeding 14 days and up to one year.

Hence, option (b) is correct.

**21. Consider the following statements regarding Superconductivity:**

1. Superconductivity is a state in which a material shows very high electrical resistance.
2. Superconducting materials can save huge amounts of energy, and be used to make highly efficient electrical appliances.
3. Superconductivity is possible only at high temperatures.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** Superconductivity is a phenomenon that, so far, has been possible only at extremely low temperatures, in the range of 100°C below zero. The search for a material that exhibits superconductivity at room temperature, or at least manageable low temperatures, has been going on for decades.

**Superconductivity is a state in which a material shows absolutely zero electrical resistance.** While resistance is a property that restricts the flow of electricity, superconductivity allows unhindered flow. Because of zero resistance, superconducting materials can save huge amounts of energy, and be used to make highly efficient electrical appliances. **Hence, only statement 2 is correct.**

**22. Consider the following statements regarding Darknet:**

1. Darknet refers to the deep hidden internet platform that is used for narcotics sale, exchange of pornographic content and other illegal activities by using the secret alleys of the onion router (ToR) to stay away from the surveillance of law enforcement agencies.
2. Owing to its end-to-end encryption, darknet is considered very tough to crack when it comes to investigating criminal activities being rendered over it.

**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:** Darknet refers to the deep hidden internet platform that is used for narcotics sale, exchange of pornographic content and other illegal activities by using the secret alleys of the onion router (ToR) to stay away from the surveillance of law enforcement agencies. **Owing to its end-to-end encryption, darknet is considered very tough to crack when it comes to investigating criminal activities being rendered over it.**

**Darknets in general may be used for various reasons, such as:**

- Computer crime (cracking, file corruption, etc.)
- Protecting dissidents from political reprisal
- File sharing (warez, personal files, pornography, confidential files, illegal or counterfeit software, etc.)
- To better protect the privacy rights of citizens from targeted and mass surveillance
- Sale of restricted goods on darknet markets
- Whistleblowing and news leaks
- Purchase or sale of illicit or illegal goods or services
- Circumventing network censorship and content-filtering systems, or bypassing restrictive firewall policies

**Hence, both statements are correct.**

**23. Consider the following statements:**

1. Malaria is a viral disease transmitted by the infective bite of Anopheles mosquito.

2. Kala-azar is caused by a protozoan parasite of genus Leishmania.

3. Dengue is transmitted by the infective bite of Aedes Aegypti mosquito.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

- Malaria is a potentially life threatening parasitic disease caused by parasites known as Plasmodium vivax (P.vivax), Plasmodium falciparum (P.falciparum), Plasmodium malariae (P.malariae) and Plasmodium ovale (P.ovale). **It is transmitted by the infective bite of Anopheles mosquito. Hence, statement 1 is incorrect.**
- Kala-azar is a slow progressing indigenous disease caused by a **protozoan parasite of genus Leishmania.**
- **Dengue is a viral disease.** It is transmitted by the infective bite of **Aedes Aegypti mosquito. Hence, statement 2 and 3 are correct.**

**24. Pneumoconiosis, sometimes seen in news is related to which of the following?**

- (a) Tuberculosis
- (b) Black lung disease
- (c) High blood glucose levels
- (d) High levels of fat in the blood

**Answer: (B)**

**Explanation:** Coal mine workers and communities around coal mines face many adverse diseases, prominent among them **pneumoconiosis (commonly known as black lung disease) due to the inhalation of coal dust**, as well as diseases due to polluted drinking water. **Hence, option (b) is correct.**

**25. Consider the following statements:**

1. The process of copying genetic information from one strand of the DNA into RNA is termed as transcription.
2. Bacteria contain only mRNA (messenger RNA) and do not have any tRNA (transfer RNA).

**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:** The process of copying genetic information from one strand of the DNA into RNA is

termed as transcription. In bacteria, there are three major types of RNAs: mRNA (messenger RNA), tRNA (transfer RNA), and rRNA (ribosomal RNA). All three RNAs are needed to synthesise a protein in a cell. The mRNA provides the template, tRNA brings amino acids and reads the genetic code, and rRNAs play structural and catalytic role during translation. There is single DNA-dependent RNA polymerase that catalyses transcription of all types of RNA in bacteria. RNA polymerase binds to promoter and initiates transcription (Initiation). Hence, statement 1 is correct.

26. 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 kills the host.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** 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.

The reproductive cycles of parasites are often very complex, sometimes requiring more than one host species. A tapeworm is a parasite that causes disease in humans when contaminated, undercooked meat such as pork, fish, or beef is consumed. The tapeworm can live inside the intestine of the host for several years, benefiting from the food the host is bringing into its gut by eating. The parasite moves from species to species as it requires two hosts to complete its life cycle. Hence, only statement 3 is incorrect.

27. To avoid unfavourable conditions, which of the following enter into diapause, a stage of suspended development?

- (a) Zooplankton
- (b) Bears
- (c) Snails
- (d) Fish

Answer: (A)

**Explanation:** 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. Hence, option (a) is correct.

28. Consider the following statements:

1. When the soil becomes dry, the capability of the plants to act as carbon sink reduces.
2. With increase in soil temperature, the microorganisms in dry soil become more productive.

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:** When the soil is dry, plants become stressed and cannot absorb as much carbon dioxide as in the normal conditions. The capability of plants to act as carbon sink reduces. Microorganisms in the dry soil become more productive, when the climate is hot and release more carbon dioxide. Hence, both statements are correct.

29. Acid rain is mainly a by-product of a variety of human activities that emit the oxides of:

- (a) Sulphur and nitrogen in the atmosphere
- (b) Mercury and lead compounds in water bodies
- (c) Radioactive compounds in effluent discharge
- (d) Carbon emitted by peat lands

Answer: (A)

**Explanation:** 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 catalyzes the oxidation. These lead to formation of acid rain that has deleterious effect on the overall ecology of the region. Hence, option (a) is correct.

30. Consider the following statements regarding Wetlands:

1. In India, Wetlands are regulated under the Environment (Protection) Rules, 1986.
2. Wetlands International is sub-branch of UN Environment that works to sustain and restore



wetlands and their resources for people and biodiversity.

**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:** Wetlands are regulated under the **Wetlands (Conservation and Management) Rules**. Wetlands International is a global organisation that works to sustain and restore wetlands and their resources for people and biodiversity. It is an **independent, not-for-profit, global organisation, supported by government and NGO membership from around the world**. Hence, both statements are incorrect.

**31. Consider the following statements regarding Vedic civilization:**

1. Sabha and Samiti were legislative assemblies at tribal or territorial level.
2. The king was autocratic with main responsibility of being protector of the tribe and the cattle wealth.
3. Samiti was not open for women in early Vedic period.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:** The king was not autocratic. He had to abide by the decision of assemblies called sabha, samiti. **Sabha and samiti were legislative assemblies at tribal and territorial level**. The samiti was a general assembly which was open for all including women. **Hence, only statement 1 is correct.**

**32. Ashokan inscriptions were majorly engraved in the Brahmi script and Kharoshthi script. With reference to the above scripts consider the following statements:**

1. Brahmi script was written from left to right where as Kharoshthi script was written from right to left.
2. Kharoshthi script prevailed in the north western region of India whereas Brahmi script prevailed in the rest of the country.

**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:** Brahmi script was written from left to right where as Kharoshthi script was written from right to left. Kharoshthi script prevailed in the north western region of India whereas Brahmi script prevailed in the rest of the country. Hence, both statements are correct.

**33. Which of the following historical events is associated with the infamous 'Cunningham Circular'?**

- (a) Revolt of 1857
- (b) Swadeshi and Boycott movement.
- (c) Rowlatt Satyagraha
- (d) Civil Disobedience Movement

**Answer: (D)**

**Explanation:** During Civil Disobedience Movement, a powerful agitation was organised in Assam against the infamous 'Cunningham circular' which forced parents, guardians and students to furnish assurances of good behaviour. **Hence, option (d) is correct.**

**34. Consider the following statements regarding East India Association:**

1. The East India Association was founded by Surendranath Banerjee, in collaboration with Indians and retired British officials in London.
2. It was the successor of the Indian National Congress.
3. It worked towards presenting the correct information about India to the British Public and voice Indian grievances in British press.

**How many of the statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- East India Association was an organization established by some Indian students **in London on 1 October 1866 on initiative of Dadabhai Naoroji**. **It was one of the predecessor organizations of the Indian National Congress**. On October 1, 1866, the London Indian Society was superseded by East India Association. **The several objectives and activities of East India Association were as follows:**
  - To advocate for and promote public interests and welfare of Indians.
  - It worked towards presenting the correct information about India to the British Public and voice Indian grievances in British press.

**Hence, only statement 3 is correct.**

35. Consider the following regarding Dravidian literature:

1. Silappadhikaram and Manimekalai, written around 10th CE, provide details of Tamil society during that period.
2. Manimekalai discusses Buddhist doctrines.
3. Tolkappiyam is a work on Tamil grammar that helps understand Tamil poetry.

How many of the above pairs are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** A Tamil grammar Tolkappiyam, was written, to understand early Tamil poetry. Tolkappiyam indicates five landscapes or types of love, and outlines their symbolic conventions. **The twin epics, Silappadhikaram (the story of the anklet), written by Ilango-Adigal, and Manimekalai (the story of Manimekalai) by Chattanar,** were written sometimes in A.D. 200-300 and give vivid accounts of Tamil society during that period. These are valuable storehouses and epics of dignity and sublimity, laying stress on the cardinal virtues of life. **In Manimekalai there is an elaborate exposition of the doctrines of Buddhism. Hence, statement 1 is incorrect.**

36. Consider the following statements, with reference to Motion of Thanks:

1. Amendments to Motion of Thanks can be moved in both the houses in such form as may be considered appropriate by the Speaker of Lok Sabha.
2. The Motion of Thanks is deemed to be a no-confidence motion.

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: (B)

**Explanation:**

- Notices of amendments to Motion of Thanks on the President's Address can be tabled after the President has delivered his Address. **Amendments may refer to matters contained in the Address as well as to matters, in the opinion of the member, the Address has failed to mention.** Amendments can be moved to the Motion of Thanks in such form as may be considered appropriate by the Speaker in Lok Sabha and Chairman in Rajya Sabha. **Hence, statement 1 is incorrect.**

- **Members of Parliament vote on this motion of thanks. This motion must be passed in both the houses.** A failure to get motion of thanks passed amounts to defeat of government and leads to collapse of government. This is why, the **Motion of Thanks is deemed to be a no-confidence motion. Hence, statement 2 is correct.**

37. The first Law Commission was established, under the Chairmanship of Lord Macaulay by the:

- (a) Government of India Act 1935
- (b) Charter Act of 1833
- (c) Law Commission Act, 1867
- (d) Government of India Act of 1919

Answer: (B)

**Explanation: Law Reform in the ancient period was ad hoc and not institutionalised.** However, since the third decade of the nineteenth century, Law Commissions were constituted by the Government from time to time. **The first law commission was established in 1834 under the Charter Act of 1833. Thereafter, the second, third and fourth Law Commissions were constituted in 1853, 1861 and 1879 respectively** helped adapt English Laws to Indian conditions. The First Law Commission of Independent India was established in 1955 with the then Attorney-General of India, Mr. M. C. Setalvad, as its Chairman. **Hence, option (b) is correct.**

38. Which of the following were added to Directive Principles under 42nd Amendment Act of 1976?

1. To secure opportunities for healthy development of children.
2. To take steps to secure the participation of workers in the management of industries.
3. To minimize inequalities in income, status, facilities and opportunities.

How many of the given statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** The 44th Amendment Act of 1978 added one more Directive Principle, which **requires the State to minimize inequalities in income, status, facilities and opportunities (Article 38).** Hence, statement 3 is incorrect.

39. Consider the following statements regarding Lok Sabha:

1. The work and conduct of the Speaker cannot be discussed and criticized in the Lok Sabha except on a substantive motion.

2. No discussion on a matter of general public importance can take place except on a motion made with the consent of the Speaker.

**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 work and conduct of the Speaker cannot be discussed and criticized in the Lok Sabha except on a substantive motion: **This is done with a view to safeguard the independence and impartiality of the office of the Speaker as it is vested with great prestige, position and authority.** No discussion on a matter of general public importance can take place except on a motion made with the consent of the Speaker/Chairman as the case may be. **Hence, both statements are correct.**

**40. The Vice-president of India is elected by the electoral college consisting of:**

- 1. Elected Members of the Parliament.
- 2. Nominated Members of the Parliament.
- 3. Elected Members of State Legislative Assemblies

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 1 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (A)**

**Explanation:** The **Vice-President is elected by the method of indirect election.** He is elected by the members of an **electoral college consisting of the members of both Houses of Parliament.** Thus, this electoral college is different from the electoral college for the election of the President in the following two respects:

- It **consists of both elected and nominated members of the Parliament** (in the case of president, only elected members).
- It **does not include the members of the state legislative assemblies** (in the case of President, the elected members of the state legislative assemblies are included).

**41. Consider the following statements regarding Karst topography:**

- 1. Karst topography is commonly associated with carbonate rocks.
- 2. They do not occur in alpine and polar environments.
- 3. Karst systems are rarely vulnerable to ground water pollution as it acts as natural water filtration system.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- The term karst describes a distinctive topography that **indicates dissolution (also called chemical solution) of underlying soluble rocks by surface water or ground water.** Although commonly associated with carbonate rocks (limestone and dolomite) other highly soluble rocks such as evaporates (gypsum and rock salt) can be sculpted into karst terrain. **Hence, statement 1 is correct.**
- **Understanding caves and karst is important because ten percent of the Earth's surface is occupied by karst landscape** and as much as a quarter of the world's population depends upon water supplied from karst areas. Though most abundant in humid regions where carbonate rock is present, karst terrain occurs in temperate, tropical, alpine and polar environments. **Karst features range in scale from microscopic (chemical precipitates) to entire drainage systems and ecosystems which cover hundreds of square miles, and broad karst plateaus.** Hence, statement 2 is incorrect.
- Although karst processes sculpt beautiful landscapes, **karst systems are very vulnerable to ground water pollution due to the relatively rapid rate of water flow and the lack of a natural filtration system.** This puts local drinking water supplies at risk of being contaminated. Hence, statement 3 is incorrect.

**42. The energy emanating from within the earth is the main force behind endogenic geomorphic processes.**

**This energy is mostly generated by:**

- 1. Radioactivity inside the earth
- 2. Tidal friction
- 3. Primordial heat from the origin of the earth

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (D)**

**Explanation:** **The energy emanating from within the earth is the main force behind endogenic geomorphic processes.** This energy is mostly generated **by radioactivity, rotational and tidal friction** and

primordial heat from the origin of the earth. Hence, all are correct.

43. Which one of the following factors is responsible for the change in the regular direction of the ocean currents in the Indian Ocean?

- (a) Indian ocean has greater variation in salinity
- (b) Indian ocean has monsoon drift
- (c) Indian ocean is a land-locked ocean
- (d) Indian ocean is generally warmer

**Answer:** (B)

**Explanation:** Normally, ocean currents are under the greater influence of prevailing winds. **Indian Ocean currents are largely under the influence of monsoon – A seasonal reversal of winds.** Hence, option (b) is correct.

44. Consider the following statements:

1. The number of cyclones in the Arabian Sea before and after the monsoon has increased over the years and is attributed to climate change.
2. The Bay of Bengal and the Arabian Sea generates half of the world's cyclones.

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:**

- The IPCC report shows that the number of cyclones in the Arabian Sea before and after the monsoon has increased over the years and is attributed to climate change. Hence, statement 1 is correct.
- The Bay of Bengal and the Arabian Sea generate only 7 per cent of the world's cyclones. However, their impact are huge as some of the most densely populated regions of the world, including some mega-cities, are susceptible. Hence, statement 2 is incorrect.

45. Equator passes through which of the following countries?

1. Indonesia
2. Maldives
3. Somalia
4. Brazil
5. Ecuador

How many of the above options are correct?

- (a) Only two
- (b) Only three

- (c) Only four
- (d) All five

**Answer:** (D)

**Explanation:** The equator passes through 13 countries: Ecuador, Colombia, Brazil, Sao Tome & Principe, Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya, Somalia, Maldives, Indonesia and Kiribati. Hence, all are correct.

46. If there is a growth of revenue deficit as a percentage of fiscal deficit, what could this possibly indicate?

1. Creation of physical assets by the Government.
2. Increase in the subsidies distributed in the country.

Select the correct option using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (B)

**Explanation:** As  $\text{Fiscal Deficit} = \text{Revenue Deficit} + \text{Capital Expenditure} - \text{Capital Receipts}$  excluding borrowings, an increase in revenue deficit with fiscal deficit being constant will lead to decrease in capital expenditure. This will lead to less assets creation by the government which might lead to less infrastructure development. Hence, statement 1 is incorrect.

47. Consider the following statements regarding GDP deflator:

1. GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy in a year.
2. Like CPI, the GDP deflator is based on a fixed basket of goods and services.
3. When GDP deflator is negative, it necessarily means that there is inflation in the economy.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:**

- In economics, the GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy in a year. Hence, statement 1 is correct.
- Like the consumer price index (CPI), the GDP deflator is a measure of price inflation/deflation with respect to a specific base year. The GDP deflator is a more comprehensive inflation



measure than the CPI index because it isn't based on a fixed basket of goods. **When GDP deflator is negative, nominal GDP is less than real GDP. It means that there is deflation in the economy.** Hence, statement 2 and 3 are incorrect.

**48. 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.

**49. A receipt is a capital receipt if it satisfies which of the following conditions?**

- 1. The receipts must create a liability for the government.
- 2. The receipts must cause a decrease in the Government assets.

**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:** A receipt is a capital receipt if it satisfies any one of the two conditions:

- 1. **The receipts must create a liability for the government.** For example, Borrowings are capital receipts as they lead to an increase in the liability of the government. However, tax received is not a capital receipt as it does not result in creation of any liability.
- 2. **The receipts must cause a decrease in the assets.** For example, a receipt from sale of shares of public enterprise is a capital receipt as it leads to reduction in assets of the government.

**50. Consider the following statements regarding GDP deflator:**

- 1. The GDP deflator is basically a measure of inflation.
- 2. It helps show the extent to which the increase in gross domestic product has happened on account of higher prices rather than increase in output.
- 3. It covers only those goods and services directly consumed by households.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The **GDP deflator, also called implicit price deflator, is a measure of inflation.** It is the ratio of the value of goods and services an economy produces in a particular year at current prices to that of prices that prevailed during the base year. This ratio helps show the extent to which the increase in gross domestic product has happened on account of higher prices rather than increase in output. **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.** Changes in consumption patterns or introduction of goods and services are automatically reflected in the GDP deflator. This allows the GDP deflator to absorb changes to an economy's consumption or investment patterns. Often, the trends of the GDP deflator will be similar to that of the CPI. **Hence, only statement 3 is incorrect.**

**51. Consider the following statements regarding Gold nanoparticles (GNPs):**

- 1. GNPs have lower solar radiation absorbing ability than the conventional bulk gold.
- 2. They are useful in the electronics industry.
- 3. They are capable of transferring various drugs made out of peptides, proteins, plasmid DNAs to target diseased cells of the human body.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- **Nanoparticles (NPs) have wide variety of potential applications in the fields of biomedical, optical and electronics research.** Metallic NPs have

been efficiently exploited for biomedical applications and among them GNPs are found to be effective in biomedical research. **NPs are those materials that are at least one dimension smaller than 100 nanometres.** GNPs are found to have greater solar radiation absorbing ability than the conventional bulk gold, which makes them a better candidate for use in the photovoltaic cell manufacturing industry. **Hence, statement 1 is incorrect.**

- **As nano-carriers, GNPs are capable of transferring various drugs made out of peptides, proteins, plasmid DNAs, small interfering RNAs, and chemotherapeutic agents to target diseased cells of the human body.** GNPs are also found to be useful in the electronics industry. Hence, statement 2 and 3 are correct.

**52. Quantum dots (QDs) are man-made nanoscale crystals that can transport electrons. Potential applications of quantum dots include:**

1. Single-electron transistors
2. LEDs
3. Solar Cells
4. Cell Biology Research

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) All of the above

**Answer: (D)**

**Explanation: Quantum dots (QDs) are semiconductor particles a few nanometres in size, having optical and electronic properties** that differ from larger particles due to quantum mechanics. **When the quantum dots are illuminated by UV light, an electron in the quantum dot can be excited to a state of higher energy.** Potential applications of quantum dots include single-electron transistors, solar cells, LEDs, lasers, single-photon sources, second-harmonic generation, quantum computing, cell biology research, and medical imaging. Their small size allows for some QDs to be suspended in solution, which may lead to use in inkjet printing and spin-coating. **They have been used in Langmuir-Blodgett thin-films.** These **processing techniques result in less expensive and less time-consuming methods of semiconductor fabrication.** Hence, all are correct.

**53. Consider the following statements regarding Machine to Machine communications (M2M):**

1. Machine to Machine communications refer to automated applications which involve machines or devices communicating through a network without human intervention.

2. It enables data to be transmitted from one device to another device through wired and wireless communications networks.

**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: M2M communications refer to automated applications which involve machines or devices communicating through a network without human intervention.** Sensors and communication modules are embedded within M2M devices, enabling data to be transmitted from one device to another device through wired and wireless communications networks. **Hence, both statements are correct.**

**54. Which of the following are caused by Virus?**

1. Severe acute respiratory syndrome (SARS)
2. Dysentery
3. Typhoid
4. Influenza

**Select the correct answer using the code given below:**

- (a) 2 and 4
- (b) 2 and 3
- (c) 1 and 4
- (d) 1 and 3

**Answer: (C)**

**Explanation:**

- Common ailments like cold, influenza (flu) and most coughs are caused by viruses. **SARS, polio and chicken pox are also caused by viruses.**
- Diseases like **dysentery and malaria are caused by protozoans** whereas **typhoid and tuberculosis (TB) are bacterial diseases.**

Hence, option (c) is correct.

**55. Consider the following statements regarding Low Earth Orbit (LEO):**

1. It is an Earth-centered orbit with an altitude of 2,000 km or less.
2. The International Space Station conducts operations in LEO.
3. Major disadvantage of low Earth orbit is that it requires high amount of energy for placing the satellites.

**How many of the above statements is/are incorrect?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:** Low earth orbit refers to an altitude up to 2,000 km or less. A satellite in the LEO can monitor activities on the ground and water surfaces. A low Earth orbit requires the lowest amount of energy for satellite placement. It provides high bandwidth and low communication latency. Satellites and space stations in LEO are more accessible for crew and servicing. Earth observation satellites and spy satellites use LEO as they are able to see the surface of the Earth clearly by being close to it. The International Space Station is in a LEO about 330 km to 420 km above Earth's surface. Hence, only statement 3 is incorrect.

**56. Consider the following statements regarding Peatlands:**

1. Peatlands are wetlands that contain mixture of decomposed organic material.
2. Peatlands often lack oxygen as they are partially submerged in layer of water.
3. If they are drained, their high carbon content makes them vulnerable to incineration.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** Peatlands are wetlands that contain a mixture of decomposed organic material, partially submerged in a layer of water, lacking oxygen. The complex biodiversity of peatlands means they are home to variety of species. Their high carbon content makes them uniquely vulnerable to incineration if they are drained. They are globally important carbon store. The unregulated exploitation of peatlands can potentially be detrimental to environment and to climate, as it could release carbon emissions that have been locked in for millennia. Hence, all statements are correct.

**57. Consider the following:**

1. Gothenburg Protocol
2. Bonn Convention
3. National Air Quality index
4. System of Air Quality and Weather Forecasting

**How many of the above national and international events monitors Ozone pollution?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (C)**

**Explanation:**

- The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone is a multi-pollutant protocol designed to reduce acidification, eutrophication and ground-level ozone. The Protocol is part of the Convention on Long-Range Trans-boundary Air Pollution.
- The Convention on Migratory Species (CMS), also known as the Bonn Convention, aims to conserve terrestrial, aquatic and avian migratory species throughout their range. Hence, option 2 is not correct.
- Ozone has been classified and monitored as one of the eight pollutants under National Air Quality index.
- Ozone is monitored as one of the Pollutants under SAFAR (System of Air Quality and Weather Forecasting).

**58. Consider the following Environmental conventions:**

1. Basel Convention : Persistent Organic Pollutants.
2. Rotterdam Convention : Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade.
3. Stockholm Convention : Control of Transboundary Movements of Hazardous Wastes and their Disposal.

**How many of the above pairs is/are correctly matched?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- The Basel, Rotterdam and Stockholm (BRS) Conventions are multilateral environmental agreements, which share the common objective of protecting human health and the environment from hazardous chemicals and wastes.
- The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal was created to protect people and the environment from the negative effects of the inappropriate management of hazardous wastes worldwide. It is the most comprehensive global treaty dealing with hazardous waste materials throughout their lifecycles, from production and transport to final use and disposal. Hence, pair 1 is not correctly matched.
- The Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade provides Parties with a first line of defence against hazardous chemicals. It promotes

international efforts to protect human health and the environment as well as enabling countries to decide if they want to import hazardous chemicals and pesticides listed in the Convention. **Hence, pair 2 is correctly matched.**

- **The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from highly dangerous, long-lasting chemicals** by restricting and ultimately eliminating their production, use, trade, release and storage. **Hence, pair 3 is not correctly matched.**

59. **Which of the following correctly assesses the impact of climate change on agriculture and food security?**

1. Crop yield may be reduced in most tropical and sub-tropical regions due to decreased water availability.
2. Insect or pest incidence may increase leading to greater crop losses.

**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)**

**Explanation:** According to IPCC report, climate change would hit the poorest countries severely in terms of reducing the agricultural products. **Crop yield would be reduced due to decreased water availability, and new or changed insect/pest incidence.** This is because higher temperature is conducive for the growth of pests. Agriculture will be adversely affected not only by an increase or decrease in the overall amounts of rainfall but also by shifts in the timing of the rainfall. **Hence, both statements are correct.**

60. **The chemical oxygen demand (COD) test is commonly used to measure which of the following?**

- (a) Computing oxygen levels in forest eco-systems
- (b) Amount of oxygen used in an oxygenation process
- (c) Oxygen required to decompose organic constituents present in the wastewater
- (d) None of the above

**Answer: (C)**

**Explanation:** The amount of oxygen that is required for the chemical oxidation of the organic and inorganic chemicals present in the wastewater by utilising oxidising agents like **Potassium permanganate, Potassium dichromate etc. is called as chemical oxygen demand (COD).** COD is the oxygen demand that is consumed by both inorganic and organic matter present in the wastewater sample. Hence, option (c) is correct.

61. **Therigatha is one of the very few surviving ancient Indian texts attributed to women. The text is associated with which of the following?**

- (a) Buddhism
- (b) Jainism
- (c) Vaishnavism
- (d) Shaivism

**Answer: (A)**

**Explanation:** The **Therigatha (songs of Buddhist monks and nuns) is a text associated with Buddhism.** It provides an insight into women's social and spiritual experiences and describes women's experience of renunciation. It is one of the very few surviving ancient Indian texts composed by or attributed to women. **It is classified as part of the Khuddaka Nikaya, the collection of short books in the Sutta Pitaka.** Hence, option (a) is correct.

62. **With reference to Chola rulers, consider the following statements:**

1. Raja Raja Chola assumed the title of Gangaikondachola ('the Chola who conquered the Ganga').
2. Rajendra Chola I destroyed the Chera navy at Trivandrum, and later captured Madurai, the capital of Pandyas.
3. The Chola rulers marked their victories by erecting temples and having inscriptions written on the walls of these temples.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- **Rajendra I assumed the title of Gangaikondachola ('the Chola who conquered the Ganga').** He built a new capital near the mouth of the Kaveri River and called it **Gangaikondacholapuram.** Hence, **statement 1 is incorrect.**
- **Rajaraja destroyed the Chera navy at Trivandrum and attacked Quilon.** He then conquered Madurai and captured the Pandyan king. He **also invaded Sri Lanka and annexed its northern part to his empire.** Hence, statement 2 is incorrect.
- The Chola rulers marked their victories by erecting temples and having inscriptions written on the walls of these temples. **Hence, statement 3 is correct.**

63. **Consider the following statements regarding traditional theatre:**



1. Bhand Pather is the traditional theatre form of Kashmir.
2. Bhavai is the traditional theatre form of Gujarat.
3. Tamaasha is a traditional folk theatre form of Uttar Pradesh.

**How many of the given statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

- Bhand Pather is the traditional folk theatre of the Kashmir valley. **The word Bhand stands for a jester while Pather means a performance or theatre. Hence, statement 1 is correct.**
- A form of folk theatre with musical and dance elements, **Bhavai is predominantly performed in the state of Gujarat.** They are performed by **men from the Bhavaiyya community of Gujarat, also known as the Vyas or Naik community.** Hence, statement 2 is correct.
- **Tamaasha is a traditional folk theatre form of Maharashtra.** It has evolved from the folk forms such as **Gondhal, Jagran and Kirtan.** Unlike other theatre forms, in Tamaasha the **female actress is the chief exponent of dance movements in the play. She is known as Murki.** Classical music, footwork at lightning-speed, and vivid gestures make it possible to portray all the emotions through dance. Hence, statement 3 is incorrect.

**64. The Sarda Act of 1929 provided for:**

- (a) Legalisation of widow remarriage.
- (b) Participation of workers in the management of industries.
- (c) Fixing the age of marriage for girls at 14 years.
- (d) Introduction of western sciences in Indian education system.

**Answer: (C)**

**Explanation:** Child Marriage Restraint Act or the Sarda Act was passed on 28 September 1929 by the Imperial Legislative Council of India to fix the marriageable age for girls at 14 and boys at 18 years. It was adjusted to 15 for girls and 21 for boys following India's independence in 1949. In 1978, the age limit was raised to 21 for boys and 18 for girls. **The Sarda Act is named after Har Bilas Sarda. Hence, statement (c) is correct.**

**65. The Battle of Rezang La, was fought during:**

- (a) Indo-Pakistani War of 1947–1948
- (b) Sino-Indian War of 1962
- (c) Bangladesh Liberation War
- (d) Kargil War

**Answer: (B)**

**Explanation: November 18, 2022, was the 60th anniversary of the Battle of Rezang La, one of the few bright spots in the War of 1962 with China.** On that day, 13 Kumaon's C Company made their heroic last stand against the Chinese army in the high Himalayas of Ladakh, warding off a very significant threat and, in the process, writing a glorious chapter in India's military history. **Hence, option (b) is correct.**

**66. Consider the following pairs:**

1. Evaporation	Process of water changing from a liquid to a gaseous state
2. Stratocumulus Clouds	Low-level layered clouds with some vertical development
3. Conventional Rainfall	Rainfall caused by the uplift of air due to temperature differences

**How many of the above pairs are correctly matched?**

- (a) Only one pair
- (b) Only two pairs
- (c) All three pairs
- (d) None

**Answer: (C)**

**Explanation:**

- **Evaporation:** The process of water changing from a liquid to a gaseous state is indeed evaporation. It **occurs when water molecules gain enough energy to escape the liquid phase and enter the atmosphere as water vapour.** Hence, pair 1 is correct.
- **Stratocumulus Clouds:** Stratocumulus clouds **are low-level layered clouds with some vertical development. They often appear as a series of rounded, lumpy cloud masses.** These clouds are typically found at lower altitudes and are known for their flat and uniform appearance. Hence, pair 2 is correct.
- **Conventional Rainfall: Conventional rainfall, also known as convective rainfall, is indeed caused by the uplift of air due to temperature differences.** When the surface of the Earth is heated, it warms the air above it, causing the air to rise. **As the air rises, it cools and condenses, forming clouds and eventually leading to precipitation in the form of rainfall.** Hence, pair 3 is correct.

Hence, option (c) is the correct answer.

**67. Which of the following is not a factor that affects the amount of precipitation that falls in a particular area?**

- (a) Latitude
- (b) Altitude
- (c) Ocean currents
- (d) The rotation of the Earth

**Answer:** (D)

**Explanation:** The **rotation of the Earth does not affect the amount of precipitation** that falls in a particular area. The other three options are all factors that affect the amount of precipitation that falls in a particular area.

Hence, option (d) is the correct answer.

68. Consider the following statements:

**Statement-I:** Inversion of temperature refers to a reversal in the normal vertical temperature distribution of the atmosphere.

**Statement-II:** Inversions occur due to the presence of warm air masses overlying cooler air masses.

Which 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 but 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:**

- An **inversion of temperature refers to a reversal in the normal vertical temperature distribution of the atmosphere**. Normally, the temperature of the air decreases with altitude. However, in an **inversion, the temperature of the air increases with altitude**. Hence, **statement-I is correct**.
- **Inversions occur due to the presence of warm air masses overlying cooler air masses**. This can happen when cold air sinks and warm air rises. Inversions can also occur when there is a lot of moisture in the air, as the moisture can trap heat and prevent the air from cooling down. Hence, **statement-II is correct**.
- **Statement-II is the correct explanation of Statement-I because it explains why inversions occur**.

Hence, option (a) is the correct answer.

69. Consider the following statements in respect of coral reefs:

1. They are formed through the mutualistic relationship between coral polyps and algae.
2. They are vulnerable to environmental stressors such as rising sea temperatures and pollution.
3. The Great Barrier Reef is the largest coral reef

ecosystem in the world, located off the coast of Australia.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:**

- **Coral polyps are tiny animals that secrete calcium carbonate to build a hard exoskeleton, which forms the structure of the reef**. They have a mutualistic **symbiotic relationship with photosynthetic algae called zooxanthellae**, which live inside their tissues. The algae provide food through photosynthesis and in return, the coral polyps provide shelter and nutrients to the algae. Hence, **statement 1 is correct**.
- **When the water temperatures rise, coral reefs can experience coral bleaching**, a phenomenon where the coral expels the symbiotic algae, causing the coral to turn white and potentially leading to its death. **Pollution from factors like sedimentation, nutrient runoff and chemical contaminants can also harm coral reefs**. Hence, **statement 2 is correct**.
- **The Great Barrier Reef being the largest coral reef ecosystem in the world, located off the coast of Australia, is correct**. The Great Barrier Reef is renowned for its vast size and biodiversity, stretching over 2,300 kilometres (1,400 miles) along the north-eastern coast of Australia. Hence, **statement 3 is correct**.

Hence, option (c) is the correct answer.

70. With reference to oceanic deep and trenches, consider the following pairs:

1. Mariana Trench - the Pacific Ocean
2. Puerto Rico Trench - the Atlantic Ocean
3. Indian Trench - the Indian Ocean
4. Kuril-Kamchatka Trench - the Arctic Ocean

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer:** (B)

**Explanation:**

- The **Mariana Trench is located in the western Pacific Ocean and is the deepest part of the world's oceans**. Hence, pair 1 is correctly matched.
- **The Puerto Rico Trench is located in the Atlantic Ocean, to the north of Puerto Rico, and is the**

**deepest part of the Atlantic Ocean.** Hence, pair 2 is correctly matched.

- There is no such feature as the Indian Trench in the Indian Ocean. **The Indian Trench is a non-existent trench.** Hence, pair 3 is not correctly matched.
- The **Kuril-Kamchatka Trench is located in the northwest Pacific Ocean, not the Arctic Ocean.** It stretches from the Kuril Islands to the Kamchatka Peninsula. Hence, pair 4 is not correctly matched.

Hence, option (b) is the correct answer.

71. Consider the following statements:

1. T-Bills are debt instruments that pay periodic coupons to the investors.
2. Foreign Portfolio Investors (FPIs) are not allowed to purchase the T-Bills.

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

Answer: (D)

Explanation:

- **Treasury bills or T-bills, which are money market instruments, are short term debt instruments issued by the Government of India** and are presently issued in three tenors, namely, **91 day, 182 day and 364 day.** Hence, statement 1 is incorrect.
- **Foreign Portfolio Investors (FPIs) are allowed to invest in the T-Bills subject to the limits prescribed by the RBI.** Hence, statement 2 is incorrect.

72. Which of the following factors can lead to cyclical slowdown in the Indian Economy?

1. Over-investment in capital assets and in inventory.
2. The production of final goods is not absorbed leading to lower prices and lower economic activity.
3. Changing demographics and change in consumer behaviour.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** Typically, a cyclical slowdown is caused by an excess of investment demand—over-investment in capital assets (residential and non-residential) and in inventory. **The production of final goods generated by excess investment is not absorbed, leading to inventory reduction, lower prices, lower economic activity, and some loss in**

**employment.** When this is accompanied by excess debt, the cyclical slowdown can be prolonged or it may become structural. **A structural slowdown, on the other hand, is a more deep-rooted phenomenon that occurs due to a one-off shift from an existing paradigm.** The changes, which last over a long-term, are driven by **disruptive technologies, changing demographics, and/or change in consumer behaviour.** Hence, statement 3 is incorrect.

73. **Stressed Assets is a powerful indicator of the health of the banking system. It includes:**

1. Non-performing Assets
2. Restructured Loans
3. Written off Assets

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation:

- **The most important scale of asset quality is Non-Performing Assets (NPA).** But NPA alone doesn't tell the whole story of bad asset quality of loans given by banks. Hence a new classification is made in the form of stressed assets that comprises restructured loans and written off assets besides NPAs.
- **Restructured asset or loan are that assets which got an extended repayment period, reduced interest rate, converting a part of the loan into equity, providing additional financing, or some combination of these measures. Written off assets are those the bank or lender doesn't count the money borrower owes to it.** The financial statement of the bank will indicate that the written off loans are compensated through some other way.

Hence, all are correct.

74. **Keki Mistry committee that was recently in news was related to:**

- (a) Armed Forces Special Powers Act
- (b) GM crops in India
- (c) Review the share buyback regulations
- (d) Reforms in the criminal Justice System.

Answer: (C)

**Explanation:** Keki Mistry-headed committee was set up by SEBI to review the share buyback regulations. Hence, option (c) is correct.

75. **In India, Microcredit is delivered through which of the following channels?**

1. Microfinance institutions (MFIs) registered as NBFCs
2. Non-banking financial companies (NBFCs)
3. Scheduled commercial banks including small finance banks (SFBs).
4. Cooperative banks

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 1, 2 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Answer: (D)

Explanation:

- Microfinance is a form of financial service which provides small loans and other financial services to poor and low-income households.
- Microcredit is delivered through a variety of institutional channels viz., (i) scheduled commercial banks (SCBs) (including small finance banks (SFBs) and regional rural banks (RRBs)) lending both directly as well as through business correspondents (BCs) and self-help groups (SHGs), (ii) cooperative banks, (iii) non-banking financial companies (NBFCs), and (iv) microfinance institutions (MFIs) registered as NBFCs as well as in other forms.

Hence, all are correct.

76. Lichen is a pioneer species. What do you understand by this statement?

- (a) It contributes substantially to nutrient recycling in the ecosystem.
- (b) It can live in inhospitable climatic conditions.
- (c) It is generally one of the first species to colonize an ecosystem.
- (d) It has the ability to form symbiotic relation with a large number of species.

Answer: (C)

**Explanation:** Lichens are typically the first organisms to colonize bare rock. They are therefore the pioneer species in primary succession. Many organisms require soil before they can colonize an area. **Lichens that colonize bare rock secrete acids that break down the rock and start the soil-production process.** Also, as lichens die, they provide some organic matter that also contributes to soil. **Mosses can then colonize the thin soil; as mosses die, the soil thickens more allowing other hardy species to colonize.** The process continues until a mature forest forms, sometimes centuries later. **Hence, option (c) is correct.**

77. Consider the following statements regarding Dead Zones:

1. Dead Zone is an area in water body that contains high concentration of oxygen.
2. It can be caused by excessive nutrient pollution from human activities.
3. Warming of the atmosphere through climate change can lead to expansion of 'dead zones' in the ocean.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

- **Dead Zone is an area in water body that contains little or no oxygen (or they are hypoxic) in bottom and near-bottom water.** Hence, statement 1 is incorrect.
- **Mostly they occur naturally but it can be caused by excessive nutrient pollution from human activities coupled with other factors.** They are well-known off western coasts of North and South America, off coast of Namibia and off west coast of India in Arabian Sea. In recent times, **warming of the atmosphere through climate change is predicted to lead expansion of 'dead zones' in the ocean.** Hence, statement 2 and 3 are correct.

78. Consider the following statements regarding dissolved oxygen in an aquatic ecosystem:

1. It increases with increase in temperature of a water-body.
2. Its concentration in fresh water is usually more than the concentration of oxygen in air.
3. Snow cover of ice on water reduces dissolved oxygen concentration.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

**Explanation: Dissolved oxygen (DO) is a measure of how much oxygen is dissolved in the water – the amount of oxygen available to living aquatic organisms.** The amount of dissolved oxygen in a stream or lake can tell us a lot about its water quality. **Oxygen concentrations are much higher in air, which is about 21% oxygen, than in water, which is a tiny fraction of 1 percent oxygen.** Dissolved oxygen levels decrease with increasing temperature and atmospheric oxygen content is far higher than dissolved oxygen levels. **Ice and snow reduce the amount of sunlight reaching**



aquatic plants, thereby reducing photosynthesis and oxygen production. Hence, only statement 3 is correct.

79. What is a "Biotope"?

- (a) It is a biome that harbours all species of same phenotype.
- (b) It is a well-defined geographical area, characterised by specific ecological conditions.
- (c) It is an ecosystem that supports the genetic mutation of a contiguous ecosystem.
- (d) It is a community of species that reproduces entirely by asexual reproduction.

**Answer:** (B)

**Explanation:** Biotope is an area that is uniform in environmental conditions and in its distribution of animal and plant life. It is often used interchangeably with the world habitat. A biotope is generally not considered to be a large-scale phenomenon. For example, a biotope might be a neighbouring park, a back garden, even potted plants or a fish tank on a porch. In other words, the biotope is not a macroscopic but a microscopic approach to preserving the ecosystem and biological diversity. Phenotype is the set of observable characteristics of an individual resulting from the interaction of its genotype with the environment. Hence, option (b) is correct.

80. Humus is the dark organic matter that forms in the soil when plant and animal matter decays. Consider the following statements in this context:

- 1. Humus contributes to moisture retention in the soil by increasing micro-porosity.
- 2. Humus contains nitrogen that is essential for plant growth and helps in nutrient retention.

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:** Humus should be differentiated from decomposing organic matter. The latter is rough-looking material and remains of the original plant are still visible. Fully humified organic matter, on the other hand, has a uniform dark, spongy, jelly-like appearance, and is amorphous. It may remain like this for millennia or more. The process of humification can occur naturally in soil, or in the production of compost. Humus has a characteristic black or dark brown colour and is organic due to an accumulation of organic carbon. The rate at which raw organic matter is converted into humus promotes (when fast) or limits (when slow) the coexistence of plants, animals, and microbes in soil. Effective humus and stable humus

are further sources of nutrients to microbes, the former provides a readily available supply, and the latter acts as a longer-term storage reservoir. Hence, both statements are correct.

81. Consider the following statements regarding 'Genome Sequencing', often seen in the news:

- 1. Genome Sequencing is used in analyzing the factors that are involved in the conservation of species.
- 2. Pan-genome is the entire set of genes from all strains within a clade.

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

**Answer:** (C)

**Explanation:** The genome is the blueprint of life, a collection of all the genes and the regions between the genes contained in our 23 pairs of chromosomes. Genome Sequencing is the method used to determine the precise order of the four letters and how they are arranged in chromosomes. It is a testing process to map the entire code of an organism. Genome Sequencing is used in analyzing the factors that are involved in the conservation of species. For e.g. the genetic diversity of a population can be used to predict the health and conservation of species. Pan-genome is the entire set of genes from all strains within a clade. Hence, both statements are correct.

82. Which country has decided to leave the International Space Station by 2024?

- (a) Canada
- (b) Russia
- (c) England
- (d) France

**Answer:** (B)

**Explanation:** Yuri Borisov, the newly appointed director-general of Roscosmos announced the plan to withdraw from the International Space Station. International Space Station was launched in the year 1998, and it has been continuously occupied since November 2000. Along with Russia and USA the other countries includes Canada, Japan and 11 European countries. Hence, option (b) is correct.

83. With reference to the radioactivity, which of the following statements is/are correct?

- 1. Radioactivity is a nuclear property.
- 2. Hydrogen bomb is prepared on the principle of nuclear fusion.

Select the correct answer using the codes given below.

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (C)

**Explanation:** Radioactivity is a nuclear phenomenon. It is the **process of spontaneous emission of alpha, beta and gamma radiations from the nuclei of an atom.** Hydrogen bomb is prepared on the principle of nuclear fusion. **Hence, both statements are correct.**

84. With reference to India's satellite launch vehicles, consider the following statements:

1. PSLVs launch the satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.

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

**Answer:** (A)

**Explanation:**

- **PSLV (Polar Satellite Launch Vehicle) is an indigenously developed expendable launch system of the ISRO.** It comes in the category of medium-lift launchers with a reach up to various orbits, including the Geo Synchronous Transfer orbit, Lower Earth orbit and Polar Sun Synchronous orbit. **GSLV is also operated by ISRO.** It is used to launch a satellite into Geo Synchronous Transfer orbit. **The GSLV is designed mainly to deliver the communication satellites to the height of 36000 km.** Hence, statement 1 is correct.
- **PSLV launches mainly the earth monitoring satellites to the Polar orbits** and these satellites do not appear to fix in the same position in the sky. Hence, statement 2 is incorrect.

85. Consider the following statements regarding Internet of Things (IoT), sometimes seen in news:

1. It is an inter-networking of physical devices, vehicles and buildings embedded with electronics, software, sensors and network connectivity.
2. It has the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.
3. At present it works only on Virtual Private Networks (VPNs).

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** IoT is a system of interrelated computing devices, mechanical and digital machines, objects, or people that are provided with unique identifiers. Thus it can be said that it is an inter-networking of physical devices, vehicles, buildings and other items—embedded with electronics, software, sensors and network connectivity. **The inter-networking has ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.** IoT is also dubbed as the infrastructure of the information society. It allows objects to be sensed and controlled remotely across existing network infrastructure. Hence, statement 3 is incorrect.

86. Consider the following statements regarding the differences between Buddhist and Jain literature:

1. While Buddhist tales and literature are didactic in character, Jain tales are not.
2. While ancient/medieval Buddhist literature is available in Sanskrit, ancient/medieval Jain literature was not composed in Sanskrit.

Which of the above statements are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (D)

**Explanation:** The **Buddhist canonical literature is in Pali which includes Tipitaka (threefold basket).** Buddhist literature is also abundantly available in Sanskrit, which includes the great epic Buddhacharita by Aswaghosha (78 A.D.). **Like the Buddhist stories, the Jain tales in general are didactic in character. They are written in some forms of Prakrit.** Jain literature is available in Sanskrit too, like the **Upamitibhava Prapancha Katha of Siddharasi (906 A.D.).** Hence, both statements are incorrect.

87. Consider the following sites:

1. Tekkalkota
2. Piklihal
3. Kupgallu

The above-mentioned sites are:

- (a) Jain pilgrimage sites from south India
- (b) Harappan sites from western India
- (c) Chalcolithic sites from north India
- (d) Neolithic paintings sites from south India

**Answer:** (D)

**Explanation:** The above-mentioned sites are Neolithic paintings sites from south India

**Prehistoric Rock Painting:**

1. The **granite rocks of Karnataka and Andhra Pradesh** provided suitable canvases to the Neolithic man for his paintings.
2. There are several such sites but more famous among them are **Kupgallu, Piklihal and Tekkalkota.**
3. Three types of paintings have been reported from here—**paintings in white, paintings in red ochre over a white background and paintings in red ochre.**

**88. Consider the following statements regarding Cholas:**

1. The temples remained centres of economic activity during this period.
2. Education saw a rapid decline due to foreign invasions.
3. Caste system was brittle and jobs were assigned based on the merit.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** 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.** A number of temples were built with the patronage of Chola kings and queens. **The temples remained centres of economic activity during this period. The 'Mathas' had great influence during this period.** Both agriculture and industry flourished. Reclamation of forest lands and the construction and maintenance of irrigation tanks led to agricultural prosperity. **Hence, only statement 1 is correct.**

**89. Which one of the following edicts mentions the personal name of Ashoka?**

- (a) Taxila
- (b) Lumbini
- (c) Maski
- (d) Kalinga Edict

**Answer:** (C)

**Explanation:** 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.**

**90. Consider the following statements regarding Simon Commission:**

1. The Commission recommended establishing the Consultative Council of Greater India.
2. Congress along with the Unionists in Punjab and Justice party in the south boycotted Simon commission.

**Which of the above statements are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer:** (A)

**Explanation:** An all-white, seven-member Indian Statutory Commission, popularly known as the Simon Commission (after the name of its chairman, Sir John Simon), was set up by the British government under Stanley Baldwin's prime ministership on November 8, 1927. **It suggested that a Consultative Council of Greater India should be established, which should include representatives of both the British provinces as well as princely states.** Congress and Muslims league boycotted commission. But some others, such as the Unionists in Punjab and the Justice Party in the south, decided not to boycott the commission. Hence, only statement 1 is correct.

**91. Consider the following statements with reference to Motion of Thanks.**

1. Amendments to Motion of Thanks can be moved in both the houses in such form as may be considered appropriate by the Speaker of Lok Sabha.
2. The Motion of Thanks is deemed to be a no-confidence motion.

**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:** (B)

**Explanation:**

- Notices of amendments to Motion of Thanks on the President's Address can be tabled after the President has delivered his Address. **Amendments may refer to matters contained in the Address as well as to matters, in the opinion of the member, the Address has failed to mention.** Amendments can be moved to the Motion of Thanks in such form as may be considered appropriate by the Speaker in Lok Sabha and Chairman in Rajya Sabha. **Hence, statement 1 is incorrect.**
- **Members of Parliament vote on this motion of thanks.** This motion must be passed in both the houses. A failure to get motion of thanks passed amounts to defeat of government and leads to collapse of government. **This is why, the Motion of Thanks is deemed to be a no-confidence motion. Hence, statement 2 is correct.**

92. Consider the following statements regarding Double Jeopardy:

1. It means that no person shall be prosecuted and punished for the same offence more than once.
2. The Constitution bars double punishment for the same offence.
3. A partial protection against double jeopardy is a Fundamental Right.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation: Article 20(2) says that no person shall be prosecuted and punished for the same offence more than once. This is called Doctrine of Double Jeopardy.** The objective of this article is to avoid harassment, which must be caused for successive criminal proceedings, where the person has committed only one crime. Constitution bars double punishment for the same offence. The conviction for such offence does not bar for subsequent trial and conviction for another offence and it does not matter even if some ingredients of these two offences are common. **A partial protection against double jeopardy is a Fundamental Right guaranteed under Article 20 (2) of the Constitution of India, which states "No person shall be prosecuted and punished for the same offence more than once".** The Supreme Court of India has ruled that the bar of double jeopardy does not arise if an accused was discharged of a criminal offence, even before the commencement of trial, on the basis of an invalid sanction for prosecution. **Hence, all statements are correct.**

93. **With reference to office of whip, consider the following statements:**

1. The office of whip is not mentioned in the constitution, but is mentioned in the Parliamentary statute.
2. He is appointed by the speaker in Lok sabha and by the Chairman in the Rajya sabha.
3. He regulates and monitors the behaviour of the party members in the Parliament.

**Which of the above statements is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

**Answer: (C)**

**Explanation:**

- The office of 'whip', is mentioned neither in the Constitution of India nor in the Rules of the House nor in a Parliamentary Statute. It is based on the conventions of the parliamentary government. Hence, statement 1 is incorrect.
- **Every political party, whether ruling or Opposition has its own whip in the Parliament.** He is appointed by the political party to serve as an assistant floor leader. Hence, statement 2 is incorrect.
- **He regulates and monitors the behaviour of the party members in the Parliament.** The members are supposed to follow the directives given by the whip. Otherwise, disciplinary action can be taken. Hence, statement 3 is correct.

94. **Which Act enabled the Governor General to associate representatives of the Indian People with the work of legislation by nominating them to his expanded council?**

- (a) Government of India Act, 1858
- (b) Indian Councils Act, 1861
- (c) Indian Councils Act, 1892
- (d) Government of India Act, 1935

**Answer: (B)**

**Explanation:**

- **Indian Councils Act, 1861, made a beginning of representative institutions by associating Indians with the law-making process.** It thus provided that the viceroy should nominate some Indians as non-official members of his expanded council.
- In 1862, Lord Canning, the then viceroy, nominated three Indians to his legislative council—the **Raja of Benaras, the Maharaja of Patiala and Sir Dinkar Rao.** Hence, option (b) is correct.

95. **The Vice-president of India is elected by the Electoral College consisting of:**



1. Elected Members of the Parliament.
2. Nominated Members of the Parliament.
3. Elected Members of State Legislative Assemblies

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: (A)

**Explanation:** The Vice-President is elected by the method of indirect election. He is elected by the members of an electoral college consisting of the members of both Houses of Parliament. Thus, this Electoral College is different from the electoral college for the election of the President in the following two respects:

1. It consists of both elected and nominated members of the Parliament (in the case of president, only elected members).
2. It does not include the members of the state legislative assemblies (in the case of President, the elected members of the state legislative assemblies are included).

Hence, option (a) is correct.

96. Consider the following statements regarding Plate tectonics:

1. Plate tectonics theory is contrary to continental drift theory.
2. It is the theory that Earth's outer shell is divided into several plates that glide over the mantle.
3. The driving force behind plate tectonics is convection in the mantle.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** Plate tectonics is the modern version of continental drift, a theory first proposed by scientist Alfred Wegener in 1912. Wegener didn't have an explanation for how continents could move around the planet, but researchers do now. Plate tectonics is thus said to be the unifying theory of geology. The driving force behind plate tectonics is convection in the mantle. Hot material near the Earth's core rises, and colder mantle rock sinks. Hence, statement 1 is incorrect.

97. The energy emanating from within the earth is the main force behind endogenic geomorphic processes. This energy is mostly generated by:

1. Radioactivity inside the earth
2. Tidal friction
3. Primordial heat from the origin of the earth

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Answer: (D)

**Explanation:** The energy emanating from within the earth is the main force behind endogenic geomorphic processes. This energy is mostly generated by radioactivity, rotational and tidal friction and primordial heat from the origin of the earth. Hence, all are correct.

98. Air closer to the Earth's surface is heavier because of:

- (a) High air pressure at lower atmosphere
- (b) Jet air circulation in upper atmosphere
- (c) Gravitational forces acting on air
- (d) None of the above

Answer: (C)

**Explanation:** Atmospheric pressure is caused by the weight of the atmosphere pushing down on itself and on the surface below it. Atmospheric pressure decreases with height above the surface of a planet because there is less total mass in the atmosphere above a reference point as the height of the reference point increases. This is explained by the heaviness of air closer to the earth. Air is heaviest at sea level because the air molecules are pressed together due to gravity. Hence, option (c) is correct.

99. Consider the following statements:

1. The ideal conditions for the formation of dew are clear sky, calm air, high relative humidity, and cold and long nights.
2. For the formation of the frost, dew point should be at or above the freezing point.
3. For the formation of dew, dew point should be below the freezing point.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

**Explanation:** When the moisture is deposited in the form of water droplets on cooler surfaces of solid objects, it is known as dew. The ideal conditions for its formation are clear sky, calm air, high relative

humidity, and cold and long nights. **For the formation of dew, it is necessary that the dew point is above the freezing point.** Frost forms on cold surfaces when condensation takes place below freezing point, i.e. the dew point is at or below the freezing point. **The excess moisture is deposited in the form of minute ice crystals instead of water droplets. Hence, only statement 1 is correct.**

100. Consider the following statements:

1. The number of cyclones in the Arabian Sea before and after the monsoon has increased over the years and is attributed to climate change.
- 2 The Bay of Bengal and the Arabian Sea generates half of the world's cyclones.

**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 IPCC report shows that the number of cyclones in the Arabian Sea before and after the monsoon has increased over the years and is attributed to climate change. **The Bay of Bengal and the Arabian Sea generate only 7 per cent of the world's cyclones.** However, their impact are huge as some of the most densely populated regions of the world, including **some mega-cities, are susceptible. Hence, statement 2 is incorrect.**

101. Consider the following statements:

1. Factor cost refers to the price arrived after deducting from the market price the government subsidy and adding the indirect taxes.
2. GDP at factor cost is useful to see how competitive market forces are and how distortionary indirect taxes are.

**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: (B)**

**Explanation:** Factor costs are the actual production costs at which goods and services are produced in an economy. **Factor cost refers to the price arrived after deducting from the market price the indirect taxes and adding to the resulting number government subsidies if any.** Hence, statement 1 is incorrect.

102. Which of the following are the factors considered behind the market determined exchange rates?

1. Net foreign currency inflows
2. Growth rate of the economy
3. Commodity dependence of the economy on global supplies
4. Forex reserves

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (D)**

**Explanation: Markets decide the exchange rate based on a variety of factors like:**

- Net foreign currency inflows
- Commodity dependence of the country on global supplies
- Forex reserves
- Growth rate of the economy

**If these factors are favourable, the currency strengthens.**

103. Consider the following statements:

1. GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy in a year.
2. Like CPI, the GDP deflator is based on a fixed basket of goods and services.
3. When GDP deflator is negative, it necessarily means that there is inflation in the economy.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

- In economics, **the GDP deflator is a measure of the level of prices of all new, domestically produced, final goods and services in an economy in a year.** Hence, statement 1 is correct.
- Like the consumer price index (CPI), the GDP deflator is a measure of price inflation/deflation with respect to a specific base year. **The GDP deflator is a more comprehensive inflation measure than the CPI index because it isn't based on a fixed basket of goods.** When GDP deflator is negative, nominal GDP is less than real DP. It means that there is deflation in the economy. **Hence, statement 2 and 3 are incorrect.**

104. 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.**

**105. A closed economy is likely to have which of the following characteristics?**

- (a) The government does not have a right to print currency.
- (b) The central bank does not control money supply.
- (c) Fiscal deficit would be zero.
- (d) Balance of Payments is zero.

**Answer:** (D)

**Explanation:** **A closed economy is self-sufficient, meaning that no imports are brought in and no exports are sent out.** The goal is to provide consumers with everything that they need from within the economy's borders. **A closed economy is the opposite of an open economy, in which a country will conduct trade with outside regions.** So, if no capital or goods/services are imported, exported, the BoP will be zero. In this case, **the fiscal deficit need not be zero since a developing country may adopt expansionary fiscal policy to tackle poverty and unemployment.** Hence, option (d) is correct.

**106. Consider the following statements, with reference to Pond Ecosystem:**

1. Ponds are generally found in almost all the villages of India.
2. The vegetation in a pond consists of floating weeds and rooted vegetation on the periphery, which are in turn eaten by birds such as kingfishers, herons, and birds of prey.

**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

**Answer:** (C)

**Explanation:**

- Ponds are indeed generally found in almost all the villages of India. They can be **temporary ponds that have water only during the monsoon season or larger tanks (lakes) that maintain an aquatic ecosystem throughout the year.** Hence, statement 1 is correct.
- **The vegetation in a pond includes both floating weeds and rooted vegetation on the periphery.** The roots of the vegetation are submerged in the muddy floor under the water, while their foliage emerges out of the surface of the water. **This vegetation serves as a food source for various birds such as kingfishers, herons, and birds of prey.** Hence, statement 2 is correct.

**107. In the context of Red Tide, consider the following statements:**

1. It is a common name for a phenomenon in which certain phytoplankton species bloom and cause the water to appear discoloured.
2. Red Tide blooms can appear greenish, brown or reddish orange, depending on the type of organism, the type of water and the concentration of organisms.
3. Red Tide blooms are always harmful and associated with tides.

**How many statements given above is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- **Red Tide is a commonly used term to describe a phenomenon where certain species of phytoplankton experience a rapid population growth or bloom, leading to the water appearing discoloured.** The term "Red Tide" is a misnomer because the blooms can have various colours, including greenish, brown, or reddish orange. **Hence, statement 1 is correct.**
- **Red Tide blooms can indeed appear greenish, brown, or reddish orange,** depending on factors such as the specific phytoplankton species involved, the characteristics of the water and the concentration of the organisms. The pigments present in the phytoplankton contribute to the observed discoloration of the water. **Hence, statement 2 is correct.**
- Red Tide blooms are not always harmful and they are not specifically associated with tides. **While some species of phytoplankton in a Red Tide bloom may produce toxins that can be harmful to marine life and humans, not all blooms are dangerous.** Some species may be harmful even at

low cell concentrations without causing noticeable water discoloration. Hence, statement 3 is incorrect.

108. What is the main objective of the Cartagena Protocol on Bio-safety?

- (a) To promote the conservation and sustainable use of biological diversity
- (b) To establish rules and procedures for the safe handling and use of Living Modified Organisms (LMOs)
- (c) To balance public health against economic benefits
- (d) To govern the movements of Living Modified Organisms (LMOs) resulting from modern biotechnology

**Answer:** (B)

**Explanation:** The main objective of the Cartagena Protocol on Bio-safety is to ensure an adequate level of protection in the field of safer transfer, handling and use of Living Modified Organisms (LMOs) resulting from modern biotechnology. It aims to prevent adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to health. The Protocol promotes bio-safety by establishing rules and procedures for the safe transfer, handling, and use of LMOs. The protocol aims to prevent adverse effects on the conservation and sustainable use of biological diversity, its main objective is focused on bio-safety rather than the promotion of conservation and sustainable use. Balancing public health against economic benefits is mentioned as a consideration. Hence, option (b) is the correct answer.

109. 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) Biosparging
- (b) Biodilution
- (c) Biomagnification
- (d) Bioaccumulation

**Answer:** (C)

**Explanation:** Bio-magnification, also known as bio-amplification 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.

110. Consider the following statements regarding Arctic haze:

1. Arctic haze is the phenomenon of a visible reddish-brown springtime haze in the atmosphere at high latitudes in the Arctic.

2. The occurrence of Arctic haze has been mainly due to cosmic radiation from Van Allen Radiation belts.

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:** Arctic haze is the phenomenon of a visible reddish-brown springtime haze in the atmosphere at high latitudes in the Arctic due to anthropogenic air pollution. A major distinguishing factor of Arctic haze is the ability of its chemical ingredients to persist in the atmosphere for significantly longer than other pollutants. Due to limited amounts of snow, rain, or turbulent air to displace pollutants from the polar air mass in spring, Arctic haze can linger for more than a month in the northern atmosphere. Hence, statement 2 is incorrect.

111. Consider the following statements, with reference to CRISPER Cas-9:

- 1. CRISPER is a gene editing technology.
- 2. It involves the introduction of any new gene from the outside.
- 3. Sickle cell anemia is the first disease that is targeted for CRISPER-based therapy in India.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

- India approved a 5-year project to develop Clustered Regularly Interspaced Short Palindromic Repeats (CRISPER) to cure sickle cell anemia in 2021 and it is the first disease that is being targeted for CRISPER based therapy in India. It is a gene editing technology which replicates natural defence mechanism in bacteria to fight virus attacks using a special protein called Cas9. It usually involves the introduction of new gene or suppression of an existing gene through a process described as genetic engineering. Hence, statement 1 and 3 are correct.
- CRISPER technology does not involve the introduction of any new gene from the outside. Hence, statement 2 is incorrect.

112. With reference to 'New Space India Limited', consider the following statements:



1. It is the country's first public sector undertaking in the space sector.
2. It aims to produce and market space based services.
3. It enables collaboration with start-ups and private sector participants without any government intervention.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (D)**

**Explanation:**

- New Space India Limited (NSIL) has been **established on March 6, 2019.**
- It is the **country's first public sector undertaking in the space sector.** It aims to produce and market space based services. It enables collaboration with start-ups and private sector participants without any government intervention. **Hence, all statements are correct.**

**113. With reference to aircraft/launch vehicle engines, consider the following statements:**

1. Ramjet, scramjet, turbojet etc. are engines which do not use oxygen present in the atmosphere for combustion of fuel.
2. Rocket engines, cryogenic engines, etc. are such engines, which use the oxygen present in the atmosphere for the combustion of fuel.

**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:** Ramjet, scramjet, turbojet etc. are such engines, which use oxygen present in the atmosphere for combustion of fuel. **Rocket engines, cryogenic engines, semichromogenic engines do not use the oxygen present in the atmosphere for fuel combustion, but carry oxygen with them.** Hence, both the statements are incorrect.

**114. With reference to nanoparticles, consider the following statements:**

1. They can enter the organisms through the cell membranes.
2. These particles collect in the atmosphere; pollute the water and the environment.

**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: Nanoparticle is very much a reaction factor or catalytic factor.** These particles collect in the atmosphere, polluting the water and the environment. **Nanoparticles can enter the food chain.** Hence, both the statements are correct.

**115. "Lakshya" and "Nishant" developed by DRDO are:**

- (a) Ballistic Missile System
- (b) Combat Engineering Equipment
- (c) Naval System
- (d) Unmanned Aerial Vehicles (UAVs)

**Answer: (D)**

**Explanation: "Lakshya" is a high speed target drone system developed by DRDO.** The drone is controlled by a ground control station. **"Nishant" is mainly used for intelligence gathering and reconnaissance, training, surveillance, artillery fire correction, damage assessment, ELINT and SIGINT in enemy territory.** Hence, option (d) is correct.

**116. Which of the following were the features of Regulating Act of 1773?**

1. It was the first step taken by the British Government to control and regulate the affairs of the East India Company in India.
2. It provided for the establishment of a Supreme Court at Calcutta.
3. It promoted the servants of the Company to engage in any private trade.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** This act is of great constitutional importance as:

- a. It was the **first step taken by the British Government to control and regulate the affairs of the East India Company in India;**
- b. It **recognised**, for the first time, the **political and administrative functions of the Company;** and
- c. It **laid the foundations of central administration** in India.
- d. It provided for the **establishment of a Supreme Court at Calcutta (1774)** comprising one chief justice and three other judges.

- e. It prohibited the servants of the Company from engaging in any private trade or accepting presents or bribes from the natives.

Hence, statement 3 is incorrect.

117. Consider the following statements regarding the pilgrimage site:

1. Unakoti located in Tripura is famously known as the 'Angkor Wat of the North-East'.
2. It has Shaivite rock carvings figures and images of gods and goddesses.
3. It has been recognised as a UNESCO world heritage.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:** Unakoti, famously known as the 'Angkor Wat of the North-East', is vying for a UNESCO world heritage tag with both the government and ASI working to preserve the lakhs of Shaivite rock carvings figures and images of gods and goddesses. "The structures of the rock-cut sculptures are gigantic and have distinct mongoloid features and display almost the same mystical charm as the spellbinding figures in the Angkor Wat temple of Cambodia. So call it the Angkor Wat of North-East. The Centre has approached UNESCO to declare it a World Heritage Site. The images found at Unakoti are of two types, namely rock-carved figures and stone images. Hence, statement 3 is incorrect.

118. Delhi became the capital of a kingdom for the first time under:

- (a) Harshavardhana
- (b) Chahamanas
- (c) Delhi Sultanate
- (d) Tomara Rajputs

Answer: (D)

**Explanation:** Delhi first became the capital of a kingdom under the Tomara Rajputs, who were defeated in the middle of the twelfth century by the Chauhans (also referred to as Chahamanas) of Ajmer. It was under the Tomaras and Chauhans that Delhi became an important commercial centre. The transformation of Delhi into a capital that controlled vast areas of the subcontinent started with the foundation of the Delhi Sultanate in the beginning of the thirteenth century. Hence, option (d) is correct.

119. Rekhapida, pidhadeul and khakra are classifications of the temple architecture of:

- (a) Odisha
- (b) Rajasthan
- (c) Assam
- (d) Tamil Nadu

Answer: (A)

**Explanation:** The main architectural features of Odisha temples are classified in three orders, i.e., rekhapida, pidhadeul and khakra. The temples of Odisha constitute a distinct substyle within the nagara order. In general, here the shikhara, called deul in Odisha, is vertical almost until the top when it suddenly curves sharply inwards. Deuls (part of the word pidhadeul) are preceded, as usual, by mandapas called jagamohana in Odisha. Hence, option (a) is correct.

120. Consider the following statements:

1. Jawaharlal Nehru and Subhash Chandra Bose jointly set up the Independence for India League.
2. National Planning Committee was set up by Subhash Chandra Bose in 1938.

Which of the above statement is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (C)

**Explanation:** Jawaharlal Nehru and Subhash Chandra Bose rejected the idea of Dominion status by Nehru report and jointly set up the Independence for India League. National Planning Committee was set up in 1938 by Subhash Chandra Bose who was persuaded by Meghnad Saha. Hence, both statements are correct.

121. Consider the following statements regarding the terms of the Office of the Governor:

1. The Governor can resign at any time by addressing a resignation letter to the Chief Minister of the State.
2. The Constitution does not lay down the grounds upon which a governor may be removed by the President.

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: (B)

**Explanation:** The resignation letter is submitted to the President, and not the Chief Minister. A governor holds office for a term of five years from the date on which he enters upon his office. However, this term of five

years is subject to the pleasure of the President. **The Supreme Court held that the pleasure of the President is not justifiable. The governor has no security of tenure and no fixed term of office.** He may be removed by the President at any time without mentioning any grounds for his removal. Hence, statement 1 is incorrect.

122. **Consider the following statements:**

1. Beginning of Parliamentary System in India can be traced back to Indian Council Act, 1861.
2. Charter Act of 1833 recommended for the appointment of Macaulay Committee on Indian Civil Service.
3. Charter Act of 1833 deprived the governor of Bombay and Madras of their legislative powers. The Governor General of India was given exclusive legislative powers for the entire British India.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation: Beginning of Parliamentary System in India can be traced back to Charter Act of 1853.** It separated, for the first time, the legislative and executive functions of the Governor General's council. It provided for addition of six new members called legislative councillors to the council. **Charter Act of 1853 recommended for the appointment of Macaulay Committee on Indian Civil Service.** Hence, only statement 3 is correct.

123. **Article 142 of the Indian Constitution, sometimes in news is related to:**

- (a) Original jurisdiction of the Supreme Court
- (b) Measures taken by the Supreme Court to do complete justice.
- (c) Appellate jurisdiction of Supreme Court in appeals from High Courts
- (d) Conferment on the Supreme Court of powers to issue certain writs

**Answer: (B)**

**Explanation:** Article 142 "provides a unique power to the Supreme Court, to do "complete justice" between the parties, i.e., where at times law or statute may not provide a remedy, the Court can extend itself to put a quietus to a dispute in a manner which would befit the facts of the case. **Hence, option (b) is correct.**

124. **Which Act enabled the Governor General to associate representatives of the Indian People with**

**the work of legislation by nominating them to his expanded council?**

- (a) Government of India Act, 1858
- (b) Indian Councils Act, 1861
- (c) Indian Councils Act, 1892
- (d) Government of India Act, 1935

**Answer: (B)**

**Explanation:** Indian Councils Act, 1861, made a beginning of representative institutions by associating Indians with the law-making process. It thus provided that the viceroy should nominate some Indians as non-official members of his expanded council. **In 1862, Lord Canning, the then viceroy, nominated three Indians to his legislative council—the Raja of Benaras, the Maharaja of Patiala and Sir Dinkar Rao.**

125. **Consider the following statements regarding Speaker of Lok Sabha:**

1. The Speaker of Lok Sabha leave the office soon after dissolution of the Lok Sabha.
2. Business Advisory Committee and Rules Committee work directly under the Chairmanship of the Speaker.

**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: (B)**

**Explanation:** The Speaker of Lok Sabha does not leave the office soon after dissolution of the house. He continues to be in the office till the newly formed assembly takes its first meeting and elects the new Speaker. **Committees like the Business Advisory Committee, the General Purposes Committee and the Rules Committee work directly under her Chairmanship.** Hence, option (b) is correct.

126. **Consider the following statements regarding Mid-Oceanic Ridges:**

1. Mid-oceanic ridge is an underwater mountain range, formed by plate tectonics.
2. The mid-ocean ridges of the world are connected and form a single global mid-oceanic ridge system that is part of every ocean.
3. They are characterised by a central rift system at the crest which is a zone of volcanic activity.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** A mid-ocean ridge or mid-oceanic ridge is an underwater mountain range, formed by plate tectonics. This uplifting of the ocean floor occurs when convection currents rise in the mantle beneath the oceanic crust and create magma where two tectonic plates meet at a divergent boundary. **The mid-ocean ridges of the world are connected and form a single global mid-oceanic ridge system that is part of every ocean, making the mid-oceanic ridge system the longest mountain range in the world, with a total length of about 60,000 km.** It is characterised by a central rift system at the crest, a fractionated plateau and flank zone all along its length. The rift system at the crest is the zone of intense volcanic activity. **Hence, all statements are correct.**

127. Consider the following statements:

1. The temperature starts increasing with the increase in altitude in Mesosphere.
2. The temperature starts decreasing with the increase in altitude in ionosphere.

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:**

- The mesosphere lies above the stratosphere, which extends up to a height of 80 km. In this layer, temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at the height of 80 km.
- The ionosphere is located between 80 and 400 km above the mesopause. It contains electrically charged particles known as ions, and Hence, it is known as ionosphere. Temperature here starts increasing with height.

Hence, both statements are incorrect.

128. The Red Sea is one of the saltiest bodies of water in the world. This is due to:

1. High evaporation and low precipitation
2. Low discharge from fresh water bodies.
3. Limited connection with other open Oceans with lower salinity such as the Indian Ocean.

How many of the above statements are correct?

- (a) Only one
- (b) Only two

- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** The Red Sea is one of the saltiest bodies of water in the world, owing to high evaporation and low precipitation; no significant rivers or streams drain into the sea, and its southern connection to the Gulf of Aden, an arm of the Indian Ocean, is narrow. Its salinity ranges from between ~36‰ in the southern part and 41‰ in the northern part around the Gulf of Suez, with an average of 40‰. Hence, all statements are correct.

129. Consider the following statements regarding Saline soils:

1. Saline soils are also known as Urvara Soils.
2. They have more salts, largely because of dry climate and poor drainage.
3. They occur in arid and semi-arid regions, and in waterlogged and swampy areas.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Saline soils are also known as Usara soils. Saline soils contain a larger proportion of sodium, potassium and magnesium, and thus, they are infertile, and do not support any vegetative growth. They have more salts, largely because of dry climate and poor drainage. They occur in arid and semi-arid regions, and in waterlogged and swampy areas. Hence, statement 1 is incorrect.

130. Most volcanoes and earthquakes in the world are located at:

- (a) Littoral zones of major oceans
- (b) Within the plates
- (c) Plate margins
- (d) The inter-junction of high mountain stretches along the continental belts

**Answer:** (C)

**Explanation:** Plate margins witness several plate collisions, sliding, transformation etc. that result into volcanism or earthquakes. Most of them are found in the Ring of Fire. Some earthquakes also occur within the plates but not as frequently as on the plate margins. Hence, option (c) is correct.



