

# CURRENT AFFAIRS MAGAZINE SEPTEMBER, 2023



**Educrat IAS**  
India's Best Mentorship for Civil Services

- CLIMATE CHANGE AND FOOD SECURITY
- SANTINIKETAN BECOMES INDIA'S 41ST WORLD HERITAGE SITE
- 6TH RASHTRIYA POSHAN MAAH
- SIMULTANEOUS ELECTIONS
- FOSTERING ETHICAL AI



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## GS Paper – 1

### 1. Adopt a Heritage 2.0 and e-Permission Portal

#### Why in News?

**Archaeological Survey of India (ASI)** launched the “**Adopt a Heritage 2.0**” program to come forward and help in better upkeep and rejuvenation of India's rich cultural heritage, in line with the vision of '**Virasat Bhi, Vikas Bhi**'.

- An easy-to-use mobile application called '**Indian Heritage**' has been introduced, alongside the launch of an **e-permission portal**.

#### What is the Indian Heritage App and e-Permission Portal?

- **Indian Heritage App:**
  - It will showcase the heritage monuments of India.
  - The app will feature state-wise details of monuments along with photographs, a list of public amenities available, geo-tagged locations, and feedback mechanism for citizens.
- **e-Permission Portal:**
  - An e-permission portal is for obtaining permission for photography, filming, and developmental projects on monuments.
  - The portal will fast-track the process of obtaining various permissions and solve operational and logistical bottlenecks.

#### What is the Adopt a Heritage 2.0 Programme?

- The programme is a revamped version of the earlier scheme (Adopt a Heritage Scheme) launched in 2017 and clearly defines the amenities sought for different monuments as per the **Ancient Monuments and Archaeological Sites and Remains Act (AMASR), 1958**.
- The stakeholders can apply for adopting a monument or specific amenities at a monument through a dedicated web portal that contains details of monuments sought for adoption.
- Adopt a Heritage 2.0 programme seeks to **foster collaboration with corporate stakeholders through which they can contribute to the preservation of these monuments** for the next generations.
  - The term of the appointment will be for a period of five years initially, which may be further extended up to five years.

#### What is the Adopt a Heritage Scheme?

- **About:**
  - It is a collaborative effort between the Ministry of Tourism, Ministry of Culture ASI, and State/UTs governments.
  - It was launched on **27 September 2017 (World Tourism Day)** by the President of India.
- **Aim:**
  - The Project aims to develop synergy among all partners to effectively promote 'responsible tourism'.
  - It aims to involve public sector companies, private sector companies, and corporate citizens/individuals to take up **the responsibility for making our heritage and tourism more sustainable**.
  - It is to be done through the development, operation, and maintenance of **world-class tourist infrastructure and amenities at ASI/ State heritage sites** and other important tourist sites in India.
- **Monument Mitras:**
  - Agencies/Companies would become '**Monument Mitras**' through the innovative concept of 'Vision Bidding', where the agency with the best vision for the heritage site will be given an opportunity to associate pride with their **CSR (Corporate Social Responsibility)** activities.
- **Rationale Behind 'Adopt a Heritage':**
  - The heritage sites are facing common challenges primarily related to the operations and maintenance of the various infrastructural as well as service assets.
  - There is a need to develop a robust mechanism for the provision of basic amenities on an immediate basis and advanced amenities on a long-term basis.

### What are the Previous Attempts for Corporate Involvement in Heritage Management?

- **National Culture Fund:** The government of India in 1996 formed a National Culture Fund. Since then, 34 projects have been completed under it through public-private partnerships.
- **Campaign Clean India:** 'Campaign Clean India,' in which the government had identified 120 monuments/destinations.
  - Under this scheme, the India Tourism Development Corporation (ITDC) adopted Qutab Minar as a pilot project in 2012, while ONGC adopted six monuments — Ellora Caves, Elephanta Caves, Golkonda Fort, Mamallapuram, Red Fort, and Taj Mahal — as part of its CSR.

#### Note:

**Experience of Italy:** Italy has the largest number of UNESCO Heritage Sites in the world. The cash-strapped government has been successfully collaborating with corporations since 2014 for heritage maintenance after shunning them for decades.

## 2. Laïcité: Principle of Secularism in France

### Why in News?

Recently, the French government **announced a ban on the wearing of the abaya, a traditional Islamic robe**, in state-run schools.

- This decision was framed as a measure to uphold the **principle of Laïcité, France's commitment to secularism**. The move was met with both **support and criticism**, sparking a broader conversation **about the role of Laïcité in modern France**.

### What is Laïcité?

#### About:

- Laïcité is a complex and politically charged term in France. It signifies a **formal separation of the State and Church**, emphasising the complete **removal of religious values from the public sphere**, replaced by **secular values such as liberty, equality, and fraternity**.
  - Laïcité finds its origins in the **struggle of anti-clerical Republicans** against the power of the Catholic Church.
- **Changing Demographics and Tensions:**
  - For the majority of the 20th century, **laïcité was generally not considered a significant issue** in France due to the **country's relative homogeneity**.
  - However, during the **1950s and 1960s**, significant **decolonization efforts in North Africa** resulted in a substantial migration of people from predominantly Muslim nations like **Tunisia, Morocco, and Algeria to France**.
    - This demographic shift triggered occasional tensions and challenges related to laïcité.
- **Related Controversial Legislation and Interpretations**
  - In 2004, France enacted a law prohibiting the **wearing of "ostentatious" religious symbols in public spaces**, including Catholic dresses, Jewish kippahs, and Muslim headscarves.
  - In 2011, **face-covering veils were banned in public places**. Each such decision stirred new interpretations of Laïcité.

### How does Laïcité Compare with Indian Secularism?

- **Historical Origins:**
  - **Laïcité:** Laïcité is a concept rooted in **French history** and is a cornerstone of the French Republic.
    - It was solidified with the enactment of the **1905 law on the Separation of Church and State**.
  - **Indian Secularism:** **Preamble** of the Indian Constitution declares India to be a **"Sovereign Socialist Secular Democratic Republic."** This sets the tone for the secular nature of the state.
    - The term 'Secular' was added to the **preamble by the 42<sup>nd</sup> Constitution Amendment Act of 1976**.
- **Characteristics:**
  - **Laïcité:** Laïcité in France is characterized by **strict separation of religious institutions from the state**.
    - This includes the prohibition of religious symbols in public schools, government buildings, and the public sphere.

- **Indian Secularism:** Indian secularism, as enshrined in the Indian Constitution, is more accommodative of religious diversity.
  - The state is not separated from religion but is expected to treat all **religions equally and impartially**.
  - The Indian government can provide financial support to religious institutions, and religious symbols are allowed in various public spaces.
- **Inspiration that France Can Draw From Indian Secularism**
  - **Sarva Dharma Sambhava:** Indian philosophy of secularism is related to “**Sarva Dharma Sambhava**” (literally it means that the destination of the paths followed by all religions is the same, though the paths themselves may be different) which means **equal respect to all religions**.
    - Indian secularism does not exclude religion from the public sphere, but rather **accommodates it in a way that does not infringe on the rights of others**.
  - **Protecting the Rights of Minorities:** Indian secularism recognizes the right to **profess, practice, and propagate religion** as a **fundamental right**, subject to public order, morality, and health.
    - It also protects the educational and cultural rights of minorities, and allows them to establish and administer their own institutions.

### 3. Drop in India's Reservoir Water Levels

#### Why in News?

India, a country heavily reliant on **monsoon rains**, faced a significant challenge in **August 2023 with an unprecedented rainfall deficit**.

- As a result, the **water levels in the nation's crucial reservoirs** have experienced a **sharp decline**, raising concerns about water supply for households, industries, and power generation.
- August is typically a month when India's reservoirs see their water storage levels increase significantly. However, **August 2023 was an exception, as it marked the driest August in over 120 years**. Instead of the **expected 255 mm of rainfall**, the country received **only about 162 mm**, resulting in a **36% rainfall deficiency**.

#### How Dry are India's Reservoirs?

- According to the **Central Water Commission (CWC)**, the live storage in the **150 reservoirs was 113.417 billion cubic meters (BCM) as of 31<sup>st</sup> August, 2023**, which was **63% of their total live storage capacity**.
  - This was about **23% less than the storage during the same period in 2022** and about **10% less than the average of the last 10 years**.
- The water levels in the reservoirs varied across different regions and river basins. The southern region, which had a **rainfall deficiency of 60% in August**, had the **lowest storage level of 49% of its combined capacity**.
- The eastern region, which received normal rainfall, had the **highest storage level of 82% of its combined capacity**.
- Some of the **river basins that had highly deficient or deficient** water levels were:
  - **Highly Deficient:**
    - **Pennar** basin in Karnataka and Andhra Pradesh
    - **Mahanadi** basin in Chhattisgarh and Odisha
  - **Deficient:**
    - **Subarnarekha, Brahmani and Vaitarni** basins in Jharkhand, West Bengal and Odisha
    - **Kaveri** basin in Karnataka and Tamil Nadu
    - **Mahi** basin in western India
    - **Krishna** basin in Maharashtra, Karnataka and Telangana
- Water storage in the reservoirs of the eastern, western, central and southern regions, except the northern region is less than last year (2022).

#### Note:

- A **20% reduction in a river basin is close to normal**, according to the CWC.
- A basin is categorized as **deficient** if the reduction is **greater than 20% and less than or equal to 60%**.
- A reduction of over 60% is called **highly deficient**.

### What Are the Consequences of this Water Scarcity?

- **Agriculture:**
  - The reservoirs provide irrigation water for crops, especially **during the rabi season**. The reduced water availability can affect crop production and farmers' incomes.
- **Power:**
  - The reservoirs also supply water for hydropower generation, which accounts for over **12% of India's total electricity generation**.
    - The dry August led to an **unexpected increase in power demand**, primarily for irrigation purposes.
      - Power generation reached a record high in August, necessitating additional electricity production by coal-fired power plants due to the precarious water levels in the reservoirs.
- **Environment:**
  - The reservoirs also **support biodiversity and ecosystem services**, such as **flood control, groundwater recharge, fisheries and recreation**. The lower water levels can affect these functions and cause ecological damage.
- **Impact on Water Supply:**
  - India's annual rainfall primarily occurs during the **southwest monsoon season**, making these reservoirs vital for water supply year-round. This scarcity in water storage threatens households.

### What are the Causes for the Rainfall Deficit?

- **El Niño:**
  - **El Niño** is a climatic phenomenon that occurs when the **sea surface temperature in the central and eastern Pacific Ocean rises above normal**.
    - It affects the global weather patterns and reduces rainfall in India during the monsoon season.
    - According to the **India Meteorological Department (IMD)**, El Niño was present during August 2023 and was expected to continue till September.
    - The IMD has forecasted that rainfall in **September will likely not be more than 10% deficient**.
      - However, the looming threat of El Niño in the **equatorial Pacific Ocean**, which is still gaining strength, poses a significant risk to India's water resources.
- **Indian Ocean Dipole (IOD):**
  - The **Indian Ocean Dipole (IOD)** is defined by the **difference in sea surface temperature between two areas (or poles, hence a dipole)** – a western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.
  - The IOD affects the climate of Australia and other countries that surround the Indian Ocean Basin, and is a significant contributor to rainfall variability in this region.
    - According to IMD, IOD was expected to turn favourable for the monsoon rainfall this year, but did not have much impact.

### Way Forward

- Promote **efficient water management practices** in agriculture, including the adoption of drip irrigation and rainwater harvesting techniques.
  - Encourage **crop diversification and the cultivation of drought-resistant crops** to reduce the reliance on water-intensive farming.
- Water innovation initiatives, such as **desalination, wastewater treatment, smart water technologies, and climate-resilient agriculture**, can help enhance water supply and efficiency and cope with water challenges and uncertainties.
- Invest in **renewable energy** sources like solar and wind power to reduce the dependency on hydropower generation, especially during dry periods.
- **Raise awareness** among the public about responsible water usage and the importance of conservation.

## 4. Nataraja Artistry of Lord Shiva

### Why in News?

Recently, The **G20 Leaders' Summit** at Bharat Mandapam, New Delhi, featured a stunning **27-foot Nataraja sculpture, the world's tallest representation of Lord Shiva in his dancing form**.

### What are the Key Highlights of the Nataraja Statue in Bharat Mandapam?

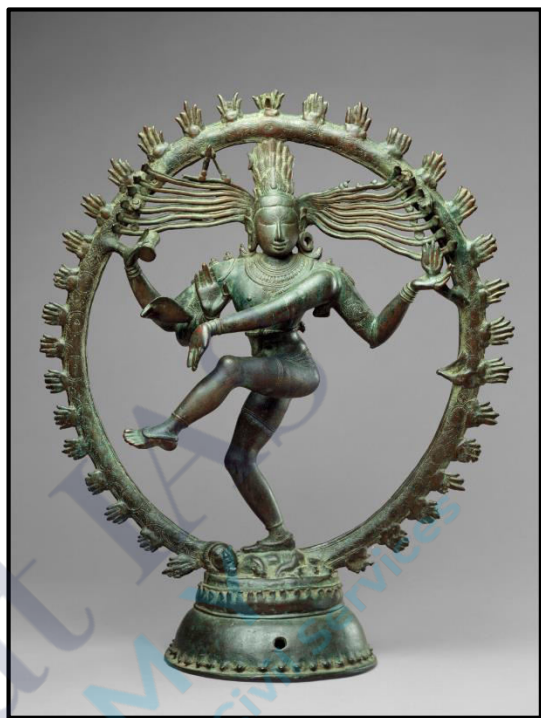
- This remarkable Nataraja statue, crafted from an **ashtadhatu (eight-metal alloy)** by artisans from Tamil Nadu, **weighs 18 tonnes**.
- The statue is sculpted by the renowned sculptor **Radhakrishnan Sthapaty** of Swami Malai in Tamil Nadu.
- The design of this Nataraja statue draws inspiration from three revered Nataraja idols: the **Thillai Nataraja Temple in Chidambaram**, the **Uma Maheswarar Temple in Konerirajapuram**, and the **Brihadeeswara (Big) Temple, a UNESCO World Heritage Site, in Thanjavur**. This offers a deep insight into the **history and religious symbolism of Lord Shiva's dancing form**.
- The Nataraja sculpture at Bharat Mandapam is made using the **lost wax method**.



### What is the History and Religious Symbolism of Lord Shiva's Dancing Form?

- **Ancient Origins of Shiva:**
  - Shiva, one of the principal deities in Hinduism, has ancient roots that trace back to the **Vedic period**.
  - In Vedic scriptures, **Shiva's precursor is Rudra**, a deity associated with natural **elements, particularly storms, thunder, and the wild forces of nature**.
  - Rudra was initially a fierce and fearsome deity, embodying the destructive aspects of nature.
- **Emergence of Nataraja Form:**
  - The concept of Shiva as a dancer, known as Nataraja, began to take shape around the **5<sup>th</sup> century AD**.
  - Early depictions of Shiva's dance laid the foundation for the multifaceted symbolism associated with the Nataraja form.
- **Shiva Under the Cholas:**
  - During the reign of the **Chola dynasty (9<sup>th</sup>-11<sup>th</sup> centuries AD)**, Shiva's Nataraja form underwent significant development.
  - The Cholas, known for their **patronage of art and culture**, played a pivotal role in **shaping Nataraja's cultural significance**.
  - The Cholas were devout Shaivites, emphasizing the worship of Lord Shiva.
    - They constructed grand Shiva temples throughout their territories, with the **Brihadeeswara Temple in Thanjavur being a prominent example**, with a particular focus on Shaiva figures in their sculptures.
- **Evolution of Nataraja Iconography:**
  - Nataraja's symbolism grew more complex under the Cholas.
  - Lord Shiva is a complex deity in the Puranic pantheon, embodying **both destructive and ascetic qualities**.
  - Nataraja, the 'Lord of Dance,' is celebrated for his invention of 108 diverse dances. The dancing Shiva became associated with both **creation and destruction, embodying the dualities of life**.
  - The dance was seen as a cosmic dance, with Shiva as the **cosmic dancer, and the world as the stage**.
  - **Iconic Elements of Nataraja**
    - In iconic representations, Nataraja is depicted within a **flaming aureole or halo, symbolizing the circle of the world**.
    - His long, flowing dreadlocks signify the **energy and dynamism of his dance**.
      - Nataraja is typically shown with four arms, each holding symbolic objects that convey deeper meanings.
  - **Symbolism in Nataraja's Attributes:**
    - Nataraja holds a **damru (hand drum)** in his upper right hand, which draws all creatures into his **rhythmic motion**, and in his upper left arm, he wields **Agni (fire)**, symbolizing his power to **destroy the universe**.
    - Beneath one of Nataraja's feet lies a crushed dwarf-like figure, representing illusion and worldly distractions.

- In ornamentation, one ear of Shiva has a **male earring while the other has a female.**
  - This represents the fusion of male and female and is often referred to as **Ardhanarishwar.**
- A snake is twisted around the arm of Shiva. The snake symbolises the **kundalini power**, which resides in the **human spine in the dormant stage. If aroused, one can attain true consciousness.**
- **Nataraja as Protector and Reassurer:**
  - Despite the formidable symbolism associated with Nataraja, he also serves as a protector.
  - The '**abhayamudra**' (**fear-allaying gesture**) **made with his front right hand reassures devotees**, offering protection from fear and doubt.
  - Nataraja's raised feet and his gesture with his front left-hand point to his feet, inviting devotees to seek refuge in him.
- **Nataraja's Smile:**
  - One of the distinctive features of Nataraja's iconography is his almost always present broad smile.
  - The French historian Renee Grousset beautifully described Nataraja's smile as representing both "death and life, both joy and pain."



#### What is the Lost Wax Method?

- Sculptors who created the Nataraja statue which is placed at the Bharat Mandapam, New Delhi, trace their lineage **34 generations back to the Cholas.**
- The crafting process used is the **traditional 'lost-wax' casting method, indigenous to the Chola era.**
  - The lost-wax method dates back at least 6,000 years, a **copper amulet** crafted using this method at a neolithic site in **Mehrgarh, Balochistan (present day Pakistan)** is dated to circa **4,000 BC.**
    - Notably, the **Dancing Girl of Mohenjo Daro** was also crafted using this technique.
- This method involves creating a **detailed wax model, coating it with alluvial soil, heating to burn away the wax, and filling the mold with molten metal.**
- The Cholas excelled in the lost wax method for producing elaborate metallic sculptures.
- This technique was used to create intricate sculptures for millennia.

#### 5. TRIFED Showcases India's Tribal Craftsmanship at G20 Summit

##### Why in News?

The recent **18<sup>th</sup> G20 Summit** witnessed a captivating display of **India's rich tribal heritage and craftsmanship**, curated and presented by the **Tribal Cooperative Marketing Development Federation of India (TRIFED)**, Ministry of Tribal Affairs.

##### What Artifacts and Products did TRIFED Display at the G20 Summit?

Artifacts/Products	Description
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Longpi Pottery:

- Originating from the village of **Longpi in Manipur**, the **Tangkhul Naga tribes** practise this unique pottery style.
- Longpi pottery stands out as it **doesn't rely on the potter's wheel; everything is hand-shaped or moulded.**
- The distinct grey-black cooking pots, sturdy kettles, and charming bowls are Longpi's trademarks, but new design elements are being introduced.



Chhattisgarh Wind Flutes:

- '**Sulur**' **bamboo wind flute** is a unique musical creation curated by the **Gond Tribe of Bastar in Chhattisgarh.**
  - It produces melodies through a simple one-handed twirl and has fish emblems, geometric lines, and triangles etched on its surface.
- The 'Sulur' serves utilitarian purposes, helping **tribal men ward off animals and guide cattle through jungles.**
- It showcases the Gond Tribe's ingenious craftsmanship, which is a **harmonious blend of artistry and functionality.**



Gond Paintings:

- Gond paintings reflect their **deep connection to nature and tradition.**
- They **start with dots, calculating image volume, which they then connect to form outer shapes filled with vibrant colours.**
- These artworks are deeply influenced by their social environment and they stand as a testament to the tribe's artistic ingenuity.



**Gujarat Hangings:**

- Curated by the **Bhil & Patelia Tribe in Dahod, Gujarat**, these wall hangings are rooted in ancient Gujarat art.
- Initially, the hangings were **dolls and cradle birds made of cotton cloth and recycled materials**.
  - The hangings now include mirror work, zari, stones, and beads, blending tradition with contemporary fashion.



**Sheep Wool Stoles:**

- Crafted by the **Bodh, Bhutia, and Gujjar Bakarwal tribes from Himachal Pradesh/Jammu & Kashmir**.
  - They use **pure sheep wool to make various clothing, including jackets, shawls, and stoles**.
  - Originally featuring monochromatic schemes of white, black, and grey, Tribal craftsmanship is undergoing a transformation with dual-coloured designs becoming popular.



**Rajasthan Artistry:**

- **Mosaic Lamps:**
  - Captures the **mosaic art style** and is crafted into lampshades and candle holders. When illuminated, they unleash a kaleidoscope of colours, adding vibrancy to any space.



**Ambabari Metalwork:**

- It is curated by the **Meena Tribe** and also embraces enamelling, a meticulous process that elevates metal decoration.
  - Today, it extends beyond gold to metals like silver and copper.

**Meenakari Crafts:**

- Meenakari crafts involve decorating metal surfaces with vibrant minerals, a tradition demanding exceptional skill, introduced by the Mughals.
  - This tradition demands exceptional skills as delicate designs are etched onto metal, creating grooves for colours to nestle in.

**Tribal Cooperative Marketing Development Federation of India (TRIFED):**

- TRIFED came into existence in 1987. It is a national-level apex organisation functioning under the administrative control of the Ministry of Tribal Affairs.
- The objective of TRIFED is the **socio-economic development of tribal people** in the country by way of **marketing development of the tribal products** such as metal craft, tribal textiles, pottery, tribal paintings and pottery on which the tribals depend heavily for a major portion of their income.
- TRIFED acts as a **facilitator and service provider for tribes to sell their product**.
- The approach by TRIFED aims to **empower tribal people** with knowledge, tools and a pool of information so that they can undertake their operations in a more systematic and scientific manner.
- It also involves capacity building of the tribal people through sensitization, formation of **Self Help Groups (SHGs)** and imparting training to them for undertaking a particular activity.
- **TRIFED has its Head Office located in New Delhi and has a network of 13 Regional Offices located at various places in the country.**

**6. Climate Change and Food Security**

**Why in News?**

In 2023, India experienced a series of disruptive weather and climate phenomena, highlighting the intricacies of its precipitation system, impacting the **Food Security**.

**How have been the Weather and Climate Phenomena?**

- **Western Disturbance:**
  - The **Western Disturbance** traditionally brings vital moisture from European seas to the western Himalayas and parts of northern India in the winter and spring.
  - In 2023, the Western disturbance **persisted late into the summer**, complicating the transition to the Southwest Monsoon season. This unusual behavior raised concerns about its effects on precipitation patterns.
  - Climate-linked warming is likely to weaken winter precipitation from the Western disturbance and shift it to more intense rain events.
- **El Niño and IOD:**
  - An El Niño phase of the **El Niño Southern Oscillation (ENSO)** was intensifying, which can **adversely affect the southwest monsoon**.

- While **not all El Niño events negatively impact the monsoon** due to its complexity, the dynamics between El Niño and the **monsoon are evolving**.
- The **Indian Ocean Dipole (IOD)** can balance the **adverse impact of the El Niño on the South West Monsoon**.
- Dynamic regression models indicate that 65% of the inter-annual variability in the southwest monsoon is attributed to the **combined effects of ENSO and the IOD**.
- Some Studies have **found that 43% of heavy rainfall events** in the Northeast Monsoon coincided with an **El Niño**.

#### How Can Such Climate Phenomena Impact Agriculture and Water Resources?

- **El Niño's Effects on Green Water:**
  - Agriculture relies on two types of **water - green water from rain-fed soil moisture and blue water from rivers, lakes, reservoirs, and groundwater** for irrigation. Both are vital for food security.
  - Climate phenomena like **El Niño can disrupt rainfed agriculture**, affecting sowing, plant growth, and soil moisture.
  - Despite investments in irrigation infrastructure, around **half of India's cultivated area depends on green water**, underscoring the significance of rainfed agriculture for food security.
  - **Contributions of green water from the monsoon and the Western disturbance** play significant roles in **preserving blue water stock** and groundwater to determine the **fate of the Rabi Crops sown in winter** and the overall water security.
- **El Niño's Effects on Crop Vulnerability:**
  - Even in irrigated areas, **crops like rice paddy, soybean, tur dal, groundnut, and maize rely on green water**, making them vulnerable to climate variability. For instance, **soybean production saw a 28% decline during the 2015-2016 El Niño year**.

#### How are the Emerging Climate Hotspots in India Impacted by Declining Monsoon Precipitation?

- **Water Stress in Central India:**
  - Certain regions in **Central India are emerging as climate change hotspots** with critical implications for water, food, and ecological security.
  - Persistent water stress and urban centers facing water shortages pose challenges.
- **Declining Monsoon Precipitation:**
  - Monsoon precipitation has been declining since the 1950s, potentially due to **reduced land-sea thermal gradients** due to the warming of the seas.
  - However, increasing intensity of rain events and heat stress are observed, adding complexity.
- **Model Uncertainties:**
  - Global climate models struggle to simulate observed precipitation trends, creating uncertainties in future projections. Climate scientists are working to improve these models.

#### What can be the Adaptation and Mitigation Strategies?

- **Shift to Less Water-Intensive Crops:**
  - Reducing dependence on water-intensive crops in favor of **less water-intensive crops like millets can enhance food system resilience** to phenomena like El Niño.
  - Shifting crops may **save 30% of blue water**, but policies are needed to prevent new demands for the saved water.
- **Alternative Crop Strategies:**
  - Encouraging farmers to adopt shorter-growing-cycle crops and diversify agricultural practices.
- **Improved Forecasting:**
  - Utilizing forecasts of climate phenomena like El Niño for informed decision-making.
- **Water Storage Management:**
  - Effective management of dams and reservoirs is crucial to reduce **flood risks and ecological damage**.

## 7. Santiniketan Becomes India's 41st World Heritage Site

### Why In News?

Recently, **Santiniketan**, which is a town located in **Birbhum district of West Bengal**, was included in the **UNESCO's World Heritage List**.

- The efforts to have **Santiniketan** recognized as a **UNESCO World Heritage Site** have been ongoing since **2010**. **Santiniketan** has been recognized by **UNESCO** as India's **41<sup>st</sup> World Heritage Site**.

### Why is Santiniketan Well Known?

- **Historical Significance:** In **1862**, **Rabindranath Tagore's father, Debendranath Tagore**, spotted this scenic landscape and decided to establish an **ashram**, building a house called **Santiniketan**, meaning "**abode of peace**".
- **Name Change:** The area, originally called **Bhubadanga**, was renamed **Santiniketan** by **Debendranath Tagore** due to its conducive environment for **meditation**.
- **Educational Legacy:** In **1901**, **Rabindranath Tagore** chose a significant portion of land and established a school based on the **Brahmachary Ashram model**. This school later evolved into **Visva Bharati University**.
- **UNESCO World Heritage Site:** The **Ministry of Culture** proposed **Santiniketan** for inclusion in the **UNESCO World Heritage List**, emphasising its importance in **human values, architecture, arts, town planning, and landscape design**.
- **Archaeological Preservation:** The **Archaeological Survey of India (ASI)** has been involved in the **restoration** of several structures in **Santiniketan**, preserving its **historical and cultural heritage**.

### Who was Rabindranath Tagore?

- **Early Life:**
  - **Rabindranath Tagore** was born on **May 7, 1861**, in **Calcutta, India**, into a prominent **Bengali family**. He was the **youngest of thirteen children**.
  - **Tagore** was a **polymath** and **excelled** in various fields. He was not only a **poet** but also a **philosopher, musician, playwright, painter, educator, and social reformer**.
- **Nobel Laureate:**
  - In **1913**, **Rabindranath Tagore** became the first Asian to be awarded the **Nobel Prize in Literature** for his collection of poems titled "**Gitanjali**" (**Song Offerings**).
- **Knighthood:**
  - **Rabindranath Tagore** was awarded with **Knighthood for Services to Literature** by **King George V** in **1915**.
  - **Tagore** renounced his **title of Knighthood** after the **1919 Jallianwala Bagh Massacre**.
- **Composer of National Anthems:**
  - He wrote the **national anthems of two countries**, "**Jana Gana Mana**" (the **Indian national anthem**) and "**Amar Shonar Bangla**" (the **Bangladesh national anthem**).
- **Literary Works:**
  - His literary works include **poems, short stories, novels, essays, and plays**. Some of his notable works include "**The Home and the World**," "**Gora**," **Gitanjali**, **Ghare-Baire**, **Gora**, **Manasi**, **Balaka**, **Sonar Tori**, and "**Kabuliwala**."
  - He is also remembered for his song '**Ekla Chalo Re**'.
- **Social Reformer:**
  - He was an advocate for **social reform, promoting ideas of unity, harmony, and tolerance**. He criticised British colonial rule and worked for **Indian independence**.
- **Tagore's Philosophy:**
  - His **philosophy** emphasised the **importance of humanism, spirituality, and the connection between nature and humanity**.
- **Literary Style:**
  - **Tagore's writing style** was marked by its **lyrical and philosophical qualities**, often exploring themes of **love, nature, and spirituality**.
- **Death:**
  - He passed away on **August 7, 1941**, leaving behind a rich legacy of **literature** and a lasting impact on **Indian and world culture**.

### What are UNESCO's World Heritage Sites?

- A **World Heritage Site** is a place that is listed by **UNESCO** for its special **cultural or physical significance**.
- The list of **World Heritage Sites** is maintained by the international '**World Heritage Programme**', administered by the **UNESCO World Heritage Committee**.
- This is embodied in an **international treaty** called the Convention concerning the **Protection of the World Cultural and Natural Heritage**, adopted by **UNESCO** in **1972**.

### 8. Debate over the Words Socialist and Secular in Constitution

#### Why in News?

Recently, some of the Members of the Lok Sabha have claimed that the words "Socialist" and "Secular" were omitted in the New Copies of the **Preamble of the Constitution of India**.

- These two words were originally not a part of the Preamble. They were added by The **Constitution (42<sup>nd</sup> Amendment) Act, 1976** during the **Emergency** imposed by then Prime Minister Indira Gandhi.

#### What is the Preamble of the Indian Constitution?

- **About:**
  - Every Constitution has a philosophy. The philosophy underlying the Constitution of India was summed up in the **Objectives Resolution**, which was adopted by the Constituent Assembly on 22<sup>nd</sup> January, 1947.
  - The **Preamble of the Constitution** puts in words the ideal contained in the Objectives Resolution.
  - It serves as an introduction to the Constitution, and contains its basic principles and goals.
- **The Preamble of the Constitution that Commenced in 1950 read:**
  - "WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN DEMOCRATIC REPUBLIC and to secure to all its citizens:
    - JUSTICE, social, economic and political;
    - LIBERTY of thought, expression, belief, faith and worship;
    - EQUALITY of status and of opportunity; and to promote among them all
    - FRATERNITY assuring the dignity of the individual and the unity of the Nation;
  - IN OUR CONSTITUENT ASSEMBLY this 26th day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION."
- **Insertion of the words Socialist and Secular:**
  - The words "Socialist" and "Secular" were added to the Preamble through the **Constitution (42<sup>nd</sup> Amendment) Act, 1976**, during the **period of Emergency** under Prime Minister Indira Gandhi's government.
  - The **insertion of "socialist"** aimed to emphasize **socialism as a goal and philosophy of the Indian state**, with a focus on eradicating poverty and adopting a unique form of socialism that involved nationalization only in specific sectors where necessary.
  - The **inclusion of "secular"** reinforced the **idea of a secular state**, treating all religions equally, maintaining **neutrality, and not endorsing any particular religion** as a state religion.

#### What is the Debate Over Removing Socialist and Secular Words from the Preamble?

- **Political Ideology and Representation:**
  - Those advocating for the removal argue that the words "socialist" and "secular" were inserted during the **Emergency in 1976**.
  - They believe this was an **imposition of a particular political ideology** and goes against the **principles of representation and democratic decision-making**.
- **Original Intent and Constitution's Philosophy:**
  - Critics argue that the original Preamble, as adopted in 1950, didn't include these words. They emphasize that the **Constitution's philosophy already encompassed the ideas of justice, equality, liberty, and fraternity** without explicitly mentioning **socialism and secularism**.
  - They argue that these values **were always implicit in the Constitution**.
- **Concerns of Misinterpretation:**
  - Some critics express concerns that the words "socialist" and "secular" might be misinterpreted or misused, potentially **leading to policies and actions that deviate from their original intent**.

- They argue for a **more neutral and flexible** approach in the Preamble.
- **Social Implications:**
  - The presence or absence of these words can **have implications for public policy**, governance, and societal discourse.
  - The term "secular" is particularly significant in a country with a diverse religious population, and its removal might **raise concerns about the state's commitment to religious neutrality**.

### Way Forward

- Foster a well-informed and inclusive public discourse on the implications of these terms in the Preamble. This should involve **academia, civil society, political parties**, and citizens to understand various perspectives and concerns.
- Facilitate a **structured debate within constitutional bodies**, such as Parliament, to deliberate on the significance, interpretation, and historical context of the words "socialist" and "secular" in the Preamble. Encourage thorough discussions to analyze the implications of any potential amendment.
- Establish an independent committee of constitutional experts, legal scholars, historians, and sociologists to **study the historical context, constitutional philosophy, and legal implications** of the words "socialist" and "secular" in the Preamble. Their findings can provide valuable insights.

## 9. National Higher Education Qualifications Framework

### Why in News?

**University Grants Commission (UGC)** has finalised the **National Higher Education Qualifications Framework (NHEQF)** to standardise qualifications and promote academic mobility.

- However, the implementation of this framework has raised concerns **due to the presence of multiple guidelines, and frameworks**, leading to confusion among stakeholders.

### What is the National Higher Education Qualifications Framework ?

#### Background:

- The movement to specify frameworks for higher education qualifications gained momentum across the world in the late 1990s, but India remained without an NHEQF.
- The idea was deliberated at the **60th meeting of the Central Advisory Board of Education in 2012**, which assigned the responsibility to the **UGC**.

#### About:

- The UGC has formulated the **NHEQF** with the aim of facilitating transparency and comparability of **higher education qualifications at all levels**. The framework has been issued for all educational institutes to adopt.
  - The NHEQF is based on the **National Education Policy (NEP) 2020**, which envisages a new and forward-looking vision for **India's higher education system**.
- **Main Features:**
  - The framework categorizes education into eight levels, with the **first four being part of the National School Education Qualification Framework (NSEQF)** and the **latter four pertaining to higher education qualifications (level 4.5 to level 8)**, each with a corresponding level descriptor that specifies the learning outcomes, the volume of learning, and the qualification type and title.
  - The NHEQF provides the guidelines for the **development and implementation of programmes of study**, such as the programme learning outcomes, the course learning outcomes, the curriculum design, the pedagogy, the assessment, and the feedback.
  - The credit framework document of the UGC mandates that **each semester must have a minimum of 20 credits**.
    - This document suggests that **one credit must comprise 15 hours of direct and 30 hours of indirect teaching**. This means that students are required to study for a minimum of **900 hours per semester or close to 10 hours a day**.
  - Qualification types are broad and discipline-independent, including certificates, diplomas, bachelor's degrees, master's degrees, and PhDs. The NHEQF also includes qualifications from **technical and**

**vocational education and professional and technical education programs, excluding medical and legal education, all within one framework.**

- It **establishes the quality assurance mechanism such as** the roles and responsibilities of the regulators, the higher education institutions, and the external agencies, as well as the processes and criteria for the approval, monitoring, and evaluation of programmes and qualifications.

#### **What are the Issues with the NHEQF?**

##### ➤ **Multiplicity of Guidelines:**

- The UGC has prescribed two separate frameworks - **the NHEQF and the National Credit Framework.**
- Higher educational institutions are separately required to implement the **Academic Bank of Credits** as a mandated modality for recognizing, accepting, and transferring credits across courses and institutions.
- The presence of **multiple regulations impinges on higher education qualifications.**

##### ➤ **Ambiguity:**

- The **NHEQF provides exit requirements**, but it doesn't clearly explain eligibility conditions and pathways through which a student can enter a program at a particular level.
  - The absence of clear eligibility conditions and pathways may lead to confusion among students and institutions.

##### ➤ **Lack of Consensus:**

- Disciplines such as **agriculture, law, medicine, and pharmacy may be under the jurisdiction of separate regulators**, but they could have been included in the NHEQF through consensus across various regulatory bodies.
- The lack of consensus may lead to a fragmented higher education system and impede academic mobility.

##### ➤ **Degrees Within a Degree:**

- The framework appears to create a hierarchy, allowing certain students who **hold four-year undergraduate degrees with a minimum CGPA of 7.5** to be eligible for **admission to PhD programmes.**
  - This approach may lead to elitism, as academic performance is often influenced by socioeconomic conditions.

##### ➤ **Equating Postgraduate Diplomas and Undergraduate Programs:**

- The NHEQF creates issues by **equating postgraduate diplomas with four-year undergrad programs**, causing confusion, especially for degrees like B.Ed (could be completed in one, two or four years is confusing).
  - This framework's attempt to **standardise qualifications on a scale of 4.5 to 10 complicates categorizing degrees that don't fit neatly**, making it hard to determine their level.

##### ➤ **Influence of International Models:**

- The NHEQF draws heavily from the **European Bologna process and Dublin descriptors.**
  - The Bologna Process is a series of agreements between **European countries** to ensure the **quality and comparability of higher education qualifications.**
  - The Dublin descriptors are a system of qualifications frameworks for **evaluating students for bachelor's, master's, and doctoral degrees.**
- India's **higher education system is more complex and diverse than the European model.** The NHEQF's development could benefit from broader consultations with Indian states.

#### **Way Forward**

- Merge the NHEQF and the National Credit Framework into a **single comprehensive framework** to reduce confusion and streamline the qualification standards.
- Engage in **wider and more intense consultations with the States** to better reflect the diversity and complexity of India's higher education system.
  - Develop **learning outcomes tailored to the Indian higher education system**, considering **socio-cultural and socio-economic factors.**
- Recognise that learning outcomes should not solely focus on **employability but also on holistic personal and societal development.**
- Review the **eligibility criteria for admission to Ph.D. programs to prevent making the higher education system elitist.**
- Establish a mechanism for ongoing monitoring and evaluation of the NHEQF to make necessary adjustments as the higher education landscape evolves.



### 1. India's Interests in Africa's RE Potential

#### Why in News?

Recently, the **International Solar Alliance (ISA)** held its 5<sup>th</sup> regional meeting in Kigali, Rwanda. **Nine solar power demonstration projects across three countries:** 4 in Uganda, 2 in Comoros and 3 in Mali, were virtually inaugurated in the meeting.

- During the meeting, a report titled "**Roadmap of Solar Energy for Universal Energy Access**", was unveiled.

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

- The report outlines a strategic approach to effectively and economically tackle the **global energy access challenge** using **solar-powered solutions**. It encompasses case studies, real-world examples, and **innovative policies** aimed at bringing about a transformative shift in the implementation of solar mini-grids.
- The report's **conclusions hold significant relevance for Africa, especially the Sub-Saharan region** and rural areas. It identifies a range of electrification strategies centred on **solar energy**, particularly focusing on solar mini-grids and **Decentralised Renewable Energy solutions**.
  - These approaches **offer effective solutions to address diverse energy access challenges**.
  - Promoting these solutions **could encourage the emergence of local innovations and business models**, thereby advancing the adoption of solar energy generation within the country.

#### Note:

- A decentralised energy system is **characterised by locating energy production facilities closer to the site of energy consumption**.
  - This allows for **more optimal use of renewable energy (RE)** as well as combined heat and power, reduces **fossil fuel use** and **increases eco-efficiency**.



#### What is the Significance of Solar Power Projects?

- **Creating Solar Project Models that can be Replicated in Member Countries:**
  - The main objective of these projects is to **enhance the well-being of underserved communities**. The projects are not just limited to providing energy, but they **also serve as drivers of advancement and symbols of global cooperation**.
- **Promoting Solar Energy to Enable Sustainable Energy Transition:**
  - ISA is **partnering with the G20 Presidency of India** and promoting solar energy as a means to achieve **universal energy access** and enable a sustainable energy transition.
- **Tackling the Lack of Affordable Credit and Technical Expertise:**
  - The central idea behind these projects is to **highlight the substantial potential of solar technology applications in improving the quality of life** for individuals across the member nations.
  - ISA will address the critical lack of affordable funding and technical expertise in its member countries, **especially focusing on LDCs and Small Island Developing States (SIDS)**.

## What is Africa's Potential in Global RE Transition?

- **Africa holds the potential to emerge as a prominent force in renewable energy generation** and innovation on a global scale.
- Despite facing various obstacles, **the continent is endowed with a rich array of renewable energy sources**, including substantial solar capacity, wind resources, **geothermal areas, hydro energy, and green hydrogen** prospects.
- Furthermore, **Africa possesses over 40% of the world's crucial mineral reserves** crucial for renewable and low-carbon technologies.
- Leveraging these resources offers the opportunity for Africa to not only fulfil its energy requirements but also **to establish itself as a significant player in RE production and advancements worldwide**.
  - However, there is a **need for collaboration among governments, private sector entities, and international organisations** to fully unlock the potential of solar energy across the continent.



## What is the Importance of Africa for India?

- **Potential Market:** Africa is **home to over half a dozen of the fastest growing countries of this decade** such as Rwanda, Senegal, Tanzania, etc. making it one of the growth poles of the world.
  - The African continent has a **population of over one billion with a combined GDP of 2.5 trillion dollars** making it a huge potential market with a wide range of opportunities **for economic growth, trade expansion, and strategic partnerships, benefiting both regions in various ways.**
- **Rich in Resource:** Africa is a **resource-rich nation dominated by commodities like crude oil, gas, leather, gold and other metals, all of which India lacks in sufficient quantities.**
  - Namibia and Niger are **among the top ten global producers of uranium.**
  - **South Africa is the world's largest producer of platinum and chromium.**
  - India is seeking diversification of its oil supplies away from the Middle East and Africa can **play an important role in India's energy matrix.**
- **Indian Ocean Geopolitics:** Eastern African nations' geographical location, natural resources, security concerns, and regional engagements **collectively position them as key actors in the global geopolitics of the Indian Ocean Region (IOR)**, with significant implications for international trade, security, and diplomacy.
  - Eastern African nations, such as Somalia, Kenya, Tanzania, and Mozambique, are strategically positioned along the eastern coast of Africa, which borders the Indian Ocean.
  - This location gives them access to important sea lanes and trade routes in the IOR, making them critical players in maritime security and commerce.
- **Trade MoUs:** India **has signed MoUs with all African nations on the Indian Ocean Rim (IOR)** is evidence of increased defence engagement with African countries.
  - Under the **Pan African e-Network Project (initiated in 2009)**, India has set up a **fibre-optic network to provide satellite connectivity**, tele-medicine and tele-education to countries of Africa.
  - The subsequent phase, **e-VidyaBharti and e-ArogyaBharti (e-VBAB), introduced in 2019, focused on providing free tele-education to African students** and continuing medical education for healthcare professionals.

## Way Forward

- **India Assisting Africa in Harnessing Solar/RE Potential:**
  - **Technical and Financial Support:** India can offer technical expertise and financial assistance to African nations in developing their RE infrastructure.
  - **Capacity Building and Collaboration:** India can facilitate capacity-building programs and **research partnerships through collaborative projects** that address specific energy challenges in African countries and foster technology transfer.
- **India Taking Advantage of Africa's RE Potential:**
  - **Investment Opportunities:** India can explore investment opportunities in African RE projects while contributing to local economic development.

- **Exporting Renewable Technology:** Indian companies can export RE technologies and equipment to African markets. Leveraging India's manufacturing capabilities, **this can be a win-win for both regions.**
- **RE Partnerships:** India can work towards regional energy partnerships with African countries, fostering cross-border energy trade.
  - This can **involve the development of energy corridors and transmission infrastructure to efficiently transfer RE across borders**, ensuring a stable and sustainable energy supply.

## 2. 6th Rashtriya Poshan Maah

### Why in News?

The **Ministry of Women and Child Development (MoWCD)** is celebrating the **6<sup>th</sup> Rashtriya Poshan Maah** throughout **September 2023.**

### What are the Key Highlights About Poshan Maah 2023?

- **Focus & Objective:**
  - The focus is on **comprehensively addressing malnutrition using a life-cycle approach**, which is a **key component of Mission Poshan 2.0.**
  - The main objective is to raise awareness about critical life stages, including pregnancy, infancy, childhood, and adolescence, in order to **promote better nutrition across India.**
- **Theme:**
  - **'Suposhit Bharat, Sakshar Bharat, Sashakt Bharat'** (Nutrition-rich India, Educated India, Empowered India), emphasising the importance of nutrition, education, and empowerment in **building a healthier and stronger country.**
- **This Year's Initiatives:**
  - During this month-long event, the MoWCD will lead nationwide efforts to raise awareness about nutrition, **focusing on key themes such as Exclusive Breastfeeding and Complementary Feeding.**
  - **These efforts include activities like:**
    - **Swasth Balak Spardha** (Healthy Child Competition) to encourage healthy competition for better nutrition and overall well-being.
    - **Poshan Bhi Padhai Bhi** (Nutrition and Education), improving nutrition through **Mission LiFE (Lifestyle for Environment)**, sensitising tribal communities about nutrition, and **addressing anaemia through a Test, Treat, Talk approach.**
- **2022's Progress:**
  - During 2022 Poshan Maah, **more than 170 million sensitization activities took place**, focusing on key themes related to nutrition.
  - **Over 600 million activities have been conducted** as part of the **Jan Andolan** movement during **Poshan Pakhwadas** (March) and **Poshan Maahs** (September) each year.

### What is Poshan Abhiyaan?

- **About:**
  - It is a **flagship initiative by the Government of India (GoI)** for addressing malnutrition comprehensively.
- **Aim:**
  - This integration aims to create an integrated nutrition support program that **enhances the content, delivery, outreach, and overall outcomes of nutritional services.**
  - The primary focus is on **promoting practices that improve health, wellness, and immunity against diseases and malnutrition.**
- **Target Audience:**
  - It targets **pregnant women, lactating mothers, adolescent girls, and children** under 6 years of age.
- **Poshan Tracker App:**
  - In 2021, the MoWCD **launched an application called Poshan Tracker.**
  - As of February 2022, the **number of beneficiaries registered on Poshan Tracker:**

Total Beneficiaries	Lactating Mothers	Pregnant Women	Children 0-6M	Children 6M-3Y	Children 3-6Y
10,10,50,463	52,41,440	80,40,215	45,95,834	4,06,33,040	4,25,39,934

## What is Saksham Anganwadi and Poshan 2.0?

### ➤ About:

- In FY 2021-22, the government restructured some schemes into **Saksham Anganwadi and POSHAN 2.0**. It includes the following sub-schemes:
  - **Integrated Child Development Services (ICDS)**
  - POSHAN Abhiyaan
  - **Scheme for Adolescent Girls (SAG)**
  - **National Creche Scheme**

### ➤ Fund:

- Poshan 2.0 is an **ongoing Centrally-Sponsored Scheme** being implemented through the State Govts/ UT administrations **based on a cost-sharing ratio between the Central and the State Government**.

### ➤ Vision:

- Address the challenging situation of malnutrition among **children up to the age of 6 years, adolescent girls (14-18 years) and pregnant and lactating women**.
- Achievement of the **Sustainable Development Goals (SDG 2 on Zero Hunger and SDG 4 on Quality Education) lies at the forefront of this programme design**.
- **Focus on the fundamental importance of nutrition and early childhood care** and education for the well-being, growth and development of children into healthy and productive adults.

### ➤ Components:

- Nutrition Support for POSHAN through SNP for children of the age group of 06 months to 6 years, pregnant women and lactating mothers (PWLM).
  - For Adolescent Girls in the age group of 14 to 18 years in Aspirational Districts and North Eastern Region (NER).
- **Early Childhood Care and Education (3-6 years)** and early stimulation for (0-3 years).
- Anganwadi Infrastructure including modern, upgraded Saksham Anganwadi, and Poshan Abhiyaan.

## What are the Other Related Initiatives?

- **Anemia Mukh Bharat Abhiyan**
- **The National Food Security Act (NFSA), 2013**
- **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
- **PM Poshan SHakti Nirman (PM-POSHAN)**.

## 3. State of Food Security and Nutrition in the World (SOFI) 2023

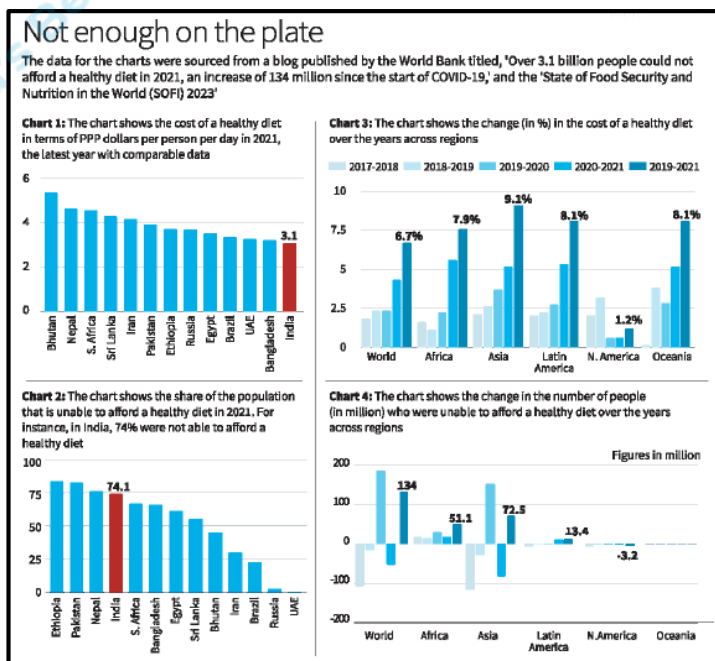
### Why in News?

'State of Food Security and Nutrition in the World' (SOFI) 2023, a report by the **United Nations Food and Agriculture Organization (FAO)**, has shed light on a concerning issue in India.

- It highlights the growing disparity between the cost of a nutritious meal and the economic realities faced by a significant portion of the Indian population.

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

- **Global Hunger:** While global hunger numbers have remained stagnant between 2021 and 2022, the number of people facing hunger worldwide **has increased by over 122 million since 2019 due to the pandemic, repeated weather shocks, and conflicts, including the war in Ukraine**.
- **Nutritional Access:** Approximately 2.4 billion individuals, largely women, and residents of rural areas, did not have consistent access to nutritious, safe, and sufficient food in 2022.
- **Child Malnutrition:** Child malnutrition is still alarmingly high. In 2021, 22.3% (148.1 million) children were stunted, 6.8% (45 million) were wasted, and 5.6% (37 million) were overweight.



- **Urbanization's Impact on Diet:** As urbanization accelerates, there is a **noticeable increase in the consumption of processed and convenience foods**, leading to a spike in overweight and obesity rates across urban, peri-urban, and rural areas.
- **Rural Dependence on Global Markets:** Previously self-sustaining rural regions, especially in Africa and Asia, are now found to be increasingly dependent on national and global food markets.
- **Regional Trends:** The SOFI report also tracks changes in the cost of a healthy diet and affordability across regions.
  - Between 2019 and 2021, Asia witnessed the highest increase in the cost of maintaining a healthy diet, **rising by almost 9%**.
  - The growth in the number of people unable to afford a nutritious diet was highest in Asia and Africa, with South Asia and Eastern and Western Africa facing the greatest challenges.
- **South Asia's Struggle:** South Asia, with 1.4 billion people, recorded the highest number (72%) of individuals unable to afford a healthy diet.
- **Africa's Challenge:** In Africa, Eastern and Western Africa were particularly affected, with 85% of the population unable to afford a healthy diet. These two continents (Asia and Africa) accounted for 92% of the global increase in this statistic, underscoring the severity of the issue on the African continent.
- **Future Outlook:** By 2050, it's projected that 70% of the global population will reside in cities. This significant demographic shift necessitates a reorientation of food systems to cater to these new urban populations and eradicate hunger, food insecurity, and malnutrition.

#### What are the Key Highlights related to the Report on India?

- **Cost of a Healthy Diet in India:** According to the SOFI report, India has the lowest cost of a healthy diet among **BRICS nations** and its neighbours. In 2021, a healthy diet in India costs approximately **3.066 Purchasing Power Parity (PPP)** per person per day, making it seemingly affordable on the surface.
  - A diet is considered unaffordable if it costs more than 52% of a nation's average income. India has a low average income compared to other countries.
  - This makes it difficult for a substantial portion of the population to afford the recommended diet.
- **The Mumbai Case Study:** The report also highlights a specific case study in Mumbai, where the **cost of meals has risen by a staggering 65% in just five years**. In contrast, salaries and wages have only increased by 28%-37% during the same period.
  - Mumbai, chosen for its consistent data availability, serves as a stark example of the challenges faced by urban populations in India.
- **Global Comparisons:** Comparing India to other countries in the report, it becomes evident that while the cost of a healthy diet in India remains relatively low, it remains unattainable for a substantial portion of the population due to income disparities.
  - **In 2021, 74% of Indians could not afford a healthy diet, ranking India fourth among the nations considered.**

#### Why is Ensuring Food Security Important for India?

- **Meeting the Nutritional Needs of the Population:**
  - **India is home to a significant population that is malnourished or undernourished**, which affects their physical and mental growth.
    - According to the **Global Food Security Index 2022**, **India has a prevalence of undernutrition of 16.3%**. Further, **30.9% of children in India are stunted, 33.4% are underweight**, and 3.8% are obese.
- **Supporting Economic Growth:**
  - **Agriculture is a crucial sector that contributes significantly** to India's economy. By ensuring food security, the government can support farmers and increase their income, which can help drive economic growth.
    - With over **70% of the population engaged in agriculture-related activities**, it is the backbone of India's economy.
- **Reducing Poverty:**
  - **Food security can play a vital role in reducing poverty levels**. By providing access to affordable and nutritious food, people can better manage their expenses, reduce their healthcare costs, and improve their overall quality of life.
    - According to the **Global Multidimensional Poverty Index MPI 2023**, India still has more than 230 million people who are poor.
- **Ensuring National Security:**

- **Food security is also essential for India's national security.** A stable food supply can prevent social unrest and political instability, which can threaten national security.
- **Combating Climate Change:**
  - Climate change poses a significant threat to India's food security. By adopting sustainable farming practices and investing in climate-resilient crops, **India can better adapt to the changing climate and ensure food security** for its population.
    - The International Food Security Assessment for 2022-2032 indicates that **India's large population has a significant impact on food insecurity trends.** It is projected that around 333.5 million people will be affected in India during 2022-23.

#### What are the Related Initiatives Taken?

- National Food Security Act (NFSA) 2013
- National Food Security Mission
- National Agriculture Market (e-NAM) Platform
- National Food Processing Mission

#### Other Policies:

- Minimum Support Prices (MSP) for Agricultural products
- Pradhan Mantri Fasal Bima Yojana (PMFBY)
- National Horticulture Mission

#### What are the Challenges of Food Security in India?

- **Inadequate Infrastructure:**
  - Inadequate infrastructure makes it difficult for farmers to transport their produce to the market and store them properly. This leads to high wastage and lower profits for farmers.
- **Poor Agricultural Practices:**
  - Poor agricultural practices like **over-cultivation, excessive use of pesticides, and improper irrigation techniques have led to decreased soil fertility** and reduced crop yields.
- **Extreme Weather Conditions:**
  - The **extreme weather conditions due to climate change have also caused crop failures and food shortages.** Floods, droughts, and heatwaves are becoming more frequent and intense, which affects food production and increases food prices.
- **Inefficient Supply Chain Networks:**
  - **Inefficient supply chain networks, including inadequate transportation, storage, and distribution facilities, also contribute** to food insecurity in India. This leads to higher prices for consumers and lower profits for farmers.
- **Fragmented Landholdings:**
  - Fragmented landholdings, **where farmers own small and scattered plots of land, make it difficult to adopt modern farming practices** and technologies. This, in turn, affects food production and availability.

#### Way Forward

- **Investing in Agriculture Production Systems and Research:**
  - The government **should invest in modern agricultural research** to increase agricultural production.
- **Improving Storage Facilities and Transportation Networks:**
  - The government **should develop adequate storage facilities to prevent post-harvest losses** and robust **transportation networks for distributing food products across the country** to ensure supply-demand balance.
- **Promoting Public-Private Partnerships:**
  - The government **should promote partnerships between the public and private sectors** to improve agricultural productivity and food availability.
- **Encouraging Sustainable Agriculture Practices:**
  - The government **should promote sustainable agriculture practices that preserve soil health and reduce the use of harmful pesticides** and fertilizers.

## 4. Simultaneous Elections

### Why in News?

The Central government set up a panel headed by former **President Ram Nath Kovind** to explore the feasibility of the **'one nation, one election' (ONOE) plan**.

- Despite Logistical and other challenges, the idea of holding **Simultaneous Elections/ ONOE** to the Lok Sabha (Parliament) and state Assemblies in India has been a topic of discussion.

### What are Simultaneous Elections?

#### ➤ About:

- The idea is about **structuring the Indian election cycle** in a manner so that elections to the **Lok Sabha and the State Assemblies are synchronised** together so that the election to both can be held within a given span of time.
- While this concept had been practiced until 1967, it gradually fell out of sync due to the frequent dissolution of Assemblies and Lok Sabhas before their terms ended.
- Currently, only a few states (**Andhra Pradesh, Arunachal Pradesh, Odisha, and Sikkim**) hold elections along with the Lok Sabha polls.

#### ➤ Advantages:

- According to the draft report on simultaneous elections by the Law Commission of India (LCI) in August 2018, **ONOE will lead to the saving of public money, reducing the strain on the administrative setup** and security forces, timely implementation of government policies, and administrative focus on development activities rather than electioneering.

### What are the Challenges in Holding Simultaneous Elections?

#### ➤ Feasibility:

- Article 83(2) and Article 172 of the Indian Constitution stipulate that the tenure of Lok Sabha and State Assemblies respectively, will **last for five years unless dissolved earlier** and there can be circumstances, as in Article 356, wherein assemblies can be dissolved earlier. Therefore, the ONOE plan raises serious issues of feasibility if the Central or State government collapses mid-tenure.
- Amending the Constitution for such a significant change would not only necessitate extensive consideration of various situations and provisions but **would also set a concerning precedent for more constitutional amendments**.
  - The **Election Commission of India (ECI)** submitted a feasibility report to the government in 2015, suggesting amendments to the **Constitution and the Representation of the People Act, 1951**.

#### ➤ Not Aligned with Federalism:

- The idea of ONOE does not square with the concept of 'federalism' as it is established on the notion that the **entire nation is "one" contradicting the content of Article 1** which envisages India as a "Union of States".

#### ➤ Present Form is More Beneficial:

- The present form of recurrent elections can be seen as beneficial in a democracy as it allows voters to have their voices heard more frequently.
- As the underlying issues of national and State polls are different, the present framework **prevents the blending of issues, ensuring greater accountability**.

#### ➤ EVM and VVPAT Requirement:

- Approximately 30 lakh **Electronic Voting Machines (EVMs)** and **Voter-Verified Paper Audit Trail (VVPAT)** machines would be **needed for simultaneous elections**.

#### ➤ Cost Considerations:

- The ECI has highlighted that simultaneous elections would require a substantial budget.
- A total of approximately Rs 9,284.15 crore would be needed for procuring EVMs and VVPATs, with additional costs for replacing machines every 15 years.
- Simultaneous elections would increase warehousing costs due to the storage of machines between elections.

#### ➤ Impact on Voter Behaviour:

- Some political parties argue that it may influence voter behaviour in a manner that voters would end up voting on national issues even for State elections and this may lead to larger national parties winning both State and Lok Sabha elections thereby marginalizing regional parties.
- **Election Issues:**
  - State and national elections are often fought on different sets of issues — and in simultaneous elections, voters may end up privileging one set over the other in ways they might not have done otherwise.
- **Diminished Accountability:**
  - Having to face the electorate more than once every 5 years enhances the accountability of politicians and keeps them on their toes. Finally, a lot of jobs are also created during the elections, which boosts the economy at the grassroots levels.

#### How can Simultaneous Elections be Restored in India?

- According to the **Recommendations of the Law Commission Working Paper (2018)**,
  - Simultaneous elections may be **restored through an amendment of the Constitution, Representation of the People Act, 1951** and Rules of Procedure of Lok Sabha and State Legislative Assemblies. A definition may be added to section 2 of the 1951 Act.
  - The no-confidence motion may be replaced with a constructive vote of no-confidence through amendments in Lok Sabha and State Assemblies rules of business.
  - **Anti-Defection Law** may be suitably diluted to prevent stalemate in case of a hung Assembly or Parliament
  - The statutory limit of six months for issuance of notification of general elections may be extended for securing flexibility as a one-time measure.

#### What are the Countries where Simultaneous Elections are conducted?

- In **South Africa**, elections to **national as well as provincial legislatures are held simultaneously for five years** and municipal elections are held two years later.
- In **Sweden** elections to the national legislature (Riksdag) and provincial legislature/county council (Landsting) and local bodies/municipal Assemblies (Kommunfullmaktige) are **held on a fixed date** i.e. second Sunday in September for four years. But most other large democracies do not have any such system of simultaneous elections.
- In **Britain**, the Fixed-term Parliaments Act, 2011 was passed to provide a sense of stability and predictability to the British Parliament and its tenure. It provided that the first elections would be held on the 7th of May, 2015 and on the first Thursday of May every fifth year thereafter.
- **Article 67 of Basic Law for the Federal Republic of Germany** proposes a constructive vote of non-confidence (electing a successor while dismissing the incumbent).

#### Way Forward

- Elections are held at different places every few months and it hampers the developmental work. Therefore, it's a must to have a deep study and deliberation on the idea in order to prevent the impact of the **model code of conduct** on development works every few months.
- There needs to be a consensus on whether the country needs one nation, one poll or not. All political parties should at least cooperate in debating this issue, once the debate starts, the public opinion can be taken into consideration. India being a mature democracy, can then follow the outcome of the debate.

## 5. Pradhan Mantri Ujjwala Yojana

#### Why in News?

The **Pradhan Mantri Ujjwala Yojana (PMUY)**, aimed at providing **LPG gas cylinders** to rural and deprived households, has faced challenges in ensuring consistent usage among beneficiaries.

- Out of 9.58 crore Pradhan Mantri Ujjwala Yojana households, **1.18 crore bought no refills in 2022-23, and another 1.51 crore bought one refill.**
- Low refill rates raise concerns about the scheme's ability to ensure sustained usage among beneficiaries.

#### What are the Concerns Regarding the PMUY?

- **Limited Refill Consumption:**
  - Data reveals that the average PMUY beneficiary refilled **fewer than four LPG cylinders during 2022-23.**



- One in four PMUY beneficiaries did not use any LPG cylinders or took just one refill in 2022-2023.
  - In contrast, non-PMUY households consumed significantly more cylinder refills, whose per household consumption of LPG cylinders **was 6.67 refills** highlighting a disparity in consumption patterns.
- **Rising LPG Cylinder Prices:**
  - Steep price increases in LPG cylinders, even with subsidies, have made them **less affordable for rural and deprived households**.
    - High prices may discourage beneficiaries from using LPG for cooking, defeating the scheme's purpose.
- **Subsidy Expenditure:**
  - Between January 2018 and March 2023, rates for subsidised LPG cylinders increased by 82%, reaching ₹903 in March 2023 from ₹495.64 in January 2018.
    - Subsidy amounts depend on the difference between the Retail Selling Price (RSP) and the subsidised cost set by the government.
  - Non-subsidised LPG cylinders saw a 49% price increase, reaching ₹1,103 in March 2023.
- **International Factors Impacting LPG Prices:**
  - Various factors, including import charges, bottling charges, freight, delivery charges, GST, and distributor commission, contribute to the final LPG price.

### What is Pradhan Mantri Ujjwala Yojana (PMUY)?

- **About:**
  - The **Ministry of Petroleum and Natural Gas (MOPNG)**, introduced the '**Pradhan Mantri Ujjwala Yojana (PMUY)**' as a flagship scheme with the objective of making **clean cooking fuel such as LPG available to the rural and deprived households** which were otherwise using traditional cooking fuels such as firewood, coal, cow-dung cakes etc.
    - Usage of traditional cooking fuels had detrimental impacts on the health of rural women as well as on the environment.
- **Objectives:**
  - Empowering women and protecting their health.
  - Reducing the number of deaths in India due to unclean cooking fuel.
  - Preventing young children from a significant number of acute respiratory illnesses caused due to indoor air pollution by burning fossil fuel.
- **Features:**
  - The scheme provides a financial support of Rs 1600 for each LPG connection to the BPL households.
  - Along with a deposit-free LPG connection, Ujjwala 2.0 will provide the first refill and a hotplate free of cost to the beneficiaries.
- **Benefits of PMUY:**
  - The eligible beneficiaries receive a **free LPG connection**.
  - The beneficiaries also **receive a subsidy on the first six refills of 14.2 kg cylinders or eight refills of 5 kg cylinders**.
  - The beneficiaries **can opt for an EMI facility to pay for the cost of the stove and the first refill**.
  - The beneficiaries can also join the **PAHAL scheme to receive the subsidy amount directly in their bank accounts**.
- **Phases of PMUY:**
  - **Phase I :**
    - The scheme was launched on May 1, 2016.
    - The target under the scheme was to release 8 Crore LPG Connections to the deprived households by March 2020.
    - The release of 8 Crore LPG connections under the scheme has also helped in increasing the LPG coverage from 62% on 1st May 2016 to 99.8% as on 1st April 2021.
  - **Ujjwala 2.0:**
    - In the Union budget for FY 21-22, provision for the release of additional 1 crore LPG connections to the eligible households by March 31, 2022.
      - The target of releasing additional 1 crore LPG connections under **Ujjwala 2.0** was achieved in January 2022. Subsequently, it was decided to release additional 60 lakh LPG connections

under Ujjwala 2.0. OMCs have achieved the target of releasing 1.6 Crore LPG Connections under Ujjwala 2.0 on 31st December 2022.

#### Formula To Calculate the LPG Price:

- The price of LPG is calculated based on the **formula known as import parity price (IPP)**.
- Basically, the calculations as per the **IPP are dependent on the international market**.
- The IPP calculation is done through Saudi Aramco's LPG price, which is the world's largest producer.
  - The price **involves costs like free on board (FOB) price**, ocean freight, customs duties, port charges and insurance costs, among other things.
- The price fluctuation of **crude oil also affects the international price of LPG**.
  - The inland prices include freight costs, oil company's margins, bottling costs, marketing expenses, dealer commissions and the **Goods and services Tax(GST)**.
- The final price thus calculated gives the retail selling price for non-subsidised cooking gas cylinders for consumers across different states.
- **India uses the IPP as most of its consumption is through imports**. The formula of LPG cylinders is revised on a monthly basis.
  - LPG is an important requirement with three major PSU suppliers like Indian oil, Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL), charging mostly similar prices with different cost structures and operational efficiencies.

#### Way Forward

- The government should intensify efforts to educate beneficiaries about the health and environmental benefits of using LPG.
- Periodic evaluation of subsidy amounts and mechanisms to keep LPG affordable for beneficiaries is needed.
- Conduct regular assessments of the PMUY scheme's effectiveness and adapt policies accordingly to address emerging challenges.

## 6. Global Push to Criminalize Ecocide

#### Why in News?

The controversial **Maya** train project in Mexico aims to link tourists with historic **Maya sites**, sparking concerns over its potential environmental and cultural impact.

- The debate surrounding this project brings into focus the **concept of "ecocide"** and the growing **global movement to criminalize environmental destruction**.

#### What is an Ecocide?

- **About:**
  - **Ecocide**, derived from Greek and Latin, translates to **'killing one's home' or 'environment'**.
  - Although there is currently **no universally recognized legal description of ecocide**, a group of lawyers convened by an NGO named **Stop Ecocide Foundation in June 2021** crafted a definition that **would place environmental devastation within the same realm as crimes against humanity**.
  - According to their proposal, ecocide is defined as "unlawful or reckless actions carried out with the awareness that there exists a substantial probability of causing severe and either extensive or enduring harm to the environment."
- **Historical Context:**
  - In 1970, biologist **Arthur Galston** was the first to draw a **connection between environmental devastation and genocide** (which is recognised as an **international crime**).
    - He made this link when addressing the U.S. military's utilization of **Agent Orange, an herbicide, during the Vietnam War**.
  - **Swedish Prime Minister Olof Palme** also used this concept in a speech at the **United Nations**.
    - He cautioned that **uncontrolled industrialization** could lead to irreversible harm to the environment.
  - In 2010, a British lawyer played a pivotal role by urging the **United Nations' International Criminal Court (ICC)** to officially acknowledge ecocide as an **international crime**.
    - Currently, the **Rome Statute of the ICC** addresses four major offenses: **genocide, crimes against humanity, war crimes, and the crime of aggression as a international crime**.

- The provision related to **war crimes is the sole statute** that can hold a **wrongdoer accountable for environmental destruction**, but only if it is intentionally caused during times of armed conflict.

### What is the Present Status of Ecocide Acknowledgment in India?

- India has **neither signed nor ratified the Rome Statute of the International Criminal Court** and has **not expressed any official position on the proposal to criminalize ecocide at the international level.**
  - However, India has ratified several **international environmental treaties** and conventions, such as the **Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and Convention on International Trade in Endangered Species of Wild Fauna and Flora.**
  - India has also enacted various **national laws and policies** to protect and conserve its environment, such as the **Environment Protection Act 1986, the Wildlife Protection Act 1972, and Compensatory Afforestation Fund Act, 2016 (CAMPA).**
- While some Indian court judgments have casually used the **term 'ecocide,'** the concept **has not been formally integrated into Indian law.**
  - In the case of **Chandra CFS and Terminal Operators Pvt. Ltd. v. The Commissioner of Customs and Ors 2015,** the **Madras High Court** noted the continuous and unbridled activities of ecocide related to the removal of valuable timbers.
  - The **T.N. Godavarman Thirumulpad vs Union Of India & Ors 1995** case in the **Supreme Court** drew attention to the need to shift from an **anthropocentric approach to an ecocentric approach for achieving environmental justice.**

### What are the Arguments in Favour of Criminalising Ecocide?

- **Protecting the Environment as an End in Itself:** Ecosystems are **intricate networks of species and interactions that have evolved over millions of years.**
  - Protecting the environment as an end in itself recognizes the **importance of preserving these ecosystems in their natural state** to maintain their integrity and evolutionary potential.
  - Ecocide laws fill a gap in environmental protection, recognizing the environment as an **entity worthy of safeguarding.**
- **Intergenerational Justice:** Advocates argue that ecocide can be seen as **accumulating a "biodiversity debt"** that future generations must repay.
  - By recognizing ecocide as a crime, **society acknowledges its obligation to leave a sustainable and habitable planet for posterity.**
- **Climate Change Mitigation:** Addressing ecocide through criminal law serves as a vital complement to **international climate agreements by directly targeting the root causes of climate change.**
  - **Large-scale deforestation and uncontrolled fossil fuel extraction,** all considered as ecocidal activities.
  - Criminalizing ecocide adds a strong legal dimension to environmental protection, holding individuals and entities accountable for actions that harm the climate.

**Note:** In March 2023, the **Intergovernmental Panel on Climate Change (IPCC)** emphasized that **global climate action remains inadequate.** Activities such as widespread fossil fuel combustion, **pollution** through plastics and fertilizers in terrestrial and aquatic environments, and the loss of species collectively indicate a new geological epoch known as the **Anthropocene.**

- **Expanding Global Recognition and Legal Action:** Ecocide is already considered a crime in **11 countries,** with **27 more contemplating similar legislation.**
  - Ecocide laws can also serve as powerful calls for justice, **especially for low- and middle-income countries** bearing the brunt of extreme weather events.
    - Small nations like **Vanuatu and Barbuda** are urging the ICC to **classify environmental crimes as international law violations.**

### What are the Arguments Against Criminalising Ecocide?

- **Development vs. Environmental Protection:** One key argument against criminalizing ecocide revolves around the **tension between development and environmental protection.**
  - Critics argue that defining ecocide may inadvertently pit development goals against environmental conservation.

- For instance, the **Great Nicobar Project in India** faced criticism for potentially harming indigenous communities and biodiversity, **while the government defended it as an initiative for "holistic development."**
- **Interference with Sovereignty:** Some argue that criminalizing ecocide may infringe upon a nation's sovereignty.
  - Countries may view such laws as **encroachments on their ability to manage their own environmental policies and resources**, leading to resistance or non-compliance.
- **Chilling Effect on Scientific Research:** Scientists and researchers could be **deterred from conducting studies that involve environmental manipulation or experimentation** due to the fear of potential legal repercussions.
  - This could impede scientific progress and understanding of complex **ecological systems**.
- **Efficacy and Enforcement Challenges:** Critics question the **effectiveness of criminalizing ecocide** in deterring environmental harm.
  - They argue that **existing environmental regulations, when enforced rigorously, can be more effective** than creating a new criminal framework that may be challenging to enforce.

### Way Forward

- **Environmental Protection as a Fundamental Imperative:** Whether ecocide is criminalized or not, the **paramount objective should always be the protection and preservation of the environment**.
- **Ecological Restoration Bonds:** There is a need to introduce the **concept of ecological restoration bonds**.
- Companies involved in projects with significant environmental impact could be required to **purchase these bonds as part of their licensing or permitting process**.
- The funds from these bonds would be earmarked for ecological restoration in case of environmental harm, ensuring that the cost of restoration is borne by the responsible parties.
- **Mandatory Environmental Education:** There is a need to implement mandatory **environmental education in schools and universities** to raise awareness about environmental rights and responsibilities.
- This education would empower citizens to advocate for the environment and engage in discussions surrounding ecocide.

## 7. ADB Regional Conference and PM Gati Shakti

### Why in News?

Recently, the **2023 Regional Cooperation and Integration (RCI) Conference** was organised by the **Asian Development Bank (ADB)** at Tbilisi, Georgia where India showcased its **PM Gati Shakti National Master Plan**.

### What is the Asian Development Bank?

#### About:

- ADB is a **regional development bank established in 1966** with the objective of promoting social and economic development in Asia and the Pacific.
  - It has **68 members**; 49 are from within Asia and the Pacific and 19 outside. **India is a founding member**.
- ADB assists its members and partners by providing loans, technical assistance, grants, and equity investments to promote social and economic development.
- As of 31st December 2022, **ADB's five largest shareholders** are **Japan** and **the US** (each with 15.6% of total shares), **China** (6.4%), **India** (6.3%), and **Australia** (5.8%).
- It is headquartered in **Manila, Philippines**.

#### About ADB Conference:

- **Theme for 2023 Conference:**
  - Strengthening Regional Cooperation and Integration through Economic Corridor Development (ECD).
- **Objective:**
  - Explore ways to integrate spatial transformation/area-centric approach with the ECD and strengthen regional cooperation through a broader approach.
  - Knowledge sharing on application of the ECD framework and operational guidelines for investable projects.
- **Participation:**
  - The conference saw participation from more than 30 member countries.
- **India's Role:**

- At the RCI Conference, **India offered its indigenously developed GIS-based technology** through knowledge sharing to ADB and **South Asia Subregional Economic Cooperation (SASEC)** countries for enhancing socio-economic planning and regional cooperation.

#### What is PM GatiShakti National Master Plan for Multi-modal Connectivity?

- It is a **Made in India** initiative, a transformative 'whole-of-government' approach for **integrated planning of multimodal infrastructure connectivity** to economic nodes and social infrastructure, thereby improving logistics efficiency.
  - PM Gati Shakti principles bring **socio-economic area-based development** as part of **regional connectivity**.
  - PM GatiShakti was launched in October 2021.
- The Gati Shakti scheme subsumed Rs. 110 lakh crore **National Infrastructure Pipeline** launched in 2019.
- PM Gatishakti National Master Plan is a **Geographic Information System (GIS)** data-based digital platform with over 1400 data layers and 50+ tools.
  - It provides visual representation of trunk and utility infrastructure, land use, existing structures, soil quality, habitation, tourism sites, forest sensitive areas etc.
- The initiative is also being implemented to enhance connectivity with regional partners as well. Some of the suitable examples are:
  - **The Indo-Nepal Haldia Access Controlled Corridor** project (eastern Indian states and Nepal)
  - **Regional Waterways Grid (RWG)** project for multimodal connectivity to growth centres and border points.

#### Government of India's Other Initiatives for Logistics Sector:

- National Logistics Policy (NLP)
- Multimodal Transportation of Goods Act, 1993.
- Multi Modal Logistics Parks
- LEADS Report
- Dedicated Freight Corridor
- Sagarmala Projects
- Bharatmala Project
- Digital Initiatives:
  - **Unified Logistics Interface Platform (ULIP)**
  - **Logistics Data Bank (LDB)**

### 8. 18th G20 Summit in New Delhi

#### Why in News?

The **18<sup>th</sup> G20 Summit** was held in **New Delhi, India** on September 9<sup>th</sup> and 10<sup>th</sup>, 2023. The summit was the **first time India hosted the G20 Leaders' Summit**.

- The theme of the summit was "**Vasudhaiva Kutumbakam**", which means "**The world is one family**".
- G20 Leaders' New Delhi Declaration achieved unanimous consensus, addressing diverse global issues, from Russia-Ukraine tensions to sustainable development, food security, and launching the Global Biofuel Alliance.

#### What are the Major Outcomes of G20 Summit 2023?

- **Admittance of the African Union (G20 now G21):**
  - The G20 leaders agreed to **admit the African Union as a permanent member** of the G20, which is a major step towards increasing the representation of developing countries in the forum.
  - **The Impact of AU's Inclusion in G20:**
    - a. The AU's membership in the G20 offers an opportunity to reshape global trade, finance, and investment and would provide a greater voice to the Global South within the G20.
    - b. It allows African interests and perspectives to be heard and recognized within the G20.
- **Global Biofuels Alliance (GBA):**
  - **About:**
    - a. GBA is an **India-led initiative** that aims to develop an alliance of governments, international organizations, and industry to **promote the adoption of biofuels**.

- b. The initiative seeks to position biofuels as a key component of the **energy transition and contribute to job creation and economic growth.**
- c. It will help accelerate India's existing biofuels programs such as **PM-JIVANYojna, SATAT, and GOBARdhan scheme.**
  - As per IEA, there will be 3.5-5x biofuels growth potential by 2050 due to **Net Zero targets**, creating a huge opportunity for India.
- o **Formation and Founding Members:**
  - a. The alliance was launched with nine initiating members: **India, the US, Brazil, Argentina, Bangladesh, Italy, Mauritius, South Africa, and the United Arab Emirates.**
    - GBA Members constitute major producers and consumers of biofuels. **USA (52%), Brazil (30%) and India (3%),** contribute about 85% share in production and about 81% in consumption of ethanol.
  - b. 19 countries and 12 international organizations have already agreed to join.
  - c. **G20 Invited Countries supporting GBA:**
    - Bangladesh, Singapore, Mauritius, UAE
  - d. **Non-G20 supporting GBA:**
    - Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, Uganda, and Finland
  - e. **International Organizations:**
    - World Bank, Asian Development Bank, World Economic Forum, World LPG Organization, UN-Energy for All, UNIDO, Biofutures Platform, International Civil Aviation Organization, International Energy Agency, International Energy Forum, International Renewable Energy Agency, World Biogas Association.
- **India – Middle East – Europe Economic Corridor (IMEC):**
  - o A Memorandum of Understanding (MoU) was signed between the Governments of India, the US, Saudi Arabia, the European Union, the UAE, France, Germany and Italy to establish the IMEC.
  - o IMEC is part of a broader initiative called the **Partnership for Global Infrastructure Investment (PGII).**
    - a. The PGII was initially introduced during the **G7 summit in the UK in June 2021.**
      - PGII aims to **finance infrastructure projects in developing countries** through a combination of public and private investments.
  - o IMEC is a significant infrastructure **project connecting India, the Middle East, and Europe.**
  - o The project aims to **establish a network of transport corridors, including railways and sea lanes.**
  - o IMEC is seen as a response to **China's Belt and Road Initiative (BRI)**, providing an alternative infrastructure network.
- **G20 Global Partnership for Financial Inclusion Document:**
  - o The G20 Global Partnership for **Financial Inclusion document** prepared by the **World Bank** has lauded the transformative **impact of India's Digital Public Infrastructure(DPI)** over the past decade under the Central Government.
  - o The document emphasizes the following initiatives that played a greater role in shaping the DPI landscape:
    - a. **Rapid Financial Inclusion:**
      - India's DPI approach achieved **47 years' worth of financial inclusion progress in just 6 years.**
      - **Jan Dhan-Aadhar-Mobile (JAM)** Trinity boosted the financial inclusion rate from **25% in 2008 to over 80% within 6 years.**
      - Regulatory frameworks, national policies, and **Aadhaar-based verification complemented DPIs.**
    - b. **Pradhan Mantri Jan Dhan Yojna (PMJDY) Success:**
      - PMJDY accounts **tripled from 147.2 million (March 2015) to 462 million (June 2022).**
      - **Women own 56% of these accounts, exceeding 260 million.**
      - PMJDY drove savings among low-income women, attracting over 12 million customers by April 2023.
    - c. **Government to Person (G2P) Payments:**
      - India's digital G2P architecture facilitated **USD 361 billion transfers to beneficiaries from 53 ministries via 312 schemes.**
      - Achieved total savings of **USD 33 billion by March 2022, equivalent to 1.14% of GDP.**

**d. Unified Payments Interface (UPI) Dominance:**

- May 2023 witnessed over **9.41 billion UPI transactions, valued at Rs 14.89 trillion.**
- UPI transactions in FY 2022–23 neared **50% of India's nominal GDP.**

**e. Private Sector Efficiency:**

- DPI streamlined private organizations' operations, reducing complexity, costs, and time.
- Some NBFCs achieved 8% higher SME lending conversion rates, 65% savings in depreciation costs, and 66% cost reduction in fraud detection.
- **Banks' customer onboarding costs in India dropped from USD 23 to USD 0.1 with DPI use.**

**f. Lower Compliance Costs for KYC:**

- Reduced compliance costs from USD 0.12 to USD 0.06, making lower-income clients more attractive.

**g. Cross-Border Payments:**

- UPI-PayNow linkage enables faster and cheaper cross-border payments with Singapore.

**h. Account Aggregator Framework:**

- Enabled 1.13 billion accounts for data sharing with 13.46 million consents raised.

**i. Data Empowerment and Protection Architecture (DEPA):**

- Provides individuals control over their data, fostering innovation and competition.

**What are the Other Key Highlights of G20 Summit 2023?**

➤ **Tripling the Global Renewable Energy Capacity By 2030:**

- G20 countries promised to work towards **tripling the global renewable energy capacity by 2030.**
  - If met, this single step could avoid **carbon dioxide emissions by seven billion tonnes between now and 2030,** according to an assessment by the **International Energy Agency (IEA).**
  - Aligns with **global efforts to limit global warming to 1.5 degrees Celsius.**
- Represents a significant shift away from **fossil fuels towards cleaner energy alternatives.**
- The declaration acknowledges that current climate action is insufficient and highlights the need for trillions of dollars in financial resources to achieve the **objectives of the Paris Agreement.**
- Expanding renewable energy capacity on this scale could avoid about 7 billion tonnes of CO2 emissions between 2023 and 2030.

➤ **Commitment to Global Food Security and Nutrition:**

- The G20 leaders recognize the importance of **addressing rising commodity prices, including food and energy prices,** which contribute to **cost-of-living pressures.**
- They aim to **eliminate hunger and malnutrition,** acknowledging that global challenges like **poverty, climate change, pandemics, and conflicts disproportionately** affect vulnerable populations, particularly women and children.
- The G20 declaration highlights the human suffering and impacts of the war in **Ukraine on global food and energy security,** supply chains, inflation, and economic stability.
- G20 leaders called for the full, timely **implementation of the Black Sea grain initiative.**
- The agriculture working group during the G20 Presidency reached a historic consensus on two aspects: **Deccan G20 High-level principles on Food Security and Nutrition and the Millet initiative called MAHARISHI.**
  - The seven principles under the high-level principles on food security and nutrition include **humanitarian assistance, increasing food production and food security net programs, climate-smart approaches, inclusivity of agriculture food systems, one health approach, digitalization of the agriculture sector, and scaling responsible public and private investment in agriculture.**
  - MAHARISHI (Millets And OtHer Ancient Grains International ReSearch Initiative) aims at advancing research collaborations and generating awareness about millets and other ancient grains during International Years of Millets 2023 and after.
- The G20 committed to promoting transparent, fair, and rule-based trade in agriculture, food, and fertilizer. They pledged not to impose export restrictions, reduce market distortions, and align with WTO rules.
- The G20 leaders emphasize the importance of strengthening the **Agricultural Market Information System (AMIS) and the Group on Earth Observations Global Agricultural Monitoring (GEOGLAM)** for greater transparency.

- This includes expanding AMIS to include vegetable oils and enhancing collaboration with early warning systems to avoid food price volatility.

▪ **Note:**

- AMIS is an inter-agency platform to **enhance food market transparency and policy response for food security.**
  - It was launched in **2011 by the G20 Ministers of Agriculture following the global food price hikes in 2007/08 and 2010.**
- GEOGLAM enhances **market transparency and food security by providing timely agricultural information worldwide.**
- The GEOGLAM policy mandate initially came from the Group of Twenty (G20) Agriculture Ministers during the French G20 Presidency in 2011.

▪ **Small Arms and Terrorist Safe Havens:**

- The 2023 New Delhi Declaration builds upon previous G20 declarations, especially the **2015 Turkiye declaration**, which strongly denounced terrorism. Unlike the **2022 G20 Bali Leaders Declaration**, which primarily focused on the financing of terrorism and the strengthening of the **Financial Action Task Force (FATF)**, the New Delhi Declaration **encompasses a wider range of concerns.**
- The G20 leaders, in the **New Delhi Declaration**, clearly **condemn terrorism in all its forms and manifestations.**
- The declaration supports the FATF's efforts to enhance global asset recovery networks and recover criminal proceeds.

▪ **Healthcare Resilience and Research:**

- The G20 New Delhi Leaders' Declaration places significant emphasis on healthcare and prioritizes the need to build a **resilient healthcare system.**
- It commits to strengthening the global health architecture to create more **resilient, equitable, sustainable, and inclusive health systems.** The **World Health Organization (WHO)** is at the core of this effort.
- The goal is to enhance primary healthcare, the health workforce, and essential health services to levels better than **pre-pandemic within the next two to three years.**
- In addition to addressing ongoing epidemics like tuberculosis and AIDS, the G20 recognizes the **importance of research on long Covid.**
- India's G20 presidency also pushed for the integration of evidence-based **traditional medicine practices with modern medicine.**
- There is an emphasis on adopting a **one-health approach**, which tracks **diseases in animals, plants, and humans within the same mechanism**, with a particular focus on tackling antimicrobial resistance.

▪ **Finance Track Agreements:**

- India's G-20 presidency has laid the foundation for a **coordinated and comprehensive policy and regulatory framework for cryptocurrencies.**
- The emergence of global consensus on **crypto asset regulation was emphasized.**
- G-20 leaders have recognized the pressing need for **more robust and effective Multilateral Development Banks (MDBs)** to address the high developmental demands globally.
- The **India Stack model of digital public infrastructure** for financial inclusion is acknowledged as a promising approach.
- The G-20 leaders' New Delhi Declaration underscores the **monitoring of risks associated with the rapid developments in the crypto-asset ecosystem.**

▪ **India-Mercosur Preferential Trade Agreement (PTA):**

- India and Brazil agreed to work together for the expansion of **India-Mercosur PTA** to promote economic ties.
  - Mercosur is a trading bloc in **Latin America, comprising Brazil, Argentina, Uruguay and Paraguay.**
- The India-Mercosur PTA came into effect on **June 1, 2009, aimed to eliminate customs duties on a limited number of goods agreed between India and the Mercosur bloc.**

▪ **Climate Financing Commitment:**



- The declaration emphasizes a **substantial increase in climate financing, calling for a "quantum jump" from billions of dollars to trillions of dollars.**
- It underscores the need for significant financial resources, including USD. 5.8-5.9 trillion in the pre-2030 period for developing countries and USD 4 trillion per year for **clean energy technologies by 2030 to achieve net-zero emissions by 2050.**
- **India's Cultural Showcase:**
  - **Bharat Mandapam** (inspired from **Anubhav Mandapam**).
  - Bronze statue of **Lord Nataraja (Chola style)**.
  - **Konark Chakra of Odisha's Sun Temple** and Image of **Nalanda University** (used as iconic backdrops).
  - **Thanjavur Paintings** and **Dhokra art**.
  - Brass statue of **Lord Buddha** sitting under Bodhi tree.
  - Diverse **musical heritage (Hindustani, Folk, Carnatic, Devotional)**.
- **Transition of G20 Presidency:**
  - Prime Minister of India handed over the customary gavel of the **G20 chair to Brazilian President Luiz Inacio Lula da Silva**, who will officially take over the presidency on December 1, 2023.

#### What are the Latest India-US Collaboration at G20 Summit 2023?

- India and the United States are strengthening their technology partnership, focusing on **resilient semiconductor supply chains, and telecom infrastructure.**
- India supports the US '**Rip and Replace**' pilot project, aligning with the removal of Chinese telecom equipment.
- India and the US reaffirmed their commitment to **deepen and diversify the India-US Major Defence Partnership** through expanded cooperation in new and emerging domains such as **space and artificial intelligence (AI)**.
- **GE F-414 Jet Engine Agreement:**
  - The US recently completed the notification process for a commercial agreement between **General Electric Aerospace and Hindustan Aeronautics Ltd. (HAL)** to manufacture **GE F-414 jet engines** in India.
  - This agreement marks a significant step in defence cooperation between the U.S. and India, highlighting India's commitment to enhancing its domestic defence manufacturing capabilities.

## 9. Food Processing Sector in India

### Why in News?

At the **17<sup>th</sup> edition of ANUTEC - International FoodTec India**, held in Mumbai, prominent figures from the industry and government unveiled a promising future for the **food processing sector in India**. It is on a **remarkable trajectory of growth**, poised to become **one of the key drivers of the nation's economy**.

### What is the Status of the Food Processing Sector in India?

- **About Food Processing:**
  - The **food processing sector is a crucial component of the overall food supply chain.**
    - It involves the **transformation of raw agricultural and livestock products into processed and value-added food products** that are suitable for consumption.
  - This sector encompasses a wide range of **activities, technologies, and processes** aimed at making food products **safer, more convenient, and longer-lasting**, while also enhancing their flavor and nutritional value.
- **Food Processing Sector in India:**
  - The Food processing sector significantly contributes to India's economy, accounting for **13% of exports and 6% of industrial investment.**
    - The sector has attracted substantial **foreign direct investments (FDI)**, with **USD 4.18 billion** pouring in from **2014 to 2020**, indicating **confidence in its future prospects.**
  - It is **expected to generate a whopping 9 million jobs by 2024**. Also, by 2030, India is set to become the **world's fifth-largest consumer of food and food technology**, as household consumption quadruples.
    - This underlines the **sector's immense growth potential.**
- **Government Initiatives Related to Food Processing Sector:**

- Inclusion of **food & agro-based processing units** and cold chain as an agricultural activity under **Priority Sector Lending (PSL)** norms in April 2015.
- Shifting from **product-by-product approval to an ingredient and additive-based approval process** by the **Food Safety and Standards Authority of India (FSSAI)** through notifications in 2016 as a **measure toward ease of doing business**.
- Allowing **100% Foreign Direct Investment (FDI)** approval under automatic route for the food processing sector.
- Setting up a Special Food Processing Fund of Rs. 2000 crore with **National Bank for Agriculture and Rural Development (NABARD)**.
- **Other Government Initiatives:**
  - **Pradhan Mantri Kisan Sampada Yojana**
  - **Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme**
  - **Production Linked Incentive (PLI) Scheme for food processing industry**
- **Challenges Related to Food Processing Sector:**
  - **Lack of Cold Chain and Storage:** **Inadequate cold storage and transportation** facilities result in significant post-harvest losses of perishable goods. This not only **affects food quality but also impacts the income of farmers**.
  - **Fragmented Supply Chain:** The supply chain in India is **highly fragmented, leading to inefficiencies and increased costs**. Poor road and rail infrastructure can result in delays and losses during transportation.
  - **Complex Regulations:** The food processing industry is subject to a **complex web of regulations, licenses, and permits**, which can be challenging for businesses to navigate.
    - **Inconsistent enforcement of regulations** can lead to unfair competition and quality issues.
  - **Food Safety Concerns:** Ensuring food safety and quality standards across the supply chain remains a significant challenge. **Contaminated or adulterated food products can harm public health** and damage the reputation of the sector.
  - **Research and Development:** Limited investment in research and development inhibits innovation and the development of new, value-added products.
    - India's **research and development (R&D) expenditure-GDP ratio** of 0.7% is very low when compared to major economies and is **much below the world average of 1.8%**.

#### Way Forward

- **Smart Food Processing Hubs:** Establishing **smart food processing hubs** equipped with advanced technologies like **Internet of Things (IoT), artificial intelligence (AI), and blockchain**. These hubs can **monitor the entire food supply chain, from farm to table, ensuring quality, traceability, and efficiency**.
- **Nutraceutical Innovation:** Developing a range of **functional and nutraceutical foods tailored to specific health needs**. These could include **foods fortified with essential nutrients, probiotics, and bioactive compounds** to address prevalent health concerns in the Indian population.
- **Zero-Waste Processing:** Implementing **zero-waste processing techniques where every part of the raw material is utilized**. For instance, **converting food waste into biofuels** or using food byproducts to create new products like bio-plastics or animal feed.
- **Community-Based Processing Centers:** Establishing community-based food processing centers in rural areas. These centers can serve as **hubs for local farmers to process their produce**, reducing post-harvest losses and creating rural employment opportunities.

## 10. Changing Dynamics of Global South

### Why in News?

Earlier in 2023, the **Prime Minister of India organised a virtual summit on the "Voice of the Global South"**, involving approximately 125 countries. The objective of this summit was to **solicit the opinions and input of countries from the Global South in order to determine the priorities for the region**.

## What is the History of the Global South?

- **Historical Context:** The term "Global South" is often used to highlight the historical legacy of colonialism and the economic disparities between the formerly colonised nations and the developed Western nations.
  - It underscores the challenges faced by these countries in achieving economic growth and development.
- **Formation of the G-77:** In 1964, the Group of 77 (G-77) countries came into existence when they signed a Joint Declaration during the first session of the UN Conference on Trade and Development (UNCTAD) in Geneva.
  - The G-77 became the largest intergovernmental organisation of developing countries at the time.
- **Purpose of G-77:** It was created to promote the economic interests of developing countries and improve their ability to negotiate on international economic issues within the UN system.
  - It now includes 134 countries across Asia, Africa, South America, the Caribbean and Oceania. China is not technically part of the group, hence, the grouping is often referred to as "G-77+China" in multilateral forums.
- **UNOSSC:** The UN Office for South-South Cooperation (UNOSSC) was established in 1974. Its role is to coordinate cooperation between countries in the Global South and with developed countries or multilateral agencies, in collaboration with the G-77.



## What led to the Revival of Global South?

- In the early decades of the 21st century, there was a noticeable decline in interest and attention towards the Global South.
  - This trend was particularly evident in countries like India and Indonesia, which were perceived as moving away from their 'Third World' origins and seeking a more prominent role on the global stage as they reformed and expanded their economies.
- However, in recent times, the Global South has regained its importance and relevance, signifying a growing recognition of the region's significance in shaping the emerging global order. Several key factors are cited as contributing to this resurgence:
  - **Impact of Covid-19 Pandemic:** The Covid-19 pandemic had a severe impact on many countries in the Global South, both in terms of public health and economic challenges. This crisis refocused attention on the vulnerabilities and needs of these nations.
  - **Economic Downturn:** The economic downturn resulting from the pandemic disproportionately affected countries in the Global South, highlighting the need for international cooperation and support.
  - **Repercussions of Russia-Ukraine Conflict:** The Russia-Ukraine conflict had a global economic impact. This had ripple effects on the developing world, further underscoring the interconnectedness of global affairs and the importance of the Global South in international diplomacy.

### Why is the Term Global South Criticised?

- **Inaccuracy of the Term:** The term "Global South" is criticised for its inaccuracy in representing the countries it was intended to describe.
  - It is pointed out that **some countries typically considered part of the Global South, like India, are actually located in the Northern Hemisphere**, while others, such as Australia, are in the **Southern Hemisphere but often categorised as part of the Global North**.
- **Need for a More Precise Classification:** In the 1980s, the recognition of this inaccuracy led to the development of the "**Brandt Line**" - a curve that more accurately divided the world into the economic North and South based on factors like economic development and wealth distribution, rather than simply by geographical location.



### What are the Demands of the Global South?

- **Proportionate Voice at Global Level:** The Global South, comprising countries with significant populations, recognises that they have the most at stake in shaping the future of the world.
  - With three-fourths of the global population residing in these countries, they argue that **they should have a proportionate and meaningful voice in global decision-making processes**.
- **Equitable Representation:** Global South demands an equitable representation in global governance. The **current model of global governance may not adequately reflect the demographic and economic realities of the world**, and there is a call for change to ensure that the voices of the Global South are heard and considered.

### What Signifies the Influence of the Global South in Global Politics?

- **Prioritising Global South:** India's Presidency of the G20 was driven by the priorities of the Global South. This suggests a **growing awareness of the need to address issues and concerns** that are particularly relevant to developing countries in the Global South.
- **Global South Leadership:** The fact that developing countries like Indonesia, India, Brazil, and South Africa are consecutively hosting the **G20 summit indicates a desire for greater leadership and influence from the Global South** in global decision-making processes.
  - These countries represent a significant portion of the world's population and economies.
- **Inclusivity:** The "Voice of the Global South" summit demonstrates a commitment to inclusivity and consultation with a wide range of nations from the Global South.
  - This indicates a **shift away from traditional power structures dominated by Western countries**.
- **Multilateralism:** The emphasis on the Global South's priorities and the involvement of these countries in hosting and shaping the G20 agenda **reflects a commitment to multilateralism, where decisions are made collectively** by a diverse group of nations.
- **Rising Influence of Developing World:** This is evident through the participation of various organisations such as G20, BRICS, **Shanghai Cooperation Organisation (SCO)**, Quad, the **Indo-Pacific Economic Forum**, and other global players who are **actively seeking involvement from countries in the Global South in decision-making processes**.

### What is the Evidence of the Global South's Increasing Influence?

- **Establishment of the 'Loss and Damage Fund':** At the **COP27 Climate Change conference** in Egypt, the establishment of the 'Loss and Damage fund' was celebrated as a significant win for the Global South.
  - It **signifies a recognition of the disproportionate burden borne by countries in the Global South**.
- **Global South in COP28:** In the upcoming **UNFCCC COP 28** in the UAE, it is anticipated that **countries from the Global South will take a leading role in driving discussions on mitigating climate change**.
- **G7 Inclusivity:** Japan, as the host of the **G7 summit**, made a notable effort to involve developing countries such as India, Brazil, Vietnam, Indonesia, Comoros, and the Cook Islands in the discussions.
  - This was seen as an **outreach to the Global South, indicating a desire for a more inclusive dialogue among the world's wealthiest nations**.

- **BRICS Summit Expansion:** The **BRICS summit**, held in South Africa, expanded its membership from five to 11 members. This **expansion was attributed to a concerted effort to engage with and incorporate more countries from the Global South** into the BRICS grouping, underscoring its growing importance.
- **G-77 Summit in Cuba:** The G-77 summit held recently in Havana, Cuba **showcased the significance of the Global South on the global stage**, as it **brought together a substantial number of developing countries to discuss key issues**.
- **African Union's Inclusion into G20:** The inclusion of the **55-nation African Union** into the G20 is seen as a significant outcome of the conference indicating **a growing recognition of the African nations** in global affairs and **the need to include their perspectives and contributions in shaping the emerging global order**.

## Conclusion

As the world navigates through complex challenges and opportunities, the Global South's influence continues to evolve, and its demands for equitable representation and a meaningful voice in global governance remain at the forefront. The global community is witnessing a rebalancing of power dynamics, with the Global South playing an increasingly vital role in shaping the future of international politics and cooperation.

## 11. India-Middle East-Europe Corridor

### Why in News?

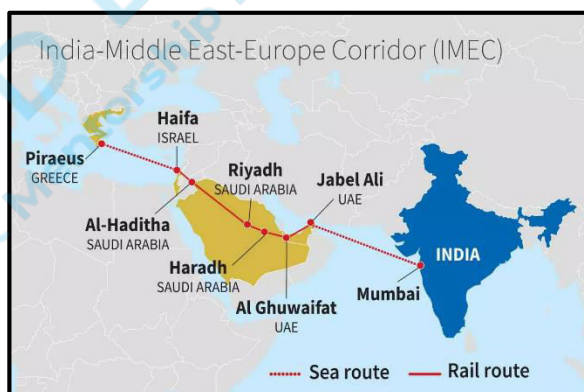
Recently, the India-Middle East-Europe Economic Corridor (IMEC) Project was signed at the **G20 Summit in New Delhi**, which holds significant geopolitical and economic implications for India.

- The project forms part of the **Partnership for Global Infrastructure and Investment (PGII)**. PGII is a values-driven, high-impact, and transparent infrastructure partnership to meet the **enormous infrastructure needs of low and middle-income countries**.

### What is the India-Middle East-Europe Economic Corridor (IMEC) Project?

#### ➤ About:

- The proposed IMEC will consist of **Railroad, Ship-to-Rail networks** and Road transport routes extending across two corridors, that is,
  - **The East Corridor** – connecting **India to the Arabian Gulf**,
  - **The Northern Corridor** – connecting the **Gulf to Europe**.
- The IMEC corridor will also include **an electricity cable, a hydrogen pipeline and a high-speed data cable**.



#### ▪ Signatories:

- India, the US, Saudi Arabia, UAE, the **European Union**, Italy, France, and Germany.

#### ▪ Ports to be Connected:

- **India:** Mundra (Gujarat), Kandla (Gujarat), and Jawaharlal Nehru Port Trust (Navi Mumbai).
- **Middle East:** Fujairah, Jebel Ali, and Abu Dhabi in the UAE as well as Dammam and Ras Al Khair ports in Saudi Arabia.
  - **Railway line will connect** Fujairah port (UAE) to Haifa port (Israel) via: Saudi Arabia (Ghuwaifat and Haradh) and Jordan.
- **Israel:** Haifa port.
- **Europe:** Piraeus port in Greece, Messina in South Italy, and Marseille in France.

#### ▪ Objective:

- It aims to create a **comprehensive transportation network**, comprising rail, road, and sea routes, connecting India, the Middle East, and Europe.
- It aims to **enhance transportation efficiency**, reduce costs, increase economic unity, generate employment, and **lower Greenhouse Gas (GHG) emissions**.
- It is expected to transform the integration of Asia, Europe, and the Middle East by facilitating trade and connectivity.

▪ **Significance:**

- Upon completion, it would provide a “reliable and cost-effective cross-border ship-to-rail transit network to supplement existing maritime and road transports”.

**What are the Geopolitical and Economic Implications of IMEC?**

➤ **Geopolitical:**

- **Thwart to China's BRI:**
  - IMEC is seen as a **potential counter to China's Belt and Road Initiative (BRI)** in the **Eurasian** region.
  - It can serve to **counterbalance China's growing economic and political influence**, especially in regions with historically strong ties to the U.S.
- **Integration Across Civilizations:**
  - The project can strengthen **ties and integration across continents and civilizations**.
  - It offers a **strategic opportunity for the U.S.** to maintain influence and reassure traditional partners amidst China's growing influence in the region..
- **Breaking Pakistan's Overland Connectivity Veto:**
  - IMEC **bypasses Pakistan**, breaking its veto over **India's overland connectivity** to the West, a hurdle persistently faced in the past.
- **Strategic Engagement with Arabian Peninsula:**
  - The corridor deepens **India's strategic engagement with the Arabian peninsula** by establishing enduring connectivity and **elevating political and strategic links** with nations in the region.
- **Promoting Intra-Regional Connectivity and Peace:**
  - IMEC has the potential to promote intra-regional connectivity and could help reduce **political tensions in the Arabian peninsula**.
  - It holds the prospect of becoming an "infrastructure for peace" in the region.
- **India's Strategic Role in Africa:**
  - The corridor's model **could be extended to Africa**, aligning with the US and EU's plan to develop a **Trans-African corridor**.
  - This signifies India's intent to strengthen its engagement with Africa and contribute to its infrastructure development.

➤ **Economic:**

- **Enhanced Trade Opportunities**
  - IMEC presents a **transformative opportunity for India to boost economic growth** by enhancing its trade connectivity with key regions.
  - The route could **significantly reduce transit times**, making trade with Europe 40% faster compared to the Suez Canal maritime route.
- **Stimulated Industrial Growth:**
  - The corridor will create an **efficient transport network for the seamless movement of goods**.
  - This will encourage industrial growth, particularly in regions connected to the corridor, as companies will find it easier to transport raw materials and finished products.
- **Job Creation:**
  - As economic activities **expand due to improved connectivity**, there will be a surge in job opportunities across sectors.
  - The growth in trade, infrastructure, and allied industries will necessitate skilled and unskilled labor, promoting employment.
- **Energy Security and Resource Access:**
  - The corridor can **facilitate secure energy and resource supplies**, especially from the Middle East.
  - Reliable access to these resources will stabilize India's energy sector and support its growing economy.
- **Facilitating Special Economic Zones (SEZs):**
  - The corridor can be strategically leveraged to develop **SEZs (Special Economic Zones)** along its route. SEZs can attract foreign investment, promote manufacturing, and drive economic growth in these designated zones.

**What are the Challenges to the India-Middle East-Europe Corridor (IMEC)?**

➤ **Logistics and Connectivity Issues:**

- Developing a **multimodal transport corridor** involving rail, road, and sea routes spanning multiple countries requires **complex logistical planning and coordination** among stakeholders.
- Selecting the **most viable and cost-effective routes**, assessing the feasibility of rail and road connections, and ensuring optimal connectivity are key challenges.
- **Missing Rail Links and Construction:**
  - Significant portions of rail links are missing, **especially in the Middle East**, requiring substantial construction efforts and **investment to complete the rail network**.
- **Coordination among Multiple Countries:**
  - Coordinating efforts, policies, and regulations among multiple countries with diverse interests, legal systems, and **administrative procedures is a major challenge** in realizing this cross-continental corridor.
- **Potential Opposition and Competition:**
  - Opposition or competition from existing transport routes, especially Egypt's Suez Canal, which may see reduced traffic and revenue, **could pose challenges and diplomatic hurdles**.
- **Cost and Financing:**
  - Estimating and securing adequate financing for the construction, operation, and maintenance of the corridor is a significant challenge.
  - The costs for development are estimated to be substantial, and funding sources need to be identified.
    - Initial estimates suggest that developing each of these IMEC routes could cost anywhere **between USD 3 billion to USD 8 billion**.

### Way Forward

- Achieving technical compatibility and standardisation in terms of gauges, train technologies, container dimensions, and other critical aspects across different countries is vital for seamless operations.
- **Balancing the geopolitical interests of participating nations** and addressing potential political sensitivities, especially regarding Israel, is crucial for smooth implementation.
- **Addressing environmental impact concerns**, ensuring sustainability, and adhering to green and eco-friendly practices in construction and operation are critical aspects of the project.
- Implementing robust security measures to safeguard cargo and infrastructure from potential threats, theft, piracy, and other security risks is essential.

## 12. India's Digital Landscape with PM-WANI

### Why in News?

The **Prime Minister Wi-Fi Access Network Interface (PM WANI)** scheme is set to **revolutionize public Wi-Fi in India**. PM-WANI can be a **potential game-changer for India's digital public infrastructure**.

- The scheme enables **public Wi-Fi data service through small retail data offices**, which can potentially **bring broadband internet to remote locations at a minimum investment**.

### What is PM-WANI?

- **About:**
  - The PM-WANI, launched by the **Department of Telecom (DoT) in December 2020**, is one key scheme launched to bolster the penetration of **public WiFi hotspots to establish a robust digital communication infrastructure throughout the nation, especially in rural areas**.
  - It is a framework that enables any entity, such as a shopkeeper, a tea stall owner, or a Kirana store owner, to set up a public Wi-Fi hotspot and provide internet service to customers.
  - This framework takes forward the goal of the **National Digital Communications Policy, 2018 (NDCP)** of creating a robust digital communications infrastructure.
- **Importance:**
  - To facilitate **ease of doing business and encourage local shops and small establishments** to become Wi-Fi providers, it has been approved that the last-mile Public Wi-Fi providers require no license, no registration and will not need to pay any fees to DoT.
- **PM-WANI Ecosystem:**
  - PM-WANI consists of four elements:

- **Public Data Office (PDO):** PDO is the entity that **establishes, maintains, and operates the Wi-Fi hotspot** and provides last-mile connectivity to the users by procuring internet bandwidth from telecom service providers or internet service providers.
- **Public Data Office Aggregator (PDOA):** PDOA is the entity that provides aggregation services, such as **authorization and accounting**, to PDOs, and facilitates them in providing services to the end users.
- **App Provider:** It is the entity that develops an application to register users and discover and display PM-WANI compliant Wi-Fi hotspots in proximity for accessing the internet service and also authenticate the potential users.
- **Central Registry:** It is the entity that **maintains the details of App Providers, PDOAs, and PDOs**. It is currently maintained by the **Centre for Development of Telematics (C-DoT)**.
- **Status:**
  - As of November 2022, the PM-WANI central registry reported the existence of **188 PDO aggregators, 109 app providers, and 11,50,394 public WiFi hotspots**.
- **Benefits of PM-WANI:**
  - It can **expand Internet access** in rural and remote areas.
  - It can provide an **affordable and convenient option for internet access**, as compared to **mobile technologies like 5G**, which require high investment and subscription costs.
  - It can stimulate **innovation and competition in the internet market**.
- **Challenges of PM-WANI:**
  - **Ensuring Wi-Fi quality and user experience poses challenges** related to **bandwidth availability, managing user numbers, device compatibility**, and maintaining data security and privacy.
  - Security threats like **data leakage, hacking, and malware** can jeopardize user and provider privacy.
  - **Mobile telecom companies might face challenges**, including market share and revenue loss, due to PM-WANI's affordability and accessibility.
  - Expanding and **maintaining PM-WANI in rural and remote areas** with low internet demand and **high operational costs** could be challenging.

#### How can PM-WANI be a Game-Changer for India's Digital Public Infrastructure?

- PM-WANI is a key part of **India's Digital Public Infrastructure (DPI)**. It can democratize internet access and bridge the digital divide by enabling anyone to become a Wi-Fi provider and anyone to become a Wi-Fi user, without any license, registration, or fee.
- Leverage the existing physical and social infrastructure, such as the shops, the CSCs, the SDCs, the post offices, the schools, the panchayats, etc., to create a distributed and decentralized network of Wi-Fi hotspots, and also utilize the existing digital infrastructure, such as **Aadhaar, UPI, e-KYC, e-Sign**, etc., to enable **seamless and secure authentication and payment of the Wi-Fi services**.
- Empower the citizens and the communities by providing them access to information, knowledge, opportunities, and services that can **improve their quality of life, and also enable them to participate and contribute to the digital economy and society**.

#### What is Digital Public Infrastructure (DPI)?

- **About:**
  - DPI refers to blocks or platforms such as **digital identification, payment infrastructure and data exchange solutions** that help countries deliver essential services to their people, empowering citizens and improving lives by enabling digital inclusion.
  - DPIs mediate the **flow of people, money and information**. First, the flow of people through a **digital ID System**. Second, the flow of money through a **real-time fast payment system**. Third, the flow of **personal information through a consent-based data-sharing system** to actualize the benefits of DPIs and to empower the citizens with a real ability to control data.
    - These three sets become the foundation for developing an effective DPI ecosystem.
  - Operates under open, transparent, and participatory governance.
  - India, through India Stack, became the first country to develop all three foundational DPIs, **Digital identity (Aadhar), Real-time fast payment (UPI)** and **Account Aggregator** built on the **Data Empowerment Protection Architecture (DEPA)**.
- **Constitutes Digital Public Infrastructure (DPI):**



- DPI comprises three integral layers:
  - **Market:** Innovative and competitive players designing inclusive products.
  - **Governance:** Legal and institutional frameworks, public programs, and policies.
  - **Technology Standards:** Identity, payments, and data sharing standards for interoperability.
- **Benefits of DPI's Approach:**
  - Reduced **development costs and modular end-user solutions.**
  - An ecosystem of **diverse applications and lower entry barriers.**
  - A democratic, non-monopolistic system with built-in scalability.
- **Successful DPI Initiatives in India:**
  - **Aadhaar, Unified Payment Interface (UPI), and CoWin. Others like Unified Health Interface (UHI), Ayushman Bharat Digital Mission (ABDM), and Open Network for Digital Commerce are in progress.**

### 13. Women's Reservation Bill 2023

#### Why In News?

Recently, the **Lok Sabha (LS)** and **Rajya Sabha (RS)**, both passed Women's Reservation Bill 2023 (**128th Constitutional Amendment Bill**) or Nari Shakti Vandan Adhiniyam.

- The bill reserves one-third of the seats in Lok Sabha, State legislative assemblies and the Delhi assembly. This will also apply to the seats reserved for **SCs (Scheduled Castes)** and **STs (Scheduled Tribes)** in Lok Sabha and State Legislatures.

#### What is the Background and Need for this Bill?

- **Background:**
  - The discussion upon the reservation of women reservation bill is prevalent since the tenure of Former Prime Minister Shri Atal Bihari Vajpayee in 1996.
  - As the then Government lacked a majority, the Bill could not have been approved.
  - Earlier Attempts at Reserving Seats for Women:
    - **1996:** First Women Reservation Bill was introduced in the Parliament.
    - **1998 – 2003:** Government tabled the Bill on 4 occasions but failed.
    - **2009:** Government tables the bill amid protests.
    - **2010:** The Union Cabinet passes the Bill and RS passes it.
    - **2014:** The Bill was expected to be tabled in LS.
- **Need:**
  - There are 82 women Member of Parliaments in LS (15.2%) and 31 women in RS(13%).
    - While the number has increased significantly since the 1st Lok Sabha (5%) but is **still far lower than in many countries.**
  - According to recent UN Women data, Rwanda (61%), Cuba (53%), Nicaragua (52%) are the top three countries in women representation. **Bangladesh (21%) and Pakistan (20%) as well are ahead of India in case of female representation.**

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

- **Reservation for Women in Lower House:**
  - The Bill provided for inserting **Article 330A** to the constitution, which borrows from the provisions of Article 330, which provides for reservation of seats to SCs/STs in the Lok Sabha.
    - The Bill provided that reserved seats for women may be allotted by rotation to different constituencies in states or Union Territories.
  - In the seats reserved for SCs/STs, the Bill sought to provide **one-third of the seats to be reserved for women on rotational basis.**
- **Reservation for Women in State Legislative Assemblies:**
  - The Bill introduces Article 332A, which mandates the reservation of seats for women in every state Legislative Assembly. Additionally, one-third of the seats reserved for SCs and STs must be allocated for women, and **one-third of the total seats filled through direct elections to the Legislative Assemblies** shall also be reserved for women.

- **Reservation for Women in NCT of Delhi ( New clause in 239AA):**
  - **Article 239AA** to the constitution grants special status to the Union Territory of Delhi as national capital with regards to its administrative and legislative functioning.
  - **Article 239AA(2)(b)** was amended by the bill accordingly to add that the laws framed by parliament shall apply to the National Capital territory of Delhi.
- **Commencement of Reservation (New article - 334A):**
  - The reservation will be effective after the census conducted after the commencement of this Bill has been published. Based on the census, **delimitation will be undertaken to reserve seats for women.**
  - **The reservation will be provided for a period of 15 years.** However, it shall continue till such date as determined by a law made by Parliament.
- **Rotation of Seats:**
  - Seats reserved for women will be rotated after each delimitation, as determined by a law made by Parliament.

#### What are the Arguments Against the Bill?

- The Bill merely reads that it shall come into effect “**after an exercise of delimitation** is undertaken for this purpose after the relevant figures for the first Census taken after commencement of the Bill is undertaken. It doesn’t specify the cycle of elections from which women will get their due share.
- The current Bill **does not provide** women’s reservation in the Rajya Sabha and State Legislative Councils. The Rajya Sabha currently has lower representation of women than the Lok Sabha. Representation is an ideal that must be reflected in both the Lower and Upper Houses.

**Note:** - The Bill also borrowed from the provisions of Article 334 of the constitution which mandated the parliament to review the provisions of reservation after 70 years of the laws coming into existence. But in the case of the Women's reservation Bill, the Bill provided for the sunset clause of 15 years for the reservation provisions for the women to get reviewed by the parliament.

## 14. AI Chatbot for PM-KISAN Scheme

### Why in News?

Recently, the Ministry of Agriculture and Farmers’ Welfare launched an **AI chatbot** — the first of its kind to be integrated with a major flagship scheme of the central government — for the **Pradhan Mantri Kisan Samman Nidhi Yojana (PM-KISAN scheme)**.

- The Chatbot will provide the farmers with “**prompt, clear and accurate**” responses to their queries.

### What are the Key Features of the AI Chatbot for PM KISAN?

- It has been developed and improved with the support of EkStep foundation and **Bhashini**.
- In the first phase of the development, the AI Chatbot will **assist farmers in seeking information related to their application status**, payment details, ineligibility status etc.
- The **AI Chatbot**, accessible through the **PM-KISAN mobile application**, is integrated with Bhashini which offers multilingual support, catering to the linguistic and regional diversity of the PM-KISAN beneficiaries.
- This integration of advanced technology will not only enhance transparency but also empower farmers to make informed decisions.

### What is an AI Chatbot?

- **About:**
  - Chatbots, also called chatterbots, is a form of **Artificial Intelligence (AI)** used in messaging apps.
  - This tool helps add convenience for customers—**they are automated programs that interact with customers like a human would** and cost little to nothing to engage with.
    - Key examples are **chatbots used by businesses in Facebook Messenger, or as virtual assistants**, such as Amazon's Alexa and **ChatGPT** etc.
    - Chatbots tend to operate in one of two ways—either via **machine learning or with set guidelines**.
    - However, due to advancements in AI technology, chatbots using set guidelines are becoming a historical footnote.
- **Machine Learning Chatbot:**

- A chatbot that functions through machine learning have an **artificial neural network** inspired by the neural nodes of the human brain.
- The bot is programmed to self-learn as it is introduced to new dialogues and words.
- In effect, as a **chatbot receives new voice or textual dialogues**, the number of inquiries that it can reply to and the accuracy of each response it gives increases.
  - Meta (as Facebook's parent company is now known) has a machine learning chatbot that creates a platform for companies to interact with their consumers through the Messenger application.

### What is PM KISAN Scheme?

#### ➤ **About:**

- It was launched on 24<sup>th</sup> February, 2019 to supplement financial needs of land holding farmers.

#### ➤ **Financial Benefits:**

- Financial benefit of **Rs 6000/- per year, in three equal installments** every four months, is transferred into the bank accounts of farmers' families across the country through **Direct Benefit Transfer (DBT) mode**.

#### ➤ **Scope of the Scheme:**

- The scheme was initially meant for **Small and Marginal Farmers (SMFs) having landholding upto 2 hectares** but scope of the scheme was **extended to cover all landholding farmers**.

#### ➤ **Funding and Implementation:**

- It is a **Central Sector Scheme** with 100% funding from the Government of India.
- It is being implemented by the **Ministry of Agriculture and Farmers Welfare**.

#### ➤ **Objectives:**

- To supplement the financial needs of the Small and Marginal Farmers in procuring various inputs to **ensure proper crop health and appropriate yields, commensurate with the anticipated farm income** at the end of each crop cycle.
- To protect them from falling in the clutches of moneylenders for meeting such expenses and ensure their continuance in the farming activities.

#### ➤ **PM-KISAN Mobile App:**

- It was developed and designed by the National Informatics Centre in collaboration with the Ministry of Electronics and Information Technology.

#### ➤ **Physical Verification Module:**

- A mandatory physical verification of **5% beneficiary every year is being done as per the provisions** laid down in the scheme.

#### ➤ **Excluded Category:** The following categories of beneficiaries of higher economic status shall not be eligible for benefit under the scheme:

- **All Institutional Land holders.**
- Farmer families which belong to one or more of the following categories:
  - **Former and present holders of constitutional posts.**
  - **Former and present Ministers/ State Ministers** and former/present Members of Lok Sabha/ Rajya Sabha/ State Legislative Assemblies/ State Legislative Councils, former and present Mayors of Municipal Corporations, former and present Chairpersons of District Panchayats.
  - **All serving or retired officers and employees of Central/ State Government Ministries /Offices/Departments** and its field units Central or State PSEs and Attached offices /Autonomous Institutions under Government as well as regular employees of the Local Bodies (Excluding Multi Tasking Staff /Class IV/Group D employees)
  - All superannuated/retired pensioners **whose monthly pension is Rs.10,000/-or more** (Excluding Multi Tasking Staff / Class IV/Group D employees) of above category
  - All Persons **who paid Income Tax in last assessment year.**
  - Professionals like **Doctors, Engineers, Lawyers, Chartered Accountants, and Architects** registered with Professional bodies and carrying out profession by undertaking practices.

## 15. First Green Hydrogen Fuel Cell Bus

### Why in News?

Recently, the Union Minister of Petroleum & Natural Gas flagged off the **country's first Green Hydrogen Fuel Cell Bus in New Delhi**, marking a revolutionary step in the transition to clean energy.

### What is a Green Hydrogen Fuel Cell?

#### ➤ About:

- Green Hydrogen Fuel Cells are a clean, reliable, quiet, and efficient source of high-quality electric power.
- They use Green Hydrogen as a fuel to drive an **electrochemical process** that produces electricity, with water and heat as the only by-products.

#### ➤ Green Hydrogen:

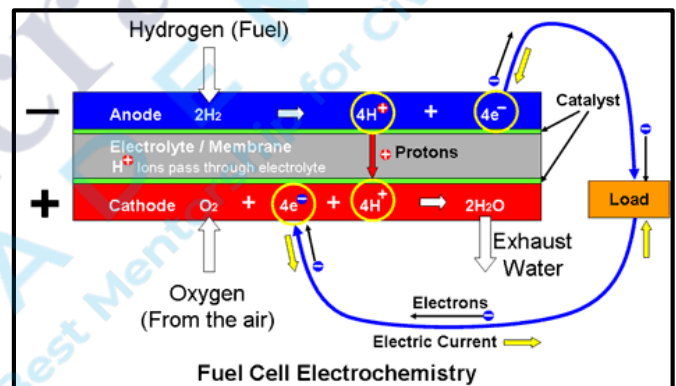
- Green hydrogen is a type of hydrogen produced through a process called **electrolysis**, using **renewable energy** sources like **wind or solar power**.
  - It involves splitting water ( $H_2O$ ) into its constituent elements, hydrogen ( $H_2$ ) and oxygen ( $O_2$ ), with **zero greenhouse gas emissions**.

#### ➤ Fuel Cell:

- A fuel cell is an electrochemical device that **converts chemical energy (in this case, hydrogen) into electrical energy**.
  - It consists of two electrodes (**anode and cathode**) separated by an electrolyte.

#### ➤ The Process of Generating Electricity:

- Green hydrogen is supplied to the anode side of the fuel cell.
- At the anode, hydrogen molecules release electrons and become positively charged hydrogen ions (protons).
  - Electrons flow from the anode to the cathode through an external circuit, generating an electric current.
- Oxygen from the air is supplied to the cathode.
- At the cathode, oxygen molecules combine with electrons and protons to **produce water vapor ( $H_2O$ ) as a byproduct**.



#### ➤ Advantages:

- The only byproduct of green hydrogen fuel cells is **water**, making them a **zero-emission energy source**.
- Hydrogen fuel cell vehicles can be refueled in a matter of minutes, similar to traditional vehicles.

#### ➤ Challenges:

- Currently, the production of green hydrogen can be **expensive, but ongoing research aims to reduce costs**.
- The development of a hydrogen infrastructure, including production, storage, and distribution, is essential for widespread adoption.

### What is the Significance of the Green Hydrogen Fuel Cell Bus?

- The bus uses hydrogen and air to generate electricity, emitting only water as a by-product, making it an **eco-friendly mode of transportation**.
  - Hydrogen **boasts three times the energy density of conventional fuels and zero harmful emissions**, making it a cleaner and more efficient choice.
- **Further Plans:**
  - IndianOil plans to introduce 15 more hydrogen fuel cell buses in Delhi NCR by the end of 2023.
    - These buses will help gather performance data under Indian operating conditions, assessing efficiency and sustainability.

### How Does Green Hydrogen Transform India's Energy Landscape?

- Hydrogen and biofuels will account for **25% of global incremental energy demand growth over the next two decades.**
- India aims to become a global champion in the production and export of hydrogen and emerge as a **hub for green hydrogen.**
- The success of the **Green Hydrogen Mission** can shoot India from being a net importer of fossil energy to becoming a **net exporter of clean hydrogen energy.**
- Hydrogen is poised to be a game changer in India's ambitious quest to achieve **Net-Zero emissions** by the year 2070.

### What are India's Initiatives to Promote Green Energy?

- Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME)
- International Solar Alliance (ISA)
- National Green Hydrogen Mission

## 16. China's Geopolitical Initiatives in Nepal

### Why in News?

Recently, China and Nepal have signed 12 agreements to enhance Bilateral Cooperation in sectors including **trade, road connectivity, and information technology.**

### What are the Agreements Signed between Nepal and China?

- The agreements include MoUs for:
  - Cooperation between The **National Planning Commission of Nepal** and China's National Development and Reform Commission
  - Enhancing digital economy corporation,
  - Cooperation on green and low-carbon development
  - Cooperation in the fields of agriculture, livestock and fisheries,
  - Cooperation in the field of science, technology and innovation; and in the field of Human Resources Development.
  - Mechanism to review the Nepal-China trade and payment agreement.
- They also signed a **protocol of phytosanitary requirements** for the export of plant-derived medicinal materials for Chinese medicine from Nepal to China.
- Nepal declined **China's invitation** to join China's **Global Security Initiative (GSI)**, advocating that joint security is not in the interest of Nepal to maintain a strategic balance between India, China and the US.

### How Have Been China Nepal Relations So Far?

- **Geopolitical Relations:**
  - Nepal has increasingly sought to balance its relations with its two giant neighbours, India and China, as part of its **foreign policy strategy.**
  - China's influence in Nepal has **grown significantly in recent years**, the almost **Six-Month Economic Blockade of Nepal** by India from September 2015 onward gave China a fast track into the country.
    - China intervened aggressively in Nepal's politics and played a **role in bringing the two communist parties**, Maoist Centre and Unified Marxist-Leninist together.
    - China has historical ties with the **communist movement in Nepal**, particularly with the **Communist Party of Nepal (Maoist Centre)**, which was involved in a **decade-long armed insurgency against the Nepalese state.** During this period, the Maoist movement received ideological, logistical, and even military support from China.
- **Economic Cooperation:**
  - Economic cooperation between China and Nepal has intensified, focusing on trade, investment, and infrastructure development.
  - Key projects like cross-Himalayan railways, ports, and hydroelectric power plants are enhancing connectivity and contributing to Nepal's economic growth.
    - Nepal has expressed interest in **China's Belt and Road Initiative (BRI)**, aiming to improve infrastructure connectivity and trade facilitation.

➤ **Security and Defense Cooperation:**

- China and Nepal have engaged in joint military exercises and increased defense cooperation, focusing on capacity building and military training.
- China has provided military aid to Nepal, further strengthening their defense ties.

➤ **Issue Between China and Nepal:**

- In its new map, **China refused to recognize a portion of land in Nepal's northwestern region**—an area that Nepal had claimed and depicted in its own map in 2020.

**What are the Implications of China's Growing Presence in Nepal for India?**

➤ **Security Concerns:**

- China's enhanced influence in **Nepal could potentially lead to strategic encirclement** for India, as it strengthens its presence in a country that shares a long border with India.
- This raises **security concerns** for India.

➤ **Access to Resources:**

- China's infrastructure projects and economic engagement in Nepal may compete with **Indian investments and economic interests**, affecting India's access to resources and markets in the region.

➤ **Belt and Road Initiative (BRI) and Connectivity:**

- Nepal's participation in China's BRI Initiative can result in a **significant increase in Chinese-backed infrastructure projects** and connectivity, which will increase Nepal's dependence on China for trade and consequently harm the interest of India.

➤ **Challenges in Regional Coordination:**

- Nepal's closer ties with China provide strategic depth to China in South Asia, potentially allowing China to project power and influence beyond its borders.
- China's deepening involvement in Nepal might make it more challenging for India to coordinate regional responses and initiatives effectively.

**What is the Significance of Nepal for India?**

➤ **Nepal's Strategic Importance:**

- **Nepal shares border with 5 Indian states**- Uttarakhand, Uttar Pradesh, West Bengal, Sikkim and Bihar. Hence an important point of cultural and economic exchange.
- Nepal is right in the middle of **India's 'Himalayan frontiers'**, and along with Bhutan, it acts as a **northern 'borderland' flank and acts as buffer states** against any possible aggression from China.

➤ **Defence Cooperation:**

- India has been assisting the **Nepal Army (NA)** in its modernisation by supplying equipment and providing training.
- The 'Indo-Nepal Battalion-level Joint Military Exercise **Surya Kiran**' is conducted alternately in India and in Nepal.
  - Also, Currently, **about 32,000 Gorkha Soldiers** from Nepal are serving in the Indian Army.

➤ **Economic Cooperation:**

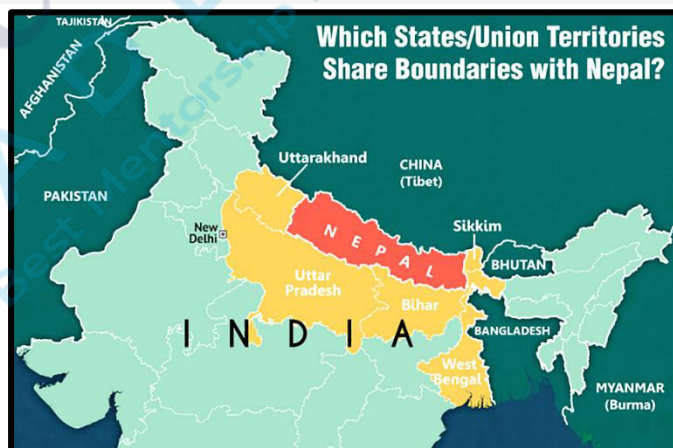
- India is the largest trading partner of Nepal. Nepal is also India's 11th largest export destination.
- Indian firms are among the largest investors in Nepal, accounting for more than 30% of the total approved **foreign direct investments**.

➤ **Treaty of Peace and Friendship of 1950:**

- The treaty talks about the **reciprocal treatment of Indian and Nepali citizens** in the two countries, in residence, property, business and movement.

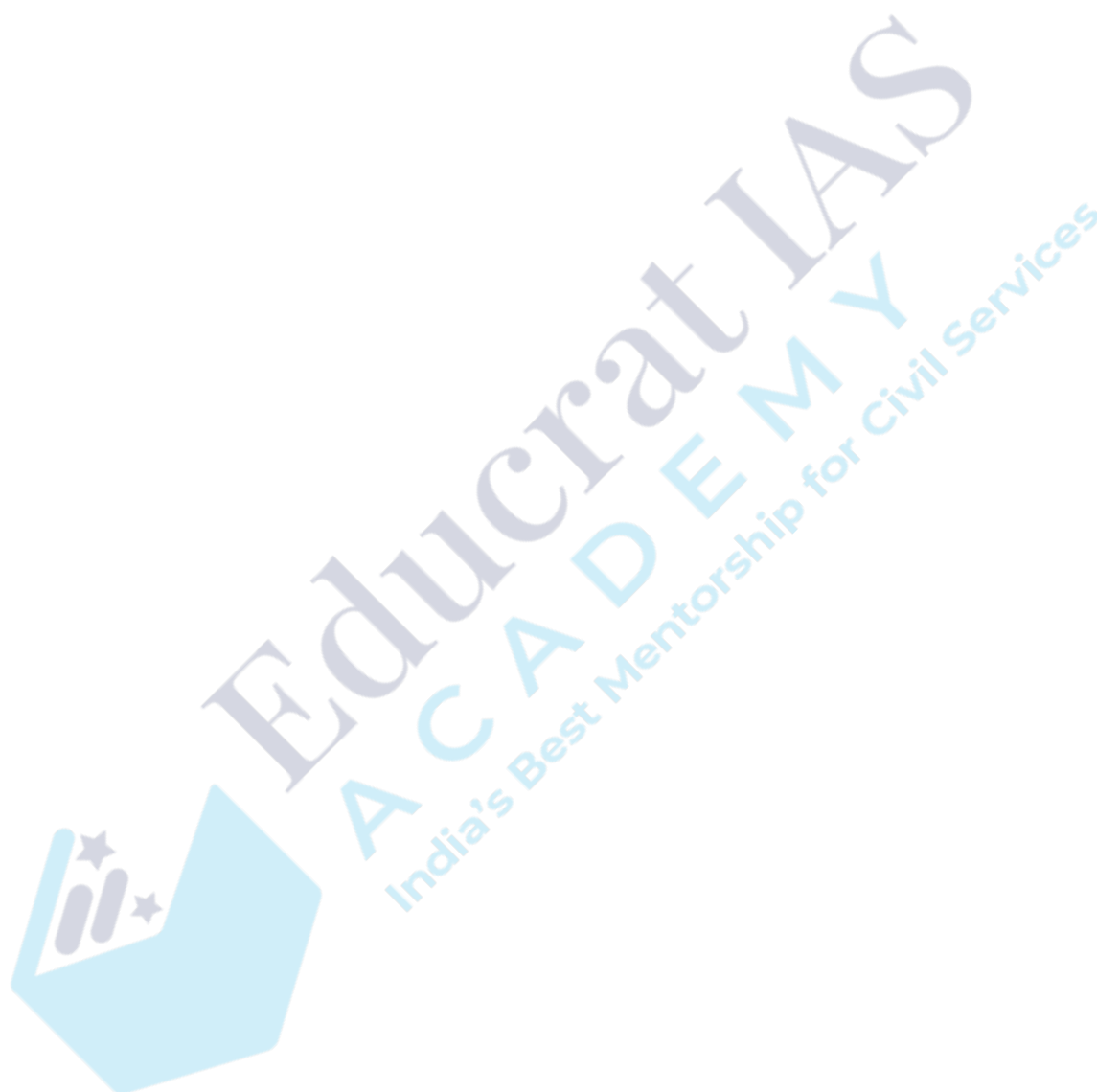
➤ **Power Sector Cooperation:**

- In June 2023 India and Nepal signed a long-term **Power Trade Agreement**, targeting the import of 10,000 MW of electricity from Nepal in the coming years.
- Memoranda of Understanding (MoUs) were signed between **National Hydroelectric Power Corporation (NHPC)**, India and Vidyut Utpadan Company Ltd, Nepal for the development of the **Phukot Karnali Hydroelectric Project and the Lower Arun Hydroelectric Project**.



### Way Forward

- To mitigate the challenges, India needs **to engage proactively with Nepal**, enhance development assistance, strengthen economic ties, and foster people-to-people relations.
- Additionally, India must work on multilateral initiatives and regional cooperation to counterbalance the expanding Chinese influence in Nepal and ensure stability and prosperity in the region.
- Diplomacy, dialogue, and collaboration will be crucial in managing these challenges effectively.



## GS Paper – 3

### 1. New Method to Determine Hubble Constant

#### Why in News?

Recently, some researchers from India and the US have **proposed a novel method to determine the Hubble constant** and the Rate of Expansion of the Universe.

**Note:** About 13.8 billion years ago, a really small, really dense, and really hot spot lying beyond spacetime began to expand. Its expansion and cooling – in an event that scientists have called the **Big Bang** – **produced the universe as we know it**. The universe continued to expand, at first really rapidly before slowing down to a great degree. Then, about **five or six billion years ago, dark energy** – an unknown and largely uncharacterised form of energy – accelerated its expansion again.

#### What is Hubble Constant?

##### ➤ About:

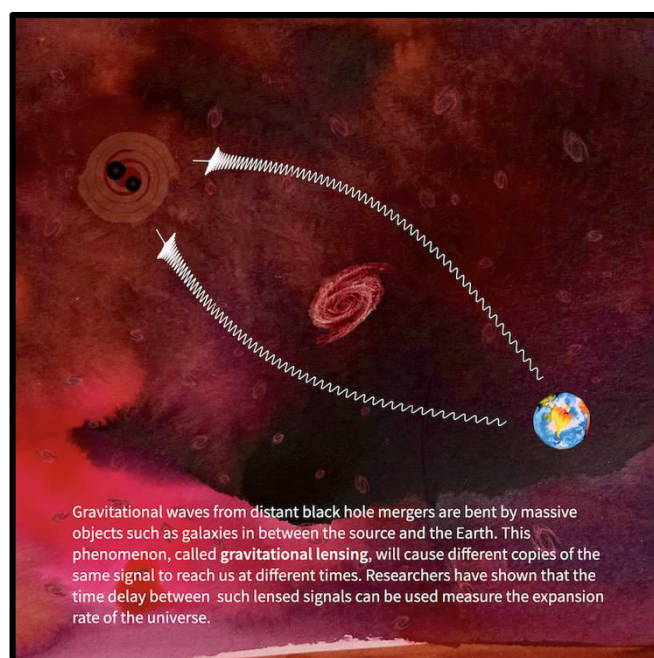
- In 1929, Edwin Hubble formulated Hubble's law, providing the **first mathematical description of the universe's expansion**.
- The precise rate of this expansion, termed the Hubble constant, remains a contentious issue in cosmology.

##### ➤ Measurement:

- Two details are required to calculate the value of the Hubble constant:
  - The distance between the observer and astronomical objects,
  - The velocity at which these objects are moving away from the **observer as a result of the expansion of the universe**.
- So far, scientists have used **three methods to get these details**:
  - They compare the observed brightness of a stellar explosion, called a supernova, with its **expected brightness to figure how far away it** could be. Then they measure how much the wavelength of the light from the star has been **stretched by the expansion of the universe** – i.e. the redshift – to figure how much it's moving away.
  - They use changes **to the Cosmic Microwave Background (CMB)** – radiation leftover from the Big Bang event – to estimate the Hubble constant.
    - The CMB is a faint, nearly uniform glow of microwave radiation that fills the observable universe. It is often referred to as the **"afterglow" of the Big Bang**.
  - They use gravitational **waves, ripples in spacetime produced** when massive astronomical objects – like neutron stars or black holes – collide with each other. Detectors that observe **gravitational waves record the data in the form of curves**.
- Using the shape of these curves, astronomers can calculate the amount of energy that the collision released. Comparing this with the amount of energy the waves had when they reached earth **allows researchers to estimate the distance between these objects and earth**.

##### ➤ Discrepancy in Measurement:

- Measurements from the first method have reported a Hubble constant about two units higher than the one derived by the second method; the third method **hasn't yet matured enough to provide a precise measurement**.
- The discrepancy **could be due to a mistake in the methods used** – or it could indicate that the Hubble constant is itself evolving with time.
- This possibility arises because the three methods estimate the Hubble constant today based on information from different stages of the universe.
- The CMB way is based on a much younger universe while the other two are based on an older universe (i.e. closer to the one today).





### What is the New Approach for Estimation of Hubble Constant?

- Researchers proposed analyzing a **collection of lensed gravitational waves** and their time delays to derive information **about the universe's rate of expansion**.
  - Gravitational lensing is a phenomenon in which the gravitational field of a massive object, such as a galaxy or a cluster of galaxies, bends and distorts the light from objects located behind it.
- This method offers an independent **estimation of the Hubble constant** and could help determine other cosmological parameters such as matter density.
  - Experts in the field find the study **fascinating and see it as a significant cosmological application** of gravitational waves.

## 2. 2nd Berlin Forum on Chemicals and Sustainability

### Why in News?

Recently, the **Union Minister for Environment, Forest, and Climate Change** participated in the virtual **'High Level Dialogue on Human Health and Environment'** convened under the **2<sup>nd</sup> Berlin Forum on Chemicals and Sustainability- Just Transition Towards a Pollution-free Planet**.

- The summit aims to foster a **shared global understanding of critical issues in chemical and waste management** while providing crucial political direction.

### What is the 2<sup>nd</sup> Berlin Forum on Chemicals and Sustainability?

- The 2<sup>nd</sup> Berlin Forum on Chemicals and Sustainability is a high-level event that aims to provide political guidance and momentum on key international issues and priorities regarding **sound management of chemicals and waste**.
  - It was organized by the **German Federal Ministry for the Nature, Nature Conservation, Nuclear Safety, and Consumer Protection (BMU)**.
  - It also aimed to garner support and ensure a high level of ambition of the **'SAICM Beyond 2020'** during the upcoming **5<sup>th</sup> meeting of the International Conference on Chemicals Management (ICCM5)**.
  - The **First Berlin Forum on Chemicals and Sustainability** highlighted the **need for a science-policy interface (SPI) on chemicals and wastes**.

### What is SAICM Beyond 2020?

- The **Strategic Approach to International Chemicals Management (SAICM)**, adopted in 2006, is a policy framework to promote chemical safety worldwide.
  - The initial objective was to achieve **"the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health."**
  - The scope of SAICM is nearly unlimited, **it includes both toxic chemicals and hazardous industrial activities**. However, **SAICM imposes no binding obligations on countries**.
- As the **mandate of SAICM ended in 2020** and the goal of a sustainable chemicals management has not been achieved, the parties agreed on developing a follow up process – **SAICM Beyond 2020** – which was supposed to be adopted in 2020 at ICCM 5.
  - Since in-person meetings have been suspended due to the Covid-19 pandemic, the 5th session of the ICCM5, **organized by UNEP under the presidency of the government of Germany**, will take place from **25 to 29 September 2023 at the World Conference Center Bonn (WCCB), Germany**.

### Why is Sound Management of Chemicals and Waste Important?

#### About:

- **Chemicals** are essential for various sectors of the economy, such as **agriculture, industry, health, and consumer goods**. However, they also pose significant risks to human health and environment if not managed properly.
- A **WHO 2021 Report** estimated that **2 million lives and 53 million disability-adjusted life-years** were lost in 2019 due to exposures to selected chemicals.
  - Nearly half of deaths attributable to chemical exposures in 2019 were due to **lead exposure and resulting cardiovascular diseases**.

➤ **Sound Management of Chemicals and Waste is Crucial for:**

- **Human Health Protection:** Proper management helps **minimize exposure to hazardous chemicals**, reducing the risk of acute and chronic health problems.
  - It prevents the **contamination of air, water, and soil** with harmful chemicals that can harm human health through **ingestion, inhalation, or skin contact**.
- **Environmental Conservation:** The release of certain waste products, such as greenhouse gases, can **contribute to climate change**, making **proper waste management** essential for mitigating environmental impacts.
- **Resource Efficiency:** Proper waste management **allows for the recovery and recycling of valuable materials**, conserving natural resources and reducing the need for resource extraction.
  - Recycling and proper waste disposal can lead to **energy savings compared to the production of new materials** from raw resources.
- **Economic Benefits:** The waste management and recycling industries **create jobs and stimulate economic growth**.
  - Proper chemical management also **reduces the cost of treating health problems** caused by hazardous substances.
- **Global Cooperation:** Chemicals and waste can cross borders, necessitating **international cooperation to address global challenges effectively**.
  - For instance, the recent **waste water release of the Fukushima nuclear power plant (with traces of tritium)** raised concerns across the globe.
  - There is a need for collaborative efforts to promote **shared responsibility for the management of chemicals and waste** on a global scale.
    - The **Stockholm Convention** serves as a prominent example.
- **Long-Term Sustainability:** Responsible management ensures a **cleaner and safer environment for future generations** by reducing pollution and minimizing the impact of chemicals and waste on ecosystems.
  - It is also crucial for achieving the **Sustainable Development Goals (SDGs)** and protecting the planet and its people.

**Note:**

- The **Stockholm Convention** is a global treaty aimed at **safeguarding human health and the environment from persistent organic pollutants (POPs)**, which are long-lasting, widespread chemicals that pose risks to both people and wildlife.
  - India **ratified the convention in 2006**, which allows it to maintain a **default "opt-out" status**, meaning that amendments to convention Annexes do not apply to India unless it **explicitly deposits a ratification, acceptance, approval, or accession instrument** with the UN depositary.
- Other Conventions Related to Chemicals are: **Basel Convention (on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal)**, **Minamata Convention (mercury)**, **Rotterdam Convention (on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade)**.

### 3. Cotton Production in India

#### Why in News?

**Cotton** is a versatile crop that provides **food, feed, and fiber for various uses, including textiles, cooking oil, and livestock feed**. It is also a major source of income and employment for millions of farmers in India.

- However, in recent years, **cotton production and yields have declined significantly**, posing a challenge for the country's agriculture and textile sectors.

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

➤ **About:**

- Cotton is one of the most important **commercial crops** cultivated in India and accounts for around **25% of the total global cotton production**.
  - Due to its economic importance in India, it is also termed as **"White-Gold"**.
- In India, around **67% of India's cotton is grown on rain-fed areas** and 33% on irrigated areas.

➤ **Growing Conditions:**

- Cotton cultivation necessitates a hot, and sunny climate with a **long frost-free period**. It is most **productive in warm and humid climatic conditions**.

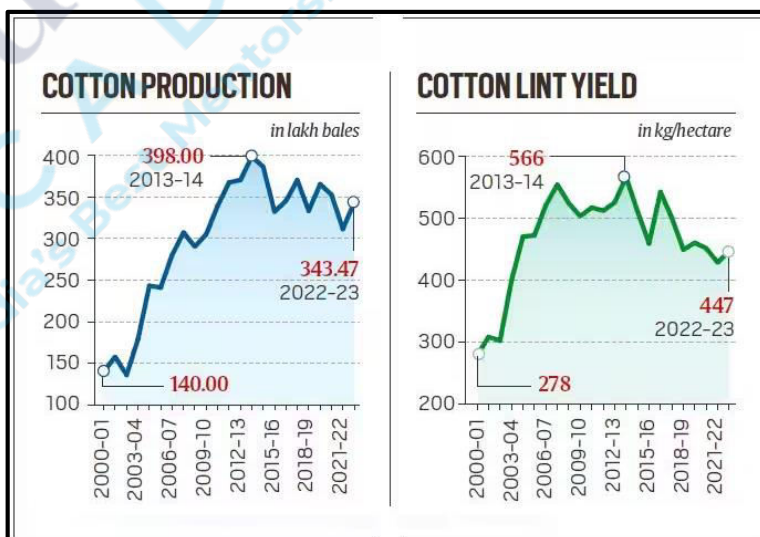
- Cotton can be successfully grown in a range of soil types, including **well-drained deep alluvial soils in northern regions, variable-depth black clayey soils in the central region, and mixed black and red soils in the southern zone.**
  - While cotton exhibits some tolerance to salinity, it is highly sensitive to waterlogging, emphasizing the **importance of well-drained soils in cotton farming.**
- **Species of Cultivated Cotton:**
  - India is the country to grow all four species of cultivated cotton ***Gossypium arboreum* and *Herbaceum* (Asian cotton), *G. barbadense* (Egyptian cotton) and *G. hirsutum* (American Upland cotton).**
  - Majority of the cotton production comes from ten major cotton growing states, which are grouped into three diverse **agro-ecological zones**, as under:
    - **Northern Zone:** Punjab, Haryana and Rajasthan
    - **Central Zone:** Gujarat, Maharashtra and Madhya Pradesh
    - **Southern Zone:** Telangana, Andhra Pradesh, Karnataka and Tamil Nadu
- **Significance:**
  - Cotton, often likened to coconut, serves as a source of three essential components:
    - **Fiber:** The **white fluffy fiber or lint**, constituting about 36% of the raw unginned cotton, is the **primary source for the textile industry.** The rest is seed (62%) and wastes (2%) separated from the lint during ginning.
      - Cotton commands a **two-thirds share in India's total textile fiber consumption.**
    - **Food:** Cottonseed contains **13% oil**, which is commonly used for cooking and frying.
      - Cottonseed cake/meal is **India's second-largest feed cake**, following soybean.
    - **Feed:** The **leftover cottonseed cake**, comprising **85% of the seed**, is a valuable, protein-rich feed ingredient for livestock and poultry.
      - Cottonseed oil ranks as the **country's third-largest domestically-produced vegetable oil**, following mustard and soybean.

### What led to Rapid Increase and Subsequent Decline in Cotton Production in India?

#### ➤ Surge:

- Between 2000-01 and 2013-14, India witnessed a remarkable surge in cotton production, primarily attributed to **Bt (*Bacillus thuringiensis*) technology.** Key developments include:

- Adoption of **genetically-modified (GM) cotton hybrids with Bt genes**, designed to **combat the American bollworm insect pest.**
- It led to a surge in lint yields from **278 kg per hectare in 2000-01 to 566 kg per hectare in 2013-14.**
  - A corresponding increase in cottonseed oil and cake production.



- However, the gains achieved through **Bt technology were short-lived. Post-2013-14**, cotton production and yields began to decline.

#### ▪ Decline:

- The primary factor responsible for decline was the **emergence of the pink bollworm (*Pectinophora gossypiella*).**
  - When pink bollworm (PBW) larvae invade cotton bolls, it causes **cotton plants to produce less cotton and the cotton produced is of lower quality.**
- Unlike the polyphagous American bollworm, **PBW is monophagous**, feeding mainly on cotton, which contributed to the **development of resistance against Bt proteins.**
  - Continuous cultivation of **Bt hybrids led to PBW populations developing resistance**, replacing susceptible ones.

- In 2014, **Gujarat experienced an unusual surge in PBW larvae survival on cotton flowers 60-70 days after planting.** In 2015, **Andhra Pradesh, Telangana, and Maharashtra** also reported PBW infestations.
  - In 2021, even Punjab, Haryana and northern Rajasthan saw heavy infestation of the pest for the first time.

**Note: Monophagous** means an organism that primarily feeds on a single specific type of food or host.

▪ **Current Methods Employed to Manage the PBW Pest:**

- Traditional insecticides had limited success in controlling PBW larvae. Instead, a different method called "**mating disruption**" has been used.
  - It entails the use of **Gossyplure, a pheromone signaling chemical** that is secreted by female PBW moths to attract male adults. In this case, the pheromone is artificially synthesised and filled into pipes or lures.
    - This method hinders **male moths from locating females** and engaging in mating, thereby causing disruption in their reproductive cycle.
- There are two approved products for mating disruptions:
  - **PBKnot**, which uses ropes with these chemicals on cotton plants to **reduce infestation** and boost yields.
  - **SPLAT-PBW**, which is a **special emulsion** that disrupts PBW mating with synthetic chemicals.

**What are the Other Issues Associated with the Cotton Sector in India?**

- **Yield Fluctuations:** Cotton production in India can be quite unpredictable due to several factors.
  - Limited access to **irrigation systems, declining soil fertility, and erratic weather patterns**, including unexpected droughts or excessive rainfall, contribute to the uncertainty surrounding cotton yields.
- **Smallholder Dominance:** The majority of cotton farming in India is **carried out by small-scale farmers.**
  - These farmers **often rely on traditional agricultural practices** and have limited access to modern farming technologies, which in turn affects overall cotton production.
- **Limited Market Access:** A significant number of cotton growers in India face constraints in reaching markets and are **compelled to sell their harvest at reduced rates to intermediaries.**

**Way Forward**

- **Integrated Pest Management:** There is a need to advocate for **integrated pest management (IPM) strategies** that combine **natural controls, trap crops, and beneficial insects** to reduce pesticide dependency while effectively managing pests.
- **Community-Based Seed Banks:** Establishing seed banks at the community level to **conserve and share traditional cotton seed varieties**, preserving genetic diversity and promoting higher-yielding strains.
- **Market Linkage Platforms:** Establishing digital platforms that **directly connect cotton farmers with buyers and textile manufacturers**, reducing middlemen involvement and ensuring fair pricing.
- **Value Addition Through Local Processing:** Promoting **value addition by establishing local cotton processing units that can gin, clean, and process cotton fiber**, creating employment opportunities and adding value to the cotton supply chain.

**4. RBI to Discontinue I-CRR**

**Why in News?**

Recently, the Reserve Bank of India (RBI) announced that it would discontinue the **Incremental Cash Reserve Ratio (I-CRR)** in a phased manner.

- The central bank will release the amount that banks have maintained under I-CRR in stages.

**How Will the RBI Implement Discontinuation of I-CRR?**

- The discontinuation of the I-CRR will be **implemented in stages** to ensure a smooth transition and **prevent sudden shocks to the system's liquidity.**
  - In the first and second stages of the I-CRR reversal, 25 % of each of the Banks' impounded funds will be released. The remaining 50% of the balance will be released in the third stage.
- This measured approach aims to ensure that **banks have sufficient liquidity to meet increased credit demand during the upcoming festival season.**

## What is I-CRR?

### ➤ Background:

- On 10<sup>th</sup> August 2023, following the announcement of the **monetary policy** and the **demonetization** of Rs 2000 notes, the RBI declared that banks would be required to maintain an **Incremental Cash Reserve Ratio (I-CRR)** of 10% on the increase in their **Net Demand and Time Liabilities (NDTL)**.
  - **NDTL** is the **difference** between the **sum of demand and time liabilities** (deposits) of a bank (with the public or the other bank) and the deposits in the form of **assets held by the other banks**.
- Stated that it would review it in September 2023, or earlier.

### ➤ Purpose of Introducing I-CRR:

- The RBI introduced the I-CRR as a temporary measure to **manage excess Liquidity** in the banking system.
  - Several **factors contributed** to the **Surplus Liquidity**, including the demonetisation of Rs 2,000 banknotes.
- RBI's surplus transfer to the government, increased **government spending, and capital inflows**.
- This liquidity surge had the **potential to disrupt price stability and financial stability**, necessitating efficient liquidity management.

### ➤ Impact of I-CRR on Liquidity Conditions:

- The I-CRR measure would absorb over **Rs 1 lakh crore of excess liquidity** from the banking system.
- As a result of the I-CRR mandate, the banking system's **liquidity temporarily turned into a deficit on 21<sup>st</sup> August 2023**, exacerbated by **outflows related to Goods and Services Tax (GST)** and central bank intervention to stabilize the rupee.
- However, liquidity conditions returned to Liquidity from the system.

## What is the Cash Reserve Ratio (CRR)?

### ➤ About:

- The percentage of cash required to be kept in reserves as against the bank's total deposits, is called CRR.
- All banks in India, except Regional Rural Banks (RRBs) and Local Area Banks (LABs), have to deposit the CRR money to RBI.
  - RRBs and LABs are exempted from maintaining CRR with RBI, **as per the RBI Act, 1934**. However, they have to maintain CRR with themselves in the form of **cash or gold or unencumbered approved securities**.
- Banks can't lend the CRR money to **corporates or individual borrowers**, banks can't use that money for investment purposes, and **Banks don't earn any interest on that money**.

### ➤ Need to Have Reserve cash with the RBI:

- Since a part of the bank's deposits is with the RBI, it ensures the **security of the amount in case of any emergencies**.
- The cash is **readily available when customers want** their deposits back.
- CRR helps in keeping **inflation under control**. If there is a threat of high inflation in the economy, RBI increases the CRR, so that banks need to keep more money in reserves, effectively reducing the amount of money that is available to the banks.
  - This curbs the **excess flow of money in the economy**.
- When there is a need to pump funds into the market, the RBI lowers the CRR rate, which in turn, helps the banks provide loans to a large number of businesses and industries for investment purposes. **Lower CRR also boosts the growth rate of the economy**.
- The CRR and other monetary tools require every commercial bank to maintain but not the NBFC.

## Why is RBI using I-CRR in the Case of Demonetisation?

- RBI has chosen to implement I-CRR in the case of a **sudden influx of liquidity, such as during demonetization**.
  - **RBI used I-CRR in November 2016**, after the **demonetization of Rs 500 and Rs 1,000 banknotes**.
- It allows the RBI to **address the issue without affecting other aspects of monetary policy**. This precision can be crucial, especially during **unique situations like demonetization**.
- The I-CRR **can be implemented relatively quickly**. When there is a sudden surge in liquidity due to a large-scale event like the **return of demonetized currency notes**, the central bank may need a tool that can be put into effect promptly.
- The I-CRR is **typically intended to be a temporary measure**. It can be introduced when there is a need to absorb excess liquidity temporarily and can be phased out once the liquidity situation stabilizes.

- But on the other hand **Other tools such as Repo Rate, Statutory Liquidity Ratio (SLR) etc may have rather long term and slower impact on liquidity.**

### What are the Monetary Policy Instruments Available to the RBI?

#### ➤ Qualitative:

- **Moral Suasion:** This is a **non-binding technique where the RBI uses persuasion and communication** to influence banks' lending and investment behavior.
- **Direct Credit Controls:** These are measures that involve **regulating the flow of credit to specific sectors or industries.** The RBI can issue directives on lending to certain sectors or set credit limits to achieve policy objectives.
- **Selective Credit Controls:** These are **more specific than direct credit controls and target particular types of loans, such as consumer credit,** to control demand in specific areas of the economy.

#### ➤ Quantitative:

- **Cash Reserve Ratio (CRR):** CRR is the proportion of a **bank's deposits that it must keep as reserves with the RBI** in the form of cash. By adjusting the CRR, the RBI can control the amount of funds available for lending by banks.
- **Repo Rate:** The repo rate is the **interest rate at which the RBI lends money to commercial banks for the short term.** A change in the repo rate can influence banks' borrowing costs and, subsequently, their lending rates.
- **Reverse Repo Rate:** The reverse **repo rate is the interest rate at which banks can park their excess funds with the RBI.** It provides a floor for short-term interest rates and helps manage liquidity.
- **Bank Rate:** The bank rate is the rate at which the **RBI provides long-term funds to banks and financial institutions.** It influences interest rates in the long-term money market.
- **Open Market Operations (OMOs):** OMOs involve the **buying or selling of government securities by the RBI in the open market.** This action affects the money supply and liquidity in the banking system.
- **Liquidity Adjustment Facility (LAF):** The LAF includes the repo rate and the reverse repo rate and is used by banks for their short-term liquidity needs. It **helps the RBI manage daily liquidity conditions.**
- **Marginal Standing Facility (MSF):** MSF is the rate at which **banks can borrow overnight funds from the RBI against the collateral of government securities.** It serves as a secondary source of funding for banks.
- **Statutory Liquidity Ratio (SLR):** SLR is the percentage of a bank's net demand and time liabilities (NDTL) that it must maintain in the form of approved securities.

## 5. Planetary Boundaries

### Why in News?

According to a new study, published in the journal **Science Advances**. The world has **breached six out of nine planetary boundaries** necessary to maintain Earth's stability and resilience.

- Scientists have investigated the processes within Earth's ecosystem that have played a crucial role in maintaining favorable conditions for human existence over the last 12,000 years.

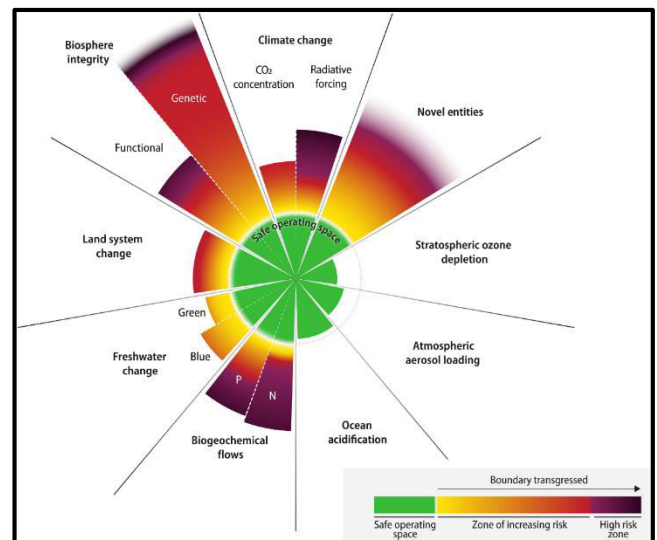
### What Are Planetary Boundaries?

#### ➤ About:

- The planetary boundaries framework was first proposed by Johan Rockström and a group of 28 internationally renowned scientists in 2009 to define the **environmental limits within which humanity can safely operate to maintain Earth's stability and biodiversity.**

#### ➤ Nine Planetary Boundaries:

- **Climate change.**
- **Change in biosphere integrity** (biodiversity loss and species extinction)
- **Stratospheric ozone depletion.**
- **Ocean acidification.**



- **Biogeochemical flows** (phosphorus and nitrogen cycles).
  - **Land-system change** (for example deforestation).
  - **Freshwater use** (alterations across the entire water cycle over land).
  - **Atmospheric aerosol loading** (microscopic particles in the atmosphere that affect climate and living organisms).
  - Introduction of novel entities (consisting of microplastics, endocrine disruptors, and organic pollutants).
- **Breaching Planetary Boundaries:**
- Breaching of these boundaries doesn't indicate an immediate catastrophe but **raises the risk of irreversible environmental changes.**
    - This situation could lead to conditions on **Earth that no longer support our current way of life.**

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

- **Impacted Boundaries:**
  - **Climate Change:**
    - The researchers set the planetary boundary for atmospheric carbon dioxide concentration and radiative forcing (represents the size of the energy imbalance in the atmosphere) contributing to climate change at 350 parts per million (ppm) and 1 Watts per square meter ( $Wm^{-2}$ ), respectively. **Currently, this has reached 417 ppm and is  $2.91 W m^{-2}$ .**
  - **Biosphere Integrity:**
    - As for biosphere integrity, the researchers kept a limit of less than 10 extinctions per million species-years. Human-induced **species extinctions have far exceeded the safe limit.**
    - The study estimated the extinction rate was **greater than 100 extinctions per million species-years.**
      - It is estimated that around **one million of the 8 million plant and animal species are threatened with extinction.**
    - Over **10% of the genetic diversity of plants and animals may have been wiped out over the last 150 years.**
  - **Land System Change:**
    - The global forested land area has dropped below the safe limit of 75%, **currently standing at only 60%.**
  - **Freshwater Change:**
    - Both **blue water** (surface and groundwater) and **green water** (available water for plants) have experienced impacts beyond their safe **thresholds of 10.2% and 11.1%, respectively in 1905 and 1929, currently at 18.2 % and 15.8 %, respectively.**
  - **Biogeochemical Flows:**
    - Flows of nutrients like **phosphorus** and **nitrogen** in the environment have surged beyond safe limits.
      - The boundary was fixed at 11 teragrams (Tg) for Phosphorus and 62 Tg for Nitrogen. This is now 22.6 Tg and 190 Tg, respectively.
  - **Novel Entities:**
    - The planetary boundary of novel entities was calculated to be zero.
    - Human influence on novel entities, including microplastics, endocrine disruptors, and organic pollutants, **has transgressed the zero boundary.** This means humans have transgressed this limit as well.
- **Safe Boundaries:**
  - **Stratospheric ozone depletion, aerosol loading** and **ocean acidification** were found to be within the planetary boundary.

### Way Forward

- Implement **conservation programs** targeting biodiversity preservation, restoration of ecosystems, and the protection of endangered species and genetic diversity.
- Embracing **circularity** promotes **resource regeneration, minimizing waste** and ensuring that valuable materials are continually repurposed rather than discarded.
  - Implement strict regulations on waste disposal, encouraging recycling and reducing pollution of novel entities like microplastics.
- **Empower communities** to actively participate in sustainable practices, cultivating a collective sense of responsibility for environmental stewardship.

- Prioritize **climate mitigation strategies** to limit temperature rise and prevent further breaches of the planetary boundary related to climate change.
- Promote **zero-emission technologies and reduce carbon footprints** through incentives for clean energy adoption and sustainable transportation.

## 6. The Phosphorus Problem

### Why in News?

The **global phosphorus problem** is gaining attention. With limited **phosphorus reserves, contamination issues, and disruptions in the fertilizer market**, finding sustainable solutions has become a critical priority.

### What are the Major Facts Related to Phosphorus?

- **About:**
  - **Phosphorus is a chemical element with the symbol "P" and atomic number 15.** It is an essential element for life and has various important properties and applications.
- **Chemical Properties:**
  - Phosphorus readily forms compounds with other elements, especially oxygen, forming various phosphates.
  - It is highly reactive and can spontaneously combust in air, producing a white smoke.
  - **Phosphorus compounds are crucial in biology**, as they are a fundamental component of **DNA, RNA, and ATP (adenosine triphosphate)**.
- **Natural Occurrence:**
  - Phosphorus is commonly found in the Earth's crust in the form of various **phosphate minerals, such as apatite**.
- **Industrial Uses:**
  - Phosphorus compounds are used in the production of fertilizers, as they are necessary for plant growth.
  - It is also **used in detergents**, where phosphate compounds help break down and remove stains.
  - Phosphorus is utilized in the **production of steel and other metallurgical processes**.
- **Phosphorus in India:**
  - India is **deficient in Apatite** (group of phosphate minerals) & **Rock Phosphate availability**.
  - According to **Indian Minerals Yearbook 2018**, in case of apatite, the country is fully dependent upon imports, while the Rock Phosphate production is only from two states namely, **Rajasthan and Madhya Pradesh**.
    - India is the world's **largest importer of phosphorus**, primarily **sourcing it from West African deposits contaminated with cadmium**.
    - **Paddy, a staple crop in India, is particularly prone to cadmium uptake**, and Indian farmers extensively use fertilizers on paddy fields.

### What is the Historical Evolution of Fertilization and Contemporary Challenges Surrounding Phosphorus?

- **Historical Evolution:**
  - The issue of fertilizing land has **plagued agriculture since its inception**. Early agricultural societies recognized that **repeated cultivation and harvest cycles depleted essential nutrients** from the soil, diminishing crop yields.
    - Indigenous communities devised various fertilization methods, **including using fish remnants and bird droppings (guano)**.
  - However, significant advancements in chemistry during the **19<sup>th</sup> century** led to the creation of **synthetic fertilizers** and the identification of vital elements like **nitrogen, phosphorus, and potassium**.
    - These elements laid the **foundation for modern chemical fertilizers** and played a pivotal role in boosting agricultural productivity during the **Green Revolution of the mid-20<sup>th</sup> century**.
    - In the present scenario, **there exists a multifaceted challenge involving phosphorus**, a crucial component of fertilizers.
- **Challenges Associated with Phosphorus:**
  - **Limited Reserves and Cadmium Contamination:**
    - Phosphorus is **scarce and primarily found in specific geological formations**. This is a major geopolitical concern.



- **Morocco and the Western Sahara region possess the world's largest phosphorus reserves**, but these reserves contain **cadmium, a harmful heavy metal** that can accumulate in the kidneys of animals and humans when consumed.
- The extraction and removal of cadmium from phosphorus resources are costly processes.
  - Cadmium-laden fertilizers can **contaminate crops, leading to potential health risks, such as heart disease.**

#### Note

**Failing to eliminate cadmium** from phosphorus sources carries the potential for a public health crisis. Conversely, the **removal of cadmium could result in higher fertilizer expenses, introducing a complex trade-off between safeguarding public health and maintaining agricultural affordability.**

- The **European Union** has introduced **legislation to regulate cadmium levels in fertilizers.**
- **Market Disruptions and Associated Concerns:**
  - Out of all the countries, only **six have significant reserves of cadmium-free phosphorus.**
    - Among them, **China imposed export restrictions in 2020**, and several EU nations stopped purchasing from Russia.
      - Consequently, there has been a surge in demand for safe phosphorus.
    - This is **one of the factors behind Sri Lanka's decision to ban synthetic fertilizer imports in 2021** and shift to organic farming.
      - However, **this transition led to a sudden decline in crop yields**, triggering a political and economic crisis in the country.
  - **Phosphorus Overuse:** Excessive fertilizer application leads to phosphorus runoff into water bodies. Excessive phosphorus **promotes algal blooms, depleting oxygen in water bodies** and causing fish deaths.
    - Algal blooms can also be **toxic to humans, leading to respiratory issues and other health problems.**
  - **Energy Intensive Mining:** Extracting and processing phosphate rock is energy-intensive, contributing to **greenhouse gas emissions and environmental degradation.**

#### What can be Potential Strategies for Managing Phosphorus Usage?

- **Smart Agriculture and Precision Fertilization:** Implement **precision agriculture techniques that utilize sensor networks, AI, and data analytics** to optimize phosphorus use on farms. This ensures that crops **receive the exact amount of phosphorus they need**, reducing excess runoff into water bodies.
  - **Union Budget 2023–24** launched the **PM-PRANAM** scheme to promote the **balanced use of chemical and alternative fertilizers**, generating awareness of **regenerative agriculture (RA).**
- **Phosphorus Recovery from Sewage and Waste:** There is a need to develop **advanced technologies for efficient phosphorus recovery from sewage and various waste streams.**
  - This could include using **innovative filtration, precipitation, and ion-exchange processes** to extract and recycle phosphorus for use in fertilizers or other applications.
  - **Example:** Companies like **EasyMining** are **retrofitting sewage treatment plants** to recover high-quality phosphorus products.
- **Circular Phosphorus Economy:** There is a need to **establish a circular economy for phosphorus**, where products containing phosphorus are designed for **easy recovery and recycling**, reducing the need for mining and reducing environmental impact.
- **Global Phosphorus Management Framework:** There is a need to **develop an international framework for phosphorus management**, similar to global climate agreements. This would **promote collaboration and coordinated efforts to address phosphorus concerns** on a global scale.

## 7. Climate Change and Indian Dairy Sector

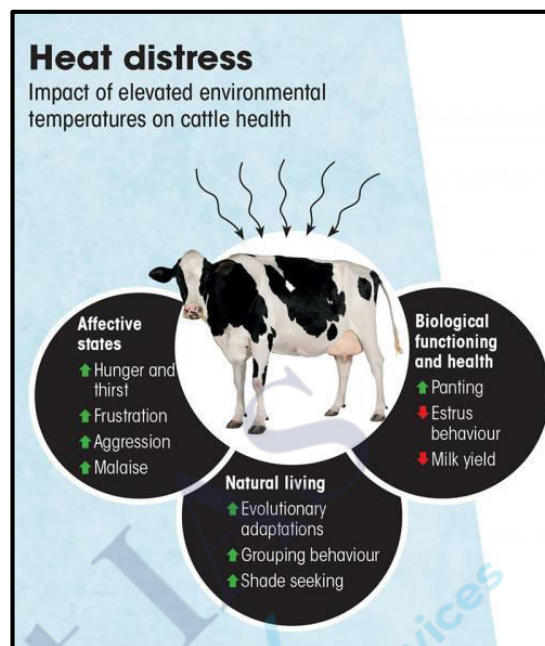
### Why in News?

In 2022, a study published in '**Lancet**' estimated that increasing temperatures could reduce **milk production** in India's arid and semi-arid regions **by 25% by end century in 2085.**

- This estimation for arid and semi-arid areas is the **second highest in India**, after Pakistan (at 28.7%). In humid and sub-humid areas, this reduction was estimated at 10%.

### What is the Impact of Heat Stress on Cattles?

- Elevated temperatures affect the cow's ability to display **natural mating behaviour**, as it **reduces both the duration and intensity of oestrus** (female animal's readiness to mate) **expression**.
  - The decrease in conception rates during summer seasons can range between 20 and 30%, as per the study.
- Lancet Study also shows that **lactating dairy cows have an increased sensitivity** to heat stress compared with nonlactating (dry) cows.
  - Moreover, because of the **positive relationship between milk yield and heat production**, higher yielding cows are more challenged by heat stress than lower yielding animals.
- The country's milk production has been steadily increasing. However, the impact of rising temperatures, especially on cross-bred cows will **make the task of meeting domestic demand difficult** and could eventually lead to a decline in per capita consumption.
- The dairy sector is likely to be affected both **directly and indirectly by climate change**.
  - **Direct Impact:**
    - Stress to animals caused by changes in temperature-humidity index would directly affect milk production.
  - **Indirect Impact:**
    - Indirect effects include **feed and water availability** being impacted by adverse climate events.



### What is the Status of Milk Production in India?

- According to 'Basic Animal Husbandry Statistics 2022', total milk production in India was **221.06 million tonnes** in 2021-2022, keeping it the **largest milk producing country** in the world.
  - The **Indigenous cattle contribute 10.35% of the total milk production in the country** whereas non-descript cattle contribute 9.82% and **non-descript buffaloes contribute 13.49%** of the total milk production in the country.
- Top five major milk producing States are **Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.06%), Gujarat (7.56%)** and Andhra Pradesh (6.97%).
- India's milk production is contributing around 23% of global milk production.

### What are the Issues Being Faced by Dairy Farmers?

- **Issues Faced :**
  - Farmers allege that the government, instead of addressing the core issues, has introduced policies that further threaten to bring down milk productivity of the country.
  - One such policy is **sex-sorted semen production, which aims to produce only female calves up to "90% accuracy"**. This has been done to enhance milk production and limit stray cattle population.
  - Over the **next five years, 5.1 million pregnancies** will be established under the programme that **offers a subsidy of Rs 750 or 50%** of the cost of sex-sorted semen on assured pregnancy.
    - This policy has the **repercussions of overlooking and eliminating male cattle slowly**.
- **Growth in Female Cattle Population:**
  - In artificial insemination and natural service, 50% of the calves are male and 50% are female calves. Under this policy, **female cattle are going to grow**.
  - The government has ignored that male cattle can be used in farming as an energy source.
  - There is also the issue of utility of female animals after they become unproductive, because it has become difficult to sell cows **due to the anti-slaughter rules across many States**.

### What is Artificial Insemination?

#### ➤ About:

- Artificial insemination is a novel method of bringing about impregnation in female breeds.
- It prevents the spread of certain diseases which are genital in nature, thereby enhancing the efficiency of the breed.

#### ➤ Shortcomings:

- Bypassing and preventing natural mating, and artificially reproducing as a principle/policy is cruel, not to mention the cruelty or pain inflicted by the artificial insemination process.

### Way Forward

- Encourage **research and innovation in cattle breeding and management practices** to mitigate the impact of climate change.
- Promote **sustainable farming practices and the use of renewable energy sources for dairy operations.**
- Advocate for policies that consider the welfare of both male and female cattle.
- Explore options for the responsible management of unproductive female cattle.
- As climate change is a challenge that impacts all of us, our dairy sector must not only evolve adaptation strategies but also help in mitigation by **contributing to reduction in greenhouse gas emissions** from the dairy sector.

## 8. India Ageing Report 2023

### Why in News?

Recently, the **UNFPA (United Nations Population Fund)** India, in collaboration with the **International Institute for Population Sciences (IIPS)** has unveiled the India Ageing Report 2023, highlighting the rapidly growing elderly population in India.

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

#### ➤ Demographic Trends:

- India's elderly population is growing rapidly, with a decadal growth rate of 41%.
- By 2050, over 20% of India's population will be elderly.
- The elderly population in India will surpass the **population of children (0 to 15 years old)** by 2046.
- The population of people aged **80+ years is expected to increase by around 279%** between 2022 and 2050.

#### ➤ Higher Life Expectancy of Women:

- Women have a **higher life expectancy at ages 60 and 80** compared to men, with variations across states and territories.
  - For instance, in Himachal Pradesh and Kerala, women at **60 years have a life expectancy of 23 and 22 years**, respectively, which is four years greater than men at **60 years in these States** — as compared to the national average differential of only 1.5 years.

#### ➤ Poverty and Well-being:

- More than 40% of the elderly in India are in the poorest wealth quintile.
  - **Poverty** among the elderly is a concern, affecting their quality of life and healthcare utilization.
- A substantial proportion of elderly individuals, especially women, are living **without any income, affecting their quality of life** and healthcare utilization.

#### ➤ Regional Variations:

- There are significant inter-State variations in the elderly population and their growth rates.
- Most States in the southern region and select northern States such as Himachal Pradesh and Punjab reported a **higher share of the elderly population** than the national average in 2021, a gap that is expected to widen by 2036.

#### ➤ Sex Ratio of the Elderly Population:

- The sex ratio among the elderly has been **climbing steadily since 1991**, with the ratio in the general population stagnating.
  - Between 2011 and 2021, the **ratio increased in India as a whole and across all regions**, barring the Union Territories and western India.
- In the northeast and the east, while the sex ratio of the elderly increased, it **remained below 1,000 in both years**, indicating that **men still outnumber the women** in these regions even at 60-plus years.

- However in central India, where the sex ratio went from 973 in 2011 to 1,053 in 2021, implying that the women caught up with and outperformed the men in survival after 60 years over the decade.
- **Low Awareness of Social Security Schemes:**
- The elderly in India have **low awareness about the various social security schemes** designed for them.
  - A little more than half of the elderly (55%) are aware of the **old-age pension scheme (IGNOAPS)**; 44% about the widow pension scheme (**IGNWPS**); and 12% about the Annapurna Scheme.
- **Concern and Challenges:**
- Poverty is **inherently gendered in old age** when older women are more likely to be widowed, living alone, with **no income and with fewer assets** of their own, and fully dependent on family for support.
  - The major challenges facing India's aging population are the **feminisation and ruralisation** of this older population.

#### **What are the Recommendations of the Report?**

- Address the **lack of credible data on various issues** related to the elderly by including relevant questions in data collection exercises such as the **National Sample Survey**, the **National Family Health Survey**, and the **Census of India**. This will help in informed policymaking.
- Increase awareness about **existing schemes for older persons and bring all Old Age Homes** under regulatory purview. Encourage the creation and running of elderly self-help groups.
- Emphasize the **importance of elderly people living in multigenerational** households. Encourage policies that facilitate and support this living arrangement.
- Encourage in **situ (at home) ageing** as much as possible by creating short-term care facilities like creches or day-care facilities. The report suggests that elderly people receive better care when living with their respective families.

#### **What is the United Nations Population Fund (UNFPA)?**

- **About:**
- It is a subsidiary organ of the **UN General Assembly** and works as a sexual and reproductive health agency.
  - The **UN Economic and Social Council (ECOSOC)** establishes its mandate.
- **Establishment:**
- It was established as a trust fund in 1967 and began operations in 1969.
  - In 1987, it was **officially renamed the United Nations Population Fund** but the original abbreviation, 'UNFPA' for the **United Nations Fund for Population Activities** was retained.
- **Objective:**
- UNFPA works directly to tackle **Sustainable Development Goals** on health (**SDG3**), education (**SDG4**) and **gender equality (SDG5)**.
- **Fund:**
- UNFPA is not supported **by the UN budget, instead, it is entirely supported by voluntary contributions** of donor governments, intergovernmental organizations, the private sector, foundations and individuals.

## GS Paper – 4

### 1. Fostering Ethical AI

#### Why in News?

Recently, some business leaders emphasized the Imperative of collaboration among governments, industry, and ecosystem players to develop **Ethical Artificial Intelligence (AI)**.

#### What is Artificial Intelligence (AI)?

##### ➤ About:

- AI is the **ability of a computer, or a robot controlled** by a computer to do tasks that are usually done by humans because they require human intelligence and discernment.
  - Although there is no AI that can perform the wide variety of tasks an ordinary human can do, some AI can match humans in specific tasks.

##### ➤ Characteristics & Components:

- The ideal characteristic of AI is its ability to rationalize and take actions that have the best chance of achieving a specific goal. A subset of **AI is Machine Learning (ML)**.
  - **ML** is a method of teaching computers to learn from data, without being **explicitly programmed**. It involves using algorithms to analyze and draw insights from data, and then using those insights to make predictions or decisions.
  - Deep Learning (DL) techniques enable this automatic learning through the absorption of huge amounts of unstructured data such as text, images, or video.

#### What is Ethical AI?

##### ➤ About:

- Ethical AI, also known as Moral or Responsible AI, refers to the **development and deployment of AI systems** in a manner that aligns with **ethical principles, societal values**, and human rights.
- It emphasizes the **responsible use of AI technology** to ensure that it benefits individuals, communities, and society as a whole, while minimizing potential harms and biases.

##### ➤ Key Aspects of Ethical AI:

- **Transparency and Explainability:** AI systems should be designed and implemented in a way that **their operations and decision-making processes are understandable and explainable** to users and stakeholders. This promotes trust and accountability.
- **Fairness and Bias Mitigation:** Ethical AI aims to **mitigate biases and ensure fairness in AI algorithms** and models to prevent discrimination against certain individuals or groups based on factors like race, gender, ethnicity, or socioeconomic status.
- **Privacy and Data Protection:** Ethical AI **upholds individuals' right to privacy and advocates for the secure and responsible** handling of personal data, ensuring consent and compliance with relevant privacy laws and regulations.
- **Accountability and Responsibility:** Developers and organizations deploying AI systems **should be accountable** for the outcomes of their AI technologies. Clear lines of responsibility and mechanisms for addressing and **rectifying errors or harmful impacts are essential**.
- **Robustness and Reliability:** AI systems should be **robust, reliable, and perform consistently** across different situations and conditions. Measures should be in place to handle adversarial attempts to manipulate or subvert the AI system.
- **Benefit to Humanity:** AI should be **developed and used to enhance human well-being**, solve societal challenges, and contribute positively to society, economies, and the environment.

#### What are the Ethical Concerns related to Artificial Intelligence?

##### ➤ Risk of Unemployment:

- The hierarchy of labor is concerned **primarily with automation**. Robotics and AI companies are building **intelligent machines** that perform tasks typically carried out by **low-income workers: self-service kiosks** to replace cashiers, fruit-picking robots to replace field workers, etc.

- Moreover, the **day is not far when many desk jobs will also be edged** out by AI, such as accountants, financial traders, and middle managers.
- **Exacerbating Inequalities:**
  - Using artificial intelligence, a company can drastically cut down on relying on the human workforce, and this means that revenues will go to fewer people.
  - Consequently, individuals who have ownership in AI-driven companies will make all the money. Also, AI could compound digital exclusion.
  - Further, **investment is likely to shift to countries where AI-related work is already established**, widening gaps among and within countries.
- **Tech Addiction:**
  - Technological addiction is the **new frontier of human dependency**. AI has already become effective at directing human attention and triggering certain actions.
  - When used right, this **could evolve into an opportunity to nudge society** towards more beneficial behavior.
  - However, in the wrong hands, it could prove detrimental.
- **Discriminating Robots:**
  - We shouldn't **forget that AI systems are created by humans**, who can be biased and judgemental.
  - It can lead to **AI facial recognition** and surveillance technology to discriminate against people of color and minorities.
- **AI Turning against Humans:**
  - What if artificial intelligence itself turned against humans, imagine an AI system that is asked to eradicate cancer in the world.
  - After a lot of computing, **it spits out a formula that does**, in fact, bring about the end of cancer – by killing everyone on the planet.

#### What are the Global Standards for Artificial Intelligence Ethics?

- **In 2021, the Recommendation on the Ethics of Artificial Intelligence** was adopted by UNESCO.
  - It aims to fundamentally shift the balance of power between people, and the businesses and governments developing AI.
- **UNESCO** members have agreed to use affirmative action to make sure that women and minority groups are fairly represented on AI design teams.
- The recommendation also underscores the importance of the proper management of data, privacy and access to information.
- It calls on **member states to ensure that appropriate safeguards** are devised for the processing of sensitive data and effective accountability and redress mechanisms are provided.
- The **Recommendation takes a strong stance that**
  - AI systems should not be used for social scoring or mass surveillance purposes
  - Attention must be paid to the psychological and cognitive impact that these systems can have on children.
  - Member states should invest and promote not only digital, media and information literacy skills, but also socio-emotional and AI ethics skills.
- UNESCO is **also in the process of developing tools to help assess** the readiness in the implementation of the recommendations.

#### Way Forward

- AI models should be designed in a way that allows for a clear understanding of their functioning and decision-making processes.
- AI models should be developed with a strong focus on data privacy and ensuring that individuals' sensitive information is handled appropriately and securely.
- There is a need for **governance norms developed in collaboration with industries** and stakeholders rather than arbitrary legislation, pointing to advanced thinking and ongoing discussions at the government level.
- There is a need for clarity regarding foundational models and data usage in AI systems.
- Ethical AI can be a transformative force, capable of empowering over a billion dreams and bridging the digital divide, not only in India but globally.
- AI and Generative AI must reach diverse populations, being accessible in various languages and regions.

## Prelims Booster – The Hindu & Indian Express

### 1st September

**1) International Finance Corporation (IFC):** IFC has committed a record \$2.97 billion (Rs. 24,561 crore) to India across 30 projects in the FY 2022-23.

- **Genesis:** Established in 1956, IFC is a member of the World Bank Group.
- **Objectives:** Largest global development institution focused on the private sector in developing countries.
- **Other members of the World Bank Group:**
  - International Bank for Reconstruction and Development (IBRD);
  - International Development Association (IDA);
  - Multilateral Investment Guarantee Agency (MIGA);
  - International Centre for Settlement of Investment Disputes (ICSID);
  - India is a member of all World Bank institutions except ICSID.

**2) Compacts of Free Association (COFA):** COFA agreements have become a key part of U.S. efforts to counter China's bid to expand its Pacific influence.

- US first signed COFA accords with three Pacific island states – **FSM, Palau and Marshall Islands** – in the 1980s.
- Now, the **US has signed renewed COFA agreements with Micronesia, PNG and Palau.**

**3) Aatmanirbhar Bharat Rozgar Yojana (ABRY):**

- **Aim:** Increase the **employment generation in the post-Covid recovery phase** along with social security benefits.
- **Implementation:** Through **Employees Provident Fund Organization (EPFO)**, Ministry of Labour and Employment.
- **Incentive:** The government is covering **both the employee and employer EPF contributions** (24% of wages) for establishments with up to 1,000 employees.
- For establishments with over 1000 employees, only the employee's EPF contributions (12% of wages) were covered in respect of new employees.

**4) Renewable Power Generation Costs in 2022:** The International Renewable Energy Agency (IRENA) has recently **launched a report titled "Renewable Power Generation Costs in 2022"**.

- In 2022, the **renewable power deployed globally since 2000** saved an estimated USD 521 billion in fuel costs in the electricity sector.

- In India, thermal coal import costs rose sharply in 2021, by 107%, but power generators either scaled back generation or sourced cheaper coal sources, moderating the price increase in 2022 to 20%.

### 2nd September

**1) Press and Registration of Books (PRB) Act, 1867:** The Centre has issued a notification for the implementation of amendments to provisions of the PRB Act 1867.

- Amendments were brought under the **Jan Vishwas (Amendment of Provisions) Act, 2023.**

• **Key Highlights:**

- **Removed provision of imprisonment** and rationalised quantum of fines.
- **Press Registrar** can suspend or cancel the certificate of registration on grounds of irregularity, not furnishing an annual statement, etc.
- Jurisdiction of Press and Registration Appellate Board extended.

**2) Fungi:** UN Biodiversity has urged people to use the word 'funga' along with 'flora and fauna', to highlight the importance of fungi.

- Fungi, along with **Animalia, Plantae, Protista, and Monera**, form the Five Kingdom Classification of Biology.

• **Characteristics of Fungi:**

- **Cell Type:** Eukaryotic.
- **Cell wall:** Present with chitin.
- **Nuclear membrane:** Present.
- **Body organisation:** Multicellular/loose tissue.
- **Mode of nutrition:** Heterotrophic (Saprophytic/Parasitic).

**3) Kakapo or owl parrot:** Genetic mapping of Kakapo will help in their conservation.

- It is found in **Aotearoa, New Zealand.**
- **IUCN Status:** Critically Endangered.
- **Threats** – Habitat loss, introduction of new predators increases in hunting.
- **Features:**
  - Large, flightless, nocturnal parrot.
  - Breeds once every two to five years.
  - Feeds on leaves, stems, roots, fruit, nectar, seeds, etc.

**4) Fiberization:** The pace of laying out optical fibre in the country has increased since the launch of 5G services.

- Fiberisation is **the process of connecting radio towers** with each other via optical fibre cables.
- It **facilitates full utilisation of network capacity** and carries large amounts of data used in 5G services.
- It will also **aid in providing additional bandwidth** and stronger backhaul support.
- In India, currently, around 38% of the towers are fiberized, compared to 80%-90% in the U.S., Japan and China.

#### 4<sup>th</sup> September

**1) Mitakshara Law:** Recently, the Supreme Court ruled that **children born out of void or voidable marriages** are entitled to parents' share in a Hindu Undivided Family (HUF) governed by **Mitakshara law**.

- It is a Hindu law school that **governs the succession of property in a HUF**.
- It holds that the son, grandson, and grandson's son have a **right to the family property** through **birth**.
- It **also recognizes the right of daughters to inherit property**, albeit with certain limitations.

**2) 9 Dash Lines: Malaysia, Vietnam, Thailand and the Philippines** have rejected the new map of China as it depicts **9 Dash Lines as a Chinese Territory**.

- China stakes claim to **90% of the South China Sea**, and this claim is based on the **U-shaped imaginary nine-dash line** etched on the map in the **1940s by China**.
- It covers various islands including **Paracels, Spratlys** and many other islands.
- Permanent Court of Arbitration of UNCLOS has ruled that China's claim in the area has no legal basis.

**3) Export control of dual-use items:** The government aims to **enhance export control over dual-use items to prevent their access to non-state actors and terrorists**.

- Dual-use items are goods, software and technology that can be used for both civilian and military applications. E.g., chemical and biological tools, etc.
- Currently, the **export of dual-use items in India's Control List called SCOMET list** (Special Chemicals, Organisms, Materials, Equipment, and Technologies) is regulated as per India's Foreign Trade Policy.
- Export of items in this list is either prohibited or permitted under an export authorization from various designated licensing authorities notified by the Government of India.

**4) Rationalization of Coal Linkages:** The Ministry of Coal has initiated a policy initiative called rationalisation of Coal Linkage.

- It **aims to reduce the distance in transportation of coal from Coal Mines to consumers**, thereby decreasing transportation costs and increasing efficiency in coal-based power generation.
- Through this initiative, **Coal PSUs are fostering a more sustainable energy ecosystem**.
- So far, four rounds of rationalization of linkage have taken place, **covering 73 Thermal Power Plants**.
- The move has resulted in the rationalising of a total of 92.16 million tonnes of coal and has saved around Rs. 6240 crores for Government.

#### 5<sup>th</sup> September

**1) Urban Infrastructure Development Fund (UIDF):** The Ministry of Housing and Urban Affairs will disburse the first tranche of loans to fund ongoing projects under UIDF.

- Union Budget 2023-24 has announced the **setting up of UIDF through priority sector lending shortfall**.
- It will be managed by the **National Housing Bank**. It has been operationalised with an initial corpus of Rs. 10,000 crore.
- It is used by public agencies to create urban infrastructure in Tier 2 and Tier 3 cities.
- It is **operationalized along the lines of the existing Rural Infrastructure Development Fund**.

**2) Agriculture Infrastructure Development Cess (AIDC):** AIDC was proposed in the union budget 2021-22 to **raise funds to finance spending on developing agriculture infrastructure**.

- It was **proposed to be levied on several products** including gold, silver, imported apples, imported alcohol, etc.
- **Cess is a kind of special-purpose tax** that is levied over and above basic tax rates.
- **Articles 270 and 271 of the Constitution** empower the Centre to collect cess and deposit it in the Consolidated Fund of India.
- Money is then supposed to be transferred to a segregated fund to be used for a specific purpose.

**3) Impossible Trinity or Trilemma:** It refers to the idea that **an economy cannot pursue independent monetary policy, maintain a fixed exchange rate, and allow the free flow of capital across its borders at the same time**.

- The idea was proposed independently by **Canadian economist Robert Mundell** and British economist **Marcus Fleming in the early 1960s**.



- According to economists, **any economy can choose to pursue only two out of the three policy options** simultaneously in the long run.
- **For ex:** If the exchange rate is fixed but the country is open to cross-border capital flows, it cannot have an independent monetary policy.

**4) Aarogya Maitri Cube under Project BHISHM:** India has built the world's first disaster hospital, called **Aarogya Maitri Cube** which can be **airlifted and assembled in 72 cubes**.

- These cubes contain **medical equipment and supplies** to support 200 survivors for 48 hours.
- These medical cubes have **been indigenously developed under Project BHISHM (Bharat Health Initiative for Sahyog Hita and Maitri)**.
- **India has already donated two Aarogya Maitri Cubes to Myanmar** as a goodwill gesture and one is being readied for donation to Sri Lanka.

### 6<sup>th</sup> September

**1) Laïcité: Laïcité is the French idea of secularism.**

- Freedom and Rights guaranteed by Laïcité
  - **Freedom of conscience** for everyone like freedom to believe or not to believe, practice a religion, to be atheist, agnostic, etc.
  - **Neutrality of State, local authorities and public services**, thereby ensuring their impartiality towards all citizens, regardless of their beliefs and convictions.
- **Prohibition guaranteed by Laïcité**
  - In primary and secondary schools, it is forbidden for pupils to manifest ostensibly their religious affiliation by signs or clothes.
  - In administration, public services etc., employees and agents are not allowed to manifest their religious, political or philosophical beliefs through signs, clothes or proselytism.

**2) Uranium enrichment:** According to the IAEA report **Iran has expanded its stock of near-weapons-grade uranium.**

- **Weapon-grade uranium** is commonly considered to have been enriched **above 90% U-235**
- Uranium enrichment is a **process to create an effective nuclear fuel out of mined uranium** by increasing the percentage of uranium-235 (U-235).
- Uranium found in nature contains only 0.7% of the chain-reacting isotope U-235.
- Most nuclear reactors that produce electricity only require fuel that is enriched to between 3-5% U-235.
- **Highly enriched uranium (HEU) is anything enriched above 20% U-235.**

**3) Enhanced scope of UPI:** RBI said the Unified Payments Interface (UPI) System will also **include pre-sanctioned credit lines issued by banks for transactions.**

- Pre-sanctioned credit line **refers to a pre-approved borrowing limit that a borrower can obtain at any time.**
- So far, only the deposited amount could be transacted through the UPI System.
- UPI facilitates immediate money transfers through mobile devices around the clock.
- Presently it handles 75% of the retail digital payments volume in India.
- **Recently, RuPay credit cards were permitted to be linked to UPI.**

**4) Gujarat Declaration:** WHO has released the outcome document of the **first WHO Traditional Medicine Global Summit 2023 in the form of the Gujarat Declaration.**

- It reaffirmed global commitments towards indigenous knowledge, biodiversity and Traditional, Complementary and Integrative Medicine.
- It **serves as a catalyst to harness the potential of traditional medicine** and focus on their integration into national health systems.

### 7<sup>th</sup> September

**1) Minister without portfolio:** Government of India (Allocation of Business) Rules, 1961 allows the President on the advice of the PM to entrust responsibilities of specified business to a union minister without portfolio.

- Several leaders such as **Lal Bahadur Shastri, V.K. Krishna Menon (at Centre) and J. Jayalalithaa (in Tamil Nadu)** were inducted as ministers without portfolio.
- **A minister without a portfolio means she/he will not have a department to handle or an office to attend.** But she/he is entitled to all perquisites and privileges of a minister.
- Such a minister does not draw salary and emoluments in the capacity of a minister but only as a member of the legislative assembly.

**2) UPI-ATM:** Hitachi Payment Services has unveiled **India's first ever United Payments Interface (UPI) – ATM.**

- Set up as a **White Label ATM (WLA)** in association with the National Payments Corporation of India (NPCI).
- **WLA is owned and operated by non-bank entities.**
- **UPI-ATM will provide customers with unified and secure card-less cash withdrawals.**

- Allows users to withdraw cash from multiple accounts using the UPI app.

**3) Justice Amitava Roy Committee:** The Supreme Court sought views of the centre and states on the Justice Amitava Roy Committee report on prison reforms.

**Key observations:**

- The correctional justice system is **“evidently gender exclusionary”**.
- Increase in population of female prisoners by 11.7% between 2014-19.
- **Only 18% of women prisoners** are allotted **exclusive women’s prison facilities**.
- All categories (undertrials and convicted) of female prisoners are lodged in the same wards.
- Poor access to basic facilities e.g., medical care, legal aid, etc.
- **Recommendations:** Telemedicine consultation, vocational training, sensitization training of prison staff, counselling of women prisoners with psychosomatic disorders or victims of sexual abuse, etc.

**4) Malaviya Mission – Teachers Training Programme (MM-TTP):** University Grants Commission’s MM-TTP was launched.

About MM-TTP.

- It is proposed by restructuring of existing schemes of capacity building of teachers under the Department of Higher Education.
- It **envisages capacity-building training for the faculty and staff** across higher educational institutions (HEIs), in the **light of the National Education Policy (NEP 2020)** within two years through multiple training centres.
- Human Resource Development Centres (HRDCs) will also be renamed as **Madan Mohan Malaviya Teachers’ Training Centre**.

**8<sup>th</sup> September**

**1) Parliament Sessions:** The Constitution of India does not mention the term “Special Session”.

- 'Term' sometimes **refers to sessions the government has convened for specific occasions**.
- **Article 85** mandates that **Parliament should meet at least twice a year** (the gap between two sessions should not exceed six months).
- By convention, **Parliament meets for three sessions in a year**.
- However, provision does not prevent the summoning of Parliament more often and these extra sessions are referred to as special sessions.
- The **Cabinet Committee on Parliamentary Affairs** determines the date and duration of parliamentary sessions.

- **The president then summons MPs for the session.**

**2) Poll Expenditure:** Declaring Candidates for assembly election weeks before the polls announcement has exposed gaps in Election Commission (EC) poll expenditure monitoring rules.

- Rules stipulate accounting of candidates’ spending from the date of their nomination and not even the announcement of polls.
- According to **Section 77(1) of the Representation of the People Act (RPA), 1951**, candidates are expected to keep an account of expenditure from the date on which he/she has been nominated till the date of declaration of the result.
- **Spending more than the maximum limit of election expenses is regarded as a corrupt practice under section 123(6) of RPA, 1951.**

**3) AYUSH Public Health Programmes:** The Union Ayush Minister has called for the strengthening of existing Ayush health programs namely:

- **AYURVIDYA:** It aims to promote a **Healthy Lifestyle through AYUSH for School Children in 75000 Schools**.
- **SUPRAJA:** It aims to **provide maternal & neonatal Intervention** for both the foetus and mother.
- **VAYO MITRA:** It aims to provide **Geriatric Healthcare Services to the elderly**.
- **KARUNYA:** It aims to provide palliative services.

**4) Honeybee:** A study showed that **Honeybees can be used as bio-monitors** (organisms that signify the quality of the environment around them) to **trace Antimicrobial Resistance**.

- **Society:** live in colonies headed by a queen.
- Types:**
- **Queen bee** (heads the swarm and is the largest),
  - **Worker bee** (female bee and has stings).
  - **Drone bee** (Male bee and has no stings).
  - **Perform the ‘Waggle dance’** to communicate between worker bees.
  - **Royal jelly, also called ‘bee milk’** secreted by worker bees, exclusively for feeding to develop a new queen bee.

**9<sup>th</sup> September**

**1) Swachh Vayu Sarvekshan 2023 Rankings:** Swachh Vayu Sarvekshan is an **initiative by the Ministry of Environment, Forest and Climate Change (MoEF&CC)**.

- It ranks cities based on the implementation of activities approved under the city action plan and air quality in **131 National Clean Air Programme cities**.

- Cities are required to do the self-assessment as per the framework provided on the PRANA online portal.
- **Major Components of Assessment:** solid waste management, road dust management, etc.
- **First ranked cities:** Indore (million plus population), Amravati (3-10 lakhs population) and Parwanoo (less than lakhs population).

### 2) Major security breach reported from Idukki Dam:

- It is a **double-curvature Arch dam** constructed across the **Periyar River in Kerala**.
- It is the **third-highest arch dam in India** after the **Tehri Dam** (Uttarakhand) and **Bhakra Nangal Dam** (Himachal Pradesh).
- It supports a 780 MW hydroelectric power station.

### 3) Nairobi declaration: The first Africa Climate Summit 2023 ends with the 'Nairobi Declaration'.

- Nairobi declaration called for an annual climate finance pledge of \$100 bn and reforms to multilateral financial systems.

### 4) Sanchi to soon be India's first 'solar city':

- Sanchi town lies in the **Raisen District of Madhya Pradesh**.
- It is known for its **Buddhist Monuments (Stupa)** which is also a **UNESCO world heritage site**.
- It **sits near the Tropic of Cancer** making it ideal for harnessing solar power.
- Help in reducing emissions of more than 14,000 tonnes of carbon dioxide annually.

### 11<sup>th</sup> September

#### 1) MoUs signed between India-Bangladesh: MoU includes,

- Cooperation in digital payment mechanisms between **National Payments Corporation of India and Bangladesh Bank**.
- Cooperation between the **Indian Council of Agricultural Research and Bangladesh Agriculture Research Council**.
- Renewal of a bilateral cultural exchange programme for 2023-25.

#### 2) Incremental Cash Reserve Ratio (I-CRR): RBI decided to discontinue I-CRR in a phased manner.

- **I-CRR is an additional cash balance** that RBI can ask banks to maintain over and above CRR for a specific period.
- **CRR is the minimum amount of total deposits that banks have to keep with the central bank**.
- Earlier RBI mandated banks to set aside an additional 10% of net demand and time liabilities to absorb surplus liquidity.

- The surplus was caused by the return of ₹ 2,000 banknotes to the banking system, surplus transfer to the government by the RBI, etc.

### 3) Hallmarking: The Centre has notified the third phase of mandatory hallmarking vide Hallmarking of Gold Jewellery and Gold Artefacts (Third Amendment) Order, 2023.

- Hallmarking is the **accurate determination and official recording of proportionate content of precious metal in precious metal articles**.
- **Objective:** Protect the public against adulteration and obligate manufacturers to maintain legal standards of fineness.
- The Hallmarking Scheme is developed by the **Bureau of Indian Standards**, which assigns a **unique HUID (Hallmarking Unique ID) number** to all hallmarked gold jewellery items.
- **Mandatory hallmarking order is applicable on 14, 18 and 22 carats** of gold jewellery/artefacts only.

### 4) Sovereign Gold Bond (SGB) Scheme: The SGB Scheme was launched in 2015 to reduce the demand for physical gold and shift a part of domestic savings, used for gold purchases, into financial savings.

- SGBs are **government securities** and issued under the **Government Securities Act, of 2006**.
- The bond is **issued by the Reserve Bank** on behalf of the Government of India.
- SGBs are restricted for sale to resident individuals, Hindu Undivided Family (HUFs), Trusts, Universities and Charitable Institutions.
- **Tenor:** Period of eight years with an option of premature redemption after 5th year.
- **Minimum investment:** One gram of gold.
- **Maximum limit:** 4 Kg for individual, 4 Kg for HUF and 20 Kg for trusts per fiscal year.

### 12<sup>th</sup> September

#### 1) Bharat Bill Payment System (BBPS): India will soon allow cross-border bill payments via BBPS for NRIs in the UK.

- The **BBPS is already available to NRIs living in Oman, Kuwait, UAE and Bahrain**.
- Allowing cross-border bill payments is part of India's larger digital payment push.
- **BBPS is a Centralised Bill Payment System for recurring payments** (Electricity, Gas, DTH, Water, Telecom Postpaid, FASTag etc.).
- It was **launched by the National Payments Council of India (NPCI)**.
- NPCI is owned by a consortium of banks, aimed at creating robust payments and settlement systems.
- It has also launched UPI.

**2) Matsya 6000:** Under **project Samudrayaan**, Indian scientists are planning to send three people 6000 meters underwater in an indigenously developed submersible called 'Matsya 6000'.

- **Samudrayaan mission is part of the Deep Ocean Mission.**
- Matsya 6000 is being **designed and developed by the National Institute of Ocean Technology (NIOT), Chennai** under the Ministry of Earth Sciences.
- It will facilitate in exploring deep sea mineral resources rich in **Nickel, Cobalt, Rare Earths, Manganese, etc.**, and the collection of samples, for further analysis.
- It has an endurance of 12 hours under normal operation and 96 hours in case of emergency for human safety.

**3) Department of Empowerment of Persons with Disabilities (DEPwD's) Initiatives to Reshape Disability Rights Landscape:** DEPwD will launch 5 initiatives to foster inclusivity, advance disability rights, and harness technology to improve the lives of PwDs.

**Initiatives include:**

- **MOU with Council of Architecture:** To mandate universal accessibility courses in Bachelor of Architecture programs.
- **Release of Anonymous Data of UDID (Unique Disability ID):** To facilitate data-driven decision-making in the disability sector.
- **PM Daksh Portal:** Comprehensive digital platform for PwDs seeking training and employment opportunities, etc.
- **Pathways to Access- Courts on Disability Rights:** Compilation of notable Supreme Court and High Courts judgments into a booklet.
- **Online Case Monitoring Portal by CCPD (Chief Commissioner for Persons with Disabilities):** To handle grievances filed by PwDs.

**4) Goa Roadmap for Tourism:** G20's Delhi Declaration underlined the significance of the 'Goa Roadmap for Tourism' as a vehicle to achieve SDGs.

- It identifies five priority areas in Tourism – **Green Tourism, Digitalization, Skills, Tourism MSMEs, and Destination Management.**
- Delhi Declaration also noted **the launch of the 'Travel for LIFE' initiative**, which nudges tourists and tourist businesses to take simple actions that have tremendous significance for environment protection and climate action.
- Further, **the Ministry of Tourism and the UN World Tourism Organization have launched the G20 Tourism and SDG Dashboard which will serve as a global repository**, showcasing best practices

and case studies of sustainable tourism practices and policies from G20 nations.

**13<sup>th</sup> September**

**1) India-UK Infrastructure Finance Bridge:** It is a collaboration between the **Niti Aayog and the City of London Corporation.**

- **Objective:** Unlocking infrastructure and leveraging the City of London's expertise in structuring and phasing major infrastructure projects.
- **Significance:** Secure long-term investment for the vital infrastructure sector in India.
- **Fortify the foundation for economic growth, job creation**, and shared prosperity in both the UK and India.
- Committed to sustainable infrastructure development, prioritizing environmentally friendly projects that are aligned with SDGs.

**2) Gresham's law:** It states that, in a fixed exchange rate system, **"bad money drives out good"**.

- It comes into play **when the exchange rate between two currencies is fixed by the government at a certain ratio that is different from the market exchange rate.**
- It causes the undervalued currency to go out of circulation.
- Overvalued currency remains in circulation but it does not find enough buyers.
- **It applies not just to paper currencies but also to commodity currencies and other goods.**
- Law, named after **English financier Thomas Gresham**, came into play recently during the Sri Lanka crisis.

**3) Overnight index swap (OIS):** Indian OIS rates rose to their highest levels in the last 10 months.

- An OIS is an **interest rate derivative contract in which two entities agree to swap/exchange a fixed interest rate payment (OIS rate) for a floating interest rate payment.**
- OIS is also considered a measure of monetary policy expectation.
- **Floating rate is usually the overnight interbank rate** {reference rate for Indian OIS contracts is Mumbai Interbank Outright Rate (MIBOR)}.
- **Benefits of OIS:** hedging interest rate risks, reduction of credit risk, and effective management of debt portfolios by financial institutions etc.

**4) Earthquake in Morocco:** Earthquake is caused by to release of energy within the earth's lithosphere generating waves.

- **Epicentre:** located in the Atlas Mountains.
- Reasons for the strongest earthquake in this region.

- Northward convergence of the African plate with respect to the Eurasian plate along a complex plate boundary.
- It was **attributed to oblique-reverse faulting at shallow depth** within the Moroccan High Atlas Mountain range.
- This type of faulting is common in areas of compression along the convergent plate boundaries.

#### 14<sup>th</sup> September

**1) Integrated Government Online Training (iGOT) Karmayogi platform:** iGOT Karmayogi, in partnership with NITI Aayog, has launched a new curated collection dedicated to the **Aspirational Blocks Programme (ABP)**.

- It is a comprehensive online platform to guide individual civil service officials in their capacity-building journey.
- The platform is envisioned to evolve into a vibrant and world-class marketplace for content modelled on the Framework of Roles, Activities, and Competencies (FRACs).
- It was **launched as part of Mission Karmayogi** with the objective of enhancing governance through Civil Service Capacity Building.

**2) Eastern Maritime Corridor (EMC):** A Memorandum of Intent (MoI) on EMC, also known as **Vladivostok-Chennai Maritime Corridor (VCMC)**, was signed between India and Russia in September 2019 formalizing plans to construct EMC.

- Increased India's involvement with the Russian Far East, oil and gas shipments into India, diversified trade routes with Northeast Asia through maritime means, etc.

**3) Most Favoured Nation (MFN):** The government has withdrawn duties imposed over and above the Most Favoured Nation (MFN) duty on certain products from the US to resolve outstanding WTO disputes.

- It is a **WTO principle of not discriminating between one's trading partners**, i.e. all are granted "most favoured nation treatment".
- **Under WTO rules, an advantage negotiated with one country must be extended to all trading partners who are WTO members.**
- However, some exceptions are allowed like countries can set up a free trade agreement, special access to developing countries, etc.

**4) Nyoma airfield:** The Minister of Defence has laid the foundation stone for **Nyoma airfield in Eastern Ladakh**.

- Border Roads Organisation will construct **India's highest fighter airfield in Nyoma**.

- **Nyoma village is located close to the south Bank of Pangong Tso** at 13,700 feet. Nyoma is around 46 kilometres from the Line of Actual Control.

Significance of Nyoma Airfield.

- **Boost air infrastructure in Ladakh** and augment IAF's capability along the Northern border.
- **Counter China's strategy of Anti Access Area Denial (A2AD).**
- A2AD involves restricting the enemy's freedom of movement on the battlefield through the deployment of a wide range of surface-to-air missile sites and long-range radars etc.

#### 15<sup>th</sup> September

**1) National E-Vidhan Application (NeVA):**

- It is a Unicode-compliant software developed to make all legislative body work and data available online for usage by both citizens and Assembly members.
- It embodies the concept of '**One Nation, One Application**'.
- **Funding:** Ministry of Parliamentary Affairs.
- **Technical support:** Ministry of Electronics and Information Technology.
- **Significance:** Automation of the entire legislative process, tracking of decisions and documents, and sharing of information.

**2) Ayushman Bhav Campaign:** It is a collaborative effort spearheaded by **Gram Panchayats to extend comprehensive healthcare coverage to every village and town**.

**It has 3 components:**

- **Ayushman Apke Dwar 3.0:** to provide Ayushman cards to remaining eligible beneficiaries enrolled under the PM-JAY scheme.
- **Ayushman Melas:** To facilitate the creation of Health IDs and issuance of Ayushman Bharat Cards.
- **Ayushman Sabhas:** To raise awareness about vital health schemes and disease conditions.

**3) FDI in Pharmaceutical Sector:**

- Total FDI inflows in the pharmaceutical sector have been Rs. 43,713 crore during the last five years (from 2018-19 to 2022-23).
- **Greenfield (New project):** 100% foreign investment is allowed under the automatic route.
- **Brownfield (Existing project):** FDI up to 74% are allowed under the automatic route and Government approval is required for investment beyond 74%.

**4) Skill India Digital (SID) Platform:** The Ministry of Skill Development and Entrepreneurship launched SID as a

state-of-the-art platform to bring all skilling initiatives together.

- **SID is the Digital Public Infrastructure (DPI)** for the skilling, education, employment, and entrepreneurship ecosystem of India.
- **Objective:** To make skill development more innovative, accessible, and personalized in its embodiment, focusing on digital technology and Industry 4.0 skills.
- The platform incorporates **Aadhar-enabled facial recognition technology as well as artificial intelligence and machine learning algorithms** to recommend customised courses to students.

### 16<sup>th</sup> September

**1) National Judicial Data Grid (NJDG):** The Supreme Court also on-boarded its case data on the NJDG portal.

- **NJDG is a database of orders, judgments and case details of District and subordinate Courts and High Courts** created as an online platform as part of the e-Courts project.
- Data is updated on a real-time basis.
- NJDG works as a monitoring tool to identify, manage & reduce pendency of cases. Recently, reasons for delay have been included in NJDG.
- To track cases related to land disputes, **Land Records data from 26 States have been linked with NJDG.**

**2) Registration of Births and Deaths (Amendment) Act (RBDAA), 2023:** RBDAA, 2023 will come into effect from **1st October, 2023.**

- Will create a National and State level database of registered births and deaths which would help in updating other databases.
- **Obtaining a birth or death certificate** (electronically or otherwise).
- Aadhar details of parents and informants are required.
- Mandatory for all medical institutions to provide a certificate as to the cause of death to the Registrar and a copy of the same to the nearest relative.

**3) International Organisation of Legal Metrology (OIML) certificate:** India has become an OIML certificate-issuing authority.

- The **OIML-Certificate system is a system for issuing, registering, and using OIML certificates**, and their associated test or reports for measuring instruments e.g., **thermometers, clinical thermometers, etc.**
- **Significance:** increase in exports, earning of foreign exchange, and generation of employment.
- **About OIML:**
  - Established in **1955** and headquartered in **Paris.**

- It develops model regulations, standards, and related documents for use by legal metrology authorities and industry.
- **India became a member in 1956.**

**4) Government e-Marketplace (GeM):** It is a 100% Government-owned online platform for public procurement, launched in **2016 by the Ministry of Commerce and Industry.**

- **Aim:** enhance transparency, efficiency, and in public procurement.
- Purchases through GeM by Government users have been authorized and made mandatory by the Ministry of Finance under the General Financial Rules 2017.

### 18<sup>th</sup> September

**1) Goods and Services Tax Appellate Tribunal (GSTAT):** The Ministry of Finance has notified the constitution of 31 GSTAT across all States and UTs.

- In February 2023, the GST Council recommended to set up GSTAT with 1 Principal Bench and a number of State Benches.
- Currently, **High Courts hear disputes in the absence of GSTAT**, making it expensive and time-consuming.
- **GSTAT is a statutory body under the Central GST Act, 2017.**
- It will hear appeals against orders passed by the **Appellate Authority or Revisional Authority.**
- It is the **forum of the second appeal in GST laws and the first common forum of dispute resolution between the Centre and the States.**

**2) Cobweb cycle in economics:** This refers to a phenomenon where **the prices of certain goods witness fluctuations that are cyclical in nature.**

- It happens due to **faulty producer expectations.**
- The producers of agricultural goods, for instance, might decide to increase their output one year because their product commanded a very high price the previous year.
- This, however, might **lead to overproduction and cause prices to slump that year, thus leading to losses.**

**3) Anti-trust laws:** The US government commenced an anti-trust trial against Google to check its dominance in the **Search Engine market to eliminate competition and maintain its monopoly.**

- Antitrust laws are regulations that encourage competition by limiting the market power of businesses and corporations.
- In India, **anti-trust provisions fall within the jurisdiction of the Competition Commission of India (CCI)** under the Competition Act, 2002.

- The Act prohibits anti-competitive agreements, abuse of dominant position by enterprises, and regulates combinations (mergers, amalgamations, and acquisitions).

#### 4) Chief Economist's Outlook: It is a quarterly report released by the World Economic Forum.

- Uncertainty around the trajectory of the world economy remains high despite the fact that fears of a global recession appear to have eased.
- Inflationary pressures subsided (looser labour markets and weaker wage growth have contributed to it).
- Central banks' sharp and synchronized tightening of monetary policy appears to dampen inflationary pressures over the last year.

#### 19<sup>th</sup> September

#### 1) Brandt Line: Brandt Line (developed in the 1980s) is a way of visualizing the world that highlights the disparities and inequalities between the wealthy North and the poorer Global South.

- Richer countries are almost all located in the Northern Hemisphere, except for **Australia and New Zealand**.
- Poorer countries are mostly located in tropical regions and in the Southern Hemisphere.
- **It is based on the North-South:** A Programme for Survival, a report addressing the problems of international inequality.

#### 2) United Nations Commission on International Trade Law (UNCITRAL): India hosts the inaugural UNCITRAL South Asia Conference.

- **UNCITRAL (established in 1966) is a subsidiary body of the General Assembly of the UN with a mandate to further harmonization and unification of the law of international trade.**
- It is **composed of 70 Member States** elected by the General Assembly.
- **Members are elected for terms of six years** (India is a member till 2028).
- **UNCITRAL is not a part of WTO.**
- WTO deals with trade policy issues whereas UNCITRAL deals with laws applicable to private parties in international transactions and is not involved with "state-to-state issues".

#### 3) Information Fusion Centre – Indian Ocean Region (IFC-IOR):

- Established in **2018 in Gurugram**.
- **Objective:** To enhance maritime domain awareness and share information on vessels of interest.
- **Region covered:** Indian Ocean Region and adjoining Seas.

- **Significance:** vital role in enhancing global efforts to combat maritime security threats including Piracy and armed Robbery, Contraband Smuggling, Illegal, unreported and unregulated (IUU) Fishing, etc

#### 4) 'Pralay' Ballistic Missiles: The Ministry of Defence granted approval for the acquisition of a regiment of Pralay ballistic missiles.

- **Type:** Surface-to-surface short-range ballistic missile that is capable of being launched from a mobile launcher.
- **Developed by:** DRDO.
- **Operational range:** 150 to 500 km
- **Payload capability:** 350 to 700 kgs of conventional warhead.
- Unlike intercontinental ballistic missiles that exit the Earth's atmosphere, **short-range ballistic missiles stay within it.**
- While it has a low trajectory and is largely ballistic, it can manoeuvre in flight.

#### 20<sup>th</sup> September

#### 1) Land Port Authority of India (LPAI): It is established under the Land Ports Authority of India Act, 2010 under the Ministry of Home Affairs.

- LPAI is **mandated to develop, sanitize and manage the facilities for the cross-border movement of passengers and goods** at designated points along the international borders of India.
- The chairperson and Members are appointed by the Central Government.
- There are currently ten Land Ports operational in India at **Attari, Agartala, Dawki, Petrapole, Raxaul, Jogbani, Moreh, Sutarkandi, Srimantapur and PTB at Dera Baba Nanak.**

#### 2) Bharatkosh Portal: Bharatkosh aims to provide 24x7 year-round electronic services to deposit money into Government Accounts using internet-based payment technologies to the users at the doorstep through the web-based portal.

- It **serves as a one-stop service** to deposit any fees/fines/other money into the Government Account.
- It is an **initiative of the Controller General of Accounts, Ministry of Finance.**
- It converges all the Civil Ministries/Departments of the Government of India.

#### 3) String-based technology to produce lithium: Usually, lithium extraction involves evaporation from ponds that concentrate lithium from saltwater reservoirs, and salt flats of underground aquifers.

- The string method uses **strings of porous fibres engineered to have a hydrophilic (a substance that has water affinity) core and water-repelling surface.**
- On dip in saltwater solution, it **uses capillary action** and subsequent evaporation of water to concentrate salt ions like sodium and lithium.
- **Significance:** Reduce the amount of land and time needed for production.

**4) Bio-hacking:** Bio-hacking is a term **used to describe various methods employed for enhancing the body's ability to function at peak performance – and maybe even extend one's lifespan.**

- It can include lifestyle changes such as **meditation, exercise; biologics; and technology adoption** such as **electromagnetic stimulators, hyperbaric chambers, etc.**
- Emerging areas of bio-hacking: reducing one's age, enabling motor functions, genetic modifications and improving functioning of the brain etc.

#### 21<sup>st</sup> September

**1) Global Alliance of National Human Rights Institutions (GANHRI):**

- **Genesis:** Established as the International Coordinating Committee of Institutions for the promotion and protection of human rights in 1993.
- It was **renamed as GANHRI in 2016.**
- **Organisational Structure:** It consists of a General Assembly and a Bureau comprising an executive committee of 16 members.
- **Members:** 120 members (88 – A status and 32 – B status NHRIs).
- "A – Accreditation"
- **Functions:** It **accredits National Human Rights Institutions (NHRI) with an 'A status'** (full compliance) or **'B status'** (partial compliance) based on their adherence to meeting the requirements of the Paris Principles.
- They also support NHRIs in capacity building and in various thematic areas to improve human rights.

**2) Five Eyes alliance:** It is an intelligence-sharing arrangement between the **US, UK, Canada, Australia and New Zealand.**

- Under this, intelligence agencies of these five countries share signal, military and human intelligence among themselves.

**3) Indo-Canada relations:** Deteriorating Indo-Canadian relations are expected to have potential economic spillovers in terms of trade and investment between the two nations.

- It led to a pause in negotiations on the **Comprehensive Economic Partnership Agreement (CEPA) between the two nations.**
- It can also adversely impact the Indian diaspora based in Canada.

**4) Nagorno-Karabakh:** Azerbaijan has launched a military operation against **Armenian forces in Nagorno-Karabakh.**

- The region is **referred to as Artsakh by Armenians** and is a **landlocked mountainous area** in South Caucasus.
- It was **claimed by both Azerbaijan and Armenia** after the fall of the Russian Empire in 1917 and has remained a point of tension ever since.
- **The territory is recognised as part of Azerbaijan,** but its inhabitants are predominantly ethnic Armenians.

#### 22<sup>nd</sup> September

**1) Asia Pacific Forum (APF):** The President of India inaugurated the **Annual General Meeting and Biennial Conference of the APF on Human Rights in New Delhi.**

- Established in 1996, it is a **coalition of 26 National Human Rights Institutions (NHRIs)** (presently Afghanistan is suspended) from all corners of the Asia Pacific region.
- **Members:** 17 full members and eight associate members (India has been a full member since 1996).
- To be admitted as a full member, an NHRI must fully comply with the minimum international standards set out in the Paris Principles.

**2) Asian Premium:** Saudi Arabia, the world's second-largest oil producer, has slashed the premium charged on exports to India.

- **Asian premium is an extra amount levied by the Organization of the Petroleum Exporting Countries (OPEC)** from Asian countries above the actual selling price.
- It is believed to be a **discriminatory pricing mechanism that Asia pays higher prices for crude oil exported from the Middle East relative to their counterparts in Europe and the US.**
- Also, Asian countries, dependent heavily on oil imports, are essentially price-takers here.

**3) SIMBEX:** Singapore India Maritime Bilateral Exercise (SIMBEX) is an **annual bilateral naval exercise between India and Singapore.**

**4) Agumbe forest:** The amount of rainfall received in Agumbe has reduced as compared to the other towns in the region.



- Agumbe is in the **Shivamogga district of Karnataka and is referred to as the “Cherrapunji of South India”**, with an average rainfall of 8000 mm.
- It is situated at an elevation of 650 meters within Central Western Ghats and has a distinctive tract of tropical moist evergreen forest.
- It is also **located adjacent to the Someshwara Wildlife Sanctuary and the Kudremukh National Park.**
- It is the **world’s only natural habitat of the King Cobra and is referred to as “The Cobra Capital”.**

### 23<sup>rd</sup> September

**1) Panel of Vice-Chairpersons (VCs):** The Rajya Sabha Chairman constituted an **all-women panel of VCs in Rajya Sabha.**

- Under the Rules of Rajya Sabha, the Chairman nominates from among the members a panel of VCs.
- Any one of them can preside over the House **in the absence of the Chairman/Deputy Chairman.**
- However, they cannot preside over the house when **the seat of Chairman/Deputy Chairman is vacant.**
- In this case, the President appoints a member of the House to perform the Chairman’s duties.
- He/she has the same powers as the Chairman when presiding and holds office until a new panel of VCs is nominated.

**2) Immunity to legislators on bribery:** The Supreme Court has transferred **the 1998 judgement of a 5 judges’ bench in PV Narasimha Rao case to a 7-judge bench to review it.**

- 1998 judgement held that legislators have immunity against criminal prosecution **on bribery charges as per the provisions of Articles 105(2) and 194(2) of the Constitution.**
- **Article 105(2) and Article 194(2) provide immunity to MPs and MLAs (respectively) from proceedings with respect to anything said or voted in Parliament or State Legislature (as the case may be).**

**3) Remission:** The Supreme Court favoured remission to convicts who have served a long period of incarceration if they show reformation.

- Remission refers to the **reduction in the duration of a sentence without changing the nature of punishment.**
- It is mostly granted on the basis of **good conduct, reformation, health grounds etc.**
- **Article 72 and 161** of the Constitution allows the **President and the Governor** respectively to pardon, suspend, remit, or commute a sentence.

- Criminal Procedure Code (CrPC) from **Sections 432 to 435 also lays the procedure for remission.**

**4) International Congress on the Chemistry of Cement (ICCC):** India will host the ICCC in New Delhi in 2027.

- ICCC is a **global platform that summarizes the state of the art of cement chemistry and major trends in cement application.**
- Congresses have been held generally at intervals of four to six years since 1918.
- **Permanent Secretariat:** Dusseldorf, Germany.
- India also organised the **9th ICCC in 1992.**

India is the **second-largest producer of cement in the world.** It accounts for more than the global installed capacity.

### 25<sup>th</sup> September

**1) Personality Rights (PRs):** Delhi High Court granted an ex-parte, omnibus injunction restraining entities from using a celebrity’s PRs.

- Ex-parte injunction is **when relief is granted to a party without hearing the other side.**
- **Omnibus injunction refers to an order granted against any unauthorised use – even those that are not mentioned in the plea.**
- **PRs refer to the name, voice, signature, images or any other feature easily identified by the public is a marker of a celebrity’s personality.**
- Only the owner or creator of these distinct features has the right to derive any commercial benefit from it.
- PRs or their protection are not expressly mentioned in a statute in India but can be traced under the right to privacy and right to property.

**2) Electronic voting machine (EVM):** The Supreme Court declined a plea for an independent audit of the source code governing the EVM system.

- A source code is a **set of written instructions for a machine’s hardware.**
- Petitioner wanted an audit using **the IEEE 1028 standard, a standard for software reviews and audits fixed by the Institute of Electrical and Electronics Engineers (IEEE).**
- EVM is a microcontroller-based portable instrument that does not require electricity and run on an ordinary battery.
- **EVMs were first used in the general election in Kerala in 1982.**
- In 1989, Parliament amended the **Representation of the People Act, 1951** to create a provision for the use of EVMs in the elections.

**3) Emerging-Market Bond Index (EMBI):** JPMorgan to add Indian government bonds to its benchmark EMBI from June 2024.

- EMBI is a **benchmark index for measuring the total return performance of international government and corporate bonds** that meet specific liquidity and structural requirements.
- **Inclusion in EMBI could potentially:**
  - Lower the **country's sovereign borrowing costs**.
  - Help finance the current account deficit.
  - **Free up liquidity for domestic financiers** to deploy in more productive assets.
  - Increase demand for the rupee and support its value.

**4) Artificial Reef (AR):** The Department of Fisheries is promoting AR under **Pradhan Mantri Matsya Sampada Yojana for rejuvenating coastal fisheries**.

- ARs are technology interventions used to rehabilitate or improve natural habitats, increase productivity and manage aquatic resources including habitat enhancement.
- **Advantages:**
  - Reduce wave damage on coasts, helps **regeneration of marine ecosystem and act as a carbon sink**.
  - Enhance recreational fisheries, and eco-tourism, creating suitable areas for diving and reducing conflicts.
  - Restricts bottom trawling in the near shore areas.

#### 26<sup>th</sup> September

**1) Nari Adalats:** Nari Adalat is a part of the **Sambal sub-scheme under Mission Shakti**, which operates under the Ministry of Women and Child Development.

- Mission Shakti **aims to strengthen women's safety, security, and empowerment**.
- **Nari Adalat provides women with an alternate Grievance Redressal Mechanism** for resolving cases of a petty nature (harassment, curtailment of rights etc.) faced by women at the Gram Panchayat level.
- This platform will be utilized for engaging with the public for awareness generation, getting feedback for improvement in schemes and for effective public delivery of service.

**2) India-UN Capacity-building Initiative (IUN-CBI):** India and the UN have launched an **IUN-CBI to operationalize development-relevant deliverables of India's G20 Presidency**.

- **Aim:** Share the country's best practices with partner countries in the Global South.
- **Deliverables:** G20 Action Plan for Accelerating Progress on the SDGs, building Digital Public Infrastructure, etc.

- **Partner:** The UN India team and the Bill & Melinda Gates Foundation will partner to leverage India's Technical and Economic Cooperation platform.
- It will also complement the **India-UN Development Partnership Fund (IUN-DPF)**.
- IU-DPF supports southern-owned and led transformational sustainable development projects across the developing world.

**3) Conservation of Foreign Exchange and Prevention of Smuggling Activities:** COFEPOSA Act, 1974 was enacted to give powers to the executive to detain individuals on the apprehension of involvement in smuggling activities.

- Based on the **concept of Preventive Detention (Article 22)**.
- Empowers central and state governments to detain individuals including foreigners involved in smuggling activities.
- Any order by the state government shall be forwarded to the central government within 10 days.

**4) Exercise in news:**

- **Yudh Abhyas – 23:** It is an annual exercise conducted jointly by the Indian Army and the United States Army.
- **Counter Terrorism Field Training Exercise (FTX 2023):** It is a multinational joint military exercise conducted by the **ASEAN Defence Ministers Meeting (ADMM) Plus Expert Working Group**.
- India participated in the exercise being held in Russia.

#### 27<sup>th</sup> September

**1) Justice Gita Mittal Committee:** It was constituted by the **Supreme Court as a three-member women's committee in the context of Manipur**.

- Its **objective was to supervise, intervene and monitor relief and rehabilitation, restoration of homesteads, religious places of worship, better relief work, etc. in Manipur**.

**2) SARFAESI Act 2002:** RBI mandates banks to disclose seized borrower assets as per the **Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act**.

- SARFAESI Act of 2002 was brought to **protect financial institutions against loan defaulters**.
- It allows secured creditors to seize **collateral against loan, after a 60-day default notice**.
- The borrower's right of redemption of the asset will be extinguished once the bank publishes an auction notice for the sale.

**3) Unified Registration Portal for GOBARdhan:** The Portal seeks to **streamline the registration of Compressed Bio-Gas (CBG) and biogas plants nationwide.**

- CBG/Biogas plants registered in the portal are eligible for assistance of Rs. 1500/MT under the **Market Development Assistance (MDA) scheme of the Ministry of Chemicals & Fertilizers.**
- GOBARdhan (Galvanizing Organic Bio-Agro Resources Dhan) Scheme under the **Ministry of Jal Shakti.**
- **Aim:** To generate wealth and energy by converting cattle dung, agricultural residue, and other organic waste into Biogas, CBG and biofertilizers.

**4) UrbanShift Asia Forum:** The **first programme of UrbanShift Asia Forum was inaugurated in New Delhi.**

- Its objective is to **provide training and capacity-building** to regional cities on **various facets of integrated and sustainable urban development.**
- It brings together diverse expertise, trainers and businesses to find holistic and hands-on solutions for tackling urban challenges.
- **Funded by:** Global Environment Facility, led by the UN Environment Programme and implemented in partnership with the World Resources Institute, C40 Cities, etc.

**28<sup>th</sup> September**

**1) Armed Forces (Special Powers) Act (AFSPA), 1958:** Union Ministry of Home Affairs has extended AFSPA in parts of **Nagaland and Arunachal Pradesh by another 6 months.**

- It grants special powers to the armed forces to bring back order in disturbed areas.
- Disturbed areas are declared under **Section 3 of the AFSPA Act, 1958** when a part or whole state/UT is in such a condition that the use of armed forces in aid of civil power is necessary.
- Declared by Governor of state and administrator of Union Territory or by Central government.
- AFSPA grants extraordinary powers under **Section 4 of the AFSPA Act and immunity (Section 6)** to the armed forces to bring back order in the disturbed areas.

**2) Scheme for Remission of Duties and Taxes on Exported Products (RoDTEP):** The Ministry of Commerce & Industry announced the **extension of RoDTEP support till 30th June 2024.**

- **Introduced as a duty remission scheme on exports.**
- It provides a mechanism for reimbursement of taxes, duties, and levies, which are currently not being refunded under any other mechanism.

- **Based on:** the globally accepted principle that taxes and duties should not be exported, and taxes and levies borne on exported products should be either exempted or remitted to exporters.
- It is **WTO-compatible** and is being **implemented in an end-to-end IT environment.**

**3) Angel Tax:** The Ministry of Finance has notified changes to **Rule 11UA of the Income Tax Rules under the Income Tax Act 1961.**

- Rule 11UA is concerned with the **valuation of shares for the purpose of levying Angel Tax.**
- Angel tax is levied when an **unlisted company issues shares to an investor at a price higher than its fair market value.**
- Earlier, it was imposed only on investments made by a resident investor. **But Budget 2023-24 proposed to extend it to non-resident investors from April 1, 2024.**

**4) Avoid - Shift - Improve (ASI) Framework:** World Bank Group in its report titled 'Decarbonizing Urban Transport for Development' recommended the **ASI framework to decarbonize urban mass transport.**

- **Avoid:** Promote access with fewer or shorter trips to address the overall demand for transport activity.

**Shift:**

- Promote a SHIFT of passenger or freight trips from more carbon-intensive modes to less carbon-intensive modes.
- **Improve:** Improve the efficiency and quality of vehicles, operations, and fuels.

**29<sup>th</sup> September**

**1) Sarna code:** The Jharkhand Government is seeking **recognition of the Sarna religious code for tribals.**

- **Sarna followers are nature worshippers** who do not consider themselves Hindus and have been fighting for a separate religious identity for decades.
- So far, the **census surveys have included them as "others" in the religion column.**
- **Believers of the Sarna faith do not practice idol worship, nor do they adhere to the concept of the Varna system, heaven-hell, etc.**
- The holy grail of the Sarna faith is **"Jal (water), Jungle (forest), Zameen (land)" and its followers pray to trees and hills.**

**2) TRAI released Draft Telecommunication Mobile Number Portability (Ninth Amendment) Regulations, 2023:** TRAI has proposed changes to **Mobile Number Portability (MNP) rules to prevent SIM-swap fraud.**

- **Need for changes:** Mobile connections are being fraudulently ported out by criminals/fraudsters by way of fraudulent SIM Swaps/replacements.

**Suggested changes:**

- **Telcos will need to check if the request is coming from a number that has undergone a SIM swap 10 days prior to the request to port.**
- In such cases, a unique porting code for the request would not be allocated.
- **Donor operator (network from which customer is porting out) to send the demographic details of the customer seeking MNP to porting operator (network to which the customer is porting).**

**3) Methane:** Food and Agriculture Organisation (FAO) released a report on **Methane emissions in livestock and rice systems.**

- Methane is a **colourless, odourless and tasteless greenhouse gas (GHG).**
- It is the **2nd most prevalent GHG emitted by human activities.**
- Methane emissions from anthropogenic activities contribute about 0.5 degrees rise to observed global warming.
- **Its Global Warming Potential (GWP) is 27-30 over 100 years (CO<sub>2</sub>'s GWP is 1).**

**4) Green Ammonia:** Green Ammonia from Egypt was imported through VOC Port, Tamil Nadu for the first time.

- **Green ammonia is made using 100% renewable and carbon-free sources.**
- Blue Ammonia refers to the ammonia for **which by-product CO<sub>2</sub> has been captured and stored, reducing climate impact.**
- Grey/Brown Ammonia refers to the ammonia produced using fossil fuels.
- **Ammonia (NH<sub>3</sub>) is a pungent gas widely used to make fertilisers.**
- Produced through the Haber-Bosch process in which hydrogen and nitrogen are reacted together at high temperatures and pressures.
- **Ministry of Power has notified the Green Ammonia Policy in 2022.**

**30<sup>th</sup> September**

**1) Net Neutrality:** TRAI's recent consultation on 'revenue sharing' and 'selective banning' of OTTs providing communication services, sparked the debate on net neutrality in India.

- Net Neutrality is a **principle advocating for an open and equal playing field for all online content and services.**
- It ensures that **Internet Service Providers treat all data on the Internet without discriminating or**

**charging differently based on the content, source, or destination.**

- The regulatory framework on Net Neutrality was notified by the **Department of Telecommunication in 2018, which upholds the principle of non-discriminatory treatment,** subject to some exceptions.

**2) Sonobuoys:** The Indian Navy plans to equip **MQ-9B Sea Guardian Drones with Sonobuoys.**

- Sonobuoy is a small device used for **underwater acoustic surveillance.**
- It **contains hydrophones** that detect underwater sounds, especially those made by submarines.
- These devices are deployed from aircraft or ships and transmit real-time acoustic data, helping pinpoint potential submarine threats.

**3) Cell Broadcast Alert System (CBAS):** The Department of Telecommunications with the National Disaster Management Authority will be conducting the testing of CBAS.

- It **aims to bolster emergency communication during disasters** and prioritize the safety and well-being of citizens.
- **CBAS represent a cutting-edge technology used to disseminate critical and time-sensitive disaster management messages.**
- Messages are delivered to all mobile devices within specified geographical areas, regardless of whether the recipients are residents or visitors.
- Government agencies and emergency services employ Cell Broadcasts to keep the public informed about potential threats and to provide vital updates during critical situations.

**4) Kamlang Tiger Reserve:** Kamlang Tiger Reserve conducted a butterfly walk and nature trail event for the first time ever in association with NGOs.

- It is **located in the Lohit district of Arunachal Pradesh** and is **named after the Kamlang River which flows through it.**
- **Climate:** Sub-tropical.
- **Flora:** Common species of trees include Ammora wallichii (Amari), Gmelina arborea (Gamari), etc.
- **Fauna:** Snow Leopard, Clouded Leopard, Tiger, Himalayan Palm Civets, Hornbill, etc.
- Glow Lake falls within this reserv

## Prelims Booster – Press Information Bureau (PIB)

1<sup>st</sup> September

**1) ENTAZIA:** It is a **bio fungicide crop protection** product formulated with **Bacillus subtilis**. It was **developed by FMC India**. It will provide farmers with a powerful and sustainable tool to protect their crops from fungi while maintaining environmental integrity. **It leverages the natural capabilities of Bacillus subtilis to control bacterial leaf blight**, one of the most serious diseases of rice. By activating the crop's defence system against plant pathogens, it **acts to prevent and control bacterial leaf blight while staying harmless to natural predators and parasites**. The biological product promotes natural pest defence by utilising the naturally occurring *Bacillus subtilis* to establish a robust line of defence against bacterial leaf blight.

**2) Third Rail Current Collector:** The third rail system is a means of providing electric power to a train through a conductor placed alongside the rails. **Kolkata Metro Railway has been using steel Third Rail for the last 40 years. Kolkata Metro Railway has now decided to use composite Aluminium Third Rail in all the upcoming corridors** being undertaken for construction along with retro fitment in existing corridors with steel Third Rail. **With this Metro Railway, Kolkata would become a member of the elite club of London, Moscow, Berlin, Munich, and Istanbul Metro which have also shifted from steel Third Rail to Aluminium Third Rail.** The advantages of aluminium composite third Rail over steel third Rail are: **Reduction in resistive current loss and improved Traction voltage level, reduced maintenance and life cycle cost, Improvement in the efficiency of train operations, huge improvement in Energy Efficiency, Reduction in carbon footprint.**

**3) Ramon Magsaysay Award:** Recently, Oncologist Ravi Kannan has been named one of the four winners of the 2023 Ramon Magsaysay Award. **It is Asia's premier prize and the highest honour celebrates the greatness of spirit and transformative leadership in Asia.** The Ramon Magsaysay Awardees, annually selected by the RMAF board of trustees, are presented with a certificate and a medallion with an embossed image of Ramon Magsaysay facing right in profile. **From 1958 to 2008, the Award was given in six categories annually: Government Service, Public Service, Community Leadership, Journalism, Literature, and Creative Communication Arts, Peace and International Understanding and Emergent Leadership.** It is presented in formal ceremonies in Manila, Philippines, on August 31st, the birth anniversary of the much-esteemed Philippine President whose ideals inspired the Award's creation in 1957.

**4) National Statistical Office (NSO):** The Ministry of Statistics and Programme Implementation has **two wings, one relating to Statistics and the other Programme Implementation.** The Statistics Wing called the National Statistical Office (NSO). **NSO consists of the Central Statistical Office (CSO), the Computer centre and the National Sample Survey Office (NSSO).**

**Function:** Releases quarterly GDP data on the last working day of the second month after the reporting quarter; Releases the Index of Industrial Production (IIP) every month in the form of quick estimates; Organizes and conducts periodic all-India Economic Censuses; Maintains liaison with international statistical organizations, such as, the United Nations Statistical Division (UNSD), the Economic and Social Commission for Asia and the Pacific (ESCAP) etc.; Prepares national accounts as well as publishes annual estimates of national product, government and private consumption expenditure, capital formation, savings, estimates of capital stock and consumption of fixed capital.

2<sup>nd</sup> September

**1) Diving Support Craft (DSC) Project:** DSC A 20' is built by M/s Titagarh Rail Systems Ltd (TRSL). They are 30 m long catamaran hull ships, with a displacement of approx. 300 tons. **All five (05) DSCs are anticipated to be delivered to the Indian Navy in FY 2024-25.** These crafts are being fitted with state-of-the-art diving equipment and tools for performing diving operations. **These ships are designed to undertake operational/training diving operations in harbours and coastal waters. These ships are indigenously designed and built under relevant Naval Rules and Regulations of the Indian Register of Shipping (IRS).** The hydrodynamic analysis/ model testing of the ships during the design stage was undertaken at the Naval Science and Technological Laboratory (NSTL), Visakhapatnam.

**2) Global Fund:** Recently, the Global Fund announced a deal with generic pharmaceutical manufacturers to significantly slash the price of a cutting-edge HIV drug. **The Global Fund is a worldwide movement to defeat HIV, TB and malaria and ensure a healthier, safer, more equitable future for all. It was set up in 2002.** **Partners:** Governments, civil society, health workers and the private sector. **It raises funds on a three-year cycle, bringing longer-term predictability in the fight against AIDS, TB and malaria.** The funding primarily

comes from the public sector, with 92% of total funding coming from donor governments. The remaining funding comes from the private sector, foundations and innovative financing initiatives. **India joined the Global Fund as a donor in 2006 and pledged US\$25 million for the Global Fund's Seventh Replenishment, covering 2023-2025.**

**3) Adopt a Heritage 2.0 Scheme:** It seeks to invite corporate stakeholders to enhance amenities at monuments by utilising their CSR funds. **It is a revamped version of the earlier scheme launched in 2017. It clearly defines the amenities sought for different monuments as per the Ancient Monuments and Archaeological Sites and Remains Act (AMASR Act) 1958.**

Interested stakeholders will be able to adopt a monument or specific amenities through a dedicated web portal at [Indianheritage.gov.in](http://Indianheritage.gov.in). **The portal will provide them with comprehensive details about the monuments that are available for adoption, including gap analysis and estimated financial requirements.** The selected stakeholders will develop, provide and or maintain amenities in hygiene, accessibility, safety and knowledge categories. In doing so, they will get an opportunity to be recognised as a responsible and heritage-friendly entity. **The term of the appointment will be for a period of five years initially, which may be further extended up to five years.**

**4) RAMBHA-LP Payload:** The Radio Anatomy of Moon Bound Hypersensitive ionosphere and Atmosphere – Langmuir Probe, named after **American chemist and physicist Irving Langmuir, who was awarded the Nobel Prize in Chemistry. It is a device used for characterising a plasma. The probe operates without interruption, aiming to explore the changes occurring in the near-surface plasma environment throughout the lunar day. The device features a 5 cm metallic spherical probe mounted on a 1-metre boom attached to the Chandrayaan-3 lander's upper deck. It was led by Space Physics Laboratory (SPL), Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram.** The initial assessment indicates that the plasma near the lunar surface is relatively sparse. It is characterised by a number density ranging from approximately 5 to 30 million electrons per cubic meter.

#### 4<sup>th</sup> September

**1) Central Bank Digital Currency:** CBDC is the legal tender issued by a central bank in a digital form. It is the same as a fiat currency and is exchangeable one-to-one with the fiat currency, only its form is different. **RBI has demarcated the digital rupee into two broad categories: general purpose (retail) and wholesale.** This demarcation is based on the usage and the

functions performed by the digital rupee and considers the different levels of accessibility. **On November 1, 2022, RBI launched its first pilot project to use digital rupee in the wholesale market for secondary trade in government securities (G-secs).** Wholesale CBDC has the potential to transform the settlement systems for financial transactions undertaken by banks in the government securities (G-Sec) segment, inter-bank market and capital market more efficiently and securely in terms of operational costs, use of collateral and liquidity management. **From December 1, 2022, a retail digital rupee (e-R) pilot was launched.** In effect, **the retail e-rupee is an electronic version of cash and will be primarily meant for retail transactions. It is available for use by all — the private sector, non-financial consumers and businesses.** It will be distributed through intermediaries, i.e., banks. It will not earn any interest and can be converted to other forms of money, like deposits with banks.

**2) M S Swaminathan Award:** It was instituted in 2004 with the objective to recognise the lifetime contributions of eminent persons who have made great impacts and outstanding contributions to agricultural research and development and to the overall food security and sustainability of agriculture, with special reference to India. **It is named after the doyen of Indian Agriculture, Prof. M.S. Swaminathan, Chairman, M.S Swaminathan Research Foundation, Chennai. It is a biennial award constituted by the Retired Indian Council of Agricultural Research Employees Association (RICAREA) and Nuziveedu Seeds Limited (NSL).** The award carries a Cash prize of Rs.2 lakhs (Rupees Two Lakhs only), a Medal, and a Citation. The award is open to all, irrespective of his/her nationality.

**3) National Carbon Registry:** Recently, the United Nations Development Programme (UNDP) has developed open-source software that allows countries to effectively manage national data and processes for trading carbon credits. **This software has recently been accredited as a digital public good (DPG).** As a DPG, the **registry uses open-source code, which allows countries to replicate and adapt the information to fit their own needs and contexts.** The registry's modules, software and technical documentation can be reused and tailored by countries, which could potentially reduce production costs and implementation timelines.

**4) C-TAP initiative:** Recently, the COVID-19 Technology Access Pool (C-TAP) has announced three new licensing agreements acquired through the Medicines Patent Pool (MPP). **It was launched in May 2020 by the WHO and the Government of Costa Rica with the support of**

**44 Member States**, UN Development Programme, Unitaid, UNAIDS, and implementing partners such as MPP. **It works under the principles of the Solidarity call to action.** It was designed to serve as a platform for developers of COVID-19 therapeutics, diagnostics, vaccines and other health products to voluntarily share their intellectual property, knowledge, and data to accelerate technological innovation and expand global production capacity.

#### 5<sup>th</sup> September

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

**2) Components of the Yojana:** Research & Development and Product Innovation support, Capacity Building, Marketing & Publicity, Target beneficiaries.

**3) Structure of G20:** The G20 works in three major tracks — two of them are official and one is unofficial. **The official tracks are the Finance Track and the Sherpa Track.** The unofficial track includes engagement groups or civil society groups.

- The Finance Track is headed by the finance ministers and central bank governors, who usually meet four times a year. **Two meetings are usually held on the side-lines of the World Bank and International Monetary Fund (IMF) meetings.** It mainly focuses on fiscal and monetary policy issues such as the global economy, infrastructure, financial regulation, financial inclusion, international financial architecture, and international taxation. **Today, it has eight working groups.**
- **Sherpa Track was established after the forum became a leaders' summit in 2008.** It consists of representatives of heads of state. **Each representative is known as a Sherpa** — it is the metaphor from the mountaineering domain, where the Sherpa is supposed to do the heavy lifting or assist the mountaineer. It focuses on socio-economic issues such as agriculture, anti-corruption, climate, digital economy, education, employment, energy, environment, health, tourism, trade, and investment. **There are 13 working groups within the Sherpa Track.**
- **The unofficial track comprises engagement or civil groups.** These groups often draft recommendations to the G20 Leaders that contribute to the policy-making process. **The engagement groups are as follows:** Business20,

Civil20, Labour20, Parliament20, Science20, SAI20, Startup20, Think20, Urban20, Women20, and Youth20.

**4) GRIHA norms:** GRIHA is an acronym for Green Rating for Integrated Habitat Assessment. **It is a rating tool that helps people assess the performance of their building against certain nationally acceptable benchmarks.** It evaluates the environmental performance of a building holistically over its entire life cycle, thereby providing a standard for what constitutes a 'green building'. **It is developed by TERI (The Energy and Resources Institute).** This tool has been **adopted by the Ministry of New and Renewable Energy.** It assesses a building out of 34 criteria and awards points on a scale of 100. **In order to qualify for GRIHA certification, a project must achieve at least 50 points.** Certain criteria / sub-criteria are mandatory and have to be complied with for the project to be at all eligible for rating.

#### Project scoring:

- 50-60 points are certified as a 1-star GRIHA rated building,
- 61-70 is a 2-star GRIHA rated building,
- 71-80 is a 3-star GRIHA rating building,
- 81-90 is a 4-star GRIHA rated building,
- 91-100 is a 5-star GRIHA rated building.

#### 6<sup>th</sup> September

**1) Indian Green Building Council:** The Indian Green Building Council (IGBC) is part of the Confederation of Indian Industry (CII) and was formed in the year 2001. **It is India's Premier certification body.** The council offers a wide array of services, which include developing new green building rating programmes, certification services and green building training programmes. **The council also organises the Green Building Congress, its annual flagship event on green buildings.** It is also among the 5 countries that are on the board of the World Green Building Council, discussing global issues at COP and similar global platforms. **The rating is based on six environmental categories, which include sustainable station facility, health, hygiene and sanitation, energy efficiency, water efficiency, smart and green initiatives and innovation and development.** **Headquarters: Hyderabad.**

**2) One-hour trade settlement:** The Securities and Exchange Board of India (SEBI), which had in July announced it was working on launching real-time settlement of trades, is now planning to implement one-hour settlement of trades first. In the one-hour settlement, if an investor sells a share, the money will be credited to their account in an hour, and the buyer

will get the shares in their Demat account within an hour.

Settlement is a two-way process that involves the transfer of funds and securities on the settlement date. **A trade settlement is said to be complete once purchased securities of a listed company are delivered to the buyer and the seller gets the money.** The current cycle of T+1 means trade-related settlements happen within a day or 24 hours of the actual transactions.

**The migration to the T+1 cycle came into effect in January 2023. India became the second country in the world to start the T+1 settlement cycle in top-listed securities after China.**

**3) Lunar Reconnaissance Orbiter (LRO):** It is a NASA spacecraft that was launched on June 18, 2009. **The prime objective of the mission is to make a 3D map of the Moon's surface from lunar polar orbit.** It has also been used to study the Moon's geology, mineralogy, and environment. **It orbits the Moon in an eccentric polar mapping orbit.** LRO is equipped with 7 science instruments, the most well-known of which is a 195-millimetre (7.7-inch) telescope and camera system that can see details up to 2.5 meters across. **LRO is equipped with a laser altimeter that produces 3D maps by shooting lasers at the surface and measuring reflection times.**

The spacecraft also carries two instruments suited to peering into dark craters to search for signs of water ice and a temperature instrument that led to the discovery of the coldest place in the solar system.

**4) Project Naman:** The Indian Army recently launched 'Project Naman', which will entail establishing facilitation and grievance redressal centres for veterans and the kin of personnel who have lost their lives. **The Project will entail establishing facilitation and grievance redressal centres for veterans and the kin of personnel who have lost their lives. The first such centre will be established in Delhi Cantonment.** 'Naman' will house a Common Service Centre, which will facilitate the veterans and their relatives. It will offer all government-to-customer services and also facilitate the updating of pensioners' accounts on the SPARSH portal of veterans, next of kin and dependents.

### 7<sup>th</sup> September

**1) Malaviya Mission:** It aims to provide tailored training programmes for teachers. **This programme will work for the capacity building of faculty members in higher educational institutions (HEI).** It will ensure continuous professional development and help in building capacities of 15 lakh teachers of HEIs through 111 Malaviya Mission centres across India in a time-

bound manner. **It aims to improve the quality of teachers' training, build leadership skills in teachers and help realise the goals of NEP.** The capacity building under the Mission will be mapped to the credit framework to ensure career progression pathways for educators. The Indian Knowledge System has been included in the modules of the Programme. **Human Resource Development Centres to be revamped and known as Madan Mohan Malaviya Teachers Training Centres.**

**2) Battery Energy Storage Systems (BESS) Scheme:** The approved scheme envisages the development of 4,000 MWh of BESS projects by 2030-31. **Financial support of up to 40% of the capital cost as budgetary support in the form of Viability Gap Funding (VGF) is provided by the union government.** The VGF shall be disbursed in five tranches linked with the various stages of implementation of BESS projects. By offering VGF support, the scheme targets achieving a Levelized Cost of Storage (LCoS) ranging from Rs. 5.50-6.60 per kilowatt-hour (kWh), making stored renewable energy a viable option for managing peak power demand across the country. This will not only enhance the integration of renewable energy into the electricity grid but also minimise wastage while optimising the utilisation of transmission networks. This will reduce the need for costly infrastructure upgrades.

**The competitive bidding process approach will foster healthy competition and encourage the growth of a robust ecosystem for BESS,** attracting significant investments and generating opportunities for associated industries. **This scheme is designed to harness the potential of renewable energy sources such as solar and wind power;** the scheme aims to provide clean, reliable, and affordable electricity to the citizens.

**3) Zero Draft Plastic Pollution Treaty:** The second meeting of the Intergovernmental Negotiating Committee (INC) concluded with the member states mandating the INC secretariat to develop a zero draft to end plastic pollution including in the marine environment. **It is an international legally binding instrument to end plastic pollution including in the marine environment.** The zero draft has 10 placeholders to discuss issues like the preamble, definitions, principles and scope, in addition to the institutional arrangements and the final provisions. **Member states such as Saudi Arabia, Iran, and China at INC-2 stressed the importance of defining the scope of the legally binding instrument.** India had agreed with this proposal.

**4) Dementia:** It is a syndrome that can be caused by a number of diseases which, over time, destroy nerve



cells and damage the brain. **It will typically lead to deterioration in cognitive function.** Symptoms include Changes in mood and behaviour sometimes happen even before memory problems occur, Forgetting things or recent events, Losing or misplacing things, Getting lost when walking or driving, Being confused, even in familiar places, and Losing track of time. There is no cure for dementia. Currently, more than 55 million people have dementia worldwide, over 60% of whom live in low-and middle-income countries. Every year, there are nearly 10 million new cases. **WHO recognises dementia as a public health priority. The World Health Assembly endorsed the Global Action Plan on the Public Health Response to Dementia 2017-2025.**

### 8<sup>th</sup> September

**1) Bharat Drone Shakti 2023:** The Indian Air Force (IAF) is teaming up with the Drone Federation of India to co-host 'Bharat Drone Shakti 2023'. The event will take place at the IAF's airbase in Hindan (Ghaziabad) and feature live aerial demonstrations by the Indian drone industry. **These demonstrations will encompass a diverse range of drone applications, including survey drones, agriculture drones, fire-fighting drones, tactical surveillance drones, heavy-duty logistics drones, loitering munition systems, drone swarms, and anti-drone solutions.** The event will also witness the active participation of more than 75 drone start-ups and corporate entities.

The event promises to showcase the capabilities of Indian drones and provide a platform for networking, knowledge exchange, and collaboration among industry leaders, innovators, and enthusiasts.

**2) Bharat: The Mother of Democracy" Portal:** On the eve of the G20 leadership summit, the Ministry of Culture launched a portal of the mega exhibition— 'Bharat: The Mother of Democracy'. **The portal showcases the content on the history of democracy in India, showcasing 7,000 years of democratic ethos starting from the Sindhu-Saraswati civilisation to 2019.** It is available in 16 languages, including German, French, Spanish, Arabic, Portuguese, Italian, Turkish, and Russian besides English and Hindi. **The portal is divided into five sections and 22 sub-sections starting from Sindhu-Saraswati Civilisation (6000-2000BCE), Mahajanapada and Gantantra (7-8 BCE), Vijaynagar Empire (14-16 century), and Mughal emperor Akbar reign (1556-1605) to Constitution of India (1947) and Elections in Modern India (1952 onwards).**

**The website- [www.motherofdemocracyg20.com](http://www.motherofdemocracyg20.com)— is curated by the Indira Gandhi National Centre for the Arts (IGNCA).**

**3) NAVAL EXERCISE VARUNA:** Recently, Phase II of the Varuna naval exercise between the Indian and French

Navy was conducted in the Arabian Sea. It is the **bilateral Naval Exercise between India and France initiated in 1993.** The exercise witnessed the participation of guided missile frigates, tankers, Maritime Patrol Aircraft and integral helicopters from the two sides. Units of both navies endeavoured to enhance and hone their warfighting skills, improve interoperability and demonstrate their ability to promote, peace, security and stability in the region. **The exercise also facilitates operational-level interaction between the two Navies to foster mutual cooperation for good order at sea,** underscoring the shared commitment to ensuring security, safety and freedom of the global maritime commons.

**4) Dark Patterns:** Dark patterns refer to **deceptive design techniques used in user interfaces to manipulate or deceive users into taking certain actions or making specific choices online.** Such patterns are unethical user interface designs that deliberately make the Internet experience harder or even exploit the users.

**These patterns exploit cognitive biases and behavioural tendencies to trick or mislead users,** often for the benefit of the platform or business implementing them. These tricks can include creating a false sense of urgency, making people feel bad for not doing something, forcing them to take certain actions, trapping them into subscriptions, or constantly bothering them.

### 9<sup>th</sup> September

**1) WTO Dispute Settlement Mechanism:** The Dispute Settlement Understanding (DSU) is the main WTO agreement on settling disputes. **The General Council of WTO convenes as the Dispute Settlement Body (DSB) to deal with disputes between WTO members. The DSB has the authority to:** establish dispute settlement panels; refer matters to arbitration, adopt panel, Appellate Body and arbitration reports; maintain surveillance over the implementation of recommendations and rulings contained in such reports; authorize suspension of concessions in the event of non-compliance with those recommendations and rulings. Ideally, disputes are resolved through negotiations. If this is not possible, WTO Members can request the establishment of a panel to settle the dispute. The panel will issue a report, which can subsequently be appealed before the WTO's Appellate Body on questions of law. Appeals are handled by the permanent seven-member Appellate Body which is set up by the DSB and broadly represents the range of WTO membership. It hears appeals from reports issued by panels in disputes brought by WTO members. The Appellate Body can uphold, modify or reverse the legal findings and conclusions of a panel. If a WTO member

does not comply with recommendations from dispute settlement, then trade compensation or sanctions, for example in the form of increases in customs duties, may follow.

**2) Morocco:** It is a mountainous country in western North Africa that lies directly across the Strait of Gibraltar. It retains much of its ancient architecture and even more of its traditional customs. **Morocco's largest city and major Atlantic Ocean port is Casablanca, an industrial and commercial centre. Capital: Rabat.** It borders Algeria to the east and southeast, the Western Sahara to the south, the Atlantic Ocean to the west, and the Mediterranean Sea to the north.

**It is the only African country with coastal exposure to both the Atlantic Ocean and the Mediterranean Sea. Two small Spanish enclaves, Ceuta and Melilla, are situated on the country's northern coast. Major mountain ranges: Atlas and Rif. Spoken Languages: Arabic and Amazigh (Tamazight). Religion: Predominantly Islam** with a rich Islamic heritage. Morocco has a constitutional monarchy with two legislative houses. The Moroccan economy remains heavily dependent on the export of raw materials.

**3) Global Biofuels Alliance:** It is an India-led Initiative to develop an alliance of Governments, International organisations and Industry to facilitate the adoption of biofuels.

A total of 19 countries and 12 international organisations have so far agreed to join the alliance, including both G20 members and non-member countries. **India, Brazil and the US are the founding members of the alliance. This Alliance will be aimed at facilitating cooperation and intensifying the use of sustainable biofuels,** including in the transportation sector. It will emphasize strengthening markets, facilitating global biofuels trade, developing concrete policy lesson-sharing and providing technical support for national biofuels programs worldwide.

**It will support worldwide development and deployment of sustainable biofuels by offering capacity-building exercises across the value chain, technical support for national programs and promoting policy lessons-sharing.** It will facilitate mobilising a virtual marketplace to assist industries, countries, ecosystem players and key stakeholders in mapping demand and supply, as well as connecting technology providers to end users' trade.

#### 11<sup>th</sup> September

**1) Global Stocktake:** Recently, the synthesis report of the first Global Stocktake was released by the United Nations Framework Convention on Climate Change on the eve of the G20 leaders' summit. **It refers to a**

**proposed five-year review of the impact of countries' climate change actions.** Under the Paris Agreement, every country must present a climate action plan in five-year cycles. **The first global stocktake was scheduled for 2023 under the Paris Agreement.** It will assess whether the net result of the climate actions being taken was consistent with the goal of keeping the increase in global average temperature from pre-industrial times to within 2 degrees Celsius.

- It will help the world determine whether it needs to do more — and how much more.
- It also recognizes that money needs to be made available for Loss and Damage and energy transition in developing countries.

**2) Heads of Asian Coast Guard Agencies Meeting (HACGAM):** The HACGAM is an annual event hosted by one of its member nations on a rotational basis. It was initiated by Japan to promote cooperation among regional coastguards. **The forum has 23 member Coast Guard agencies and two associate members – the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) and the United Nations Office on Drugs and Crime (UNODC).** It was launched after the capture of the pirated vessel MV Alondra Rainbow by the Indian Coast Guard in November 1999.

- **The primary focus of the HACGAM is to foster cooperation between the coast guards of the member Asian states to ensure and promote safe, secure and clean seas in the region.** The Indian Coast Guard chairs the search and rescue (SAR) working group and is a proactive member of the other working groups, which include environmental protection, controlling unlawful acts at sea, and information sharing. **In 2022, the 18th edition of the meeting was hosted by the ICG in New Delhi.**

**3) India-Middle East-Europe Economic Corridor:** The project includes **India, the UAE, Saudi Arabia, the European Union, France, Italy, Germany and the US.** The project will aim to enable greater trade among the involved countries, including energy products. **The IMEC comprises an Eastern Corridor connecting India to the Gulf region and a Northern Corridor connecting the Gulf region to Europe.** It will include a railway and ship-rail transit network and road transport routes. **The corridor will include a rail link as well as an electricity cable, a hydrogen pipeline and a high-speed data cable.** In the coming times, it will be a major medium of economic integration between India, West Asia and Europe. **The rail and shipping corridor is part of the Partnership for Global Infrastructure Investment (PGII).**

**4) FAO Food Price Index:** The Food and Agriculture Organization's (FAO) price index fell to a new two-year low in August. **The Food and Agriculture Organization's (FAO) food price index is a measure of the monthly change in international prices of a basket of food commodities.** It consists of the average of five commodity group price indices (cereal, vegetable, dairy, meat, and sugar), weighted with the average export shares.

- **Base year: 2014-16**

#### 12<sup>th</sup> September

**1) Digital Markets Act:** It is a **ground-breaking European law aiming to prevent large online platforms that connect consumers with content, goods, and services from abusing their market power.** The European Commission believes that keeping the big internet companies in check can lead to more competition and choice, greater innovation, better quality, and lower prices.

##### Key measures:

- Tighter restrictions on how digital gatekeepers can use people's data—users must give their explicit consent for their activities to be tracked for advertising purposes.
- **Messaging services and social media platforms teaming up and sharing users.** This could mean, for example, Meta-owned WhatsApp users being able to send messages directly to a completely different messaging service, such as Telegram.
- Presenting users with the option to uninstall preloaded applications on devices.
- Gatekeepers are banned from ranking their own products or services higher than others in online searches.

**2) Nipah Virus:** Nipah virus infection is a **zoonotic illness that is transmitted from animals to humans.** The organism that causes Nipah Virus encephalitis is an **RNA or Ribonucleic acid virus of the family Paramyxoviridae, genus Henipavirus,** and is closely related to Hendra virus. It was **first broke out in Malaysia and Singapore in 1998 and 1999.** It first appeared in domestic pigs and has been found among several species of domestic animals, including dogs, cats, goats, horses and sheep. **The disease spreads through fruit bats, or 'flying foxes,' of the genus Pteropus, who are natural reservoir hosts of the Nipah and Hendra viruses.** The virus is present in bat urine and, potentially, bat faeces, saliva, and birthing fluids. Typically, the human infection presents as an encephalitic syndrome marked by fever, headache, drowsiness, disorientation, mental confusion, coma, and potentially death. There is no definitive treatment available for the virus.

**3) Self-Regulatory Organisation:** It is a non-governmental organisation that sets and enforces rules and standards relating to the conduct of entities in the industry (members). **The aim is to protect the customer and promote ethics, equality, and professionalism.** These typically collaborate with all stakeholders in framing rules and regulations. **The recognised SRO will serve as a two-way communication channel between its members and the RBI.** It will work towards establishing minimum benchmarks and standards and help in institutionalising professional and healthy market behaviour among its members. These will impart training to the staff of its members and others and will conduct awareness programmes. **It will establish a uniform grievance redressal and dispute management framework across its members.**

**4) Eastern Economic Forum:** The Union Minister of Ports, Shipping & Waterways will attend the Eastern Economic Forum, which is being held at the Russian port city of Vladivostok. **It was established in 2015 to support the economic development of Russia's Far East and to expand international cooperation in the Asia-Pacific region.** It is a key international platform for establishing and strengthening ties within the Russian and global investment communities. For a comprehensive expert evaluation of the economic potential of the Russian Far East, the investment opportunities it offers, and business conditions within advanced special economic zones.

#### 13<sup>th</sup> September

**1) Duchenne Muscular Dystrophy:** It is a rare genetic disorder that results from an X-chromosome mutation. It was **first described by the French neurologist Guillaume Benjamin Amand Duchenne in 1860.** It is characterised by progressive muscle degeneration and weakness due to alterations of a protein called dystrophin that helps keep muscle cells intact. **It is a multi-systemic condition affecting many parts of the body, which results in the deterioration of the skeletal, heart, and lung muscles.** It primarily affects males, while females are typically carriers. **It can begin as early as age 2 or 3, first affecting the proximal muscles** (those close to the core of the body) and **later affecting the distal limb muscles** (those close to the extremities). Usually, the lower external muscles are affected before the upper external muscles. The affected child might have difficulty jumping, running, and walking. Other symptoms include enlargement of the calves, a waddling gait, and lumbar lordosis (an inward curve of the spine). Later on, the heart and respiratory muscles are affected as well. **Presently available treatments are gene therapy,**

**exon skipping, stop codon read-through and gene repair.**

**2) Overnight Index Swap:** Recently, Indian overnight index swap (OIS) rates rose to their highest levels in 10 months due to offshore payments and the triggering of stop losses. It is a derivative instrument where returns under a fixed-rate asset are swapped against a predetermined published index of a daily overnight reference rate for an agreed period of time. **The primary purpose of an OIS is to manage interest rate risk, particularly the risk associated with fluctuations in the overnight lending rate.** An overnight index swap rate is calculated each day. **This rate is based on the average interest rate institutions with loans based on the overnight rate have paid for that day.**

**3) Eastern Maritime Corridor (EMC):** The EMC is a proposed sea route between the Indian port of Chennai and the Russian port of Vladivostok. **The corridor is estimated to bring down transportation time between Indian and Russian ports in the Far East Region by up to 40 per cent (24 days from the current 40 days).**

The present trade route between Mumbai, India, and St. Petersburg, Russia, covers a distance of 8,675 nautical miles. **The EMC will cover a distance of about 5,600 nautical miles, which is significantly shorter than the current route via the Suez Canal.** Once complete, EMC will take 24 days, down from presently over 40 days, to transport goods from India to Far East Russia. For India, it will provide a shorter and more efficient route to access the markets of the Far East, such as China and Japan.

**4) Recent NSO Data:** According to the latest National Statistical Office (NSO) data, India's retail inflation rate eased to 6.83% in August from a 15-month high of 7.44% in July 2023, mainly due to a slide in prices of food items, especially vegetables. However, it continued to remain above the upper limit of the 4+/-2% band of the Reserve Bank of India's (RBI) medium-term inflation target. The retail inflation of 6.83% in August 2023 makes it the **4th instance of headline inflation staying higher than the upper limit of the target during this calendar year and the seventh such instance since August 2022.** In the Index of Industrial Production (IIP), manufacturing in absolute terms improved to 141.2 in July from 135 a year ago and 141.1 in the previous month. The worrisome area is the contraction of 2.7% yoy in consumer durables in July 2023 reflective of the weakness and skewness in consumption demand.

**14<sup>th</sup> September**

**1) C-295 MW aircraft:** It is a transport aircraft with a 5-10 tonne capacity. **It will replace the legacy Avro aircraft in the Indian Air Force (IAF) procured in the 1960s. It is a versatile and efficient tactical transport aircraft that can perform a number of different missions.** The aircraft, with a flight endurance of up to 11 hours, can carry out multi-role operations under all weather conditions. **It can routinely operate day as well as night combat missions from desert to maritime environments. It can also operate on short, unprepared airstrips as it is capable of Short Take-off and Landing (STOL).** It has a rear ramp door for quick reaction and para-dropping of troops and cargo. **Short take-off/land from semi-prepared surfaces is another of its features. It can be converted into an air tanker that can deliver up to 6,000 kg of gasoline to fixed and rotary wing receivers by adding a detachable refuelling kit.** The C-295 can be transformed into a powerful water bomber that can put out forest fires with up to 7,000 litres of water due to a flexible roll-on/roll-off system. **It is equipped with a close-air-support operation that uses an Intelligence Surveillance and Reconnaissance (ISR) with a multi-mission radar that can also be weaponized.** The aircraft can be utilised for casualty or medical evacuation as well as airdropping loads and paratroopers.

**2) eCourts Project:** The eCourts Project was conceptualised based on the **"National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary – 2005"** submitted by eCommittee, Supreme Court of India, with a **vision to transform the Indian Judiciary by ICT enablement of Courts.** E-committee is a body constituted by the Government of India in pursuance of a proposal received from the Hon'ble the Chief Justice of India to constitute an eCommittee to assist him in formulating a National Policy on computerisation of the Indian Judiciary and advice on technological communication and management-related changes. It is a **Pan-India Project, monitored and funded by the Department of Justice, Ministry of Law and Justice, Government of India for the District Courts across the country.**

**3) Skill India Digital (SID) Platform:** SID serves as India's Digital Public Infrastructure (DPI) for the skill development, education, employment and entrepreneurship ecosystem. **SID Platform aims to bring all skilling initiatives under a single umbrella and provide skill development and entrepreneurial support to people.** Built by the **National Skill Development Corporation (NSDC)** in collaboration with multiple industry players, **the platform is part of the World Bank-assisted Skill Acquisition and**

**Knowledge Awareness for Livelihood Promotion (SANKALP) programme.** The platform aligns with the vision articulated in the G20 framework for building Digital Public Infrastructure (DPI) and the digital economy. **It supports multiple Indian languages for inclusivity and uses Aadhaar-based eKYC for secure access.** The platform incorporates Aadhaar-enabled facial recognition technology as well as artificial intelligence and machine learning algorithms to recommend customised courses to students. The platform also integrates government training programmes from both Central and State governments, creating a unified hub for skill development initiatives. **It has introduced Digitally Verified Credentials (DVCs), a secure and tamper-proof way to showcase skills and qualifications.** Users can confidently present their qualifications in a digital format that is inherently authentic. Additionally, SID offers Digital CVs through personalised QR Codes for easy access to an individual's skills and experiences.

#### 16<sup>th</sup> September

**1) TTPs-based Cybercrime Investigation Framework:** TTPs stands for **Tactics, Techniques, and Procedures.** It is the term used by cybersecurity professionals to describe the behaviours, processes, actions, and strategies used by a threat actor to develop threats and engage in cyber-attacks. It is a tool for apprehending cybercriminals' modes of operations in a crime execution lifecycle. **It was developed by the I-hub NTIHAC foundation (c3ihub) at IIT Kanpur with support from the Department of Science and Technology (DST) under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).**

The framework can help in tracking and classifying cybercrimes, identifying the chain of evidence required to solve the case and mapping evidence onto the framework to convict criminals.

**2) Samudra Prahari:** It is an Indian Coast Guard Ship (ICGS) specially designed for pollution control. **It is the first pollution control vessel of its kind in Southeast Asia. It is equipped with the most advanced pollution Response and Control equipment for mitigating oil spills in the Exclusive Economic Zone.** It has tanks and inflatable barges for storage of oil spills. The ship is capable of unhindered oil recovery operations with a storage capacity of 500 KL.

**The vessel is designed to operate a twin-engine Advanced Light Helicopter and to operate and embark Chetak helicopter.** Special features include an integrated platform management system, power management system, and high power external firefighting system and one indigenous gun mount with

firefighting system. The ship has unmanned machinery operation capabilities.

**3) Gandhi Sagar Wildlife Sanctuary:** It is situated on the northern boundary of the Mandsaur and Nimach districts in Madhya Pradesh. It lies in the **Khathiar-Gir dry deciduous forest ecoregion.** It was notified in the year 1974 and added to the list of sanctuaries in 1984. River Chambal flows through the sanctuary, dividing it into two parts.

**The sanctuary has many places of historical, archaeological and religious importance, such as Chaurasigarh, Chaturbhujnath temple, Bhadkaji rock paintings, Narsinghjar Hinglajgarh fort, Taxakeshwar temple etc.** The principal tree species found here are Khair, Salai, Kardhai, Dhawda, Tendu and Palash. Herbivores like Chinkara, Nilgai and Spotted Deer, and carnivores like the Indian Leopard, Striped Hyena and Jackal are found in good numbers in the region. It also has a good population of crocodiles, fish, otters and turtles

**4) Sangeet Natak Akademi Amrit Awards:** It is a national honour bestowed on performing artists as well as teachers and scholars in the field of performing arts. **The recipients are selected by the Akademi's General Council. The Akademi's General Council consisted of distinguished musicians, dancers, theatre artists and scholars in these disciplines and nominees of the Government of India, state governments, and Union Territories.** The honour carries a purse money of Rs. 1,00,000/- (Rupees one lakh) besides a Tamrapatra and Angavastram.

The award was constituted to honour Indian artists aged above 75 years who have not been accorded any national honour in their career so far.

#### 18<sup>th</sup> September

**1) Pralay ballistic missiles:** It is a **quasi-ballistic surface-to-surface missile.** It can hit targets 150-500 km away. The missile can carry 350-700 kg of high-grade explosives. It was **developed by the Defence Research Development Organisation (DRDO).** It is powered by a solid propellant rocket motor and other new technologies. The missile guidance system includes state-of-the-art navigation and integrated avionics. It can change its path after covering a certain range in mid-air.

**2) Santiniketan:** Santiniketan, the home of late Nobel laureate Rabindranath Tagore, has been added to the UNESCO World Heritage Sites list. **It is located in the state of West Bengal.**

It was established in 1901 by Rabindranath Tagore. It was a residential school and centre for art based on ancient Indian traditions.

In 1921, a 'world university' was established at Santiniketan, later recognised as 'Visva Bharati'. Visva-Bharati in Santiniketan is Bengal's only central university whose chancellor is the Prime Minister. It is distinct from the prevailing British colonial architectural orientations of the early 20th century and of European modernism. It represents approaches toward pan-Asian modernity, drawing on ancient, medieval and folk traditions from across the region.

**3) World Ozone Day: World Ozone Day, or International Day for the Preservation of the Ozone Layer, is observed annually on September 16.** It is celebrated every year to spread awareness among people about the depletion of the Ozone Layer and the measures taken/ to be taken to preserve it. **The theme for World Ozone Day 2023 is "Montreal Protocol: fixing the ozone layer and reducing climate change."** In 1994, the UN General Assembly proclaimed 16 September the International Day for the Preservation of the Ozone Layer, commemorating the date of the signing, in 1987, of the Montreal Protocol on substances that deplete the Ozone layer. The protocol was signed on September 16, 1987, in Montreal, Canada, to address the depletion of the ozone layer.

**4) Shanti Swarup Bhatnagar (SSB) Prize:** Recently, the latest set of winners for the Shanti Swarup Bhatnagar Prize was announced. For the second time in a row, CSIR failed to honour a single woman scientist for outstanding contribution to science and technology. **Instituted in 1958 by the Council of Scientific and Industrial Research (CSIR), about 12 scientists under the age of 45 years win this prize every year. The prizes cover seven domains of science; physical, chemical, biological, medical, engineering, mathematics and atmospheric.** It is known to be a significant boost not just to the scientific career of the winner but also to the profile of their institution. **Asima Chatterjee was the first woman to win it in the Chemical Sciences category in 1961.** It took a 14-year-long wait for the next woman laureate and a 48-year-long wait for a woman to win it in her category. **The 23 winners across disciplines in 2021 and 2022 are all men. This means that only 19 out of the almost 600 awarded Bhatnagar prizes have gone to women scientists.** The Nobel Prizes have a similarly pathetic gender ratio. Only 24 of the 343 science prizes have gone to women.

**19<sup>th</sup> September**

**1) Vibhav Anti-Tank Munition:** It is a self-neutralising anti-tank mine. Designed and developed completely indigenously in a joint venture with the Defence Research and Development Organisation (DRDO) in India, "Vibhav" is a point-attack anti-tank munition. It

is designed to provide mobility kill against all enemy armoured vehicles. The munition is under production by the Kalyani Group for the Indian Army. **The anti-tank mine is made of new-age plastic, which gives it adequate strength and durability to withstand the requirements of storage, handling and operating in varying field conditions.** The munition can be laid both mechanically or manually. **A host of safety and actuation mechanisms have been incorporated in "Vibhav" to make it safe to handle, lethal against targets and reliable.** The integrated explosive, mechanical and electronic safety features ensure utmost operator safety. The munition also incorporates an **electronic anti-handling and anti-lift device (EAHALD) that stays active for 120 days once armed.** It has mechanical timers. Due to this, after 120 days, it will be self-neutralised. **It has a storage life of 10 years with no special storage requirements.**

**2) Kisan Rin Portal:** The portal helps farmers' avail of subsidised loans under the Kisan Credit Card (KCC). It was developed in collaboration with multiple government departments. **It offers a comprehensive view of farmer data, loan disbursement specifics, interest subvention claims, and scheme utilisation progress.** It fosters seamless integration with banks for more focused and efficient agriculture credit.

**3) Operation Sajag:** It is a coastal security drill conducted by the Indian Coast Guard along the west coast. It involved all stakeholders of the Indian coastal security construct. **A total of 118 ships, including those from Customs, Marine Police, Ports, and the Indian Navy, participated in the drill.** The drill facilitates revalidation of the coastal security mechanism and brings awareness among the fishermen at sea. During the drill, extensive checking and verification of documents and crew passes of all fishing boats, barges and craft at sea was undertaken. Biometric card readers have also been issued to security agencies. **Besides monitoring of dhows, island security and community interaction programmes have been institutionalised under the coastal security construct.**

**4) Bima Sugam platform:** It will enable individuals to buy life, health, motor or property insurance policies online. The platform will enable easy access under a single roof for insurance companies, agents, brokers, banks and even aggregators. **The platform will act as a centralised database which will assist consumers with all insurance-related.** It will also pave the way for a speedy acceptance of new or sandbox products. **Cyril Amarchand Mangaldas (CAM) has been appointed as the legal counsel for the project.** The responsibilities of CAM will include the **incorporation of a Section 8 not-for-profit company,**

which will be the company owning the Bima Sugam platform. The platform will support all personal and commercial/business insurance requirements and support in identifying and comparing optimal products to meet user requirements within stipulated timelines. **The entire spectrum of insurance offerings through the platform will include life insurance and all its variants — term plans, savings (Par and Non-Par), annuities, pension plans, etc.** The platform will have to demonstrate an end-to-end digital on-boarding journey for all insurance products without any manual interventions.

### 20<sup>th</sup> September

**1) Weather Information Network Data Systems (WINDS) portal:** It was launched in July 2023 by the Ministry of Agriculture and Farmers' Welfare to leverage advanced weather data analytics to give stakeholders actionable insight to make informed weather decisions on agriculture. **Crucial weather-related information and data will be available to the farmers through WINDS.** The portal also shares the ministry's parametric crop insurance scheme, along with the non-scheme parametric insurance industry programmes for crop risk mitigation and disaster risk reduction and mitigation being run by the insurance industry. **The WINDS initiative is laying emphasis on setting up a strong network of weather stations.** Through this initiative, the target is to establish a wide network of weather stations at the block and gram panchayat levels. This extensive network of weather stations will enable accurate monitoring of weather patterns, effective planning, risk assessment and timely response to meteorological challenges.

**The goal is to bridge the gap in weather information availability and empower decision-makers, farmers and stakeholders at the grassroots level.**

**2) Dhruvastra Missile:** It is a helicopter-launched anti-tank guided missile (ATGM) system. It is a short-range air-to-surface missile. It was **indigenously developed by the Defence Research and Development Organisation (DRDO).** Dhruvastra is the Air Force's version of Helina (Helicopter-launched Nag missile) ATGM. It is equipped with an Imaging Infrared (IIR) seeker and operates in "lock on before launch" mode. The fire-and-forget missile has a minimum range of 500 metres and a maximum range of 7 kilometres. **It can be launched from an altitude of up to 4 kilometres and can hit targets moving at speeds of up to 70 kilometres per hour.** The missile can engage targets both in direct hit mode as well as top attack mode. It works in all kinds of weather, during the day or night, and in various types of terrain, such as deserts, plains, hills and forests.

**3) Pandit Deendayal Upadhyay National Welfare Fund for Sportspersons (PDUNWFS):** It was set up in March 1982 with a view to assisting outstanding Sportspersons of yesteryear, living in indigent circumstances, who had brought glory to the Country in sports. **The scheme was revised in May 2016 to provide for lump sum ex-gratia assistance to outstanding Sportspersons of yesteryears.** It extends to the whole of India. The scheme can be administered to active sportspersons individually or collectively as a group. The applicant must be a Serving or Retired Sportsperson (including sports doctors, sports psychologists, sports mentors, physiotherapists, masseurs, coaches, support personnel, umpires, referees, and match officials). **The applicant must have represented India at a National or International Level sports competition.** The Annual income of self/family of the applicant (from all sources) must be less than Rs. 4 LPA. **The applicant must qualify as one of the following.**

- Injured during the period of their training for competitions and also during the competitions.
- Disabled as an after-effect of their strenuous training or otherwise.
- Living in indigent circumstances.
- Dependent of a deceased sportsperson.

### 21<sup>st</sup> September

**1) General Crop Estimation Survey Portal:** This revolutionary portal and mobile application has been designed to transform agricultural practices across the nation. **It has been developed by the Department of Agriculture and Farmers' Welfare.** It has been developed for leveraging technology to enhance the reach, scope, and outcome of government actions in the course of development. **The automation of the GCES process will ensure on-time reporting of crop statistics and the accuracy of the data.** The portal and the app provide a comprehensive repository of yield estimation including village-wise GCES plan and plot details where the crop-cutting experiments are conducted, post-harvesting crop weight and drainage weight of the crop. Also, **Georeferencing enables the primary worker to draw the boundary of the experimental plot and upload photos of the plot as well as of the crops through it.** This feature will ensure transparency and accuracy of the data as well.

**2) SIMBEX 23:** It is an annual bilateral Naval exercise between the Indian Navy and the Republic of Singapore Navy (RSN). **It has been conducted since 1994.** It holds the distinction of being the longest continuous naval exercise that the Indian Navy has conducted with any other country. **SIMBEX-2023 is being conducted in two phases - a harbour Phase at Singapore followed by a Sea Phase.** Besides Ranvijay,

Kavaratti, and Sindhukesari, Long-Range Maritime Patrol Aircraft P8I is also participating in the exercise. Units of both navies will endeavour to hone their war-fighting skills while consolidating their capability to undertake multi-discipline operations jointly in the maritime domain.

**3) Nuakhai Juhar:** It is an important social festival of Western Odisha and adjoining areas of Simdega in Jharkhand. The word nua means new, and khai means food. **It is an agricultural festival that is observed to welcome the new rice of the season. It is observed on the fifth day of the lunar fortnight of the month of Bhadrapada or Bhadra (August–September), the day after the Ganesh Chaturthi festival.**

**Nuakhai is understood to have nine colours, and as a consequence, nine sets of rituals are followed as a prelude to the actual day of celebration.** People offer the newly harvested crop called Nabanha to their respective presiding deities.

**4) Pradhan Mantri Kisan Samman Nidhi (PM-KISAN):** **PM-Kisan Yojana came into effect on December 1, 2018.** Under the scheme, income support of Rs. 6000 per annum is provided to all eligible farmer families across the country in three equal instalments of Rs. 2,000 each every four months. The fund of Rs. 2,000 is directly transferred to the bank accounts of the eligible farmers/farmer's family under the Direct Benefit Transfer Mode.

**Nodal Ministry - Ministry of Agriculture and Farmers Welfare.** It is to supplement the financial needs of all landholding farmers' families in procuring various inputs to ensure proper crop health and appropriate yields, commensurate with the anticipated farm income as well as for domestic needs. A landholder farmer's family is defined as "a family comprising of husband, wife and minor children" who owns cultivable land as per land records of the concerned State/UT.

The entire identification process of the family rests with the State/UT Governments. **It is a Central Sector Scheme with 100% funding from the Central Government.**

**Eligibility:** Landholding farmers' families with cultivable landholding in their names, Farmers from both the urban and rural areas, Small and Marginal farmers' families.

**22<sup>nd</sup> September**

**1) Adi Shankaracharya:** The Madhya Pradesh Chief Minister recently unveiled a 108-foot statue of Adi Shankaracharya, an 8th-century Vedic scholar and teacher, in Omkareshwar. Adi Shankaracharya, or Shankara, as he was known, was an ancient Indian philosopher and theologian who lived in the early 8th

century CE. He was born in Kalady, a village in present-day Kerala.

**Philosophical Contributions:** He is **best known for his role in the development and propagation of Advaita Vedanta, a non-dualistic school of Hindu philosophy.** His most important work is his efforts to synthesize the six sub-sects, known as 'Shanmata.' **'Shanmata', which literally translates to 'six religions,' is the worship of six supreme deities.** Shankaracharya explained the existence of one Supreme Being (Brahman) and that the six supreme deities are part of one divine power. **He also founded 'Dashanami Sampradaya,' which talks about leading a monastic life. He established four prominent monastic centres in India, each associated with one of the cardinal directions: Sringeri in the south, Dwarka in the west, Puri in the east, and Badrinath in the north.** His review of 'Brahma Sutra' is known as 'Brahmasutrabhasya', and it is the oldest surviving commentary on 'Brahma Sutra'.

**He wrote 23 books on the principles contained in the Advaita Vedanta philosophy, including Viveka Chudamani, AtmaBodha, Vakya Vritti, Upadesa Sahasri, etc.** 72 devotional hymns and meditational hymns like Soundarya Lahari, Nirvana Shatakam, Maneesha Panchakam.

**2) National Medical Commission (NMC):** **NMC is a statutory body established under the National Medical Commission Act, 2019.** The NMC replaced the erstwhile Medical Council of India (MCI), which was established in 1934. **NMC regulates medical education and medical professionals.** The Commission grants recognition of medical qualifications gives accreditation to medical schools, grants registration to medical practitioners, monitors medical practice and assesses the medical infrastructure in India.

**Headquarters:** New Delhi. **It consists of 33 members, including the Chairman (medical professionals only), 10 ex-officio members and 22 part-time members.**

**Medical Advisory Council:** It provides the platform through which the states or UTs can put forth their views and concerns before the NMC and advises the NMC on measures to determine and maintain minimum standards of medical education.

**3) Asia Pacific Forum:** It was founded in 1996. **It has created a strong and united platform that brings together National Human Rights Institutions (NHRIs) from all corners of the Asia Pacific.** It addresses some of the most serious human rights challenges in the Asia-Pacific region. **It has 17 full members and eight associate members. India has been a full-time member since 1996.** To be admitted as a full member, a National Human Rights Institution must fully comply with the minimum international standards set out in the Paris Principles.



National Human Rights Institutions that partially comply with the Paris Principles are granted associate membership. **Decisions about the admission of new members to the APF are made by the Forum Council.** A fundamental goal of the APF is to promote the establishment of independent NHRIs in the Asia Pacific region and to support our members to do their work as effectively as possible.

### 23<sup>rd</sup> September

**1) VB\_HmeY\_H4907:** At the lowest point, nearly 11,000 metres below the surface of the Pacific Ocean, a new virus named vB\_HmeY\_H4907 has been discovered on Earth. **It is a new virus discovered nearly 11,000 metres below the surface of the Pacific Ocean. The virus has been understood as a Bacteriophage, which means 'bacteria eater'.** It infects halophilic bacteria (bacteria that inhabit environments with high salt concentrations) from the genus Halomonas. **Such bacteria are generally found in deep-sea hydrothermal vents.** The virus is actually very genetically similar to its host and is a lysogenic phage, meaning that it inserts its genetic material into the bacteria but usually doesn't kill it; instead, both virus and bacteria replicate at the same time.

**2) I2U2 Group:** It is a **grouping of India, Israel, the United Arab Emirates, and the United States.**

The group was initially formed in **October 2021** to deal with issues concerning **infrastructure, transport, and maritime security in the region.** Originally named the **"International Forum for Economic Cooperation,"** it was also known as the **"West Asian Quad"** at the time. The group held their first virtual summit in July 2022. This unique grouping of countries identifies bankable projects and initiatives to tackle some of the greatest challenges, with a particular focus on joint investments and new initiatives in water, energy, transportation, space, health, food security, and technology. **It aims to mobilise private sector capital and expertise to achieve a variety of goals, including modernising infrastructure, advancing low-carbon development pathways, and improving public health.**

**3) Polycystic Ovary Syndrome:** One in five women in India grapples with PCOS, with 60% of those seeking infertility treatments doing so due to PCOS-related problems. It is a very common hormone problem for women of childbearing age. **Women with PCOS may not ovulate, have high levels of androgens, and have many small cysts on the ovaries.** It can cause missed or irregular menstrual periods, excess hair growth, acne, infertility, and weight gain. Genetic predisposition, often marked by a family history of diabetes or obesity, is exposed to environments that encourage neither a healthy diet nor regular exercise

and are stress-laden. It can be prevented through lifestyle changes, medications, and fertility treatments.

**4) AI Chatbot for PM-KISAN Scheme:** It acts as a comprehensive guide for the beneficiaries, providing them with timely and accurate responses to their queries related to the scheme. **This is the first AI Chatbot integrated with a major flagship scheme of the Union government. It has been developed and improved with the support of the EKstep Foundation and Bhashini.** The introduction of the AI chatbot in the PM-KISAN grievance management system is aimed at empowering farmers with a user-friendly and accessible platform. **In its first phase of development, the AI chatbot will assist farmers in seeking information related to their application status, payment details, ineligibility status, and other scheme-related updates. The AI Chatbot, accessible through the PM KISAN mobile app, is integrated with Bhashini,** which offers multilingual support, catering to the linguistic and regional diversity of the PM KISAN beneficiaries. This integration of advanced technology will not only enhance transparency but will also empower farmers to make informed decisions. **Currently, the Chatbot is available in English, Hindi, Bengali, Odia, and Tamil.**

### 25<sup>th</sup> September

**1) Exercise Yudh Abhyas:** It is an annual exercise conducted jointly by the Indian Army and the United States Army. **The lead battalion from the Indian side is affiliated with the MARATHA Light Infantry Regiment.** Both sides will practice a series of tactical drills to enhance interoperability in conducting UN peacekeeping operations. **The theme is 'Employment of an Integrated Battle Group in Mountain/ Extreme Climatic Conditions' under Chapter VII of the United Nations mandate.** The scope of the Field Training Exercise includes validation of Integrated Battle Groups against hostile forces at the Brigade level, Integrated Surveillance Grid at the Brigade/ Battalion level, employment of Heliborne/Airborne elements and Force Multipliers etc.

**Other Exercises between India and USA.**

- **Army:** Vajra Prahar;
- **Navy:** MALABAR (Multilateral);
- **Air Force:** Cope India, Red Flag (Multilateral).

**2) Emerging Markets Bond Index:** India's local bonds will be included in the Government Bond Index-Emerging Markets (GBI-EM) index of JP Morgan. **It is a benchmark index for measuring the total return performance of international government and corporate bonds issued by emerging market countries**

that meet specific liquidity and structural requirements.

Emerging market bonds are debt instruments issued by developing countries, which tend to carry higher yields than government or corporate bonds of developed countries. A total of 23 Indian Government Bonds (IGBs) with a combined notional value of \$330 billion are eligible. **All fall under the category of "fully accessible" for non-residents.**

**3) India-UN Capacity Building Initiative:** The initiative is aimed at building the capacity of countries in the Global South. **The goal is to share India's development experiences, best practices, and expertise through capacity-building and training programs. It extends the success of India's G20 Presidency, which prioritised the inclusion of voices from the Global South in the G20 agenda.** As part of this initiative, the UN India team and the Bill & Melinda Gates Foundation will "partner to leverage India's Technical and Economic Cooperation platform to share India's development experiences and best practices across the world. **It will also put into action the development goals established during India's G20 Presidency, including the G20 Action Plan for advancing the SDGs and enhancing technology and digital infrastructure.**

#### **4) Outcomes of the G20 Summit, New Delhi:**

- **Formal Inclusion of the African Union as a Permanent Member:** The G-20 welcomed the African Union, giving voice to the global south.
- **Initiatives Regarding Clean Energy:** India offered a tangible solution through a Global Biofuel Alliance, promoting clean energy globally.
- **Provision of Aid for Asia-Africa:** For development purposes and to meet SDGs a provision of aid was set up for Asia and Africa.
- **Announcement of An Economic Corridor:** The most significant outcome was the announcement of the India-Middle East-Europe Economic Corridor which will connect India to Europe via the United Arab Emirates, Saudi Arabia, Jordan, and Israel.
- **The Delhi Declaration:** A joint statement issued by all G-20 members emphasised the need for global cooperation in a polarised international order.

#### **26<sup>th</sup> September**

**1) Brent Crude:** It serves as the most widely used benchmark that defines oil prices around the world. **The term "Brent" refers to the Brent oil field, which was discovered in the 1970s and became a significant source of oil production.** About two-thirds of all internationally traded crude oil supplies are priced relative to Brent, making it the most widely used marker of all. It is a light, sweet crude oil extracted from different oil fields in the North Sea. **Its unique**

**properties, low density and low sulphur content make Brent crude oil simpler to process into products such as gasoline. As its supply is water-borne, Brent crude oil is easy to transport to distant locations.** The Brent Crude oil price is influenced by various factors, including supply and demand dynamics, geopolitical events, production disruptions, and economic factors.

**2) India Post Payments Bank (IPPB):** IPPB has been established under **the Department of Posts, Ministry of Communication, with 100% equity owned by the Government of India.**

**IPPB was launched on September 1, 2018, aimed at making banking services available at people's doorstep.** Its mandate is to remove barriers for the unbanked and under-banked and reach the last mile, leveraging a network comprising 160,000 post offices (145,000 in rural areas) and 400,000 postal employees. **Headquarters: New Delhi.** The operations of IPPB will be on a smaller scale as compared to other banks and will not advance loans or issue credit cards to avoid risk. **It will accept deposits, offer remittance services, mobile payments/transfers/purchases and other banking services like ATM/debit cards, net banking and third-party fund transfers.** It will accept deposits up to Rs. 2 lakh, beyond which the account will be automatically converted into a post office savings account. The products and services of the bank will be made available through various mediums such as counter services, micro ATMs, mobile banking apps, messages, and interactive voice responses. The IPPB will use Aadhaar to open accounts, and a QR card and biometrics will be used for authentication, transactions, and payments.

**3) Payments Banks:** A payments bank is like any other bank but operates on a smaller scale without involving any credit risk. **It was set up on the recommendations of the Nachiket Mor Committee. Its objective is to widen the spread of payment and financial services to small businesses, low-income households, and the migrant labour workforce in a secure technology-driven environment.** They are registered under the **Companies Act 2013 but are governed by a host of legislations such as the Banking Regulation Act, 1949; RBI Act, 1934; Foreign Exchange Management Act, 1999, etc.** It needs to have a minimum paid-up capital of Rs. 100,00,00,000. It can take deposits up to Rs. 2,00,000. It can accept demand deposits in the form of savings and current accounts. **The money received as deposits can be invested in secure government securities only in the form of Statutory Liquidity Ratio (SLR). This must amount to 75% of the demand deposit balance.** The remaining 25% is to be placed as time deposits with other scheduled commercial banks. It can offer remittance services, mobile

payments/transfers/purchases, and other banking services like ATM/debit cards, net banking, and third-party fund transfers. It cannot issue loans and credit cards. It cannot accept time deposits or NRI deposits. It cannot set up subsidiaries to undertake non-banking financial activities.

### 28<sup>th</sup> September

**1) Social Bonds:** Social bonds, also known as social impact bonds and abbreviated as SIB, are the type of bond where the bond issuer is gathering funds for a project that has some socially beneficial implications. These bonds are designed to finance projects that address various social issues, such as healthcare, education, affordable housing, poverty alleviation, and environmental sustainability. **The Pimpri Chinchwad Municipal Corporation (PCMC) in Maharashtra's Pune and UNDP in 2020 co-created India's inaugural SIB. This is the first externally certified AAA-rated Indian Rupee-denominated SIB in the country.** The bonds have been rated 'AAA' by CRISIL and ICRA. The face value of each bond is ₹1lakh. Maturity: 5 years. Coupon Rate: 7.63 per cent.

**2) National Intelligence Grid (NATGRID):** It is conceptualised as a seamless and secure database for information on terrorists, economic crimes and similar incidents to help bolster India's capabilities. **The project was started in 2009 in the aftermath of the 26/11 Mumbai terror attacks. NATGRID was set up as an attached Office of the Ministry of Home Affairs with effect from December 1, 2010. It started its operations on December 31, 2020.** Natgrid services will be available to 11 central agencies and police departments of all states and union territories. **It works as an integrated intelligence grid that connects databases of core security agencies of the government of India.** It will have data related to all immigration entry and exit, banking and financial transactions, credit card purchases, telecom, individual taxpayers, air flyers, train travellers besides others to generate intelligence inputs.

**3) Kamlang Tiger Reserve:** It is located in the southeastern part of Lohit District in Arunachal Pradesh near the border with Myanmar. **It is named after the Kallang River, which flows through the reserve and joins the Brahmaputra.** It is spread between the famed Namdapha National Park on its south and Lang River on its north. **The local inhabitants are Hishmi, Digaru and Mizo.** It enjoys a sub-tropical climate as it falls within the sub-tropical zone. **The vegetation may broadly be classified into tropical, temperate and alpine. All four big cats, including the Snow Leopard, Clouded Leopard, Leopard and Tiger, are the common inhabitants.** Certain endangered

species, such as Himalayan Palm Civets, Leopard Cat, Slow Lories and Hoolock Gibbon, can also be spotted in the sanctuary. Other species commonly found here are Giant and Flying Squirrels, Hornbills, Deer, Civets, Boar, Capped Langur, Stump Tailed Macaque etc.

**4) UN Population Fund (UNFPA):** It is a trust fund under the jurisdiction of the United Nations Development Programme (UNDP). **UNFPA was formerly (1969–87) known as the United Nations Fund for Population Activities. Established in 1969, the UNFPA is the largest international source of assistance for population programs.** It is the leading UN organization for the implementation of the 1994 Programme of Action of the International Conference on Population and Development.

In other words, **UNFPA is the United Nations sexual and reproductive health agency. 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 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, population problems of developed and developing countries and issues related to the status of women, including the gender gap.

### 29<sup>th</sup> September

**1) Noor-3 Satellite:** It is an imaging satellite developed by Iran. **It is a satellite with potential spying capabilities, boosting Iran's abilities in space.** It has been put in an orbit 450 kilometres (280 miles) above the Earth's surface. **It was launched by the three-stage Qased, or messenger carrier. The spacecraft's two predecessors, Noor-1 and Noor-2, launched in April 2020 and March 2022, respectively, also atop Qased rockets.** Noor-1 fell back to Earth in April 2022, but Noor-2 remains operational and may work in concert with Noor 3 when the latter satellite comes online. **The launch was carried out by the aerospace arm of Iran's paramilitary Revolutionary Guard.** The Guard operates its own space program parallel to Iran's regular armed forces and answers only to Supreme Leader Ayatollah Ali Khamenei. **It launched its first satellite into space in April 2020 (Noor-1).**

**2) Economic Advisory Council to the Prime Minister (EAC-PM):** It is an independent body constituted to give advice on economic and related issues to the Government of India, specifically to the Prime Minister. **It was set up for the first time in September 2017 with a term of two years. These could be either suo-motu or on reference from the Prime Minister or anyone else. EAC-PM is headed by a Chairperson and consists of eminent economists as members.** It is supported in

its functions by a team of officials and administrators. There is no fixed definition of the exact number of members and staff of the EAC-PM. It is common for the Council to be reconstituted time and again with different organizational structures headed by various economists who are of recognized international eminence. **For administrative, logistic, planning, and budgeting purposes, the NITI Aayog serves as the nodal agency for the EAC-PM.**

**3) 'Sankalp Saptah:** It is linked to the effective implementation of the Aspirational Blocks Programme (ABP). To implement the ABP and prepare an effective block development strategy, "chintan shivers (brainstorming sessions)" were organized at village and block levels across the country. **The 'Sankalp Saptah' is the culmination of these chintan shivers. 'Sankalp Saptah' will be observed in all 500 aspirational blocks.** Each day in Sankalp Saptah will be dedicated to a specific development theme on which all aspirational blocks will work. **The themes for the first six days are "Sampoorna Swasthya", "Suposhit Parivar", "Swachhta", "Krishi", "Shiksha", and "Samridhi Diwas". The last day of the week will be a celebration of the work conducted during the entire week, as "Sankalp Saptah – Samavesh Samaroh".** The inaugural programme will witness the participation of about 3,000 panchayat and block-level people's representatives and functionaries from across the country at the Bharat Mandapam.

**4) CRIIO 4 GOOD Initiative:** It is a new online life skills learning module. It consists of a series of 8 cricket-based animation films to promote gender parity, equip girls with life skills and encourage their participation in sports. **Using the popularity and passion of cricket young audiences, ICC and UNICEF released these modules to inspire children and youth to adopt critical life skills and appreciate the importance of gender equality. The programme is in three languages: English, Hindi and Gujarati.**

The themes of the eight modules are: leadership, problem-solving, confidence, decision-making, negotiation, empathy, teamwork and goal setting and are visualized through state-of-the-art animation using cricketing examples. **The programme was launched in association with the International Cricket Council, UNICEF, and the Board of Control for Cricket in India.**

### 30<sup>th</sup> September

**1) LASE programme at IIT Bombay:** LASE stands for **Liberal Arts, Social Sciences, and Engineering, and was a one-of-its-kind multidisciplinary program launched by IIT Bombay in 2021.** It was aimed at giving undergraduate students a chance to move out of their respective engineering departments at the end of the

first year and customise their degrees as per their interests. The students under LASE would graduate with a Bachelor of Science at the end of four years in one of the following: Natural Sciences; Engineering Sciences; Social Sciences; Art and Design. **The idea behind the programme was to give greater flexibility to students who may be interested in disciplines other than their respective streams of engineering. It aimed to provide an alternative to a choice-based education to a student at IIT Bombay, as opposed to a predefined branch of engineering.** The programme also came on the back of the New Education Policy advocating for multidisciplinary education. Under LASE, a student could take any number of courses from any department at IIT Bombay. An undergraduate student pursuing an engineering degree at IIT Bombay graduates with a Bachelor of Technology (BTech) at the end of four years.

**2) Intelligent Grievance Monitoring System (IGMS) 2.0:** Recently, the Union Minister of State (Independent Charge) Science & Technology, MoS Personnel, Public Grievances, Pensions launched the Intelligent Grievance Monitoring System (IGMS) 2.0. **It is a public grievance portal and Automated Analysis in the Tree Dashboard portal of the Department of Administrative Reforms and Public Grievances (DARPG). It has been implemented by IIT Kanpur.** The Dashboard provides instant tabular analysis of Grievances Filed & Disposed, State-wise & District-wise Grievances Filed & Ministry-wise data. It will also help the officials identify the root cause of the grievance. **This portal will help the DARPG with the creation of a draft letter for the selected scheme/ministry and expedite the grievance redressal process by the concerned ministry/department. It has been enabled with Artificial intelligence (AI) capacity.**

**3) Sastra Ramanujan Prize:** Ruixiang Zhang, Assistant Professor, University of California, Berkeley, USA will be awarded with the 2023 SASTRA Ramanujan Prize for his outstanding contributions in mathematics. **The prize was instituted in the year 2005. It is awarded every year by the SASTRA University on its campus near Kumbakonam in Tamil Nadu, on Ramanujan's birth anniversary, December 22.** The prize is conferred annually to mathematicians from across the world who are less than 32 years of age, and working in an area influenced by the Srinivasa Ramanujan. The age limit is 32 years to commemorate the fact that Ramanujan accomplished a phenomenal body of work in this short span. Cash prize: It carries a citation and an award of \$10,000. This award has gained global repute ever since it was instituted. **Other recipients: Manjul Bhargava and Akshay Venkatesh**

**4) Project Udbhav:** Project Udbhav was started in 2021 by the Indian Army in collaboration with the United Service Institution of India, a defence think-tank. It is an initiative to rediscover the profound Indic heritage of statecraft and strategic thoughts derived from ancient Indian texts of statecraft, warcraft, diplomacy and grand strategy. **It focuses on a broad spectrum**

**including Indigenous Military Systems, Historical Texts, Regional Texts and Kingdoms, Thematic Studies, and intricate Kautilya Studies.** At its core, Project Udbhav seeks to bridge the historical and the contemporary to integrate age-old wisdom with modern military pedagogy.



## PLACES IN NEWS

**1) Bhoramdeo Wildlife Sanctuary (BWS):** Chhattisgarh HC has dismissed a plea that aimed to designate BWS as a tiger reserve.

- BWS is situated in the **Kawardha district of Chhattisgarh and shares its border with Kanha National Park in Madhya Pradesh.**
- **Flora:** Sal, Saja, Teinsa, Kara and Haldu species.
- **Fauna:** Animals like leopards, hyenas, foxes, bears, cheetahs, wild buffalo, Nilgai etc.
- **Vegetation:** Mix of dense forests and open grasslands.
- **River Sakari flows through the sanctuary.**

**2) Sukapaika River:** The Odisha government has decided to rejuvenate the Sukapaika River.

- It is a **tributary of the Mahanadi River**
- It branches away from the Mahanadi at Ayatpur and flows for about 40 km before rejoining its parent river.
- Mahanadi originates from Sihawa Mountain in Chhattisgarh.
- **Major Tributaries:** Birupa, Chitroptala, Genguti and Lun.
- **Left bank Tributaries:** The Seonath, the Hasdeo, the Mand, and the Ib.
- **Right bank Tributaries:** The Ong, the Tel and the Jonk.

**3) Libya (Capital: Tripoli)**

**Political boundaries;**

- **Location:** North Africa.
- **Bordered by:** Egypt, Sudan, Niger, Chad, Tunisia and Algeria.

**Geographical Features.**

- Major physical features are the Nafūсах Plateau and the Al-Jifārah (Gefara) Plain, Akhḍar Mountains (Green Mountains), and Saharan Plateau.
- There are no permanent rivers in Libya. Numerous Wadis that drain uplands are filled by flash floods during the rains.
- **Highest Point:** Bikku Bitti.



**4) Eritrea (Capital: Asmara)**

**Political boundaries.**

- **Location:** East African country located on the Horn of Africa on the Red Sea.
  - **Bordered by:** Sudan, Ethiopia, and Djibouti.
  - **Maritime border:** Saudi Arabia and Yemen.
- Geographic features.**
- **Major Rivers:** Gash, Tekezē (Satit), Baraka, and Anseba.
  - **Highest point:** Mount Soira.



**5) Vanuatu (Capital: Port-Vila)**

- A political crisis has been witnessed in Vanuatu.

**Political Boundaries.**

- Located in the **southwestern Pacific Ocean.**
- It has a **chain of 13 principal and many smaller islands located west of Fiji and east of Australia.**

- **Major Islands:** Vanua Lava, Santa Maria (Gaua) in the Banks Islands group etc.

**Geographical features.**

- **Physical features:** Rugged Mountains, high and low plateaus, rolling hills, coastal terraces and offshore coral reefs.
- **Highest point:** Tabwémasana.
- **Major Rivers:** Jordan and Sarakata



## 6) Cuba (Capital: Havana)

- Cuban Foreign Ministry states that it uncovered a human trafficking ring aimed at recruiting Cubans to fight for Russia in its war in Ukraine.

### Political Boundaries

- Neighbouring country includes **Haiti; Jamaica; the Bahamas archipelago and the US** (north across the Straits of Florida)

### Geographical features

- **Cuba is the largest island in the Caribbean Sea.**
- Forms an important segment of the Antilles (West Indies) island chain.
- Situated just south of the Tropic of Cancer at the intersection of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea.
- **Major River:** Cauto.
- **Highest Peak:** Turquino Peak.



## 7) Sudan (Capital: Khartoum)

- UNHCR appealed for \$1 billion to support Sudan (facing civil war).

### Political Boundaries.

- Situated in northeastern Africa.
- Bordered with **Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia and Eritrea.**
- **South Sudan was bifurcated from it in 2011.**
- Sudan shares its maritime border with Saudi Arabia in the Red Sea.

### Geographical Features:

- **Highest Peak:** Deriba Caldera (Jabel Marra Mountain).
- **Major River:** Nile River (White Nile and Blue Nile merge in Khartoum).
- **Major lakes:** Kundi, Abyad and Turdat el-Rahad.



## 8) Gati Shakti Vishwavidyalaya (GSV):

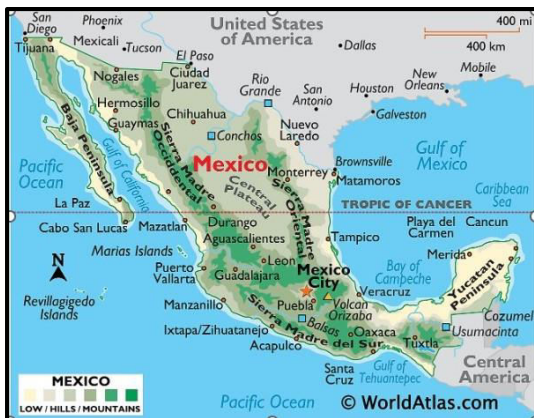
- GSV is a **Central University in Vadodra (Gujarat)**, established through an Act of Parliament in 2022.
- It is **India's first University in the Transportation and Logistics sectors.**
- It subsumes the previously-existing National Rail and Transportation Institute (NRTI).
- Sponsored by the **Ministry of Railways.**
- **Mandate:** applied education, training, skilling and research in the logistics sector.

## 9) Mexico (Capital: Mexico City)

- Mexico's Supreme Court ruled that state laws prohibiting abortion are unconstitutional and violate women's rights.

### Political Boundaries:

- Bordered with USA (North), the Pacific Ocean (West and South), the Gulf of Mexico and the Caribbean Sea (East) and Guatemala and Belize (Southeast).
- It shares the Yucatan Peninsula, which separates the Gulf of Mexico from the Caribbean Sea, with Belize and Guatemala.
- **Geographical Features:**
- **Major Rivers:** Rio Grande, Colorado.
- **Major Mountain Ranges:** Sierra Madre.
- **Highest Mountain:** Pico de Orizaba (Active Volcano).
- One of the countries along the Ring of Fire.



**10) Cauvery Wildlife Sanctuary:** Researchers discovered a 'white' sambar in Cauvery Wildlife Sanctuary.

- Leucism is a condition in which the pigmentation of an animal's skin is missing, causing white or pale skin.
- Cauvery Wildlife Sanctuary is spread over three districts – **Chamarajanagar, Mandya and Ramanagara of Karnataka.**
- It provides a vital link between Bannerghatta National Park in the north and Biligiri Rangaswamy Temple Tiger Reserve and Male Mahadeshwara Hills Wildlife Sanctuary in the south.
- Forest is primarily of **dry deciduous and scrub types.**
- Animals found in the sanctuary are tiger, elephant, leopard, bison, wild dog, sambar, spotted deer, etc.

**11) Timor-Leste (Capital: Dili)**

- India has announced the opening of an embassy in Dili.
  - **Political Boundaries.**
  - **Location:** It is an island country in the eastern Lesser Sunda Islands, at the southern end of the Malay Archipelago.
  - **Border:** Timor Sea (southeast), the Wetar Strait (north), the Ombai Strait (northwest), and western Timor (part of the Indonesian province, in the southwest).
  - **Geographical features.**
  - **Highest Peak:** Mount Tatamailau.
- Major River:** Laclo River.

**12) Marrakesh:** Morocco has experienced an earthquake of 6.8 magnitude with its epicentre near Marrakesh.

- Marrakesh is situated west of the **foothills of the Atlas Mountains.**
- An ancient section of Marrakesh – Medina – has been **designated as a UNESCO World Heritage Site.**
- The Marrakesh Agreement, establishing the **World Trade Organization, was signed in 1994.**
- World Intellectual Property Organization administered **Marrakesh Treaty** makes the production and international transfer of specially adapted books for people with blindness or visual impairments easier.

**13) Konark Sun Temple:** Also known as **Black Pagoda**, the Temple is situated in Puri (Odisha), and is dedicated to Sun God.

- It was **established in the 13th century by King Narasimhadeva-I of the Eastern Ganga dynasty.**
- It is built in **Kalinga architecture and designed as a Chariot** drawn by 7 horses and has 12 pairs of wheels (signifying 12 months of year).
- Each wheel consists of **8 wider spokes and 8 inner spokes that represent the 8-time divisions of the day.**
- It is a **UNESCO World Heritage Site.**

**14) Bhoj Wetland:** The National Green Tribunal has banned the operation of cruise boats in Upper Lake in Bhopal and another wetland site.

- It further banned construction within **"no development zone" i.e. "buffer zone" as provided in Wetland Rules, 2017.**
- **Bhoj Wetland** (Bhopal, Madhya Pradesh) was designated as a **Ramsar site in 2002.**
- It has **two man-made reservoirs i.e. Upper Lake (Bhojtal) and Lower Lake.**
- Upper Lake is an important source of drinking water for the city.



- Upper lake is rich in biodiversity, particularly resident and migratory birds, macrophytes, phytoplankton, zooplankton, etc.

**15) Kilauea volcano:** Kilauea volcano has erupted again in Hawaii.

- Kilauea aka Mount Kilauea, the **world's most active volcanic mass**, is located in the southeastern part of the island of **Hawaii, Hawaii state, U.S.**
- A volcano is a vent in the crust of Earth, from which eruptions of molten rock, hot rock fragments, and hot gasses take place.

**16) K2-18 b Exoplanet:** NASA's James Webb Space Telescope discovered the presence of carbon dioxide and methane on an Exoplanet.

- **K2-18 b exoplanet is 120 light years from Earth.**
- Planets that orbit stars, other than our sun, are called Exoplanets.
- **James Webb Telescope** is a space telescope specifically designed to conduct infrared astronomy.
- Its high-resolution and high-sensitivity instruments allow it to view objects too old, distant, or faint for the Hubble Space Telescope.

**17) Armenia (Capital: Yerevan)**

- Union Cabinet approved the MoU with Armenia on Cooperation in the field of sharing successful Digital Solutions implemented at the Population Scale for Digital Transformation

**Political Boundaries.**

- **Location:** Landlocked country of Transcaucasia (populated region to the south of the Caucasus Mountains).
- **Border:** Azerbaijan, Nagorno-Karabakh Republic (a disputed territory), Turkey, Nakhchivan Autonomous Republic (an exclave of Azerbaijan), Georgia, and Iran.

**Geographical features.**

- **Physical features:** It is a mountainous country (there are no lowlands).
- **Highest Peak:** Mount Aragats (Alaghez).
- **Rivers:** Aras River.



**18) Libya (Capital: Tripoli)**

- Libya's eastern port city of Derna suffered massive damage after torrential rains caused flooding that burst dams and swept away buildings.

**Political boundaries**

- **Location:** North Africa.
- **Bordered by:** Egypt, Sudan, Niger, Chad, Tunisia and Algeria.

**Geographical Features**

○ **Major physical features are:**

- **Nafūṣah Plateau** and the Al-Jifārah (Gefara) Plain,
- **Akhḍar Mountains** (Green Mountains),
- **Saharan plateau.**
- **There are no permanent rivers in Libya.** Numerous wadis that drain uplands are filled by flash floods during the rains.
- **Highest Point:** Bikku Bitti.



**19) Burkina Faso (Capital: Ouagadougou)**

- Burkina Faso orders the French embassy defence attache to leave.

**Political Features:**

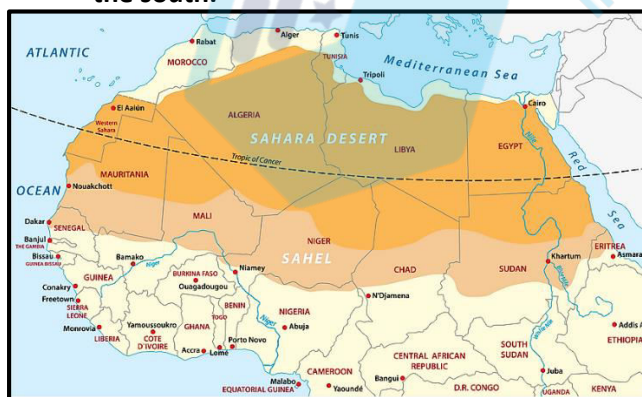
- **Landlocked country** in western Africa.

- **Boundary countries:** Mali to the north and west, Niger to the northeast, Benin to the southeast, and Côte d'Ivoire, Ghana, and Togo to the south.
- **Geographical feature.**
- Characterized by a **Savanna grassland.**
- **Main Rivers:** the Black Volta, the Red Volta, and the White Volta.
- **Highest Peak:** Mount Tenakourou.



20) **Three Sahel nations:** Mali, Burkina Faso and Niger have signed a defence pact to cooperate against threats of armed rebellion or external aggression.

- **About Sahel Region:**
  - It is a **semi-arid region of western and north-central Africa** that stretches from the Atlantic Ocean to the Red Sea along the Sahara desert's southern rim.
  - **Countries:** Burkina Faso, Cameroon, Chad, Gambia, Guinea Mauritania, Mali, Niger, Nigeria and Senegal.
  - It forms a **transitional zone between the Sahara desert to the north and savannahs to the south.**



21) **Pir Panjal region:** Pir Panjal Range is a group of mountains in the Inner Himalayan region.

- **Location:** from east-southeast (ESE) to west-northwest (WNW) across Himachal Pradesh and Jammu and Kashmir.

- Separates the Jammu hills from the Kashmir Valley.
- **Hill station-** Gulmarg is located in this range.
- **Major passes:** Pir Panjal Pass (west of Srinagar), Banihal Pass, Sinthan Pass (link Jammu and Kashmir), Rohtang La (link Kullu to Lahual).
- **The Atal tunnel is constructed in the Pir Panjal ranges.**

22) **Narmada River:** Flooding in Narmada displaced thousands in Gujarat.

- It is the **largest west-flowing river** and rises near the **Amarkantak range of mountains in Madhya Pradesh.**
- It is the **fifth-largest river in the country.**
- It traverses **Madhya Pradesh, Maharashtra, and Gujarat and meets the Gulf of Cambay.**
- **Tributaries** are the Burhner, Halon, Heran, Banjar, Dudhi, Tawa, Barna, Kolar, Beda, Goi, and Orsang.
- Flows between the **Vindhya Range and Satpura Range.**
- **Dams in Narmada Basin:** Sardar Sarovar Dam, Rani Avanti Bai Sagar (Bargi) Dam, Maheshwar Dam etc.

23) **Chausath Yogini temple:** It is believed that the design of the old Parliament building was inspired by **Chausath Yogini temple located in Mitaoli village in Madhya Pradesh.**

- The Old Parliament Building was designed by **architects Edwin Lutyens and Herbert Baker.**
- The grand Chausath Yogini temple is **circular**, with 64 chambers dedicated to the 64 yoginis, and a central shrine dedicated to Shiva.
- The 64 yoginis are believed to be powerful warriors and sorceresses.
- It was built around 1323 by **King Devapala of the Kachchhapaghata dynasty.**

24) **Ukraine (Capital: KYIV):**

- A missile explosion in **Kostyantynivka city** is being seen as a result of a wayward Ukrainian rocket.
- The City is situated in **eastern Ukraine, on the Kryvyi Torets River.**
- Ukraine is known as the **'breadbasket of Europe'.**
- **Bounded by:** Belarus, Russia, the Sea of Azov, the Black Sea, Moldova and Romania, Hungary, Slovakia, and Poland.
- **Geographical feature:**
  - **Main Rivers:** Danube River, Dnieper River.
  - **Highest Peak:** Mount Hoverla.



**25) Tungareshwar Wildlife Sanctuary:** Tungareshwar Sanctuary is situated in the Vasai-Virar area of the Thane district, Maharashtra.

- Spread over 85 sq. km, it forms a corridor between Sanjay Gandhi National Park (also known as Borivali National Park) and Tansa Wildlife Sanctuary.
- It is home to the famous Tungareshwar Temple, dedicated to Lord Shiva.
- The sanctuary's diverse habitats include littoral forests and hills, which are home to leopards, wild boars, barking deer, langurs, bonnet and rhesus macaques, among other animals.
- The sanctuary is home to numerous birds including the Crested Serpent-eagle, Jungle Owlet, White-eyed Buzzard, Oriental Honey-buzzard, Emerald Dove and Heart-spotted Woodpecker.

**26) Kaobal Gali-Mushkoh Valley:** High-altitude passes within the Gurez valley, located in northern Kashmir, are now linked to the Mushkoh valley.

- **Mushkoh Valley:**
  - Located in Dras, Ladakh, the Mushkoh valley is also renowned as the "valley of wild tulips".
  - Home to Himalayan Yew.
- **Gurez Valley:**
  - **Location:** is close to the Line of Control (LoC) with the Kishanganga River demarcating the line in several parts.
  - It is one of the sites of the Kargil War.
  - It is one of few habitations in Kashmir where villages with only log houses exist.

**27) Veerangana Durgavati Tiger Reserve:** The Ministry of Environment, Forest and Climate Change has notified Veerangana Durgavati Reserve as a Tiger reserve.

- It is the 7th Tiger Reserve in the State of Madhya Pradesh and 54th in the country.

**Location:**

- Approx. 20 kilometres from Bhopal and spans three districts – Narsinghpur, Sagar, and Damoh.
- **Areas:** Nauradehi Wildlife Sanctuary and Durgavati Wildlife Sanctuary.
- Parts of the reserve fall under the Narmada and Yamuna River basins.
- The establishment of new Tiger Reserves in a state is governed by the National Tiger Conservation Authority.

**28) Asola Bhatti Wildlife Sanctuary (ABWS):** Asola Bhatti Sanctuary is situated in the northeastern part of the Aravalli range, classified as a tropical desert thorny forest.

- **Range:** stretches across 32.71 square kilometres in the southeastern part of the Delhi Ridge.
- **Fauna:** Sambar, Spotted deer, Hog deer, Nilgai, Black Buck, Indian Boar, leopards, Striped hyenas, and rhesus macaques, among other animals.
- **ABWS is also part of the Sariska-Delhi Wildlife Corridor.**
- Neeli jheel-manmade lake lies in this sanctuary.

**29) Nicaragua (Capital: Managua)**

- **Political Features:**
  - The largest country in Central America.
  - **Bordering Countries:** Honduras (north) and Costa Rica (South).
- **Geographical features:**
  - **Rivers:** San Juan, Coco, Río Grande de Matagalpa, etc.
  - **Lakes:** Lake Nicaragua, Lake Managua, Lake Tiscapa, etc.
  - **Volcanoes:** Masaya, Cerro Negro, Mombacho, etc.
  - **Highest peak:** Mogotón peak.

**30) Lough Neagh:** The demand has been made in the UK to bring the Lough Neagh lake under Public Ownership.

- It is a Ramsar Site and the largest freshwater lake in the UK.
- It is also home to the largest commercial wild eel fishery in Europe.
- **Lake is facing threats due to blue-green algal bloom (due to Cyanobacteria) caused by:**
  - Rising water temperature;
  - Invasive species (Zebra Mussels) and,
  - Eutrophication (water runoff having excess nutrients from fertiliser)

## EDUFACTS

### 1st September

1) The GRA (Global Research Alliance) is an international organization that **brings countries together to find ways to grow more food without growing greenhouse gas emissions.**

2) A total of **23.14 million minor irrigation (MI) schemes have been reported in India.** Among these, 21.93 million (94.8%) are groundwater (GW) schemes, and 1.21 million (5.2%) are Surface Water (SW) schemes.

3) In **Mattur village of Karnataka** everyone speaks the **Sanskrit language.**

### 2nd September

1) India has been **increasing its ethanol blending in petrol** from 1.53% in 2013-14 to 11.8% in August 2023.

2) Tractors consume about 7.4% of our country's annual diesel usage and account for 60% of total agricultural fuel usage.

### 4th September

1) In the Union Budget FY24, the government projected to bring down the fiscal deficit to 5.9% of the gross domestic product (GDP) in the current FY.

2) According to a report by the Wildlife Conservation Society (WCS)-India titled 'Illegal Trade of Red Sand Boa in India 2016-2021' social media, especially YouTube, aids illegal trade, with 200 sales-promoting videos in 2021.

### 5th September

1) Guinness World Records has acknowledged the PMJDY's success, certifying that the **"Most bank accounts opened in one week as part of the Financial Inclusion Campaign is 18,096,130** and was achieved by the Department of Financial Services, Government of India."

2) In June 2022, **the SC in Kattukandi Edathil Krishnan & Another Vs. Kattukandi Edathil Valsan and others ruled that children born to partners in live-in relationships can be considered legitimate.** This is conditional in a way that the relationship needs to be long-term and not of 'walk in, walk out' nature.

3) **The Ramon Magsaysay Award is presented annually on August 31st, which coincides with the birthday of Ramon Magsaysay,** the third president of the Republic of the Philippines, who inspired its creation. **The award is internationally recognised as the Nobel Prize counterpart of Asia.**

### 6th September

1) **The Aditya-L1 launch was conducted using the PSLV-C57 rocket.** The PSLV's fourth stage was fired twice, a first in ISRO's history, to precisely insert the spacecraft into its elliptical orbit.

2) **The National Council of Educational Research and Training is an autonomous organization that was established in 1961** under the Societies Registration Act. The NCERT has been granted deemed university status under the 'de Novo category.

3) Dr. Sarvepalli Radhakrishnan served as the **first Vice-President of India from 1952 to 1962 and the second President of India from 1962 to 1967.**

### 7th September

1) The Impossible Trinity is a fundamental concept in international economics and monetary policy. **It was proposed independently by Canadian economist Robert Mundell and British economist Marcus Fleming** in the early 1960s.

2) **Italy has the largest number of UNESCO Heritage Sites** in the world.

3) La Nina is a pattern that **describes the unusual cooling of the Tropical Pacific Ocean.** It means "Little Girl" in Spanish and is sometimes called El Viejo, anti-El Niño, or simply "a cold event."

### 8th September

1) **The Indian philosophy of secularism is related to "Sarva Dharma Sambhava"** which means equal respect for all religions.

2) The annual costs of invasive alien species have quadrupled every decade since 1970. In 2019, the global economic cost of these species exceeded a staggering USD 423 billion annually.

### 9th September

1) Every year, the **International Day of Clean Air for Blue Skies is celebrated on 7 September** to raise awareness and facilitate actions to improve air quality.

2) In 2021-22, India's Unemployment rate dropped to 4.1% according to Periodic Labour Force Survey (PLFS).

3) The **Payments Council of India (PCI) is a body representing over 85% of the non-bank companies in the Payments ecosystem** and was formed to effectively cater to the needs of the digital payments industry.

3) **Sand is classified as a "minor mineral", under the Mines and Minerals (Development and Regulations) Act, 1957 (MMDR Act)** and administrative control over minor minerals vests with the State Governments.

#### 11th September

1) While the Black Sea Grain Initiative helped Ukraine export 16.8 million tonnes in 2022-23, about 39% of its wheat actually moved via the land route to Eastern Europe.

2) **India is not a party to the 1951 Refugee Convention and its 1967 Protocol**, the key legal documents pertaining to refugee protection under International Law.

3) Nanomaterials are engineered at the nanoscale, with a particle size of less than 100 nm in at least one of its dimensions.

#### 12th September

1) August 2023 marked the **driest August in India in over 120 years**.

2) Approximately **90% of e-waste collection and 70% of recycling in India is being managed by a competitive informal sector**.

3) A United Nations Environment Programme report in February 2023 warned that the unchecked rise of AMR could lead to up to 10 million deaths annually by 2050.

#### 13th September

1) The lost-wax method dates back at least 6,000 years, a copper amulet crafted using this method at a neolithic site in Mehrgarh, Balochistan (present-day Pakistan) is dated to circa 4,000 BC.

2) In the **Indira Sawhney judgment 1992**, SC had categorically said 50% shall be the rule, only in certain exceptional and extraordinary situations for bringing far-flung and remote areas' population into mainstream said 50% rule can be relaxed.

3) The West Bengal Legislative Assembly recently made a significant decision by declaring '**Poila Baisakh, the first day of the Bengali calendar, as 'Bangla Dibas' or West Bengal Foundation Day.**

#### 14th September

1) A Primitive Streak is a linear structure that appears in the embryo that marks its transition from having a radial symmetry (like an egg) to the bilateral symmetry of our bodies (marked by left and right hands and legs).

2) Himachal Pradesh suffered losses of Rs. 10,000 crore and around 418 people have died due to rain-related incidents this Monsoon 2023.

3) The **Konark temple is attributed to King Narasimhadeva I** of the Eastern Ganga dynasty about 1250 CE.

#### 15th September

1) **Saudi Arabia is currently India's second-largest supplier of crude oil** (Iraq has been India's top supplier).

2) The 18th G20 Summit witnessed a captivating display of India's rich tribal heritage and craftsmanship such as Longpi Pottery, Chhattisgarh Wind Flutes, Gond Paintings, Gujarat Hangings, etc.

3) The Solar Orbiter is a collaborative mission between the European Space Agency (ESA) and NASA that **aims to investigate the Sun's magnetic fields**, energetic particles, and plasma in their pristine state before they are altered during their journey.

#### 16th September

1) The **Global Stocktake is a periodic review mechanism established under the Paris Agreement in 2015**. It takes place every five years, with the first-ever stocktake scheduled to conclude at the UN Climate Change Conference (COP28) at the end of 2023.

2) **Gresham's law is a monetary principle that states that "bad money drives out good."** In contrast to

Gresham's Law, Thiers' Law highlights a phenomenon where "good money drives out bad."

3) India has recorded 85 quakes in the last 200 years and **ranks 16 on the list of countries with highest earthquakes.**

#### 18th September

1) Apple iPhone 15 has integrated the NavIC navigation system developed by the **Indian Space Research Organisation (ISRO)** into its hardware.

#### 19th September

1) Santiniketan has been **recognized by UNESCO as India's 41st World Heritage Site.**

2) **Singapore emerged as the largest beneficiary of Indian ODI (Outward Direct Investment) in FY2023, receiving Rs 2.03 lakh crore, representing 22.3% of the total ODI, indicating the growing interest of Indian firms in the Singaporean market.**

3) BRSR (Business Responsibility and Sustainability Reporting) is **a mandatory disclosure mechanism for the top 1000 listed companies or businesses to report their performance on Environmental, social, and corporate governance (ESG) parameters** and demonstrate their commitment to responsible business practices.

#### 20th September

1) India successfully phased out **ODS like Chlorofluorocarbons, Carbon Tetrachloride, Halons, Methyl Bromide, and Methyl Chloroform** for controlled uses by 1st January, 2010.

2) Within the next 70 years, river systems, especially in the American South, are likely to experience periods with such low levels of oxygen that **the rivers could "induce acute death" for certain species of fish and threaten aquatic diversity at large.**

#### 21st September

1) French Revolution in 1789, which gave rise to the famous motto "**liberté, égalité, fraternité**" (**liberty, equality, fraternity**).

2) The **lion population in India escalated from 523 to 674** individuals between the years 2015 and 2020.

2) For the year 2023, the total pendency of registered cases in SC is 64,854. In SC, there are 5,412 cases filed and 5033 cases disposed of in August 2023.

3) The **Ministry of Women & Child Development, Government of India, awards Bal Shakti Puraskar and Bal Kalyan Puraskar** every year to celebrate the energy, determination, ability, zeal and enthusiasm of our children and their caregivers.

3) The **IMD uses 4 colour codes:** Green (All is well), Yellow (Be Aware), Orange/Amber (Be prepared), Red (Take Action).

#### 22nd September

1) In 2021, the Recommendation on the Ethics of Artificial Intelligence was adopted by UNESCO. It **aims to fundamentally shift the balance of power between people, businesses and governments developing AI.**

2) The **Sacred Ensembles of the Hoysala, the famed Hoysala temples of Belur, Halebid and Somanathapur** in Karnataka have been added to the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage list.

3) The eruption of **Hunga Tonga-Hunga Ha'apai volcano in 2022** produced a plume 58 km high and **produced the biggest atmospheric explosion ever recorded.**

#### 23rd September

1) One in three adults across the world suffers from hypertension.

2) In 2004, salaried women workers earned 70% of what men earned. By 2017 the gap had reduced and women earned 76% of what men did. Since then the gap has remained constant till 2021-22.

3) The Central Government has decided to introduce 56 prizes under the category of Rashtriya Vigyan Puraskar (3 Vigyan Ratna, 25 Vigyan Shri, and 25 Yuva Vigyan Shanti Swarup Bhatnagar, 3 Vigyan Team Awards) to felicitate scientists.

#### 25th September

1) The **University Grants Commission (UGC)** has finalised the **National Higher Education Qualifications Framework (NHEQF) based on the National Education Policy (NEP) 2020** to standardise qualifications and promote academic mobility.

2) Recently, the **Indian government identified 62 new elephant corridors**, marking a significant milestone in the nation's commitment to wildlife conservation. **This brings the total number of such corridors to 150**, a remarkable increase from the 88 registered in 2010.

3) A recent study represents the **first instance where RNA (Ribonucleic Acid), a molecule less stable than DNA, has been extracted from extinct species such as the Tasmanian tiger.**

#### 26<sup>th</sup> September

1) Parliamentary privileges are special rights, immunities and exemptions enjoyed by the two Houses of Parliament, their committees and their members. Under these privileges, the **members of Parliament are exempted from any civil liability** (but not criminal liability) for any statement made or act done in the course of their duties.

2) Recently, **JPMorgan Chase & Co. will include India in its Government Bond Index-Emerging Markets (GBI-EM) index from June 2024**, anticipating significant inflows to India. This move is expected to widen the investor base and potentially lead to the appreciation of the Rupee.

3) According to the World Federation of the Deaf, there are over **70 million deaf people in the world**. More than 80% of them live in underdeveloped countries. **They collectively use more than 300 different sign languages.**

#### 27<sup>th</sup> September

1) **China, the US and India**, who collectively account for about 42% of global greenhouse gas emissions and are the **top three emitters** in that order were all absent from the recent United Nations Climate Ambition Summit (CAS).

2) **India is the 16th largest maritime country in the world**. Currently, Maritime transport in India handles 95% of the trade by volume and 68% by value.

3) The **Five Eyes is an intelligence alliance comprising nations including Australia, Canada, New Zealand, the United Kingdom and the US**. The 'Nine Eyes' group expands to cover the Netherlands, Denmark, France

and Norway, whereas the 14 Eyes bloc further includes Belgium, Italy, Germany, Spain and Sweden.

#### 28<sup>th</sup> September

1) The current self-regulation mechanism of TV news channels is based on the guidelines issued by the **NBDA (News Broadcasters and Digital Association) and the NBF (News Broadcasters Federation)**, which are voluntary associations of broadcasters.

2) **Joshimath town is situated on Vaikrita groups of rocks** (made up of coarse mica-garnet-kyanite and sillimanite-bearing psammitic metamorphics) overlain by morainic deposits which are composed of irregular boulders and clay of varying thicknesses.

3) **Vibrio vulnificus is a bacterium that can cause severe infections in humans**. It spreads through marine organisms and infections have a high mortality rate, ranging from 15% to 50%, even with prompt diagnosis and treatment.

#### 29<sup>th</sup> September

1) Recently, In the midst of India's extensive digital infrastructure development, **Moody's report "Decentralized Finance and Digital Assets" has underscored that the world's largest digital identification program frequently denies services to users.**

2) **NHRC was established on 12th October 1993, under the Protection of Human Rights Act (PHRA), 1993**, and in accordance with the Paris Principles for promoting and protecting human rights.

3) According to the Institute of International Finance (IIF), Global Debt rose to an all-time high of USD 307 trillion in the second quarter of 2023.

#### 30<sup>th</sup> September

1) India and Vietnam elevated their cooperation to a Comprehensive Strategic Partnership from a Comprehensive Partnership forged in 2013.

2) In a recent plea before the Supreme Court of India, the **Election Commission of India (ECI) clarified that the linking of Aadhaar numbers with the Electoral roll is not mandatory.**

3) In a significant initiative to empower senior citizens and persons with disabilities across India, the **Ministry of Social Justice and Empowerment, Government of India, organized 'Samajik Adhikarita Shivirs' camps at 72 locations simultaneously**

## Practice MCQs on Current Affairs Subject- September 2023

1. Consider the following statements, with reference to Self-Respect Marriages:

1. In Self-Respect Marriages, a couple can declare themselves married without the presence of a priest.
2. The self-respect of marriages was recognized by the Hindu Marriage (Tamil Nadu Amendment) Act, 1967.
3. These marriages are exempted from registration as per the law.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

Answer: (B)

**Explanation:** Recently Supreme Court notified that 'Self-respect' marriages in Tamil Nadu don't need public solemnization. It allows a couple to solemnize their marriage through a joint declaration to live as husband and wife in the presence of relatives, friends or other persons. **Section 7-A of the Hindu Marriage Act, 1955 deals with the special provision on "self-respect and secular marriages"**. It legally recognises "any marriage between any two Hindus", which can be referred to as "suyamariyathai" or "seerthiruththa marriage" or by any other name. **Self-respect marriages allow a couple to tie a knot in the absence of a priest, through a written or an oral declaration.** In this type of marriage, a Hindu couple does not need to follow any religious practices and can be declared married to each other in the presence of relatives, friends or other persons. **It is extended only to the state of Tamil Nadu. Hence, statement 3 is incorrect.**

2. Consider the following statements, with reference to Vyommitra:

1. It is an AI-enabled robot that will accompany astronauts in the unmanned GPS Aided GEO Augmented Navigation (GAGAN) Mission.
2. It has been designed, developed and integrated indigenously by the Defence Research and Development Organization (DRDO).

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:** Vyommitra's mission is to perform specific tasks in order to analyse how astronauts might behave. **The robot was designed, developed, and integrated by the ISRO Inertial Systems Unit (IISU).** An AI-enabled robot is designed to ride aboard a rocket and survive stress and vibrations while in flight. It has the ability to speak, see and make facial expressions, it has been created to resemble a human. **Vyommitra will accompany astronauts on manned missions in addition to the unmanned Gaganyaan mission.** She will mimic every action that astronauts are required to take and respond to them in two languages. She will monitor via module parameters that can alert, carry out life support procedures, carry out tasks like operating switch panels and imitate other human actions in space throughout the un-crewed flight. **Vyommitra will also acquire a digital twin, which would be built through collaboration with academic institutions such as the IITs. Hence, both statements are incorrect.**

3. The Hollongapar Gibbon Sanctuary, which was recently seen in the news, is located in which state?

- (a) Uttar Pradesh
- (b) Arunachal Pradesh
- (c) Assam
- (d) Himachal Pradesh

Answer: (C)

**Explanation:** The Hoollongapar Gibbon Sanctuary, formerly known as the **Gibbon Wildlife Sanctuary or the Hollongapar Reserve Forest, was renamed on May 25, 2004.** It is an isolated protected area of evergreen forest in Assam's Jorhat district. The sanctuary is **home to the only apes in India, the western Hoolock, as well as the Bengal slow Loris, the only nocturnal primate found in the northeast Indian states. Hence, option (c) is correct.**

4. Consider the following statements regarding Smishing:

1. It entails sending bogus text messages to people to deceive them into disclosing critical personal information.
2. Smishing messages generally contain urgent or attractive content designed to compel recipients to act quickly.

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 term "smishing" is a combination of "SMS" (Short Message Service) and "phishing." **Smishing is a type of phishing attack that includes sending bogus SMS messages to someone to fool them into disclosing sensitive personal information such as passwords, credit card details, or other confidential data.** Smishing messages generally include urgent or attractive content designed to induce recipients to take immediate action, such as clicking on a malicious link, dialling a phone number, or disclosing sensitive information. **Hence, both statements are correct.**

**5. With reference to Walking Leaves, consider the following statements:**

1. They are insects that live in densely forested places and feed on plants.
2. Walking leaves, both male and female, can fly considerable distances.
3. Their arms and legs can regenerate.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Answer:** (B)

**Explanation:**

· Walking Leaves, sometimes known as **leaf insects, are insects that resemble leaves.** They are any of over 50 species of flat, generally green insects (order Phasmida or Phasmatodea) with a remarkable leaflike appearance. They eat on **vegetation and like highly forested places.** Their native range stretches from Indian Ocean islands to areas of mainland South Asia and Southeast Asia, as well as Papua New Guinea and Australia in the western Pacific. **Hence, statement 1 is correct.**

· **Males are often smaller than females. They are generally brown or green, with some being somewhat speckled or having serrated edges, similar to nibbled leaves.** Female walking leaves are unable to fly. Males can fly short distances since their hind wings are highly developed. **Hence, statement 2 is incorrect.**

· Walking leaves' arms and legs can regenerate. **Hence, statement 3 is correct.**

**6. With reference to the International Finance Corporation (IFC), consider the following statements:**

1. IFC is a member of the World Bank Group established in 1956.

2. It is an international financial institution that offers investment, advisory, and asset management services to encourage private sector development in developing countries.

3. India is a member of all World Bank institutions except IFC.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

· IFC is an international financial institution that offers investment, advisory, and asset management services to encourage private sector development in developing countries. **It was established in 1956 as the private sector arm of the World Bank Group to advance economic development by investing in strictly for-profit and commercial projects that purport to reduce poverty and promote development.** The IFC is owned and governed by its member countries but has its own executive leadership and staff that conduct its normal business operations. **It is a member of the World Bank Group and is headquartered in Washington, D.C., United States.**

· **Other members of the World Bank Group:**

- International Bank for Reconstruction and Development (IBRD)
- International Development Association (IDA)
- Multilateral Investment Guarantee Agency (MIGA)
- International Centre for Settlement of Investment Disputes (ICSID)

India is a member of all World Bank institutions except ICSID. **Hence, statement 3 is incorrect.**

**7. With reference to Red Sand Boa, consider the following statements:**

1. It is a Non-Venomous and Ovoviviparous snake endemic to India, Pakistan, and Iran.
2. It is called a "Two-headed snake" due to its round tail that looks like a head.
3. It is used for making certain medicines, cosmetics, and in black magic, and is in huge demand in the international market.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** A report by the Wildlife Conservation Society (WCS)-India report flags the illegal trade of red sand boa. It is a Non-Venomous and Ovoviviparous snake endemic to India, Pakistan, and Iran. It is called a "Two-headed snake" due to its round tail that looks like a head. It is used for making certain medicines, cosmetics, and in black magic, and is in huge demand in the international market. It is listed as near threatened in the IUCN Red List. The trade and possession of it is an offence under the Wildlife Protection Act 1972. Hence, all statements are correct.

8. Consider the following statements regarding Super Blue Moon:

1. A Super Blue Moon is the convergence of three lunar occurrences - a full Moon, a Super Moon, and a blue Moon.
2. Super moon happens when the moon is passing through or is close to its perigee, and is also a full moon.

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 Super Blue Moon is the convergence of three lunar occurrences - a full Moon, a Super Moon, and a blue Moon. Blue moon refers to the second full moon within a single month — a rare event since full moons typically occur once a month. When a season experiences four full moons, the third full moon is deemed the blue moon. Super moon happens when the moon is passing through or is close to its perigee, and is also a full moon. A full moon at perigee (super moon) is about 14% bigger and 30% brighter than a full moon at apogee (called a "micro moon"). The next Super Blue Moon will occur in January 2037. Hence, both statements are correct.

9. Mahendragiri, the Indian Navy's Stealth Frigate, is manufactured under which project?

- (a) Project 75 (I)
- (b) Project 17A
- (c) Project 15 B
- (d) Project 11 A

**Answer:** (B)

**Explanation:** The Indian Navy's final stealth frigate constructed as part of Project 17A, 'Mahendragiri', is scheduled for launch at Mazagon Dock Shipbuilders Ltd in Mumbai on Friday. Vice-President Jagdeep Dhankhar will be present at the launch ceremony. Named after a prominent peak in the Eastern Ghats of Odisha, INS 'Mahendragiri' marks the seventh

addition to the fleet of Project 17A frigates. Distinguished by enhanced stealth characteristics, advanced weaponry, and cutting-edge sensors, these vessels are a continuation of the Project 17 frigate series. Hence, option (b) is correct.

10. Recently, the Johannesburg Declaration was news, it is related to:

- (a) Expansion of BRICS membership
- (b) Raising the collective voice of developing nations at the World Trade Organisation Forum
- (c) Providing agriculture subsidies to African nations
- (d) Strengthening the bilateral relationship between India and South Africa

**Answer:** (A)

**Explanation:** The 15th BRICS Summit concluded in Johannesburg last week with the membership of the grouping going from 5 to 11, after the induction of four countries from the Gulf and West Asia — Egypt, Iran, Saudi Arabia and the United Arab Emirates as well as Ethiopia and Argentina from Africa and South America, respectively. The expansion was carried out under the Johannesburg Declaration which refers to "consensus" being reached on "the guiding principles, standards, criteria and procedures of the BRICS expansion process", details of which have not been made public so far. Hence, option (a) is correct.

11. With reference to Fiberization, consider the following statements:

1. Fiberisation is the process of connecting radio towers via optical fibre cables.
2. It facilitates full utilisation of network capacity and carries large amounts of data used in 5G services.
3. In India, currently around 50% of the towers are fiberised, compared to 80%-90% in the U.S., Japan and China.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The pace of laying out optical fibre in the country has increased since the launch of 5G services. Fiberisation is the process of connecting radio towers with each other via optical fibre cables. It facilitates full utilisation of network capacity and carries large amounts of data used in 5G services. It will also aid in providing additional bandwidth and stronger backhaul support. In India, currently, around 38% of the towers are fiberised, compared to 80%-90% in the U.S., Japan and China. Hence, statement 3 is incorrect.

12. Consider the following statements, with reference to the CE-20 Cryogenic Engine:

1. It is the first cryogenic engine to use a Gas-generator cycle using the Liquid Oxygen and Liquid Hydrogen propellants combination.
2. It has a capacity of 28 tonnes of fuel and will be used as the upper stage of Geosynchronous Satellite Launch Vehicle Mk III (LVM3).

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:** ISRO has successfully tested the CE-20 Cryogenic engine to be used in "Mission Gaganyaan". Cryogenic engines use fuels at cryogenic temperatures (-150 to -273 degrees C) and are comparatively more powerful than solid and liquid propellant engines. It is the first cryogenic engine to use a Gas-generator cycle using Liquid Oxygen and Liquid Hydrogen propellants combination. It has a capacity of 28 tonnes of fuel and will be used as the upper stage of Geosynchronous Satellite Launch Vehicle Mk III (LVM3). Hence, both statements are correct.

13. Kokborok language, recently seen in the news, is spoken in which state?

- (a) Tripura
- (b) Mizoram
- (c) Arunachal Pradesh
- (d) Sikkim

Answer: (A)

**Explanation:** Kokborok is the language spoken by the Borok people belonging to Tripura. Borok is a branch of the Boro people of Assam belonging to the Sino-Tibetan linguistic group and racial Mongoloids. Kokborok belongs to the Tibeto-Burman family and has a close affinity with other language families like Bodo, Garo, Dimasa etc. It is one of the state languages of Tripura. It is declared as an official language of Tripura Tribal Areas Autonomous District Council. Hence, option (a) is correct.

14. Recently, the Government formed a committee to know the viability of simultaneous Lok Sabha and Assembly elections in the country, The committee is headed by whom?

- (a) Prahalad Joshi
- (b) Amitabh Kant
- (c) Ram Nath Kovind
- (d) Dinesh Goswami

Answer: (C)

**Explanation:** Setting the ball rolling on its party's manifesto promise of working towards simultaneous Lok Sabha and Assembly elections in the country, the government on Friday announced a committee that would submit its report to Parliament. While details of the committee's composition were not announced, it is learnt that former President Ram Nath Kovind will head it.

15. Consider the following statements about the "Global Fund":

1. It is a multinational organization that promotes environmental sustainability and animal conservation in diverse places worldwide.
2. It obtains funding from governments, private-sector partners, foundations, and people.
3. Its Secretariat is located in Geneva, Switzerland.

How many of the above statements is/are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

**Explanation:**

- The Global Fund is an international finance and partnering organization that intends to attract, leverage, and deploy extra resources to end the epidemics of HIV/AIDS, TB, and malaria in order to meet the United Nations' Sustainable Development Goals. Hence, statement 1 is incorrect.
- Governments, commercial sector partners, foundations, and individuals contribute to the Global Fund. Its headquarters are in Geneva, Switzerland. Hence, statement 2 and 3 are correct.

16. Consider the following statements regarding GRIHA (Green Rating for Integrated Habitat Assessment)

**Statement 1:** GRIHA evaluates and certifies buildings based on their environmental performance throughout their life cycle, jointly established by TERI and the Ministry of New and Renewable Energy.

**Statement 2:** GRIHA focuses on renewable energy usage and waste generation, with the rating system revised every three years.

**Statement 3:** GRIHA certification requires a minimum of 75 points based on 20 quantitative measures.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three

(d) None

**Answer: (B)**

**Explanation:**

· GRIHA, which stands for **Green Rating for Integrated Habitat Assessment**, is indeed an organization jointly established by TERI (The Energy and Resources Institute) and the Ministry of New and Renewable Energy. **Its primary objective is to evaluate and certify buildings based on their environmental performance throughout their entire life cycle.** This includes various aspects such as energy efficiency, water conservation, waste management, and more. **Hence, Statement 1 is correct.**

· **GRIHA focuses on renewable energy usage and waste generation, with the rating system revised every three years.** GRIHA has international recognition and supports global sustainable development efforts, including the adoption of renewable energy in the building sector. **It plays a role in data collection for global building energy through tools like the "Common Carbon Metric,"** contributing to initiatives like "The Climate Reality Project." **Hence, statement 2 is correct.**

· **GRIHA certification does involve a point-based system where projects earn points for meeting specific criteria.** However, the minimum requirement for GRIHA certification is 50 points, not 75. **GRIHA comprises 34 criteria, and projects must achieve a certain score to attain one of the certification levels, which range from one star to five stars. Hence, statement 3 is incorrect.**

**Hence, option (b) is correct.**

**17. With reference to the Indian economy, consider the following statements:**

1. If the inflation is too high, the Reserve Bank of India (RBI) is likely to buy government securities.

2. If the rupee is rapidly depreciating, RBI is likely to sell dollars in the market.

3. If interest rates in the USA or European Union were to fall, that is likely to induce RBI to buy dollars.

4. A series of rate hikes by the Reserve Bank of India (RBI) aimed at curbing inflation is expected to initially moderate economic growth before affecting inflation rates.

**Which of the statements given above are correct?**

(a) 1, 2 and 4 only

(b) 2, 3 and 4 only

(c) 1 and 3 only

(d) 1, 2 and 3

**Answer: (B)**

**Explanation:**

**Selling and purchasing of Government Securities-**

· **Open market operations are carried out by the central bank in association with the commercial banks.** For conducting such operations, there is no involvement of the public.

· **Government bonds are mostly bought by commercial banks, financial institutions, high-net-worth individuals, and large business corporations.** All these entities maintain accounts with the bank, and whenever these entities purchase bonds, the amount gets transferred to the central bank.

· **Thus, it can be said that open market operations have an impact on the deposits and reserves of the bank and also play a role in their ability to provide credit.** When a central bank wants to reduce the availability of money to the public, it will sell government bonds and securities with the help of commercial banks.

· **This step reduces the money supply in the economy and restricts banks from offering credit to individuals. It impacts both the supply and demand of the credit.**

· Similarly, at times when the liquidity conditions are tight, the central bank buys back the securities, which gives the commercial banks and the public easy access to the credit facilities that help inject liquidity into the system and stabilise the market. **Hence, statement 1 is not correct.**

· RBI used to sell or purchase the dollar as per the demand of market conditions. When it is needed to decrease the demand for dollars to prevent the rupee from depreciating in comparison to dollars, RBI is likely to sell dollars and vice-versa. **Hence, statements 2 and 3 are correct.**

· The impact of a series of rate hikes by the Reserve Bank of India (RBI) is expected to become more pronounced. These rate hikes, aimed at curbing inflation, may initially moderate economic growth before affecting inflation rates. **Hence, statement 4 is correct.**

**Hence, option (b) is correct.**

**18. Consider the following statement regarding the G-20 Disaster Risk Reduction Working Group**

1. Current economic choices and development pathways are not in line with the commitments to reduce risk contained in the Sendai Framework as well as the 2030 Agenda and the Paris Agreement.

2. The G20 DRR Working Group aims to integrate risk reduction measures into public and private sector investment decisions and policy-making to reduce existing risk, prevent the creation of new risk and, ultimately, build resilient economies, societies, and natural systems.

**Which of the following is correct?**

(a) Only 1

(b) Only 2

- (c) Both 1 and 2  
(d) Neither 1 nor 2

**Answer:** (C)

**Explanation:**

· The G20 DRR Working Group aims to integrate risk reduction measures into public and private sector investment decisions and policy-making to reduce existing risk, prevent the creation of new risks and, ultimately, build resilient economies, societies, and natural systems. Hence, statement 2 is correct.

· Current economic choices and development pathways are not in line with the commitments to reduce risk contained in the Sendai Framework as well as the 2030 Agenda and the Paris Agreement. The G20 DRR Working Group is committed to changing this through the development of policy guidance, exchange of technical knowledge, promotion of capacity building, and identification of new approaches to financing that prioritize risk reduction and resilience. Hence, statement 1 is correct.

· **Additional Information** – India has taken a pioneering step by establishing the inaugural G20 Disaster Risk Reduction Working Group. This initiative is significant as G20 member countries collectively account for approximately 85% of the global GDP and roughly two-thirds of the world's population. Recognizing the strong link between economic choices and human vulnerability to disasters, the G20 is uniquely positioned to shape a new approach to decision-making that incorporates disaster risk considerations. Hence, option (c) is correct.

19. Consider the following statements regarding the Air Quality Life Index (AQLI) report 2023

1. India topped among the countries worst hit by air pollution followed by Bangladesh.
2. PM2.5 and PM10 concentration in the air is used as a measurement parameter.
3. It is released by the Energy Policy Institute at the University of Chicago (EPIC).

**How many of the statements given above are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) None

**Answer:** (A)

**Explanation:**

· India ranked second among the countries worst hit by air pollution with Bangladesh topping the list.

· Nepal ranked third followed by Pakistan and Mongolia. Hence, statement 1 is incorrect.

· National AQI is determined on the basis of the concentration of 8 pollutants namely **Particulate**

**Matter (PM 2.5, PM 10), Sulfur dioxide (SO<sub>2</sub>), Nitrogen dioxide (NO<sub>2</sub>), Carbon monoxide (CO), Ozone (O<sub>3</sub>), Ammonia (NH<sub>3</sub>) and Lead (Pb).** On the other hand, only PM2.5 concentration in the air is used as a measurement parameter in AQLI.

· Hence, statement 2 is incorrect.

· AQLI measures the impact of particulate pollution on life expectancy.

· It is released by the Energy Policy Institute at the University of Chicago (EPIC).

Hence, statement 3 is correct.

Hence, option (a) is correct.

20. Consider the following statement regarding the Right to Information (RTI)

1. The genesis of India's RTI legislation can be traced back to 1986 when the Supreme Court issued a landmark judgment in the case of Indra Sawhney & Others v. Union of India.

2. The Right to Information (Amendment) Act, of 2019, the Centre will notify the tenure of all Information Commissioners at the state and centre level.

**Which of the following statements is correct?**

- (a) Only 1  
(b) Only 2  
(c) Both 1 and 2  
(d) Neither 1 nor 2

**Answer:** (B)

**Explanation:**

The genesis of India's RTI legislation can be traced back to 1986 when the Supreme Court issued a landmark judgment in the case of Mr Kulwal v/s Jaipur Municipal Corporation. In this case, the Supreme Court directed that the freedom of speech and expression guaranteed under Article 19 of the Constitution inherently includes the Right to Information. This recognition was based on the understanding that without access to information, the exercise of freedom of speech and expression by citizens would remain incomplete.

**What is Indira Sawhney Case –**

In the Indra Sawhney case, the Government notice reserving 10% of government posts for economically depressed classes among the upper castes was invalidated by the Supreme Court while preserving the 27% quota for lower castes. The ruling in Indra Sawhney vs. Union of India, 1992 & Ors by the Supreme Court marked a significant turning point in India's history of backward class reservation. In the Indra Sawhney case, the fact was reiterated that providing reservations to 60%, while 40% of them without a reservation will lead to an imbalance in the structure of the society. Through the Indra Sawhney case ruling and its stipulation that reservations for underprivileged

groups should only apply to initial appointments and not promotions, the term “creamy layer” also acquired popularity.

**Hence, statement 1 is not correct.**

The Right to Information (Amendment) Act, of 2019, granted the Union Government unilateral powers over the appointment and compensation of information commissioners, raising concerns about their independence.

**Hence, statement 2 is correct.**

**Hence, option (b) is correct.**

**21. Consider the following statements about the G20 Workstreams:**

1. There are 3 tracks namely, Finance Track, Sherpa Track and Engagement Groups.
2. All of them have members of Governments of various countries.
3. B20, C20, L20 are part of Finance Track.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (A)**

**Explanation:**

**G20 Overview:**

- Established in **1999, initially focused on finance.**
- Transitioned into a leaders' forum post-2008 financial crisis.
- G20 Summit is the main annual event.
- Meetings involve ministers, officials, and civil society.
- The G20 operates through three major tracks: **Finance Track, Sherpa Track, and unofficial engagement groups. Hence statement 1 is correct.**

**G20 Tracks:**

- **Finance Track:**
- Led by finance ministers and central bank governors.
- Meets about four times a year.
- Focus on **fiscal, monetary, and economic matters.**
- Covers global economy, infrastructure, regulations, inclusion, and taxation.
- **Comprises eight working groups.**
- Achievements include the **Debt Service Suspension Initiative (DSSI) and Sustainable Finance Roadmap.**

**Sherpa Track:**

- Established in **2008.**
- Composed of representatives appointed by heads of state.
- Focus on various socio-economic issues.
- Includes agriculture, climate, digital economy, health, trade, etc.

- **Sherpas represent leaders, akin to mountain Sherpas.**

- **Comprises 13 working groups.**

- **Engagement Groups (Unofficial Track):**

- Involves civil society organizations. **Hence statement 2 is incorrect.**

- Formulate recommendations influencing policy decisions.

- **Includes Business20 (B20), Civil20 (C20), Labour20 (L20), etc. Hence statement 3 is incorrect.**

- Represents different sectors and interests.

**22. Consider the following with respect to payloads on Aditya L1:**

Payload	Function
1. ASPEX	Monitors X-ray flares to investigate the heating mechanism of the solar corona
2. VELC	Focuses on examining solar corona parameters and the origins of Coronal Mass Ejections
3. SoLEXS	Aims to analyze variations, distributions, and spectral characteristics of the solar wind
4. PAPA	Devoted to studying the composition of solar wind and its energy distribution.

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (B)**

**Explanation:**

- **ASPEX:**

- Focuses on the variation, distribution, and spectral characteristics of solar wind. **Hence statement 1 is incorrect.**

- Relevant because **solar wind can disrupt power lines, communication satellites, and high-altitude spacecraft.**

- **VELC:**

- Analyzes the parameters of the solar corona and investigates the origin of Coronal Mass Ejections (CMEs). **Hence statement 2 is correct.**

- Important because CMEs can interact with Earth's magnetic field, potentially causing geomagnetic storms and affecting technologies on Earth.

- **SUIT:**

- Captures images of the photosphere and chromosphere in the ultraviolet (UV) range.

· Useful for tracking solar flares emanating from the photosphere.

· **SoLEXS:**

· Monitors X-ray flares to study the heating mechanism of the solar corona. **Hence statement 3 is incorrect.**

· Essential because energy from X-ray flares can disrupt radio waves, causing blackouts in navigation and communication signals.

· **PAPA:**

· Studies the composition of solar wind and its energy distribution. **Hence statement 4 is correct.**

· Significant as the solar wind can disrupt communication and navigation satellites.

· **HEL1OS:**

· Observes dynamic events in the solar corona and estimates the energy used to accelerate particles during eruptive events.

· Provides valuable estimates for better shielding against potential solar eruptions.

23. Consider the following statements about the recent State of Food Security and Nutrition in the World (SOFI) 2023:

1. The global population facing hunger has reduced by more than 122 million since 2019.

2. Asia experienced the highest surge in the expense of sustaining a nutritious diet, with costs rising by 25%.

3. It is estimated that by 2050, 70% of the world's population will live in urban areas.

4. Among the BRICS nations and neighbouring countries, India has the least affordable cost for a healthy diet.

How many of the statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (A)**

**Explanation:**

· The number of people experiencing hunger globally increased by more than 122 million since 2019, primarily due to factors like the pandemic, recurring weather-related disasters, and conflicts such as the Ukraine war. **Hence statement 1 is incorrect.**

· Urbanization is leading to higher consumption of processed and convenience foods, resulting in an upsurge in overweight and obesity rates across urban, peri-urban, and rural areas.

· The State of Food Insecurity and Nutrition in the World (SOFI) report monitors shifts in the cost and affordability of a healthy diet across different regions.

· Asia observed the most significant rise in the cost of maintaining a nutritious diet, increasing by almost 9%

between 2019 and 2021. **Hence statement 2 is incorrect.**

· The increase in the number of people unable to afford a nutritious diet was particularly prominent in Asia and Africa, with South Asia, Eastern Africa, and Western Africa facing the greatest challenges.

· **Projections indicate that by 2050, approximately 70% of the global population will be residing in urban areas.** This demographic shift necessitates a reconfiguration of food systems to meet the needs of these urban populations and combat hunger, food insecurity, and malnutrition effectively. **Hence statement 3 is correct.**

· According to the SOFI report, **India has the most affordable cost for a healthy diet among BRICS nations and neighbouring countries.** In 2021, a nutritious diet in India was estimated to cost approximately 3.066 Purchasing Power Parity (PPP) per person per day, seemingly making it affordable. **Hence statement 4 is incorrect.**

24. The rate of expansion of the Universe is quantified using the:

- (a) Boltzmann's Constant
- (b) Bernoulli's Theorem
- (c) Hubble's Constant
- (d) Rydberg's Constant

**Answer: (C)**

**Explanation:**

**Boltzmann Constant (k):**

· This constant is fundamental in the field of **statistical mechanics and thermodynamics.**

· It relates the average kinetic energy of particles in a gas to the temperature of that gas.

· It **helps establish the connection between the microscopic behaviour of particles (atoms and molecules) and the macroscopic properties of matter like temperature and pressure.**

**Bernoulli's Theorem:**

· Bernoulli's theorem is not represented by a constant but is a fundamental principle in fluid dynamics.

· It **describes the relationship between the pressure, velocity, and elevation of a fluid in a steady, incompressible, and inviscid flow.**

· It's often used to explain the behaviour of fluids in situations like the flow of blood in arteries or the lift of an aeroplane wing.

**Hubble's Constant ( $H_0$ ):**

· Hubble's constant is a critical parameter in cosmology.

· It **represents the current rate of expansion of the universe.**

· It describes the velocity at which galaxies are moving away from each other due to the expansion of space itself. **Hence option 3 is correct.**

**Rydberg Constant ( $R_y$ ):**

- The Rydberg constant is a fundamental physical constant that appears in the equations governing the behaviour of electrons in atoms.
- It is **used to calculate the wavelengths of spectral lines in atomic spectra, particularly for hydrogen.**

25. Consider the following pairs:

Islands	Dispute between
1. Huangyan Island	China, Vietnam, and Taiwan
2. Senkaku Island	Russia and Japan
3. Kachatheevu	Maldives and Sri Lanka

**How many of the statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (D)**

**Explanation:**

**1. Huangyan Island (Scarborough Shoal):**

- **Dispute Between: Philippines and China**
- **Explanation:** Huangyan Island, also known as Scarborough Shoal, is located in the South China Sea. The Philippines and China both claim sovereignty over this uninhabited shoal. **The dispute escalated in 2012 when there was a standoff between Philippine and Chinese vessels near the island.** It remains a contentious issue in the region. **Hence pair 1 is incorrect.**

**2. Senkaku Islands (Diaoyu Islands):**

- **Dispute Between: Japan, China, and Taiwan**
- **Explanation:** The Senkaku Islands, known as the Diaoyu Islands in China and Tiaoyutai Islands in Taiwan, are a group of uninhabited islands in the East China Sea. Japan administers these islands, but they are claimed by both China and Taiwan. **The dispute involves historical claims, fishing rights, and access to potentially valuable natural resources.** Hence pair 2 is incorrect.

**3. Kachatheevu:**

- **Dispute Between: India and Sri Lanka**
- **Explanation:** Kachatheevu is a small uninhabited island situated in the Palk Strait between India and Sri Lanka. The island has been a subject of dispute between these two nations. **In 1974, India ceded control of the island to Sri Lanka through an agreement,** which led to protests and concerns among some sections of the Indian population regarding **fishing rights and sovereignty.** The issue remains a point of contention between the two countries. **Hence pair 3 is incorrect.**

26. **With reference to the principle of the basic structure of the Constitution, consider the following statements –**

1. The Supreme Court, in its landmark 1973 judgment in the Kesavananda Bharati case, determined that Parliament has the power to amend the Constitution, but its fundamental principles or basic structures cannot be amended.
2. According to the 42nd Amendment Act (1976), there is no limit to the power of Parliament to amend the Constitution and it cannot be questioned in any court on any amendment on any basis.
3. In 1975, the principle of the basic structure of the Constitution was reaffirmed and applied by the Supreme Court in the case Indira Gandhi vs. Raj Narayan.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:**

- The Supreme Court, in its landmark 1973 judgment in the Kesavananda Bharati case, determined that Parliament has the power to amend the Constitution, but its fundamental principles or basic structures cannot be amended. This decision placed restrictions on Parliament's power to enact sweeping amendments. **This landmark decision confirmed the Supreme Court's right to subject parliamentary laws to judicial review.** Additionally, it advanced the notion of separation of powers among the three branches of government: legislative, executive and judiciary. **Hence, statement 1 is correct.**
- **In 1951, in Shankari Prasad vs. Union of India, the Supreme Court ruled that as per Article 368, Parliament has the power to amend any part of the Constitution, including the fundamental rights.**
- **In 1965, in Sajjan Singh vs. State of Rajasthan, the Supreme Court upheld its previous decision in the Shankari Prasad case of 1951, confirming that Parliament can indeed amend any part of the Constitution under Article 368.** Nevertheless, worth noting, that Justices Hidayatullah and Mudholkar, while dissenting from the majority opinion, expressed reservations about the unrestricted power of Parliament to amend the Constitution and potentially curtail the fundamental rights of citizens.
- **In 1967, in Golak Nath vs. the State of Punjab, the Supreme Court overturned the Shankari Prasad decision, holding that Article 368 completely delineates the procedure for amending the Constitution and empowers Parliament to amend any**



part of the Constitution. Does not give unrestricted rights.

· In 1973, the Supreme Court upheld the validity of the 24th Constitutional Amendment Act in **Keshavananda Bharati vs. the State of Kerala**. However, it modified the decision of the **Golak Nath case** and ruled that the **Parliament has the power to amend any part of the Constitution, but it must ensure that the fundamental structure of the Constitution, known as the "Basic Structure" Known, remains intact**. This case is famous for introducing the concept of the "Basic Structure of the Constitution".

· In 1975, the principle of the basic structure of the Constitution was reaffirmed and implemented by the Supreme Court in the case **Indira Gandhi vs. Raj Narayan**. Also invalidated the provision of the 39th Amendment Act (1975), in which election disputes involving the Prime Minister and the Speaker of the Lok Sabha were kept out of the jurisdiction of the court. **Hence statement 3 is correct.**

· 42nd Amendment Act (1976), there is no limit to the power of Parliament to amend the constitution and it cannot be called in question in any court on any ground on any amendment. **Hence statement 2 is correct.**

· In 1980, in **Minerva Mills v. Union of India**, the Supreme Court declared certain provisions of the 42nd Constitutional Amendment Act invalid. The Court's judgment emphasized that Parliament cannot limit the right of "Judicial Review" as it is an integral part of the "Basic Structure" of the Constitution.

· In 1981 in the **Wamana Rao vs Union of India case**, the court introduced the concept of 'Doctrine of Prospective Overruling'. It determined that prior to the Kesavananda judgment, laws included in the Ninth Schedule could not be challenged for infringement of fundamental rights. However, it has allowed the laws made after the Kesavananda judgment to be challenged in court. **Hence option (c) is correct.**

#### 27. Consider the following statements regarding the Jal Jeevan Mission

1. Jal Jeevan Mission is envisioned to provide safe and adequate drinking water through individual household tap connections by 2025 to all households in rural India.

2. The Jal Jeevan Mission will be based on a community approach to water and will include extensive Information, Education and communication as key components of the mission.

#### Which of the above statements is/are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (B)**

**Explanation:** Jal Jeevan Mission, is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India. The programme will also implement source sustainability measures as mandatory elements, such as recharge and reuse through greywater management, water conservation, and rainwater harvesting. **Hence, statement 1 is not correct.**

The Jal Jeevan Mission will be based on a community approach to water and will include extensive Information, Education and communication as key components of the mission. JJM looks to create a jan andolan for water, thereby making it everyone's priority. **Hence, statement 2 is correct.**  
**Hence, option (b) is correct.**

#### 28. Zealandia is a long, narrow microcontinent that is mostly submerged in the

- (a) South Pacific Ocean
- (b) North Pacific Ocean
- (c) North Atlantic Ocean
- (d) South Atlantic Ocean

**Answer: (A)**

**Explanation:**

· Zealandia is a long, narrow microcontinent that is mostly submerged in the South Pacific Ocean.

· A microcontinent is a landmass that has broken off from a main continent. Zealandia broke off from Antarctica about 100 million years ago, and then from Australia about 80 million years ago.

· Zealandia is about half the size of Australia, but only 7 per cent of it is above sea level. Most of that terrestrial land makes up the two large islands of the country of New Zealand, the North Island and the South Island. Stewart Island, just south of the South Island, and many smaller islets are also a part of Zealandia. New Caledonia, a collection of islands governed by France, makes up the northern tip of Zealandia.

**Hence, option (a) is Correct.**

#### 29. Consider the following statements regarding kuruvai paddy

1. Kuruvai cultivation refers to the seasonal cultivation of paddy (rice) during the Kuruvai season in the Indian state of Tamil Nadu.

2. The Kuruvai season, also known as the "short-term" or "lesser" monsoon season, typically occurs between June and September.

3. It is characterized by the onset of the Northeast monsoon, which brings rainfall to the region.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

· Kuruvai cultivation refers to the seasonal cultivation of paddy (rice) during the Kuruvai season in the Indian state of Tamil Nadu.

· The Kuruvai season, also known as the "short-term" or "lesser" monsoon season, typically occurs between June and September.

· It is characterized by the onset of the southwest monsoon, which brings rainfall to the region.

Hence, statements 1 and 2 are correct while statement 3 is not correct.

Hence, option (b) is correct.

30. Recently in the news, Gilbert Hill is situated in which of the following states –

- (a) Manipur
- (b) Nagaland
- (c) West Bengal
- (d) Maharashtra

**Answer: (D)**

**Explanation:**

**About Gilbert Hill –**

· It is a 200-foot monolithic column of black basalt rock located at Andheri in Mumbai, Maharashtra.

· The rock has a sheer vertical face and was formed when molten lava was squeezed out of the Earth's clefts during the Mesozoic Era about 66 million years ago.

· It was declared a National Park in 1952, while the Brihan Mumbai Municipal Corporation categorised it as a Grade II heritage structure in 2007.

· The 'hill' is only one of three outcrops of volcanic rock worldwide.

· Arguably the oldest heritage site in the country in its original form, Gilbert Hill has a few temples and a small garden atop. These are accessed by a steep staircase carved into the rock. Hence, option (d) is correct.

31. Consider the following types of Dark Patterns:

1. False Urgency: Fake urgency for quick actions.
2. Basket Sneaking: Unauthorized items at checkout, raising costs.
3. Confirm Shaming: Compelling unrelated purchases for access.
4. Forced Action: Using fear, shame, and guilt for sales.

How many of the above statements are correct?

- (a) Only one

- (b) Only two
- (c) Only three
- (d) All four

**Answer: (B)**

**Explanation:**

**Various types of Dark Patterns include:**

· **False Urgency:** Misleading users with a false sense of urgency to make immediate purchases or take action.

· **Basket Sneaking:** Adding extra items at checkout without user consent, increasing the total payable amount.

· **Confirm Shaming:** Using fear, shame, ridicule, or guilt to push users into buying products or continuing subscriptions.

· **Forced Action:** Compelling users to take unrelated actions or buy additional goods or services to access their intended product/service.

· **Subscription Trap:** Making it difficult or complex to cancel paid subscriptions.

· **Interface Interference: Manipulating UI elements to misdirect users** by highlighting certain information while obscuring relevant details.

· **Bait and Switch:** Deceptively advertising one outcome but delivering another based on user actions.

· **Drip Pricing:** Hiding or revealing price elements discreetly during the user experience.

· **Disguised Advertisement:** Presenting ads as user-generated content, news articles, or false information.

· **Nagging:** Overloading users with unrelated requests, information, or interruptions during transactions.

32. Consider the following statements about self-respect marriages:

1. These marriages typically occur without priests or traditional wedding rituals.
2. These kinds of marriages are not mentioned in any Act.
3. Recently, the Supreme Court held these marriages to be ultra vires.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

· In 1968, the Hindu Marriage (Tamil Nadu Amendment) Act, 1967, was enacted, introducing Section 7-A into the Hindu Marriage Act of 1955. Section 7-A legalized self-respect and secular

marriages among Hindus who meet the minimum marriage age requirements, mandating their registration. These marriages typically occur without priests or traditional wedding rituals like the holy fire or mangalsutra and are often witnessed by family and friends. Hence statement 1 is correct and 2 is incorrect.

· The Supreme Court ruled that self-respectful marriages do not require public solemnization or declaration. It overruled the Madras High Court's ruling in *S. Balakrishnan Pandiyan* and cited its 2001 judgment in *S. Nagalingam v. Sivagami*, which upheld Section 7-A of the Hindu Marriage Act (Tamil Nadu State Amendment). The Court highlighted that couples may avoid public declarations due to parental pressure, and imposing such a requirement could jeopardize their safety and bodily integrity. The High Court's observations were deemed to violate Article 21 (the right to life) of the Constitution, as they hindered the free will of adult individuals. Hence statement 3 is incorrect.

33. Consider the following statements regarding Heat Index:

1. India has launched its own heat index called Humidex to assess heat's impact and issue heatwave alerts.
2. High humidity during heat waves results in a higher heat index because humid air feels hotter to humans.
3. The Heat Index categorizes the apparent temperature into different levels using colour codes, with green representing an experimental Heat Index of less than 35°C.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

· Some countries, like Canada, have their own heat index measurements. Canada uses the Humidex system. In 2024, India plans to launch its own heat index to assess heat's impact on its population and issue impact-based heatwave alerts for specific areas. Hence statement 1 is incorrect.

· Hot air can hold more moisture than cold air, increasing the apparent temperature or heat index as temperatures rise. High humidity during heat waves results in a higher heat index because humid air feels hotter to humans. High humidity can lead to heat stress, with symptoms including increased heart rate and heat-related issues, potentially fatal if not addressed. When humidity is high, it's harder for the

body to lose heat through sweating and evaporation, making the heat index a more useful measure than just the air temperature. Hence statement 2 is correct. 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 of 36-45°C.
  - **Orange:** Experimental heat Index in the range 46-55°C.
  - **Red:** Experimental heat Index greater than 55°C.
- Hence statement 3 is correct.

34. Consider the following statements about Bhitarkanika National Park:

1. It was declared as a national park in 1998.
2. Ramsar site status attained in 2002, the second in Odisha after Chilika Lake
3. Houses India's second-largest mangrove ecosystem.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation:

· Bhitarkanika National Park is a 145 km<sup>2</sup> (56 sq mi) large national park in northeast Kendrapara district in Odisha in eastern India. It was designated on 16 September 1998 and obtained the status of a Ramsar site on 19 August 2002. The area is also been designated as the second Ramsar site of the State after the Chilika Lake. Hence, statements 1 and 2 are correct.

· It is surrounded by Bhitarkanika Wildlife Sanctuary, which is spread over 672 km<sup>2</sup> (259 sq mi). Gahirmatha Beach and Marine Sanctuary are to the east, separating the swamp region and mangroves from the Bay of Bengal. The national park and wildlife sanctuary is inundated by the rivers Brahmani, Baitarani, Dhamra, and Pathsala. It hosts many mangrove species and is the second-largest mangrove ecosystem in India. Hence, statement 3 is correct.

35. Which of the following statements is true about disguised unemployment?

- (a) The majority of disguised unemployed in India are found in the agriculture sector
- (b) The majority of disguised unemployed in India are found in the trade sector
- (c) The majority of disguised unemployed in India are found in the transport sector
- (d) The majority of disguised unemployed in India are found in the manufacturing sector

**Answer: (A)**

**Explanation:**

· **Disguised unemployment, also known as hidden unemployment, refers to a situation in which more people are engaged in a particular activity or sector of the economy than is actually necessary for its efficient operation.** In other words, it is a form of unemployment where individuals are employed in jobs that do not fully utilize their skills and labour potential.

· **In the context of India, agriculture is a sector where disguised unemployment is prevalent.** This is because a significant portion of the country's workforce is employed in agriculture, and often, there are more people working in agriculture than are required for efficient agricultural production. **This leads to a situation where many individuals in the agricultural sector are not contributing significantly to the overall output, and their labour is, in essence, "disguised" or hidden, as it does not add much value to the sector.**

· In contrast, the other sectors mentioned (trade, transport, and manufacturing) may have their own issues with unemployment or underemployment, but **disguised unemployment is most commonly associated with the agricultural sector in India due to its labour-intensive nature and the persistence of traditional farming practices.**

Hence, option (a) is correct.

**36. Consider the following statements regarding Offshore Wind Energy in India:**

1. As far as wind power is concerned India stands in 5th position across the globe after China, Brazil, the US, and Germany

2. Offshore wind farms must be at least 200 nautical miles from the shore and 50 feet deep in the ocean.

3. Offshore wind turbine installation and operation are governed by national and international laws, primarily UNCLOS (United Nations Convention on the Law of the Sea).

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

· In the last decade the Government of India has done a commendable job in promoting renewable energy, and precisely because of that **India is very well placed on the world map of renewable power by occupying 4th position (163 GW) after China (1161 GW), US (352 GW) and Brazil (175 GW).** As far as wind power is concerned India (42 GW) again stands in 4th position

across the globe after China (365 GW), the US (140 GW), and Germany (66 GW) Hence, **statement 1 is incorrect.**

· **Wind energy is typically classified into two types: onshore wind farms, which are large installations of wind turbines located on land, and offshore wind farms, which are installations positioned in bodies of water.** Offshore wind energy involves the utilization of sea winds to generate electricity. These wind farms can employ either fixed-foundation turbines, constructed in shallow waters, or floating wind turbines, designed for deeper ocean locations. **Floating wind farms are still in the early stages of development.**

· To qualify as offshore wind farms, they must be situated a minimum of 200 nautical miles from the coastline and in waters at least 50 feet deep. **These offshore wind turbines generate electricity, which is transmitted back to the shore via cables buried in the ocean floor. Hence, statement 2 is correct.**

· The installation and operation of offshore wind turbines are governed by national and international laws, primarily **the United Nations Convention on the Law of the Sea (UNCLOS).** The specific regulatory rules depend on the maritime zone in which the turbines are located:

· **In territorial waters (up to 12 nautical miles from the coast), the coastal State has full sovereignty, giving it complete control over offshore wind turbine regulation.**

· **Within the exclusive economic zone (up to 200 nautical miles from the coast), the coastal State has exclusive jurisdiction and control, including the ability to establish safety zones around wind farms.** These safety zones must be respected by all ships, provided due notice has been given, and they cannot obstruct crucial international sea lanes.

· Beyond exclusive economic zones lie the high seas or international waters. Here, the legal status of offshore wind facilities and their energy production purpose is less clear, as it is not explicitly mentioned as a high seas freedom under UNCLOS. **Hence, statement 3 is correct.**

**37. Consider the following statements about Kaziranga National Park:**

1. It gained the status of a national park in 1974 and was designated as a UNESCO World Heritage Site in 1985.

2. The reserve is renowned for its rich biodiversity, including the iconic Indian one-horned rhinoceros.

3. Kaziranga is not recognized as an Important Bird Area by BirdLife International for the conservation of avifaunal species.

**How many of the above statements are correct?**

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

· **Kaziranga Tiger Reserve is located in the Indian state of Assam, in the northeastern part of the country.** It was established as a reserve forest in 1908 and later declared a wildlife sanctuary in 1950. **It gained the status of a national park in 1974 and was designated as a UNESCO World Heritage Site in 1985. Hence, statement 1 is correct.**

· **Kaziranga National Park is home to significant breeding populations of 35 mammal species, with 15 of them classified as threatened according to the IUCN Red List.** Among its notable distinctions, the park boasts the world's largest population of Indian rhinoceros (2,401), wild water buffalo (1,666), and eastern swamp deer (468). **Collectively, the Indian rhinoceros, royal Bengal tiger, Asian elephant, wild water buffalo, and swamp deer are known as the 'Big Five' of Kaziranga. Hence, statement 2 is correct.**

· **Kaziranga has been identified by Birdlife International as an Important Bird Area.** It is home to a variety of migratory birds, water birds, predators, scavengers, and game birds. **Hence, statement 3 is incorrect.**

**38. Consider the following statements regarding Global Stocktake:**

1. The global stocktake is part of the Paris Agreement, where countries meet every two years to assess progress in combating climate change, starting in 2023.
2. The Global Stocktake links the implementation of nationally determined contributions (NDCs) with the overarching goals of the Paris Agreement and has the ultimate aim of raising climate ambition.
3. The modalities for implementation agreed at the Climate Change Conference in Katowice provide for two stocktake phases.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** The global stocktake is **part of the Paris Agreement, where countries meet every five years to assess progress in combating climate change, starting in 2023. The first official report of this stocktake, after nearly two years of preparation, will set the foundation for COP28, a United Nations climate negotiation event in Dubai COP28, scheduled for late**

**November, will address how countries respond to the findings of the global stocktake and what additional actions they can take. Hence, statement 1 is incorrect. The Global Stocktake is a fundamental component of the Paris Agreement which is used to monitor its implementation and evaluate the collective progress made in achieving the agreed goals. The Global Stocktake thus links the implementation of nationally determined contributions (NDCs) with the overarching goals of the Paris Agreement and has the ultimate aim of raising climate ambition. Hence, statement 2 is correct.**

**The Global Stocktake process outlined in the Katowice agreement**

· **Phase 1 (Data Collection):** Gather climate information from sources like **NDCs, IPCC reports, and input from stakeholders.** Publish this data in synthesis reports and focus on specific areas like mitigation, adaptation, and emissions status.

· **Phase 2 (Technical Assessment):** Evaluate the collected information to **measure progress in Paris Agreement goals.** Engage stakeholders in technical dialogues to discuss findings, identify ways to enhance climate responses, and document outcomes in reports.

· **Phase 3 (Political Messages):** Translate assessment results into actionable policies, helping Parties improve climate actions and promote international cooperation. The specific documentation method, such as a declaration or formal decision, is yet to be determined.

**Hence statement 3 is incorrect.**

**39. Consider the following with respect to India- USA Relations:**

Agreement	Cooperation
1. GSOMIA	Provides India with real-time access to American geospatial intelligence
2. LEMOA	Facilitates military logistics sharing
3. COMCAST	Allows secure communications using U.S. proprietary equipment
4. BECA	Ensures the protection of shared classified information and promotes interoperability

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

· A key pact called **General Security of Military Information Agreement (GSOMIA) was signed by the two countries in 2002**. The GSOMIA provides specific measures to ensure security standards for safeguarding critical information shared by the US with India.

· **The two countries inked the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016** which allows their militaries to use each other's bases for the repair and replenishment of supplies as well as provide for deeper cooperation.

**India and the US signed another pact called COMCASA (Communications Compatibility and Security Agreement) in 2018** that provides for interoperability between the two militaries and provides for the sale of high-end technology from the US to India.

· About BECA, officials said the agreement will give India access to classified geospatial data as well as critical information having significant military applications from the US.

**Hence only 2 pairs are correctly matched.**

**40. Consider the following statements regarding Hunga - Tonga Volcano:**

1. Hunga Tonga–Hunga Ha'apai volcano is a submarine volcano in the West Pacific Ocean.
2. It created the world's youngest land mass, a new island about 65 kilometres northwest of Nuku'alofa.
3. It is not a part of the highly active Kermadec-Tonga subduction zone and its associated volcanic arc.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) three
- (d) None

**Answer: (A)**

**Explanation:**

· Hunga Tonga–Hunga Ha'apai is a **submarine volcano in the South Pacific located about 30 km (19 mi) south of the submarine volcano of Fonuafo'ou and 65 km (40 mi) north of Tongatapu**, Tonga's main island. **Hence statement 1 is incorrect.**

· **Its most recent eruption in January 2022 generated a tsunami that reached as far as the coasts of Japan and the Americas** and a volcanic plume that reached 58 km (36 mi) into the mesosphere. **As of May 2022, the eruption is the largest volcanic eruption in the 21st century.** It created the world's youngest land mass, a new island about 65 kilometres northwest of Nuku'alofa. **Hence statement 2 is correct.**

· It is **part of the highly active Kermadec-Tonga subduction zone and its associated volcanic arc**, which extends from New Zealand north-northeast to Fiji and

is formed by the subduction of the Pacific Plate under the Indo-Australian Plate. **Hence statement 3 is incorrect.**

**41. Consider the following statements, with reference to Incremental Cash Reserve Ratio (I-CRR):**

1. It aims to absorb the surplus liquidity generated by the return of Rs 2,000 notes to the banking system.
2. I-CRR is an additional cash balance that RBI can ask banks to maintain over and above CRR for a specific period.
3. I-CRR mandates banks to maintain 10% on the increase in their net demand and time liabilities (NDTL).

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** Recently, RBI has decided to discontinue the I-CRR in a phased manner since it was adopted as a temporary measure to absorb excess liquidity from the banking system. **The I-CRR was introduced on August 10, 2023**, by the RBI to absorb the surplus liquidity generated by various factors, including the return of Rs. 2,000 notes to the banking system. **The level of surplus liquidity in the system surged because of the return of Rs. 2,000 banknotes to the banking system, RBI's surplus transfer to the government, pick up in government spending and capital inflows.** I-CRR is an additional cash balance that RBI can ask banks to maintain over and above CRR for a specific period. **The banks are mandated to maintain an I-CRR of 10% on the increase in their net demand and time liabilities (NDTL).** NDTL refers to the total demand and time liabilities (deposits) of the public that are held by the banks with other banks. I-CRR measure is expected to absorb above Rs. 1 lakh crore of excess liquidity from the banking system. The Cash Reserve Ratio (CRR) is the minimum amount of the total deposits that banks have to maintain as cash reserve with the Reserve Bank of India. **Hence, all statements are correct.**

**42. Consider the following statements, with reference to Pearl Millet:**

1. Pearl millet is also called 'bajra'.
2. It is a rainfed Rabi crop of dry and warm north-western and western parts of the country.
3. It is a hardy crop that resists frequent dry spells and drought.

**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 recent study India's core pearl millet or bajra production zone has shifted to 18 districts spread across eastern Rajasthan and Haryana between 1998 and 2017. **Pearl millet also called, bajra in India, is suited to soils of low fertility and limited moisture.** It is a popular food crop in India and Africa. **It is a rainfed Kharif crop of dry and warm north-western and western parts of the country.** It is a **hardy crop which resists frequent dry spells and drought.** Pearl millet is the major millet occupying first position among all the millets in India followed by Sorghum and Ragi. It is **termed "nutricereal"** as it is a good source of energy, carbohydrates, protein, fat, ash, dietary fibre, iron and zinc. India classifies pearl millet cultivation zones based on rainfall patterns and soil types. **Hence, statement 2 is incorrect.**

43. **G4, the group is often in the news, which of the following nations are members of it?**

1. Brazil
2. Germany
3. India
4. Japan

**Select the correct answer using the code given below:**

- (a) 2 and 3 only  
(b) 1, 2 and 4 only  
(c) 1, 3 and 4 only  
(d) 1, 2, 3 and 4

**Answer:** (D)

**Explanation:**

· Prime Minister **Narendra Modi and Brazilian President Luiz Inácio Lula da Silva Sunday agreed to continue working towards reform in the UN Security Council (UNSC) under the framework of the G4 and L.69 groupings** as well as by holding regular bilateral coordination meetings.

· **The G4 nations — Brazil, Germany, India and Japan — support each other's bid for permanent UNSC membership.** The L.69, a group of developing countries from Africa, Latin America and the Caribbean, Asia and the Pacific (Small Island Developing States), also supports UNSC reform. **Hence, option (d) is correct.**

44. **Consider the following statements with reference to Banglar mati, Banglar jol:**

1. Banglar mati, Banglar jol is a prayer for Bengali unity and harmony written by Rabindranath Tagore.
2. It is the state anthem of West Bengal and the national anthem of Bangladesh respectively.

**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 the **West Bengal Assembly passed a resolution making Poila Baishakh (April 15) as the statehood day and declaring Rabindranath Tagore's Banglar mati, Banglar jol as the state anthem.** Banglar mati, **Banglar jol is a prayer for Bengali unity and harmony which was written by Rabindranath Tagore** in the context of Viceroy Lord Curzon's partition of Bengal in 1905. **Hence, statement 1 is correct.**

· The song became an anthem for those fighting against Britain's divide-and-rule policy during the Bengal partition. **Banglar mati, Banglar jol is the state anthem of Bangladesh.** Amar sonar Bangla (My Golden Bengal) written by Rabindranath Tagore is the national anthem of Bangladesh. **Hence, statement 2 is incorrect.**

45. **Consider the following pairs:**

Arts	States
1. Saura painting	Gujarat
2. Maheshwari silk sarees	Tamil Nadu
3. Millenium Silk	Assam
4. Pithora Art	Madhya Pradesh

**How many of the pairs given above are correctly matched?**

- (a) Only one pair  
(b) Only two pairs  
(c) Only three pairs  
(d) All four pairs

**Answer:** (B)

**Explanation:** The exhibition 'Tribes India' pavilion is a part of the **G-20 Leaders' Summit at Bharat Mandapam, New Delhi that is being conducted by TRIFED** to showcase a wide range of traditional tribal arts.

· **Pithora Art** – They are ritual paintings, characterized by animated figures and lavish use of colour, propagated by the **Rathwa, Bhilala, Naik and Bhil tribes of Gujarat and Madhya Pradesh.**

· **Gond painting** from Madhya Pradesh.

· **Saura painting** by artisans from Odisha.

· Angora and Pashmina shawl from the **high altitudes of Leh-Ladakh and Himachal Pradesh,** woven by the Bodh and Bhutia tribes.

· Maheshwari silk sarees from Madhya Pradesh.

· Eri or "Millenium Silk" made by the Bodo tribe from Assam.

46. Consider the following statements, with reference to Global Biofuels Alliance (GBA):

1. It is an India-led initiative by the G20 grouping.
2. India, Britain and the US are the founding members of the alliance.
3. All the members of G20 are members of this alliance.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation:

· Recently Global Biofuels Alliance (GBA) was announced at the G20 event to develop an alliance of Governments, International organizations and Industry. **GBA is an India-led Initiative to develop an alliance of Governments, International organizations and Industry to facilitate the adoption of biofuels. Hence, statement 1 is correct.**

· **India, Brazil and the US are the founding members of the alliance.** The initiative aims to position biofuels as a key to energy transition and contribute to jobs and economic growth. **Hence, statement 2 is incorrect.**

**It will facilitate the development, adoption and implementation of internationally recognized standards, codes, sustainability principles and regulations to incentivize biofuels adoption.** It will help accelerate India's existing biofuels programs such as PM-JIVANYojna, SATAT and GOBARdhan scheme which will result in:

- Contributing to increased farmers' income,
  - Creating jobs and
  - Overall development of the Indian ecosystem.
- **19 countries and 12 international organisations have already agreed to join.** GBA Members constitute major producers and consumers of biofuels. **Hence, statement 3 is incorrect.**

47. Consider the following statements:

1. The G21 grouping includes G20 countries and the African Union.
2. All the countries in the African Continent are members of the African Union.

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: Recently the **African Union, which represents 55 countries, was admitted as a new**

**member of the G20, making it G21.** The G21 forum includes G20 and the African Union. **The idea was floated in June 2023, when Prime Minister Narendra Modi wrote to G20 leaders to propose that the African Union be given full membership at the upcoming Delhi Summit of G20. It was in the spirit of 'sabka saath' (Everyone's support) that India proposed permanent membership for the African Union in the G20. So far, only one country from the African Union which is South Africa was part of the G20. Hence, both statements are correct.**

48. Consider the following statements, with reference to the Sovereign Gold Bond (SGB) Scheme:

1. SGBs are government securities issued on behalf of the Government of India by the Reserve Bank of India (RBI).
2. SGBs are denominated in grams of gold, with 1 gram serving as the fundamental unit.
3. Interest on SGBs is not taxable under the terms of the Income Tax Act of 1961.

How many of the statements above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

· The Reserve Bank of India (RBI) just revealed the issue price for the next **Tranche 2 of the Sovereign Gold Bond (SGB). The Government of India created SGBs in 2015 as part of the Gold Monetization Scheme.** SGBs are government securities issued on behalf of the Government of India by the Reserve Bank of India. **Hence, statement 1 is correct.**

· **They serve as a substitute for genuine gold. SGBs are denominated in grams of gold, with 1 gram serving as the fundamental unit.** Investors must pay the issue price in cash, and the bonds must be redeemed in cash when they mature. **Hence, statement 2 is correct.**

· The interest on Gold Bonds is taxable according to the rules of the Income Tax Act of 1961. **SGBs can be used as loan collateral. Hence, statement 3 is incorrect.**

49. Recently, the first 'Global Symposium on Farmers' Rights' (GSFR) is going to be held in which country?

- (a) USA
- (b) India
- (c) Bangladesh
- (d) Indonesia

Answer: (B)

Explanation: The President of India, **Smt Droupadi Murmu will inaugurate the first 'Global Symposium**



on Farmers' Rights' (GSFR) at the ICAR Convention Centre, National Agricultural Science Centre Complex in New Delhi. India is hosting its first 'Global Symposium on Farmers' Rights' from September 12 to 15, 2023. The Global Symposium on Farmers' Rights promises to be a significant platform for fostering dialogue, recognizing farmers' contributions, and shaping the future of agriculture and food security on a global scale. Hence, option (b) is correct.

50. Consider the following statements regarding Morocco:

1. It is a mountainous country in western North Africa that lies directly across the Strait of Gibraltar.
2. It is the only African country with coastal exposure to both the Atlantic Ocean and the Mediterranean Sea.

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:** It is a mountainous country in western North Africa that lies directly across the Strait of Gibraltar. It retains much of its ancient architecture and even more of its traditional customs. Morocco's largest city and major Atlantic Ocean port is Casablanca, an industrial and commercial centre. It is the only African country with coastal exposure to both the Atlantic Ocean and the Mediterranean Sea. Hence, both statements are correct.

51. Consider the following statements, with reference to the India-Saudi Arabia Strategic Partnership Council:

1. The council will be headed by the Prime Minister of India and Crown Prince Mohammed.
2. The council will meet once in a year.
3. India is the third country with which Saudi Arabia has formed such a strategic partnership, after the UK and France.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only Two
- (c) All Three
- (d) None

Answer: (A)

**Explanation:** Recently the first summit-level meeting of the India-Saudi Arabia Strategic Partnership Council (SPC) was co-chaired by Saudi Arabia's Crown Prince Mohammed bin Salman Al Saud and Prime Minister Narendra Modi. The council will meet twice in one

year. India is the fourth country with which Saudi Arabia has formed such a strategic partnership, after the UK, France and China. The Strategic Partnership Council essentially aimed to initiate a high-level council to steer the Indo-Saudi relationship that was established in 2019. Hence, only statement 1 is correct.

52. Consider the following statements, with reference to Varicella Zoster Virus (VZV):

1. Varicella-zoster is a herpes virus that causes Chikungunya.
2. Clade 9 variant of varicella-zoster virus (VZV) is found only in India.
3. The symptoms of both Monkeypox disease and Varicella Zoster Virus (VZV) are the same.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only Two
- (c) All Three
- (d) None

Answer: (D)

**Explanation:**

· Recently the Indian Council of Medical Research-National Institute of Virology (ICMR-NIV) has for the first time found the presence of the Clade 9 variant of varicella-zoster virus (VZV) in India. Varicella-zoster is a herpes virus that causes chickenpox, a common childhood illness. Hence, statement 1 is incorrect.

· Herpes simplex virus (HSV) is a virus that causes infections that is very contagious. Herpes zoster (HZ), which is commonly known as shingles, is caused by the reactivation of the varicella-zoster virus (VZV). The Indian Council of Medical Research-National Institute of Virology scientists have for the first time in the country, found the presence of the Clade 9 variant of varicella zoster virus (VZV). Clade 9 is the most common strain in circulation in countries such as Germany, the UK and the USA. Hence, statement 2 is incorrect.

· Mpox disease symptoms are frequently mistaken for VZV, as their clinical presentations often closely resemble each other. The symptoms of Monkeypox disease and Varicella Zoster Virus (VZV) are different. The most characteristic symptom of Varicella Zoster Virus (VZV) causing chicken box is an itchy, blister-like rash on the skin. Mpox (Monkeypox) symptoms include fever, headache, body aches, swollen lymph nodes and a rash. Hence, statement 3 is incorrect.

53. Consider the following statements with reference to E-Waste (Management) Rules, 2022:

1. It digitises the process of recycling e-waste and provides more visibility to the movement of e-waste in the economy.
2. The rules cover manufacture, refurbisher and micro-enterprise as defined in the MSME Development Act, 2006.

**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:** E-Waste (Management) Rules, 2022 **aids in digitizing the process and provides more visibility to the movement of e-waste in the economy.** These rules cover every manufacturer, producer refurbisher, dismantler and recycler involved in the manufacture, sale, transfer, purchase, refurbishing, dismantling, recycling and processing of e-waste or electrical and electronic equipment listed in Schedule I. **The rule does not cover the following:**

- Waste batteries as covered under the **Battery Waste Management Rules, 2022.**
- Packaging plastics as covered under the **Plastic Waste Management Rules, 2016.**
- Microenterprise as defined in the **Micro, Small and Medium Enterprises Development Act, 2006.**
- Radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962.

**Hence, statement 2 is incorrect.**

**54. Consider the following statements regarding Gene-drive technology:**

1. It is a genetic engineering technique for modifying genes.
2. It can aid in the eradication of malaria-causing mosquitos.

**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:** To genetically alter mosquitos, **gene-drive technology has been employed in outdoor but controlled environments in India, Brazil, and Panama.** A gene drive is a genetic engineering tool used to modify genes. This method could be used to effectively eradicate pest species such as malaria-causing mosquitoes. **Using this strategy, mosquitos will preferentially inherit some genes rather than inheriting according to Mendelian genetics laws.** In

this case, a protein breaks the mosquito's DNA at a location that does not encode a specific sequence in the genome. This triggers a natural repair mechanism in the cell that contains the DNA, forcing the cell to insert a sequence known as the drive sequence into the damaged section. **Hence, both statements are correct.**

**55. The Digital Markets Act (DMA) was recently drafted by which of the following organizations?**

- (a) World Economic Forum
- (b) European Union
- (c) G20
- (d) ASEAN

**Answer: (B)**

**Explanation:** The European Commission recently classified **six Internet behemoths as gatekeepers under the Digital Markets Act (DMA): Alphabet, Amazon, Apple, ByteDance, Meta, and Microsoft.** It is a game-changing European law that aims to prevent giant internet platforms that connect customers with content, goods, and services from abusing their market dominance. **Hence, option (b) is correct.**

**56. Consider the following statements, with reference to the Voter-verifiable paper audit trail:**

1. It is a machine that is attached to the Electronic Voting Machine that provides feedback to voters using a ballot-less voting system.
2. It has a transparent window that shows the Name, Serial number and Election symbol for 7 seconds to the voter.

**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:** Recently Election Commission of India mandated the counting of all VVPAT slips in 5 randomly selected polling stations per Assembly constituency or segment in the upcoming 2024 Lok Sabha election. **VVPAT is a machine that is attached to the ballot unit (BU) Electronic Voting Machine (EVM) that provides feedback to voters using a ballot-less voting system. It is also called a verifiable paper record (VPR).** When a vote is cast, a slip is printed containing the serial number, name and symbol of the candidate and remains exposed through a transparent window for 7 seconds. Thereafter, this printed slip automatically gets cut and falls into the sealed drop box of the VVPAT. **It was used for the first time in all 21 polling stations of the Noksen Assembly constituency of Nagaland in 2013. The 2019 Lok Sabha elections became the first**

general election to have 100% of EVMs being attached to VVPATs. Hence, both statements are correct.

57. Consider the following statements, with reference to the Nipah virus (NiV):

1. NiV is a zoonotic virus (transmitted from animals to humans) and can also be transmitted through contaminated food or directly between people.
2. It was first recognized in 1999 during an outbreak among pig farmers in Malaysia.
3. There is no treatment or vaccine available for either people or animals.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

**Explanation:** Kerala has witnessed the outbreak of NiV. NiV is a zoonotic virus (transmitted from animals to humans) and can also be transmitted through contaminated food or directly between people. It was first recognized in 1999 during an outbreak among pig farmers in Malaysia. Fruit bats of the family (Pteropodidae) and genus (Pteropus) are the natural hosts for the Nipah virus. There is no treatment or vaccine available for either people or animals. Hence, all statements are correct.

58. Moodbidri, a place where unique terracotta figurines were discovered is located in which of the following state?

- (a) Andhra Pradesh
- (b) Karnataka
- (c) Telangana
- (d) Tamil Nadu

Answer: (B)

**Explanation:** In recent archaeological explorations near Moodbidri, Dakshina Kannada, unique terracotta figurines were discovered (related to the Megalithic Dolmen site). Moodbidri is a town and taluk in Dakshina Kannada district. It lies 34 km northeast of the district headquarters, Mangalore, in Karnataka. Because of the widely grown bamboo in ancient days, this place was named Moodabidri. Hence, option (b) is correct.

59. With reference to the Nataraja sculpture, consider the following statements:

1. Around the 5th century AD, the notion of Shiva as a dancer, known as Nataraja, began to take shape.
2. The lost wax method was used to create the Nataraja sculpture at Bharat Mandapam.

3. The Nataraja statue at Bharat Mandapam is inspired by the Thillai Nataraja Temple, the Uma Maheswarar Temple, and the Brihadeeswara (Big) Temple.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

**Explanation:** Around the 5th century AD, the notion of Shiva as a dancer, known as Nataraja, began to take shape. Bharat Mandapam's Nataraja sculpture was created utilizing the lost wax method. This Nataraja statue was inspired by three respected Nataraja idols: the Thillai Nataraja Temple in Chidambaram, the Uma Maheswarar Temple in Konerirajapuram, and the Brihadeeswara (Big) Temple in Thanjavur, which is a UNESCO World Heritage Site. Hence, statement 2 is incorrect.

60. Eastern Maritime Corridor is a proposed marine corridor between which of the following countries?

- (a) India and Bangladesh
- (b) Japan and India
- (c) India and Singapore
- (d) Russia and India

Answer: (D)

**Explanation:** Eastern Maritime Corridor (EMC) is the proposed marine corridor between India and Russia connecting Chennai and Vladivostok ports. EMC is estimated to reduce the time required to transport cargo between Indian and Russian Ports of the Far East Region by up to 16 days. A large container ship that travels at normal cruising speed will be able to cover this distance in 10 to 12 days approximately. It is a part of India's maritime programme and its flagship programme Sagarmala. Sagarmala was launched with the objective to boost India's logistics sector performance, by unlocking the full potential of India's coastline and waterways. Hence, option (d) is correct.

61. Consider the following statements, with reference to the Skill India Digital (SID) Platform:

1. It is the Digital Public Infrastructure for skilling, education, employment and entrepreneurship ecosystem in India.
2. It is a joint initiative of the Ministry of Commerce & Industry and the Ministry of Education.
3. The Platform aims to provide formal school education to both adults and school children free of cost.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:**

· Recently the Skill India Digital platform was launched by the Ministry of Skill Development and Entrepreneurship. **Skill India Digital (SID) is the Digital Public Infrastructure for skilling, education, employment and entrepreneurship ecosystem of India.** It is a state-of-the-art platform to bring all skilling initiatives together. **Hence, statement 1 is correct.**

· It is an **Application Programming Interface (API)-based on trusted skill credentials, payment and discovery layers for jobs and entrepreneurial opportunities.** The improved version of the platform has **Udyam, e-Shram, NCS and ASEEM portals interlinked for G2C, B2C and B2B services.** It will act as a bridge between the employees and employers and allow educational institutes to create/modify curricula as per industry demands. **The platform was developed by the Ministry of Skill Development and Entrepreneurship.** It is also a comprehensive information gateway for all government skilling and entrepreneurship initiatives – a go-to hub for citizens in pursuit of career advancement and lifelong learning. **Skill India Digital is designed to provide various services such as discovery, recommendation, skilling, lifelong learning opportunities, apprenticeship, assessment, LMS, etc.** Hence, **statement 2 and 3 are incorrect.**

**62. Consider the following statements, with reference to the Indian Council of World Affairs (ICWA):**

- 1. It was established by a group of Indian intellectuals before Indian Independence.
- 2. It is declared as an institution of national importance by the Indian Council of World Affairs Act, 2001.
- 3. The vice-president of India is the ex-officio President of ICWA.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** Recently the renovated library of the Indian Council of World Affairs (ICWA) was inaugurated by the Vice-President of India. **The Indian Council of World Affairs was established in 1943 by a group of Indian intellectuals as a think tank.** It was registered as

a non-official, non-political and non-profit organisation under **the Registration of Societies Act 1860.** By the **Indian Council of World Affairs Act, 2001, it has been declared an institution of national importance.** The council is devoted exclusively to the study of international relations and foreign affairs. **The Vice President of India is the ex-officio President of ICWA.** The Minister of External Affairs is the Vice-President of the Council. **It is located at the Sapru House, New Delhi.** It is named after the eminent Indian Jurist and intellectual, Sir Tej Bahadur Sapru, the founder and President of the Council. **Hence, all statements are correct.**

**63. Consider the following statements, with reference to Ayushman Bhav campaign:**

- 1. The campaign aims to deliver healthcare services to the last mile of India by adopting a multi-ministerial approach.
- 2. It is an umbrella campaign comprising Ayushman Apke Dwar 3.0, Ayushman Mela and Ayushman Sabha.

**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 campaign was virtually launched by the president of India to ensure delivery of the healthcare services to the last mile of India. **Ayushman Bhava is a 15-day campaign that starts on September 17 and ends on October 2, Gandhi Jayanti.** Ayushman Bhava is an umbrella campaign comprising 3 major components such as:

- 1. Ayushman Apke Dwar 3.0
- 2. Ayushman Mela
- 3. Ayushman Sabha

The 3 initiatives will be undertaken by the Union Health Ministry across the country. **The entire campaign is based on 'Jan Bhagidari' or public participation. Ayushman Mela will be organised in over 117,000 Health and Wellness Centres (HWCs) across the country where all the poor and middle-class people will be diagnosed and treated. Hence, both statements are correct.**

**64. MQ-9B which was recently seen in the news is related to which of the following:**

- (a) Fighter Jet
- (b) Unmanned Aerial Vehicle
- (c) Aircraft Carrier
- (d) Surface-to-air missile

**Answer:** (B)

**Explanation:** Both India and the United States discussed the recent agreement between **GE Aerospace and Hindustan Aeronautical Limited (HAL)** to manufacture **GE F-414 jet engines in India**, as well as the purchase of **31 General Atomics MQ-9B** remotely piloted aircraft, as both countries sought to expand and diversify their defence partnership and cooperation. The MQ-9B is an unmanned aerial vehicle that can fly either remotely or autonomously. **Hence, statement (b) is correct.**

**65. Consider the following statements regarding the Vidya Samiksha Kendra:**

1. It serves as a data repository for all initiatives run by the Union Ministry of Education.
2. It will aid in calculating the Gross Access Ratio by mapping the school location layer with the population layer.

**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 Ministry of Education is encouraging states to establish **Vidya Samiksha Kendras (VSKs) under the National Digital Education Architecture (NDEAR)**. Vidya Samiksha Kendra (VSKs) is a data repository that will house data from all Ministry of Education (MoE) initiatives. **The goal of creating VSKs is to map the school location layer with the population layer to calculate the Gross Access Ratio.** It can assist in the planning of new schools or industry clusters to understand the skilling requirements of the area, as well as in the planning of higher educational institutions based on demand and future scenarios. **Hence, both statements are correct.**

**66. Consider the following statements, with reference to the National Judicial Data Grid portal (NJDG):**

1. It is the national repository of all case-related information pertaining to the Supreme Court, High Courts, District and Taluka Courts.
2. NJDG has been developed by the National Informatics Centre (NIC).

**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:**

· Recently, the Supreme Court of India has onboarded the **National Judicial Data Grid (NJDG) portal** that will aid the ease of doing business initiative of the Government of India. The National Judicial Data Grid portal (NJDG) is the national repository of all case-related information pertaining to the Supreme Court, High Courts, District and Taluka Courts.

· NJDG has been developed by the **National Informatics Centre (NIC)** in close coordination with the in-house software development team of the **Computer Cell, Registry**. The entire database shall be periodically updated on the NJDG portal.

· The portal provides access to case-related information, statistics such as institution, pendency and disposal of cases, case types, and year-wise break-up of the Supreme Court of India.

· **NJDG is the only website that offers single window access to the entire information relating to cases and Courts starting from the Taluka level Courts to the Apex Court** of our country in a searchable manner. **Hence, both statements are correct.**

**67. Consider the following statements with reference to the International Organisation of Legal Metrology (OIML):**

1. It is an intergovernmental treaty organization that was established in 1955, and headquartered in Paris.
2. It aims to develop model regulations, standards and related documents for use by legal metrology authorities and industry.
3. India is not a member of the organisation.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Answer: (B)**

**Explanation:** India has recently become an OIML certificate-issuing authority which will help the Indian economy in several ways, including an increase in exports, earning of foreign exchange, and generation of employment. **The OIML stands for International Organisation of Legal Metrology. Established in 1955 and headquartered in Paris.** The OIML is an international standard-setting body. **It develops model regulations, standards and related documents for use by legal metrology authorities and industry.** It is an intergovernmental treaty organization that provides mutual recognition systems that reduce trade barriers and costs in a global market. **OIML is a single certificate accepted worldwide. OIML-CS is a system for issuing, registering and using OIML certificates, and their associated OIML type evaluation/test reports, for instruments like digital balance, clinical**

thermometers, etc. With the addition of India, the number of countries authorised to issue OIML certificates has increased to 13. **India became a member of the OIML in 1956. India signed the Metric Convention in 1956. Hence, statement 3 is incorrect.**

**68. Which of the following statements best describes the Overnight Index Swap (OIS)?**

- (a) It is an interest rate swap involving the overnight rate being exchanged for a fixed interest rate.
- (b) It is an overnight interest rate that represents the average rate for overnight Treasury repo transactions.
- (c) It is a benchmark interest rate that financial institutions use to price U.S. dollar-denominated derivatives and loans.
- (d) It is the target interest rate set by the RBI at which commercial banks borrow and lend their extra reserves to one another overnight.

**Answer: (A)**

**Explanation:** Recently Indian overnight index swap (OIS) rates reached their highest levels as investors opted to pay short-end swaps in anticipation of the Reserve Bank of India's (RBI) upcoming rate hike. **Overnight Index Swap (OIS) is an interest rate swap agreement where a fixed rate is swapped against a pre-determined published index of a daily overnight reference rate.** It refers to a hedging contract in which a party exchanges a predetermined cash flow with a counterparty on a specified date. **The overnight index swap denotes an interest rate swap involving the overnight rate being exchanged for a fixed interest rate.** An overnight index swap uses an overnight rate index such as the federal funds rate as the underlying rate for the floating leg, while the fixed leg would be set at a rate agreed on by both parties. **Hence, statement (a) is correct.**

**69. Consider the following claims regarding the Changthangi goat:**

- 1. The Changthangi goat is found in Ladakh's Changthang area.
- 2. The Changthangi goat is typically domesticated and kept by nomadic Changpa people.
- 3. The Changthangi goats provide the Mohair Wool utilised in the shawl's weaving.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All Three
- (d) None

**Answer: (B)**

**Explanation:**

· The Changthangi goat is an **animal found in Ladakh's cold, arid Changthang region. Hence, statement 1 is correct.**

· The Changthangi goat is usually domesticated and raised by nomadic communities called the Changpa. **Hence, statement 2 is correct.**

· The wool that is used in weaving the **Pashmina Shawl is obtained from the Changthangi goats.** The Mohair Wool used in weaving the shawl is obtained from the Angora goat. **Hence, statement 3 is not correct.**

**70. Which of the following best defines the term 'MULE', recently seen in the news?**

- (a) A lunar rover
- (b) It is a load-bearing autonomous robot
- (c) It is a drone defence system
- (d) It's an anti-tank missile

**Answer: (B)**

**Explanation:** The Indian Army presented the **Multi-Utility Legged Equipment (MULE) at the recent North Tech Symposium 2023 in Jammu.** It is an autonomous load-bearing robot designed for the Indian Army. **It was designed for human-free intervention in tracking down and eliminating terrorists. It is outfitted with 360-degree cameras and radars to assist the operator in detecting threats and shooting them down. It is an analog-faced machine with four legs and a payload capacity of 12 kg. The gadget can function on Wi-Fi or Long-Term Evolution (LTE),** allowing it to reach distances of up to 10 kilometres from the location. It is operated via an easy-to-use remote control. It can also incorporate a firing platform. It is capable of taking on projects with pre-programmed missions and may be employed in various terrains, including snow and mountains. It can climb mountains up to 45 degrees and steps as high as 18 cm. **Hence, option (b) is correct.**

**71. Consider the following statements with reference to the Anorthosite:**

- 1. Anorthosite is a type of sedimentary rock composed predominantly of calcium-rich materials.
- 2. Anorthosite is found on both the earth's and the moon's surface.
- 3. Anorthosite soil is available in India in the states of Tamil Nadu and Andhra Pradesh.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

· A hefty supply of the anorthosite soil from Sittampoondi and Kunnamalai villages ensured the Chandrayaan-3 mission's success. **Anorthosite is a type of intrusive igneous rock composed predominantly of calcium-rich plagioclase feldspar.** It contains Aluminium, Silicon and Calcium, minerals that are high in demand. **Hence, statement 1 is incorrect.**

· **Plagioclase** – It is a member of the feldspar group (like orthoclase) and is a framework silicate. **Plagioclase consists of a solid solution between the albite and anorthite end-members, and together with quartz is the most common of the rock-forming minerals.** All anorthosites found on Earth consist of coarse crystals, but some samples of the rock taken from the Moon are finely crystalline. Most anorthosites formed during Precambrian times. **In India, this soil is available in abundance in places like Sithampoondi and Kunnamalai villages surrounding Namakkal,** and also in some areas in Andhra Pradesh and northern parts of the country. **Hence, statements 2 and 3 are correct.**

**72. With reference to Anti-trust laws, consider the following statements:**

1. Antitrust laws are regulations that encourage competition by limiting the market power of businesses and corporations.
2. In India, anti-trust provisions fall within the jurisdiction of the Competition Commission of India (CCI) under the Competition Act, 2002.

**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 US government commenced an **anti-trust trial against Google to check its dominance in the Search Engine market to eliminate competition and maintain its monopoly.** Antitrust laws are regulations that encourage competition by limiting the market power of businesses and corporations. **In India, anti-trust provisions fall within the jurisdiction of the Competition Commission of India (CCI) under the Competition Act, 2002.** The Act prohibits anti-competitive agreements, and abuse of dominant position by enterprises, and regulates combinations (mergers, amalgamations, and acquisitions). **Hence, both statements are correct.**

**73. Consider the following statements, with reference to Cosmological Constant:**

1. It is a form of matter or energy that acts in opposition to gravity.
2. It is considered equivalent to dark energy.

3. The idea of cosmological constant was first proposed by Albert Einstein.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** The cosmological constant is presumably an enigmatic form of matter or energy that acts in opposition to gravity. It is considered by many physicists to be equivalent to dark energy. **Albert Einstein came up with the cosmological constant, which he called the universal constant, in 1915.** The cosmological constant was intended to balance certain calculations in his theory of general relativity. At the time, physicists believed the universe was static, neither expanding nor contracting. However, **Einstein's work suggested that gravity would cause it to do one or the other. Hence, all statements are correct.**

**74. With reference to PM Vishwakarma scheme, consider the following statements:**

1. It aims to provide subsidised loans of up to Rs. 1 lakh to traditional artisans and craftsmen including weavers, goldsmiths, blacksmiths, laundry workers, and barbers.
2. It is available for rural and urban artisans and craftsmen across India.
3. The Ministry of Micro, Small & Medium Enterprise (MSME) is the nodal ministry of this scheme.

**How many of the above statements is/are incorrect?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

· Prime Minister Narendra Modi launched **the PM Vishwakarma scheme in New Delhi on the occasion of Vishwakarma Jayanti. The scheme is being seen as a means for the government to reach out to the economically marginalised and socially backward communities** – particularly the Other Backward Classes (OBC) groups. **It is a new scheme with an outlay of Rs 13,000 crore and is fully funded by the Central government.** It aims to provide subsidised loans of up to Rs 2 lakh to traditional artisans and craftsmen including weavers, goldsmiths, blacksmiths, laundry workers, and barbers. **Hence, statement 1 is incorrect.**  
· **Ministry of Micro, Small & Medium Enterprise (MSME) is the nodal ministry.** The Ministry of Tribal

Affairs would provide active support for the implementation of the scheme for the well-being of the Vishwakarma. It is available for rural and urban artisans and craftsmen across India. **Hence, statement 2 and 3 are correct.**

75. Consider the following pairs of UNESCO heritage in danger list and their respective countries:

UNESCO danger list	Country
1. Saint Sophia Cathedral	Ukraine
2. Lake Turkana	Canada
3. Hampi	India

Which of the above pairs is/are correctly matched?

- (a) Only one pair
- (b) Only two pairs
- (c) All three pairs
- (d) None

**Answer: (B)**

**Explanation:**

The UN's cultural organisation placed World Heritage Sites in the **Ukrainian cities of Kyiv and Lviv on its in-danger list. The decision, taken at UNESCO's annual World Heritage Committee meeting in Riyadh, is a step towards better protection of the historic sites. UNESCO had added Kyiv's Saint Sophia Cathedral and the medieval buildings of the city's Kyiv-Pechersk Lavra monastery site to the list.** The two historic sites have remained under permanent threat since the commencement of the war. Kyiv's Saint Sophia cathedral dates back to the 11th century and is one of the city's best-known landmarks. Lviv, the western Ukrainian city near the Polish border, was founded in the late Middle Ages and its historic centre was inscribed on the World Heritage List in 1998. **Hence, pair 1 is correctly matched.**

Garamba National Park is located in Congo and Lake Turkana is located in Kenya. **Hence, pair 2 is incorrectly matched.**

India – Manas Wildlife Sanctuary and Hampi are the two heritage sites from India placed under the Danger List. **Hence, pair 3 is correctly matched.**

76. Consider the following statements regarding the Montreal Protocol:

- 1. It aims to reduce ozone-depleting substance production and consumption.
- 2. India is a signatory to the Montreal Protocol.
- 3. It was declared at the end of the Paris Agreement in 2015.

How many of the above statements is/are correct?

- (a) Only one

- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation: The Ministry of Environment, Forest and Climate Change (MoEF&CC) recently celebrated the 29th World Ozone Day. On September 16, the world observes World Ozone Day, also known as the International Day for the Preservation of the Ozone Layer. It is a global agreement to protect the Earth's ozone layer by phasing out the ozone-depleting chemicals. It includes both production and consumption of ozone-depleting chemicals. It was signed in 1987 and enacted in 1989. The Kigali agreement is the recent amendment to the material protocol which envisages the phase-down of HFCs in 2016. India became a signatory to the Montreal Protocol in 1992. Hence, statement 3 is incorrect.**

77. Consider the following statements, with reference to the Taiwan Strait:

- 1. It separates the islands of Taiwan and Continental Asia and is also known as the Formosa Strait.
- 2. The strait is currently part of the South China Sea and connects to the East China Sea to the north.

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: Taiwan Strait or Formosa Strait separates the island of Taiwan (Formosa) and continental Asia (the coast of China's Fukien province). It is an arm of the Pacific Ocean found in the South China Sea. It contains the Pescadores Islands (controlled by the government of Taiwan). The area lies in a typhoon zone. It is the primary shipping route between China, Japan, and Europe. The strait is currently part of the South China Sea and connects to the East China Sea to the north. Hence, both statements are correct.**

78. Consider the following statements, with reference to the Chausath Yogini Temple:

- 1. It was built by King Mahipala in the Satavahana dynasty.
- 2. It is part of the UNESCO world heritage and is located in Odisha.

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 located in the state of Madhya Pradesh. The temple was built by the Kachchhapaghata king Devapala. The king belonged to the Pala dynasty. The Mitaoli temple has 64 chambers dedicated to the 64 yoginis. The Madhya Pradesh temple is believed to have inspired the old Parliament building. Hence, both statements are incorrect.

79. Which of the following countries has committed to exchanging "K9 Vajra" technology to improve defence cooperation?

- (a) Russia and India
- (b) South Korea and India
- (c) India and Japan
- (d) India and Israel

**Answer: (B)**

**Explanation:** South Korea is eager to share submarine and missile technologies with India to improve defence cooperation. Both presidents agreed to boost defence collaboration, citing the K9 Vajra, a 52-caliber tracked self-propelled howitzer manufactured by a South Korean firm. Over the next three years, South Korea will provide India with a USD 4 billion credit line for "high-value" projects 52-caliber. Hence, option (b) is correct.

80. With reference to Pralay Ballistic Missile, consider the following statements:

- 1. It is a surface-to-surface short-range ballistic missile that is capable of being launched from a mobile launcher.
- 2. It can hit targets from a distance of 1000 to 1400 km and is powered by a liquid-fuel rocket motor.

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:**

· Pralay is a Hindi word that means "apocalypse" or "to cause great destruction" or "damage". The Pralay missile project was sanctioned in 2015 and is a derivative of the Prahaar missile programme, which was first tested in 2011. It is a surface-to-surface short-range ballistic missile that is capable of being launched from a mobile launcher. It was developed by DRDO. Hence, statement 1 is correct.

· It can hit targets from a distance of 150 to 500 km and is extremely difficult to intercept by enemy interceptor missiles. Pralay is powered by a solid fuel rocket motor and is a high explosive preformed fragmentation warhead that weighs somewhere between 350 kg to 700 kg. Hence, statement 2 is incorrect.

81. Consider the following Committees:

- 1. Ashok Mehta Committee
- 2. JVP Committee
- 3. Balwant Rai Mehta Committee
- 4. Gadgil Committee

How many of the above committees had the mandate to discuss the Panchayati Raj System in India?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (C)**

**Explanation:**

· The Panchayati Raj system in India represents rural local self-government, aimed at building grassroots democracy and rural development.

· It was constitutionally established through the 73rd Constitutional Amendment Act of 1992.

**Evolution of Panchayati Raj:**

- **Balwant Rai Mehta Committee, 1957:**
  - Formed in 1957 to address democratic decentralization issues in independent India.
  - Recommended the scheme of 'Democratic decentralization,' which later became Panchayati Raj.
  - Its recommendations were accepted by the National Development Council in January 1958. Hence (3) is correct.
- **Ashok Mehta Committee, 1977:**
  - Established in December 1977 during the Janata Government.
  - Chaired by Ashoka Mehta.
  - submitted a report in August 1978 with 132 recommendations to revitalize and strengthen the declining Panchayati Raj system.
  - Led to the passage of new legislation in states like Karnataka, Andhra Pradesh, and West Bengal. Hence (1) is correct.
- **GVK Rao Committee, 1985:**
  - Appointed by the Planning Commission to examine various aspects of PRIs.
  - Recommended an essential role for Panchayati Raj in local planning and development.
- **L. M. Singhvi Committee, 1986:**
  - Established in 1986 by the Rajiv Gandhi government.
  - Chaired by Indian jurist L. M. Singhvi.
  - Recommended constitutional recognition for Panchayati Raj institutions.

· **P.K. Thungon Committee, 1988:**  
· In 1989, recommended constitutional recognition for local government bodies.

· Proposed a constitutional amendment for periodic elections to local government institutions and the delegation of appropriate functions and funds to them.

· **Gadgil Committee, 1988:**  
· Constituted in **1988 by the Congress Party.**

· Chaired by **V.N. Gadgil.**  
· Tasked with determining how Panchayati Raj institutions could be made more effective.

· The recommendations of this committee served as the foundation for drafting an amendment bill to confer constitutional status and protection on Panchayati Raj institutions. **Hence (4) is correct.**

The "**JVP committee**" was established by the Congress during its Jaipur session. This committee, comprising **Jawaharlal Nehru, Vallabhbhai Patel, and Pattabhi Sitaramayya**, was tasked with examining the recommendations of the **Linguistic Provinces Commission, also known as the Dhar Commission.** In its report dated April 1, 1949, the committee concluded that the prevailing circumstances were not conducive to the creation of new provinces. **Hence (2) is incorrect.**

**82. Consider the following statements about Planetary Boundaries:**

1. Climate change and ocean acidification are, but biogeochemical flows are not a component of Planet Boundaries.
2. The world had breached 5 boundaries back in 2009.

**Which of the following statements is correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Answer: (D)**

**Explanation:** The following 9 are the Planet Boundaries:

1. **Climate change:** Maintaining atmospheric CO<sub>2</sub> concentration below 350 ppm and limiting radiative forcing to a maximum increase of +1 W/m<sup>2</sup>.
2. **Ocean acidification:** Ensuring that mean surface seawater saturation state with respect to aragonite remains at or above 80% of pre-industrial levels.
3. **Stratospheric ozone depletion:** Restricting the reduction in total atmospheric O<sub>3</sub> to less than 5% from a pre-industrial level of 290 Dobson Units.
4. **Biogeochemical flows in the nitrogen (N) cycle:** Limiting industrial and agricultural fixation of N<sub>2</sub> to 35 Tg N/yr.
5. **Biogeochemical flows in the phosphorus (P) cycle:** Keeping annual P inflow to oceans below 10 times the

natural background weathering of P. Hence statement 1 is incorrect.

6. **Global freshwater use:** Keeping consumptive use of runoff resources below 4000 km<sup>3</sup>/yr.

7. **Land system change:** Ensuring that less than 15% of the ice-free land surface is under cropland.

8. **The erosion of biosphere integrity:** Limiting the annual rate of loss of biological diversity to less than 10 extinctions per million species.

9. **Chemical pollution:** Managing the introduction of novel entities into the environment.

The world had breached 3 boundaries in 2009, 5 in 2015 and 6 in 2023. **Hence statement 2 is incorrect.**

**83. Consider the following statements about Elephant Corridors:**

1. An elephant corridor is a forested area that links larger habitats containing elephant populations.
2. It acts as a pathway for the movement of animals between these habitats.
3. Plan Bee is a plan to avoid the Man and human conflict mainly near the agricultural farms.

**How many of the above statements are incorrect?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:** Elephant corridors, characterized as slender strips of land, serve as vital connections between two expansive elephant habitats. These corridors play a pivotal role in mitigating casualties among these animals resulting from accidents and other factors. Consequently, in the face of forest fragmentation, preserving these migratory pathways becomes even more imperative. **The identification of these elephant corridors has been a collaborative effort, involving The Elephant Task Force Report of 2010, known as "Gajah," and the State Forest Departments of states within the elephant range.** To date, a **total of 100 elephant corridors have been pinpointed across the country.** In recognition of their importance, the Government of India has implemented numerous measures aimed at safeguarding these vital passages for elephants. **Hence statements 1 and 2 are correct.**

**Plan Bee, an innovative initiative introduced by the Northeast Frontier Railway (NFR) to deter wild elephants from approaching railway tracks, has earned recognition as the best innovation award from Indian Railways. The Plan Bee strategy involves the installation of devices along the tracks, which produce a buzzing sound that mimics a swarm of honey bees. This sound serves as a natural repellent for elephants,**

as they naturally fear the potential stings of bees. **The first such device was set up in the vicinity of the Guwahati railway station.** Notably, the buzzing noise can be heard by elephants from a distance of 600-700 meters, effectively discouraging them from venturing close to the railway tracks. **Hence statement 3 is incorrect.**

84. Consider the following statement, with reference to Fifteenth Finance Commission of India

1. Its recommendations will cover a period of five years from the year 2022-23 to 2026-27.
2. The recommended limits for states as a percentage of GSDP were 4% in 2021-22, 3.5% in 2022-23, and 3% during 2023-26, with an additional 0.5% allowed for power sector reforms.

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:

**15th Finance Commission of India –**

· The Finance Commission (FC) is a constitutional body, that determines the method and formula for distributing the tax proceeds between the Centre and states, and among the states as per the constitutional arrangement and present requirements.

· Under Article 280 of the Constitution, the President of India is required to constitute a Finance Commission at an interval of five years or earlier.

· The 15th Finance Commission was constituted by the President of India in November 2017, under the chairmanship of NK Singh. Its recommendations will cover a period of five years from the year 2021-22 to 2025-26.

Hence, statement 1 is not correct.

· The Fifteenth Finance Commission proposed a glide path to reduce the fiscal deficit for both Central and state governments. The recommended limits for states as a percentage of GSDP were 4% in 2021-22, 3.5% in 2022-23, and 3% during 2023-26, with an additional 0.5% allowed for power sector reforms. Hence, statement 2 is correct.

Hence, option (b) is correct.

85. Which of the following statements are correct regarding China's Thousand Talents Plan

- (a) It's a plan of the Communist Party of China to promote the idea of communism at a global level through Chinese scholars.
- (b) It's an initiative of the Chinese government to promote indigenous products in China.

(c) It's an initiative of the Chinese Communist Party that aims to attract global scientific talent to make China a leader in science and technology.

(d) It's an initiative headed by China in collaboration with ASEAN to promote regional talent and boost innovation in the region.

Answer: (C)

Explanation:

**About China's Thousand Talents Plan**

The Thousand Talents Plan, initiated by the Chinese Communist Party, aims to attract global scientific talent to make China a leader in science and technology by 2050. It has raised concerns due to allegations of acquiring foreign technologies and intellectual property through non-transparent means.

**A US Senate report cited it as a threat to American interests, citing cases of technology theft.** Many in Australian and US academia are suspected of participating without disclosure. Human rights concerns also arise as technologies acquired have been used for surveillance and in the oppression of Uyghurs in Xinjiang.

Hence, option (c) is correct.

86. Consider the following statements with reference to Kisan Rin Portal:

1. It aims to revolutionize credit services under the Kisan Credit Card.
2. The portal was developed by the National Informatics Centre (NIC).
3. It promotes seamless connections with banks to provide more focused and efficient agricultural loans.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The Ministry of Agriculture & Farmers Welfare launched the Kisan Rin Portal to revolutionize access to credit services under the Kisan Credit Card (KCC). The KRP portal serves as an integrated hub, offering a comprehensive view of farmer data, loan disbursement specifics, interest subvention claims, and scheme utilization progress. KRP is poised to revolutionize access to credit services under the Kisan Credit Card (KCC). It will also assist farmers in availing of subsidized agriculture credit through the Modified Interest Subvention Scheme (MISS). By fostering seamless integration with banks, this portal enables proactive policy interventions, strategic guidance, and adaptive enhancements for more focused and efficient agriculture credit. It promotes seamless connections

with banks to provide more focused and efficient agricultural loans. The portal is developed collaboratively by:

- Ministry of Agriculture and Farmers Welfare (MoA&FW),
- Department of Financial Services (DFS),
- Department of Animal Husbandry & Dairying (DAH&D),
- Department of Fisheries (DoF),
- Reserve Bank of India,
- National bank for agriculture and development (NABARD).

Hence, statement 2 is incorrect.

87. Biohacking, recently seen in news is related to which of the following?

- (a) Hacking into biological systems to steal or modify data
- (b) Biological experimentation done to improve the qualities or capabilities of living organisms
- (c) The use of biotechnology to produce new forms of life or to modify existing ones
- (d) Exploiting biological vulnerabilities to cause harm or disruption

Answer: (B)

**Explanation:** Biohacking has grown in popularity in recent years; it is the **process of changing or boosting one's own body or biology by a variety of means, including nutrition, supplements, devices, implants, or genetic engineering.**

Biohacking can be used to improve health, performance, well-being, or aesthetics, as well as to explore the boundaries and possibilities of human nature. **Genetic engineering is the most well-known sort of biohacking**, in which people experiment with new technology to improve their physical looks or capabilities. Hence, option (b) is correct.

88. With reference to Five Eyes Alliance, consider the following statements:

1. It is an intelligence-sharing arrangement among the US, UK, Canada, Australia and India.
2. Under this, intelligence agencies of these five countries share signal, military and human intelligence among themselves.

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 an intelligence-sharing arrangement among the US, UK, Canada, Australia and New

Zealand. Under this, intelligence agencies of these five countries share signal, military and human intelligence among themselves. **It began in 1946 when the United States and the United Kingdom agreed to an open exchange of intelligence on the communications of foreign nations.** It was expanded when Canada joined the alliance in 1948, followed by Australia and New Zealand in 1956. **These countries are signatories to the UKUSA Agreement for their cooperation in signal intelligence.** The alliance or network monitors the electronic communications of citizens and foreign governments. Hence, statement 1 is incorrect.

89. Consider the following statements regarding Pandit Deendayal Upadhyay National Welfare Fund for Sportspersons (PDUNWFS):

1. It provides lump sum aid to excellent athletes.
2. It can be given to active athletes individually or in a group setting.
3. It also assists the families of dead excellent athletes.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

**Explanation:** In New Delhi, the Union Minister for Youth Affairs and Sports recently honoured players under the Pandit Deendayal Upadhyay National Welfare Fund for Sportspersons (PDUNWFS). It was founded in March 1982 with the goal of aiding brilliant athletes from the past who were living in impoverished conditions and had brought pride to the country through athletics. **The scheme was amended in May 2016 to grant lump sum ex-gratia support to excellent athletes from the past.** It covers the entire country of India. The initiative supports the general well-being of athletes to alleviate distress among them and their dependents. The system can be offered to active athletes individually or as a group. The candidate must be a serving or retired athlete (including sports doctors, psychologists, mentors, physiotherapists, masseurs, coaches, support employees, umpires, referees, and match officials). **The applicant must have represented India in a sport at the national or international level. The applicant's total annual income (from all sources) must be less than Rs. 4 LPA. It also assists the families of dead excellent athletes. Hence, all statements are correct.**

90. Consider the following statements regarding the Serious Fraud Investigation Office (SFIO):

1. It is a corporate fraud investigation agency established by the Government of India in response to

the Naresh Chandra Committee on Corporate Governance's recommendations.

2. It is a multidisciplinary ministry of finance organization.

**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 was established in 2003 in response to stock market frauds, the failure of non-financial banking organizations, and the phenomenon of vanishing corporations and plantation enterprises, as recommended by the Naresh Chandra Committee on Corporate Governance. The Government of India established it as a corporate fraud investigation agency. It is a multidisciplinary institution that reports to the Ministry of Corporate Affairs. **Hence, statement 2 is incorrect.**

**91. With reference to the Agumbe forest, consider the following statements:**

- 1. Agumbe is in the Shivamogga district of Karnataka and is referred to as "Cherrapunji of South India", with an average rainfall of 8000 mm.
- 2. It is the world's only natural habitat of the King Cobra and referred to as "The Cobra Capital".
- 3. It is situated at an elevation of 650 meters within Central Western Ghats and has a distinctive tract of tropical moist evergreen forest.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** The amount of rainfall received in Agumbe has reduced as compared to the other towns in the region. **Agumbe is in the Shivamogga district of Karnataka and is referred to as the "Cherrapunji of South India",** with an average rainfall of 8000 mm. It is the **world's only natural habitat of the King Cobra and is referred to as "The Cobra Capital".** It is situated at an elevation of 650 meters within Central Western Ghats and has a distinctive tract of tropical moist evergreen forest. It is also located adjacent to the Someshwara Wildlife Sanctuary and the Kudremukh National Park. **Hence, all statements are correct.**

**92. Consider the following statements, with reference to the World Federation for Medical Education (WFME):**

- 1. It is a global organisation dedicated to enhancing the quality of medical education worldwide.
- 2. The National Medical Commission (NMC) is recognised by the WFME.

**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:** National Medical Commission (NMC), has been granted the World Federation for Medical Education (WFME) Recognition Status for 10 years. **WFME was established in 1972** as a common platform for agreeing on principles and standards for medical education over the full life cycle of professional activities. **WFME is a global organization dedicated to enhancing the quality of medical education worldwide.** WFME's accreditation program plays a pivotal role in ensuring that medical institutes meet and uphold the highest international standards of education and training. **The National Medical Commission (NMC), India has been granted the World Federation for Medical Education (WFME) Recognition Status for a remarkable tenure of 10 years.** The recognition will enhance the quality and standards of medical education in India by aligning them with global best practices and benchmarks. The recognition will enable Indian medical graduates to pursue postgraduate training and practice in other countries that require WFME recognition. **Hence, both statements are correct.**

**93. Consider the following statements, with reference to the Elephant Corridors:**

- 1. It is a strip of land that enables elephant movement between two or more habitats.
- 2. West Bengal has the most number of elephant corridors in India.
- 3. The border road organisation and the Ministry of Environment are jointly responsible for building elephant corridors.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** In a report released by the **Ministry Of Environment Forest And Climate**, there has been a **40% increase in elephant corridors in India**. An elephant corridor is a strip of land that enables elephant movement between two or more friendly habitats. **West Bengal has the most elephant corridors (26) which amounts to 17% of the total elephant corridors**. Elephants have also seen increased presence in Madhya Pradesh found in Sanjay Tiger reserves and Bandhavgarh. **The east-central region has 52 elephant corridors. North East region has the second largest elephant corridors with a total of 48 corridors. Southern India has 32 which is 21 % of the elephant corridors, while northern India was the lowest with 18 corridors or 12 %**. The majority of the corridors were noted to be within state boundaries and the intensity of the use of corridors has increased by 40%. The decrease in corridor use is attributed to habitat fragmentation, shrinkage and destruction. **Hence, only statement 3 is incorrect.**

94. **With reference to the Mithun (*Bos frontalis*), consider the following statements:**

1. It is known as the mountain cattle.
2. The Food Safety and Standards Authority of India (FSSAI) has given it the 'food animal' label.
3. It is classified as a vulnerable species on the IUCN Red List.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** Mithun in the Northeast has been designated a 'food animal' by the Food Safety and Standards Authority of India (FSSAI). The Mithun (*Bos frontalis*) is thought to be a descendant of the Indian Gaur or bison. It is **vital to the socioeconomic and cultural lives of tribes in Arunachal Pradesh such as the Nyishi, Apatani, Galo, and Adi**. It is found in Northeast India, Bangladesh, northern Myanmar, and Yunnan Province, China. It is referred to as the 'cattle of the mountain'. It has a lot of commercial potential as well as the ability to provide nutritional, livelihood, and financial security. **It is classified as a vulnerable species on the IUCN Red List. It is a state animal of both Arunachal Pradesh and Nagaland**. Earlier in 2022, Himalayan yak was accepted as a food animal by FSSAI. **Hence, all statements are correct.**

95. **What is a Data Fiduciary's responsibility in the context of the Digital Personal Data Protection (DPDP) Act of 2023?**

- (a) It is in charge of safeguarding data against any sort of processing.
- (b) It collects, saves, and shares personal information while also facilitating consent management.
- (c) It serves as a regulatory authority in charge of enforcing data protection regulations.
- (d) It is a person designated to manage personal data processing.

**Answer:** (B)

**Explanation:** The DPDP Act is a legal framework developed in India to protect individual's data and ensure that their data is shared only with their consent. **It governs the handling of digital personal data and lays down several safeguards to safeguard persons' privacy in the digital age. The Digital Personal Data Protection Act, of 2023, was introduced and later enacted by both the Lok Sabha and the Rajya Sabha** after multiple iterations and consultations. Individuals or companies whose data must be protected may be considered DP. The DP must provide written consent to generate and use the data, identifying the exact purpose for which it will be used. DP can revoke the consent at any moment or limit its use. A data fiduciary is an entity that collects, stores, and shares data. **Hence, option (b) is correct.**

96. **With reference to the International Congress on the Chemistry of Cement (ICCC), consider the following statements:**

1. ICCC is a global platform that summarizes the state of the art of cement chemistry and major trends in cement application.
2. India is the first-largest producer of cement in the world. It accounts for more than 8% of the global installed capacity.
3. India will host the ICCC in New Delhi in 2025.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** ICCC is a global platform that summarizes the state of the art of cement chemistry and major trends in cement application. Congresses have been held generally at intervals of four to six years since 1918. **Its permanent secretariat is in Dusseldorf, Germany. India also organised the 9th ICCC in 1992. India is the second-largest producer of cement in the world**. It accounts for more than 8% of the global installed capacity. India will host the ICCC in New Delhi in 2027. **Hence, only statement 1 is correct.**

97. Consider the following statements, with reference to Green Firecrackers:

1. They are crackers made without ash and with additives such as dust suppressants.
2. These crackers are made with barium compounds, which give the green colour to the crackers.
3. Green crackers cause zero pollution.

How many of the above statements is/are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

- Recently the Supreme Court backed the verdict of the Delhi High Court that has banned the production and sale of green crackers in the national capital ahead of the Diwali festival. **Green crackers are firecrackers made with a reduced shell size, without ash, and/or with additives** such as dust suppressants to reduce emissions with specific reference to particulate matter. **Hence, statement 1 is correct.**
- These crackers come without barium compounds through which crackers get the green colour. **It is a metal oxide that contributes to air and noise pollution. In India, green crackers were launched in 2019 and currently, there are 3 types of green crackers that include:**
  1. **SWAS** (Safe Water Releaser);
  2. **STAR** (Safe Thermite Cracker);
  3. **SAFAL** (Safe Minimal Aluminium);
- To identify green crackers, customers can look for the CSIR NEERI logo on the fireworks packaging. Green crackers cause 30 % lesser particulate matter pollution as compared to traditional crackers. **Hence, statement 2 and 3 are incorrect.**

98. Consider the following statements, with reference to the Vaishali Festival of Democracy:

1. The festival aims to highlight aspects of India's democratic tradition.
2. The festival is organised by the Indian Council of World Affairs (ICWA).

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 the 'Vaishali Festival of Democracy', was held at Vaishali, Bihar to understand the democratic workings of India. Vaishali Festival of Democracy aims to 'highlight aspects of India's democratic tradition. **Hence, statement 1 is correct.**
- **Vaishali Festival of Democracy was organised by the Indian Council of Cultural Research (ICCR).** The festival highlights the various dimensions of India's democracy and its historical roots, as well as facilitates dialogue on its journey through the years. **Hence, statement 2 is incorrect.**

99. Consider the following statements with reference to Rashtriya Vigyan Puraskar:

1. It is one of the highest recognitions in the field of science, technology and innovation in India.
2. People of Indian Origin staying abroad with exceptional contributions to Indian society are also eligible for the awards.

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:** Recently the Union Government came out with a new set of National Awards in the field of Science, Technology and Innovation known as "Rashtriya Vigyan Puraskar". The awards aim to recognize the remarkable contributions made by scientists, technologists, and innovators in various fields of science and technology. **Scientists, technologists, and innovators working in government or private sector organizations, as well as individuals working independently are eligible for this.** People of Indian origin residing abroad who have made exceptional contributions benefiting Indian communities or society are also eligible for these awards. These awards will not include any cash component, instead, they will likely bestow only a certificate and medallion on the awardee. **Hence, both statements are correct.**

100. Which of the following best describes the PM-WANI Scheme?

- (a) It is a framework that enables any entity, such as a shopkeeper or a tea stall owner, to set up a public Wi-Fi hotspot and provide internet service to customers.
- (b) It is an academic development scheme for providing funding to state universities and colleges to improve infrastructure, faculty recruitment, and research facilities.

(c) It is a women-centric welfare program that aims to create a conducive environment for the overall development of women, especially in rural and marginalized communities.

(d) It is an agricultural development scheme that aims to improve water-use efficiency in the agriculture sector.

**Answer:** (A)

**Explanation:**

- It was **launched by the Department of Telecom (DoT) in December 2020**, it is one key scheme launched to bolster the **penetration of public WiFi hotspots to establish a robust digital communication infrastructure** throughout the nation, especially in rural areas.
- **PM-WANI is a key part of India's Digital Public Infrastructure (DPI)**. It is a framework that enables any entity, such as a shopkeeper, a tea stall owner, or a Kirana store owner, to set up a public Wi-Fi hotspot and provide internet service to customers. **Hence, option (a) is correct.**

**101. With reference to Personality Rights (PRs), consider the following statements:**

1. PRs refer to the name, voice, signature, images or any other feature easily identified by the public as a marker of a celebrity's personality.
2. Only the owner or creator of these distinct features has the right to derive any commercial benefit from it.
3. PRs or their protection are expressly mentioned in a statute in India but cannot be traced under the right to privacy and right to property.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Delhi High Court granted an ex-parte, omnibus injunction restraining entities from using a celebrity's PRs. Ex-parte injunction is when relief is granted to a party without hearing the other side. **Omnibus injunction refers to an order granted against any unauthorised use- even those that are not mentioned in the plea. PRs refer to the name, voice, signature, images or any other feature easily identified by the public as a marker of a celebrity's personality.** Only the owner or creator of these distinct features has the right to derive any commercial benefit from it. PRs or their protection are not expressly mentioned in a statute in India but can be traced under

the right to privacy and the right to property. **Hence, statement 3 is incorrect.**

**102. With reference to the Asian Games, consider the following statements:**

1. It is a multi-disciplinary sports event held once in every four years.
2. It is recognised by the International Olympic Committee and is the second largest multi-sport event after the Olympics.

**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 Asian Games are a multi-disciplinary sports event held once every four years. **It is recognised by the International Olympic Committee and is the second largest multi-sport event after the Olympics.** India is one of the founding members of the Asian Games Federation and also the host of the first Asian Games in 1951. **The 19th Asian Games will take place in Hangzhou, China, from 23rd September 2023 to 8th October 2023**, which was originally scheduled to be held in 2022 and was postponed due to the Covid-19 pandemic. **Hence, both statements are correct.**

**103. Consider the following statements, with reference to Artificial Reef (AR):**

1. An artificial reef is a manmade structure that may mimic some of the characteristics of a natural reef.
2. The Department of Fisheries is promoting Artificial Reef (AR) under the Pradhan Mantri Matsya Sampada Yojana (PMMSY).

**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:** In recent times the Department of Fisheries has been promoting Artificial Reef (AR) under Pradhan Mantri Matsya Sampada Yojana (PMMSY) for rejuvenating coastal fisheries. **Artificial reefs (AR) are natural or manmade engineering technology interventions placed in the sea to provide an artificial fish habitat.** Oil and gas platforms, bridges, lighthouses, and other offshore structures often function as artificial reefs. **The advantages of Artificial Reef (AR) are:**



- Reduce wave damage on coasts, helps regeneration of marine ecosystem and acts as a carbon sink.
- Enhance recreational fisheries, and eco-tourism, creating suitable areas for diving and reducing conflicts.
- Restricts bottom trawling in the near shore areas.

Hence, both statements are correct.

104. The Lachin Corridor has had a significant impact on the Nagorno-Karabakh region. The corridor connects the:

- Turkey and Armenia
- Armenia and Georgia
- Azerbaijan and Iran
- Armenia and Azerbaijan

Answer: (D)

**Explanation:** After Azerbaijan launched an offensive to reclaim full control of the disputed Nagorno-Karabakh region of the South Caucasus, Armenian separatist troops surrendered and agreed to a truce. Territorial issues and ethnic conflict between Armenia and Azerbaijan have had a significant influence on the Nagorno-Karabakh region for nearly four decades. Azerbaijan has established a siege on the Lachin Corridor, the only access into the Nagorno-Karabakh region from Armenia. Hence, option (d) is correct.

105. Consider the following statements regarding Foot and Mouth Disease (FMD):

1. It is an animal-borne viral disease that is highly contagious.
2. It spreads easily to humans through direct contact with sick animals.
3. There are currently no FMD vaccinations available.

How many of the above statements is/are correct?

- Only one
- Only two
- All three
- None

Answer: (A)

**Explanation:**

- Over 21,000 animals were recently vaccinated against foot and mouth disease (FMD) by the Chandigarh administration. It is a **highly contagious viral disease that affects animals with cloven hooves, such as cattle, sheep, goats, and pigs. Hence, statement 1 is correct.**
- **It is a trans-boundary animal disease (TAD) that has a significant impact on livestock output and disrupts regional and international traffic in animals and animal products. It is an animal sickness, not a human disease, and it is distinct**

**from hand, foot, and mouth disease, which is frequent in young infants.** In rare situations, it can be transmitted to humans. Human instances are usually mild and self-limiting, with symptoms resembling other viral diseases. **Hence, statement 2 is incorrect.**

- **Vaccination is a common way of controlling FMD** in areas where the disease is endemic or where outbreaks are likely. Vaccinated animals can still get the virus, although the severity of the disease is lessened. **Hence, statement 3 is incorrect.**

106. Consider the following statements:

1. Project 15 Fuel Cell Buses is an initiative of the Ministry of Petroleum and Natural Gas.
2. India's First Green Hydrogen-Powered Fuel Cell Bus will travel between Mumbai to Gandhi Nagar.

Which of the above statements is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Answer: (A)

**Explanation:** Recently the Ministry of Petroleum and Natural Gas announced that it will flag off the 1st Green Hydrogen Fuel Cell Bus at Kartavya Path in Delhi. Green Hydrogen, produced using renewable energy, has the potential to play a key role in such low-carbon and self-reliant economic pathways. Fuel cell vehicles have inherent advantages of long-range and lower refuelling time as compared to battery vehicles. IndianOil has initiated a scientifically designed program to undertake operational trials of 15 Fuel Cell buses powered by Green hydrogen on the identified routes in Delhi, Haryana and U.P. IndianOil has also established a state-of-the-art dispensing facility at our R&D Faridabad campus that can refuel green hydrogen produced from electrolysis using solar PV panels. **Hence, statement 2 is incorrect.**

107. Necroptosis, sometimes seen in the news is related to which of the following?

- (a) It is a form of regulated cell death in the human brain.
- (b) The drug approved by the Indian Medical Association for Alzheimer's disease.
- (c) It is a treatment procedure for the recovery of people affected by AIDS.
- (d) A new organic and sustainable method to treat Nuclear Waste Water.

Answer: (A)

**Explanation:** Scientists have recently figured out the process of the death of the brain cells that can help in

Alzheimer's treatment. **Cell death usually happens as an immune response to infection or inflammation and rids the body of undesirable cells.** When the supply of nutrients collapses, the cells swell up, destroying a plasma membrane. The cells get inflamed and die off. The amyloid and tau are the abnormal proteins that develop in the brain. **Cells in Alzheimer's patients get inflamed when amyloid protein gets into neurons in the brain. The amyloid clumps into so-called plaques and the fiber-like tau protein forms its own bundles, known as tau tangles.** Neurons exposed to amyloid plaques and tau tangles initiate a cell death process called necroptosis. **Necroptosis or cell death is a direct connection between these abnormal proteins, amyloid and tau. Hence, option (a) is correct.**

108. Consider the following statements regarding Caribbean box jellyfish:

1. It is only one centimetre long and lacks a brain.
2. It is capable of associative learning.
3. It can be trained to foresee and avoid future problems.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** Despite the lack of a brain, researchers have demonstrated that the Caribbean box jellyfish can learn to avoid obstacles via visual and mechanical cues. These are less than a millimetre long and lack a brain. It is a member of the Cnidaria phylum (the animal group comprised of jellyfish, sea anemones, and coral). **Tripedalia cystophora, or Caribbean box jellyfish, is recognized for its ability to negotiate murky water and a maze of hidden mangrove roots. These gelatinous, fingernail-sized animals can avoid swimming into barriers by learning from visual signals. It possesses cognitive abilities never before seen in animals with such a basic neural system.** Their "associative learning" capacity is equivalent to that of significantly more evolved animals such as fruit flies or mice. They have four rhopalia, or visual sensory centres, each with lens-shaped eyes and roughly a thousand neurons that aid in avoiding damage. **They can be trained to "predict a future problem and try to avoid it" through "operant conditioning." Hence, all statements are correct.**

109. With reference to Ephemerals, consider the following statements:

1. They are plants that have one or more generations per year and grow only during favourable periods and pass the unfavourable periods in the form of seeds.
2. Ephemerals produce tough seeds that withstand drought and other extreme conditions in harsh environments.

**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:** In botany, an ephemeral plant can be defined as one that has one or more generations per year, growing only during favourable periods (such as when adequate moisture is available) and passing the unfavourable periods in the form of seeds. Some species' seed coats contain a growth inhibitor that can only be washed away by a large amount of water, preventing germination after only a brief shower. **Ephemerals produce tough seeds that withstand drought and other extreme conditions in harsh environments.** Ephemerals are certain plant species that wait throughout the year to bloom only during the monsoon. **Ex: Ground orchids, lilies, wild yam etc.** These flowers act as an important source of nectar and pollen for native pollinators, thus preserving the ecosystem. **Hence, both statements are correct.**

110. Asola Bhati Wildlife Sanctuary is located in which states/UTs of India

- (a) Gujarat
- (b) Ladakh
- (c) Uttar Pradesh
- (d) Delhi

**Answer: (D)**

**Explanation:** The Wildlife Institute of India (WII), Dehradun, is likely to conduct a study on the biodiversity of the Asola Bhatti Wildlife Sanctuary in Delhi and prepare a management plan. A report released last year based on a camera-trap study at the sanctuary, which covers an area of 32.71 sq km and is part of the Ridge in South Delhi, had pointed to the presence of eight leopards and two to four striped hyenas at the sanctuary. **Hence, option (d) is correct.**

111. Consider the following statements with reference to the International Coffee Organization (ICO):

1. It was established in 1963 and functions under the aegis of the United Nations.
2. India is not a member of the ICO.

3. It is being held for the first time in an Asian coffee-producing country.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** For the **1st time in Asia, Bengaluru is set to host the 5th World Coffee Conference (WCC)**. The International Coffee Organization (ICO) was established in 1963 under the aegis of the United Nations and following the approval of the first International Coffee Agreement in 1962. **The headquarters is located in London, United Kingdom. The ICO is the only intergovernmental organization for coffee, bringing together exporting and importing Governments.** It currently represents 93% of world coffee production and 63% of world consumption. **The mission is to strengthen the global coffee sector and promote its sustainable expansion in a market-based environment for the benefit of all actors in the Global Coffee Value Chain (G-CVC).** There are 49 Members (75 countries) with India being one of the members. Every 4 to 5 years, the International Coffee Organization holds a high-level World Coffee Conference to enable discussion around critical topics for the global coffee sector. **Hence, statement 2 is incorrect.**

112. Consider the following statements with reference to Galactic Tides:

1. It is a tidal force experienced by objects subject to the gravitational field of a galaxy.
2. Galactic tides affect the supermassive black holes at galaxy centres.

**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:** Galactic tides are **the tidal forces experienced by objects affected by the gravitational field of galaxies, such as the Milky Way.** Galactic tides are caused by gravitational forces within a galaxy, arising in the interactions between celestial objects like stars and gas clouds. **They can reshape a galaxy's structure by creating tidal tails and bridges, promoting star formation, and disrupting smaller star systems. These tidal forces influence various aspects of a galaxy's evolution.** They can reshape a galaxy's

structure by creating tidal tails and bridges, promoting star formation, and disrupting smaller star systems. Galactic tides also disrupt the orbits of stars, leading to long-term changes in galactic structure. **Galactic tides also affect the supermassive black holes at galaxy centres,** leading to events that change the ways in which these cosmic beasts interact with nearby stars. **Hence, both statements are correct.**

113. ciTRAN, sometimes seen in the news is related to which of the following?

- (a) A transgenic crop that contains the features of Citrus plants.
- (b) It is a very uncommon earth mineral.
- (c) It is a virus that has only recently been found.
- (d) It is a Ribonucleic acid (RNA) that is circular.

**Answer:** (D)

**Explanation:** Recently researchers have identified ciTRAN as a Circular RNA virus. **ciTRAN is a circRNA that modulates HIV-1 transcription.** Circular RNA (circRNA) plays a pivotal role in regulating gene expression and is essential for various biological processes. **The establishment of how the ciTRAN modulates the virus's transcription process, could potentially lead to novel drugs and therapies to fight HIV-1.** HIV-1 viral protein R (VpR) induces ciTRAN expression, which in turn interacts with serine/arginine-rich splicing factor 1 (SRSF1), a protein known to repress HIV-1 transcription. **HIV-1 viral protein R (VpR) is a multifunctional protein that plays specific roles at multiple stages of the HIV-1 viral life cycle and affects anti-HIV functions of the immune cells.** ciTRAN prevents SRSF1 from doing its job, thereby promoting efficient viral transcription. The researchers developed an SRSF1-inspired mimic that can inhibit viral transcription regardless of ciTRAN induction. **Hence, option (d) is correct.**

114. With reference to the United Nations Climate Ambition Summit (CAS), consider the following statements:

1. The CAS aimed to accelerate climate action as a prelude to the 28th Conference of Parties (COP 28).
2. China, USA and India are the most active participants of CAS.
3. In this Summit, India updated its goal to achieve net-zero emissions by 2070.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The United Nations Climate Ambition Summit (CAS) held in **United Nations Headquarters, New York on 20th September 2023**, aimed to accelerate climate action as a prelude to the 28th Conference of Parties (COP 28) to the United Nations Framework Convention on Climate Change (UNFCCC). **Hence, statement 1 is correct.**

**China, the US, and India**, who collectively account for about **42% of global greenhouse gas emissions** and are the top three emitters in that order, were all absent from the CAS. **Hence, statement 2 is incorrect.**

In COP 26, India pledged to achieve net-zero emissions by 2070. **Hence, statement 3 is correct.**

**115. With reference to Odhuvars, consider the following statements:**

1. Odhuvars sing devotional hymns at Hindu temples in Tamil Nadu, but they are not priests.
2. They can be only men.
3. Odhuvars play an essential role in Saivite temples, as they are responsible for singing from the Thirumurai.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** Odhuvar refers to individuals who perform devotional music and sing hymns in temples, particularly during religious ceremonies and rituals. They can be both men and women. They sing devotional hymns at Hindu temples in Tamil Nadu, but they are not priests. **They play an essential role in Saivite temples, as they are responsible for singing from the Thirumurai** not only during regular pujas but also during special functions and festivals, ensuring the sacred verses are honoured and cherished. **Hence, statement 2 is incorrect.**

**116. With reference to Angel Tax, consider the following statements:**

1. Angel tax is levied when a listed company issues shares to an investor at a price lower than its fair market value.
2. It was imposed only on investments made by a non-resident investor.

**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 Ministry of Finance has notified changes to Rule 11UA of the Income Tax Rules under the Income Tax Act 1961. Rule 11UA is concerned with the valuation of shares for the purpose of levying Angel Tax. **Angel tax is levied when an unlisted company issues shares to an investor at a price higher than its fair market value.** Earlier, it was imposed only on investments made by a resident investor. But Budget 2023-24 proposed to extend it to non-resident investors from April 1, 2024. **Hence, both statements are incorrect.**

**117. Consider the following statements, with reference to DNA nanoball strategy:**

1. It is a technique used to determine the entire genomic sequence of an organism.
2. The technique can detect viruses when infected people are in a pre-symptomatic period.

**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:** It is a new platform that uses nucleic acids-based diagnostics techniques to detect the DNA of the pathogens. Through loop-mediated isothermal amplification technology, the approach creates nanoballs out of pathogens' DNA that can then be identified through electrical signalling. The design does not need laboratory techniques to support diagnosis. It is a **low-cost technology that can be widely deployed and scalable.** **Hence, both statements are correct.**

**118. What is the major objective of the RoDTEP scheme introduced by the Indian government?**

- (a) To promote imports
- (b) To avoid rupee depreciation
- (c) To lower export taxes
- (d) To encourage domestic consumption

**Answer: (C)**

**Explanation:** The government has extended the RoDTEP scheme's export benefits for another year. **It was introduced by the government as a duty remission scheme for exports and will go into effect on January 1, 2021.** It is introduced as a duty remission scheme on exports. It provides a mechanism for reimbursement of taxes, duties, and levies, which are currently not being refunded under any other mechanism. **The scheme will be managed by the Ministry of Finance's Department of Revenue.** RODTEP provides a mechanism for reimbursement of taxes, duties, and levies that are currently not refunded

under any other mechanism at the central, state, and local levels but are incurred by export entities in the process of manufacturing and distributing exported products. **Hence, option (c) is correct.**

**119. Consider the following statements regarding the Balsams (genus Impatiens):**

1. Balsams are commonly referred to as 'touch-me-not' due to the unique behaviour of their mature seeds bursting open upon touch and distributing seeds.
2. Idukki, particularly the high ranges around Anamudi, is often termed a 'balsam paradise.'
3. It is a species that serves as an indication.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation: Balsams are commonly referred to as 'touch-me-not' due to the unique behaviour of their mature seeds bursting open upon touch and distributing seeds. Idukki, particularly the high ranges around Anamudi, is renowned for its rich diversity of wild balsams. Scientists often term the district as a 'balsam paradise.' Balsams play a crucial role as indicator species for climate change. It is found in the world's tropical, subtropical, and northern temperate zones. Balsams have a regular life cycle that lasts from June to December. Any alterations in the climate of a region are often reflected in the population of these plants. Hence, all statements are correct.**

**120. Consider the following statements regarding the Advanced Very High-Resolution Radiometer (AVHRR):**

1. It is a multi-purpose imaging sensor used to monitor cloud cover, sea surface temperature, ice, snow, and vegetation cover features on a worldwide scale.
2. It detects the Earth's emitted radiation using three solar channels in the visible-near infrared range but lacks thermal infrared channels.
3. The INSAT-1 satellite series lacks an Advanced Very High-Resolution Radiometer (AVHRR).

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

· The multi-purpose imaging equipment **Advanced Very High-Resolution Radiometer (AVHRR)** is utilized

**for global monitoring of cloud cover, sea surface temperature, ice, snow, and vegetation cover characteristics. Hence, statement 1 is correct.**

· It can **detect the Earth's outgoing radiation in six channels**, three solar channels in the visible-near infrared area, and three thermal infrared channels, with a spatial resolution of 1 km at the nadir. **Hence, statement 2 is incorrect.**

· **The Very High-Resolution Radiometer (VHRR) is a two-channel radiometer that delivers visible and infrared photographs of the Earth.** The INSAT-1 satellite series is equipped with an AVHRR that provides images in the visible and thermal infrared spectrums. **Hence, statement 3 is incorrect.**

**121. With reference to the Atal Pension Yojana (APY), consider the following statements:**

1. APY is a flagship social security scheme launched under the Ministry of Finance.
2. It, replaced the Swavalamban scheme, which provides a minimum guaranteed pension for people in the unorganized sector to all bank account holders in the age group of 18 to 40 years.
3. Subscriber would receive a guaranteed minimum monthly pension of Rs 1,000 to Rs 5,000 per month after attaining the age of 60 years, depending on contribution.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation: The Pension Fund Regulatory and Development Authority (PFRDA) has requested the government to increase the guaranteed pension amount under APY. APY is a flagship social security scheme launched under the Ministry of Finance. It replaced the Swavalamban scheme, which provides a minimum guaranteed pension for people in the unorganized sector to all bank account holders in the age group of 18 to 40 years. Subscribers would receive a guaranteed minimum monthly pension of Rs 1,000 to Rs 5,000 per month after attaining the age of 60 years, depending on contribution. It is administered by PFRDA under the National Pension System. Hence, all statements are correct.**

**122. Consider the following statements with reference to India Ageing Report, 2023:**

1. India has the world's highest old-age population.
2. Kerala has the lowest old-age population in India.
3. It is jointly released by Niti Aayog and the Ministry of Health and Family Welfare.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

**Explanation:** Recently the **India Ageing Report, 2023** was jointly released by the International Institute for Population Sciences and the United Nations Population Fund. By 2050, the share of the elderly in India's total population can reach more than 20%. **The number of working-age people in the age group of 15-59 years will decrease.** Women will live longer than men, due to which the number of older women will be more than older men. **The elderly population of India is currently estimated to be at 41% and the percentage of the elderly population in the country is projected to double to over 20% of the total population by 2050.** By 2046 it is likely that the elderly population will have surpassed the population of children (aged 0 to 15 years) in the country. The report called for a special focus on older persons in disaster-preparedness plans that are formulated. **Monaco has the highest old-age population in the world. In India, Kerala has the highest old-age population. Hence, all statements are incorrect.**

123. Consider the following statements with reference to Micro Earthquakes:

- 1. It is a low-intensity earthquake with a magnitude of 2.0 or less.
- 2. They occur only along the coastal boundaries of the continent.

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 frequent occurrence of the Micro earthquake may be the reason for the sinking of the Joshimath, Uttarakhand. **An earthquake having a magnitude (M) less than 2.0 is termed a micro-earthquake.** India is located in a seismically active region where **59% of India's land mass is prone to earthquakes. Joshimath region of Uttarakhand falls in the highest seismic zone of India.** The seismic activity of micro-earthquakes is normal in the Joshimath region. **Hence, statement 2 is incorrect.**

124. Consider the following statements regarding the Conocarpus tree:

- 1. It is an invasive species of mangrove.
- 2. It is indigenous to the Indian subcontinent.
- 3. Flowering in this tree takes place in summer and the particles spreading from it cause cold, coughing, asthma, allergy etc. harm to human beings nearby.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

**Explanation:**

- It is an invasive mangrove species, recently banned by the Gujarat government. Earlier, the Telangana government had also banned it. **Hence, statement 1 is correct.**
- **Conocarpus is a genus of two species of flowering plants in the family of Combretaceae,** native to tropical regions of the world. It is widely used in public spaces for its ornamental looks. **Hence, statement 2 is incorrect.**
- **Flowering in this tree takes place in winter and the particles spreading from it cause cold, coughing, asthma, allergy etc. harm to human beings nearby.** The roots of this species go deep inside the soil and develop extensively, damaging telecommunication lines, drainage lines and freshwater systems. **Hence, statement 3 is incorrect.**

125. Sonobuoys, recently seen in news is related to which of the following?

- (a) To take underwater photographs.
- (b) Detection and analysis of sound in the ocean.
- (c) To avoid oil spills.
- (d) Measurement of oceanic currents and tides.

Answer: (B)

**Explanation:** Sonobuoys are small, disposable devices that are used in underwater acoustics and sonar systems to detect and analyze sound in the ocean, particularly for detecting submarines and other underwater objects. **Sonobuoys are dropped into the ocean from aircraft or launched from ships or submarines. They dive to a predetermined depth and start listening for acoustic signals,** assisting in the identification of potential submarine threats. **Multiple sonobuoys can be deployed in a pattern to pinpoint a target's exact location. Hence, option (b) is correct.**

## Practice MCQs on Conventional Subjects- September 2023

1. Which of the following is/are consists of the current account of the balance of payments?

1. Exports
2. Interest Payments
3. Transfers

Select the correct answer from the code given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Answer: (D)

**Explanation:** In the external sector, it refers to the account maintained by every government of the world in which every kind of current transaction is shown—this account is maintained by the central banking body of the economy on behalf of the government. Current transactions of an economy in foreign currency all over the world are—**export, import, interest payments, private remittances and transfers. Hence, all are correct.**

2. Which of the following institutions is known as the private arm of the World Bank?

- (a) International Development Agency
- (b) International Finance Corporation
- (c) Multilateral Investment Guarantee Agency
- (d) International Bank for Reconstruction and Development

Answer: (B)

**Explanation:** The International Finance Corporation (IFC) was set up in 1956 which is also known as the private arm of the WB. It lends money to private sector companies of its member nations.

3. Consider the following statements regarding the reverse repo rate:

1. It is the rate of interest the RBI pays to its clients who offer short-term loans to it.
2. It is the reverse of the repo rate and this was started in November 2006 as part of the liquidity Adjustment Facility (LAF) by the RBI.
3. In practice, financial institutions operating in India park their surplus funds with the RBI for short-term periods and earn money.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three

(d) None

Answer: (B)

**Explanation:** It is the rate of interest the RBI pays to its clients who offer short-term loans to it. **It is the reverse of the repo rate and this was started in November 1996 as part of the liquidity Adjustment Facility (LAF) by the RBI.** In practice, financial institutions operating in India park their surplus funds with the RBI for a short-term period and earn money. It has a direct bearing on the interest rates charged by the banks and financial institutions on their different forms of loans. **Hence, statement 2 is incorrect.**

4. How would you distinguish between the revenue and capital receipts of the government?

1. Revenue receipts are non-redeemable, unlike certain capital receipts.
2. Capital receipts are always debt-creating, unlike revenue receipts.

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 main difference between revenue receipts and capital receipts is that in the case of revenue receipts, the government is under no future obligation to return the amount, i.e., they are non-redeemable. But in the case of capital receipts which are borrowings, the government is under obligation to return the amount along with interest. Capital receipts may be debt-creating or non-debt-creating. Examples of debt-creating receipts are—Net borrowing by the government at home, loans received from foreign governments, and borrowing from RBI. Examples of non-debt capital receipts are the recovery of loans, proceeds from the sale of public enterprises (i.e., disinvestment), etc. These do not give rise to debt. **Hence, statement 2 is incorrect.**

5. Which of the following statements about the Monetary Policy Framework Agreement is correct?

- (a) It is an agreement between the Government and the Reserve Bank of India (RBI) on the maximum tolerable inflation rate that the RBI should target to achieve price stability.

(b) It is an agreement between Banks and the Reserve Bank of India (RBI) to ensure that the changes in the Interest rates are passed on to the customers.

(c) It is an agreement between the Government and the Reserve Bank of India (RBI) on the minimum inflation rate that the RBI should target to achieve growth.

(d) None of the above

**Answer:** (A)

**Explanation:** The Monetary Policy Framework Agreement is an agreement reached between the Government and the central bank in India – The Reserve Bank of India (RBI) – on the maximum tolerable inflation rate that RBI should target to achieve price stability. **The Reserve Bank of India and Government of India signed the Monetary Policy Framework Agreement on 20 February 2015 which made inflation targeting and achieving price stability the responsibilities of RBI.** Subsequently, the government, while unveiling the Union Budget for 2016-17 in the Parliament, proposed to amend the Reserve Bank of India (RBI) Act, 1934 to give a statutory backing to the aforementioned Monetary Policy Framework Agreement and for setting up a Monetary Policy Committee (MPC). **Hence, option (a) is correct.**

**6. Consider the following statements:**

1. The main carbohydrates found in our food are in the form of starch and sugars.

2. If a food item contains starch then it can be tested with the help of dilute iodine solution.

**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:** There are many types of carbohydrates. **The main carbohydrates found in our food are in the form of starch and sugars.** We can easily test if a food item contains starch. When we take a small quantity of a food item or a raw ingredient and put 2-3 drops of dilute iodine solution on it then a blue-black colour indicates that it contains starch. **Hence, both statements are correct.**

**7. Consider the following pairs**

Name of acid	Found in
1. Acetic acid	Unripe mangoes
2. Oxalic acid	Spinach
3. Tartaric acid	Vinegar

1. Acetic acid	Unripe mangoes
2. Oxalic acid	Spinach
3. Tartaric acid	Vinegar

**Which of the pairs given above is/are correctly matched?**

(a) 1 only

(b) 1 and 3 only

(c) 2 only

(d) 1, 2 and 3

**Answer:** (C)

**Explanation:**

Name of acid	Found in
1. Acetic acid	Unripe mangoes
2. Oxalic acid	Spinach
3. Tartaric acid	Vinegar

**8. With reference to 'LiFi', consider the following statements:**

1. It uses light as the medium for high-speed data transmission.

2. It is a wireless technology and is slower than 'WiFi'.

**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:** Li-Fi technology is a **ground-breaking light-based communication technology that makes use of light waves instead of radio technology to deliver data.** Li-Fi technology will enable faster, more



reliable internet connections in future, even when the demand for data usage has outgrown the available supply from existing technology such as **4G, LTE and Wi-Fi**. Using light to deliver wireless internet will also allow connectivity in environments that do not currently support Wi-Fi such as aircraft cabins, hospitals, and hazardous environments. **Hence, statement 2 is incorrect.**

9. **Assertion (A):** Unsaturated fats are more reactive compared with saturated fats.

**Reason (R):** Unsaturated fats have only single bonds in their structure.

**Code:**

(a) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(c) (A) is true, but (R) is false.

(d) (A) is false, but (R) is true.

**Answer: (C)**

**Explanation: Assertion (A) is true but (R) is not correct.**

A compound having a double bond in its structure is more unstable in comparison to single-bond compounds. **Unsaturated fats, having double bonds in their structures are more reactive than saturated fats.**

10. **In the context of stem cells, consider the following statements:**

1. They are found only in multicellular organisms.

2. They can be taken from umbilical cord blood just after birth.

**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:** Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide (through mitosis) to produce more stem cells. They are found in multicellular organisms. **In mammals, there are two broad types of stem cells: embryonic stem cells**, which are isolated from the inner cell mass of blastocysts, and **adult stem cells**, which are found in various tissues. Stem cells can also be taken from umbilical cord blood just after birth.

11. **With reference to Coral reefs, consider the following statements:**

1. Coral reefs are underwater structures made from calcium carbide secreted by corals.

2. Coral reefs are colonies of tiny animals found in marine waters that contain few nutrients.

3. Coral reefs are found in the deep sea near continental shelves.

**Which of the statements given above is/are correct?**

(a) Only one

(b) Only two

(c) All three

(d) None

**Answer: (A)**

**Explanation:**

· **Coral reefs are underwater structures made from calcium carbonate secreted by corals.** Coral reefs are colonies of tiny animals found in marine waters that contain few nutrients. Most coral reefs are built from stony corals. **Hence, statement 1 is incorrect.**

· **Coral reefs are often called “rainforests of the sea”.** Coral reefs form some of the most diverse ecosystems on Earth. **They occupy less than 0.1% of the world’s ocean surface, about half the area of France, yet they provide a home for 25% of all marine species**, including fish, molluscs, worms, crustaceans, echinoderms, sponges, tunicates and other cnidarians. Coral reefs are colonies of tiny living animals found in marine waters that contain few nutrients. **Hence, statement 2 is correct.**

· Coral reefs are found in the deep sea away from continental shelves, around oceanic islands as atolls. **Hence, statement 3 is incorrect.**

12. **With reference to ‘Biomes’, consider the following statements:**

1. Biomes are defined by genetic, taxonomic, or historical similarities

2. Biomes are contiguous areas with similar climatic conditions on the 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: (B)**

**Explanation:** Unlike ecozones, biomes are not defined by genetic, taxonomic, or historical similarities. **Biomes are often identified with particular patterns of ecological succession and climax vegetation** (quasi-equilibrium state of the local ecosystem). **Hence, statement 1 is incorrect.**

13. Which the following Conventions are/are not correctly matched with their themes:

1. Rotterdam Convention- Hazardous Chemicals and Pesticides
2. Stockholm Convention - The Control of Transboundary Movements of Hazardous Wastes and Their Disposal
3. Basel Convention – Persistent Organic Pollutants
4. Nagoya Protocol- Biological Diversity

Select the answer using the codes given below:

- (a) 1 and 2
- (b) 2 and 3
- (c) 3 and 4
- (d) 1 and 4

Answer: (D)

Explanation:

· The Rotterdam Convention was signed on 10th September, 1998 at Rotterdam, Netherlands and came into effect on 24th February, 2004. It is a multilateral treaty on hazardous chemicals and pesticides.

· Stockholm Convention on Persistent Organic Pollutants is an International environmental treaty. This was signed in 2001 and came into effect from May, 2004. It aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

· The Basel Convention is on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. It is usually known as the Basel Convention. It is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent the transfer of hazardous waste from developed to less developed countries (LDCs). It does not, however, address the movement of radioactive waste.

· The Basel Convention was opened for signature on 22 March 1989, and entered into force on 5 May 1992. As of February 2014, 180 states and the European Union are parties to the Convention. Haiti and the United States have signed the Convention but not ratified it.

· The Nagoya Protocol or the Convention on Biological Diversity was opened for signature on 5 June 1992 at the United Nations Conference on Environment and Development (the Rio "Earth Summit") and entered into force on 29 December 1993. The Convention is the only international instrument comprehensively addressing biological diversity.

14. Consider the following statements:

1. Endangered species are those species whose population is small and the location is confined to limited areas
2. Rare species are those species whose population has declined significantly or whose habitat is on the verge of complete elimination

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:

· Rare species are those species whose population is small and the location is confined to limited areas.

· Endangered species are those species whose population has declined significantly or whose habitat is on the verge of complete elimination.

15. Consider the following statements.

1. Many desert plants have a special photosynthetic pathway that enables their stomata to remain closed during night-time to minimise water loss through transpiration.
2. In high altitudes, the body compensates for low oxygen availability by increasing red blood cell production and decreasing the binding affinity of haemoglobin.

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: Many desert plants have thick cuticles on their leaf surfaces and have their stomata arranged in deep pits (sunken) to minimise water loss through transpiration. They also have a special photosynthetic pathway (CAM) that enables their stomata to remain closed during day time.

In the low atmospheric pressure of high altitudes, the body does not get enough oxygen. The body compensates for low oxygen availability by increasing red blood cell production, decreasing the binding affinity of haemoglobin and increasing breathing rate.

16. Which of the following saw the beginning of an Individual satyagraha in opposition to it?

- (a) Cripps Mission
- (b) Gandhi-Irwin Pact
- (c) August Offer
- (d) Cabinet Mission

Answer: (C)

Explanation:

**Individual Satyagraha –**

During the Second World War, the **British government made an announcement on 8th August 1940, known as the 'August Offer,' to secure the cooperation of Indians.** The August Offer proposed that after the war, a representative body of Indians would be established to draft a new constitution. Gandhi was not satisfied with this proposal, and he decided to initiate an Individual satyagraha in opposition to it. **Individual I satyagraha was limited, symbolic, and non-violent in nature, and the selection of satyagraha was left to Mahatma Gandhi. Acharya Vinoba Bhave was the first person to engage in Individual satyagraha and he was sentenced to three months of imprisonment. Jawaharlal Nehru was the second satyagrahi and he was imprisoned for four months. Individual satyagraha lasted for nearly 15 months. Hence, option (c) is correct.**

17. Regarding the main features of the Government of India Act, 1935, consider the following statements.

- 1. Establishment of a Federal Court in Calcutta.
- 2. Extension of separate electorates for Sikhs, Europeans, Indian Christians, and Anglo-Indians.
- 3. Termination of dual government at the centre.

Which of the above statements is/are correct?

- (a) Only 2
- (b) 1, 2
- (c) 2, 3
- (d) 1, 3

Answer: (A)

Explanation: The Government of India Act, 1935 had the following main features:

- 1. Establishment of a **Federal Court in Delhi.**
- 2. Division of powers into three lists: **Federal, Provincial, and Concurrent.**
- 3. Termination of dual government. **The Governor-General and his Executive Council were responsible for "reserved subjects."** The Cabinet was responsible for "transferred subjects."

4. Bicameral legislatures in six provinces: **Bengal, Madras, Bombay, United Provinces, Bihar, and Assam.**

5. Separate electorates for **Muslims, Sikhs, Europeans, Indian Christians, and Anglo-Indians.**

6. Provincial autonomy and the introduction of responsible government in the provinces. The governors were to act on the advice of their ministers.

7. **Dyarchy was abolished** and provincial governments were handed over to elected ministers. Elected legislatures were responsible for "transferred subjects."

8. Direct elections on the basis of adult franchise.

9. Provincial legislatures in **Bengal, Madras, Bombay, United Provinces, Bihar, and Assam** were made bicameral.

10. Establishment of a **Federal Court in Delhi** with a Chief Justice and six judges.

**Therefore, only statement 2 is correct.**

Hence, option (a) is correct.

18. Consider the following about parallel governments during the Quit India Movement. Leaders of parallel governments were involved

- 1. Baliya – Jati Sarkar
- 2. Tamaluk – W.B. Chavan
- 3. Satara – Nana Patil

Which of the above pairs is/are correctly matched?

- (a) 1, 2
- (b) Only 3
- (c) 2, 3
- (d) 1, 3

Answer: (B)

Explanation: During the Quit India Movement, parallel governments were established in various regions of India. **Some of the key regions with their leaders were:**

1. **Baliya (for a week in August 1942)** - Under the leadership of Chittu Pandey. He released several Congress leaders.

2. **Tamaluk (from December 1942 to September 1944)** - Jatyta Sarkar worked towards cyclone relief, sanctioned funds for schools, supplied grains to the poor, organized the electrification of villages, and more.

3. **Satara (from mid-1943 to 1945)** - Known as the "Parallel Government," it was led by **W.B. Chavan, Nana Patil, and others.**

Therefore, only the pair mentioned in statement 3 is correctly matched.

Hence, option (b) is correct.

19. Regarding the 1946 Royal Indian Navy Mutiny, consider the following statements.

1. The immediate trigger was the demand for better food and working conditions for Indian sailors in the Royal Indian Navy.
2. The Indian National Congress and Muslim League condemned the strikes.
3. The mutiny was limited to the Bombay region.

Which of the above statements is/are correct?

- (a) 1, 2
- (b) Only 1
- (c) 1, 3
- (d) 2, 3

Answer: (A)

Explanation:

· The **Royal Indian Navy Mutiny (also known as the Royal Indian Navy Mutiny or the Bombay Mutiny) took place on 18th February, 1946** when Indian sailors of the Royal Indian Navy launched a total strike and later a mutiny against their British officers and the British government. **The immediate trigger was indeed the demand for better food and working conditions for Indian sailors in the Royal Indian Navy.** However, the movement quickly evolved into a broader call for independence from British rule.

· **The mutiny was not limited to the Bombay region; it spread across various naval establishments in India, including Karachi, Mumbai, and Calcutta.**

· Indian National Congress and Muslim League did condemn the strikes, as they did not support the use of force or armed rebellion in the struggle for independence.

Therefore, statements 1 and 2 are correct.

Hence, option (a) is correct.

20. The first 'White Paper on Constitutional Reforms for India' for India was prepared and presented to the Joint Select Committee of the British Parliament on the recommendations of whom?

- (a) Hunter Commission
- (b) Radcliffe Commission
- (c) Butler Commission
- (d) Simon Commission

Answer: (D)

**Explanation:** In November 1927 (two years before the stipulated time), the British government announced the appointment of a seven-member statutory Commission, with **Sir John Simon as its Chairman, to report on its new constitution for India under the**

**Government of India Act, 1919.** Since all the members of the Commission were British, all parties in India boycotted it. **The Commission submitted its report in 1930, and its recommendations were incorporated, with some modifications, in the Government of India Act, 1935.**

Hence, option (d) is correct.

21. **Abhinav Bharat Society was one of the most significant of the secret societies of Maharashtra. Consider the following statements regarding Abhinav Bharat society:**

1. It was initially started by the Savarkar Brothers as Mitra Mela in Nasik.
2. It believed in the overthrow of the British government through armed rebellion.
3. It was involved in the killing of A.M.T. Jackson, the district magistrate of Nasik, the case popularly known as 'The Nasik Conspiracy case'.

How many statements given above is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

**Explanation:** Vinayak Savarkar and Ganesh Savarkar started Mitra Mela, a revolutionary secret society in Nasik in 1903. It was one among several such melas (revolutionary societies) functioning in Maharashtra at that time, which believed in the overthrow of British rule through armed rebellion. In 1904, in a meeting attended by 200 members from various towns in Maharashtra, **Vinayak Savarkar renamed it Abhinav Bharat, taking after Giuseppe Mazzini's Young Italy.** M. T. Jackson, the district magistrate of Nasik, was assassinated in India by Anant Laxman Kanhare in 1909 in the historic "Nasik Conspiracy Case". **Hence, all statements are correct.**

22. Consider the following:

1. Muslim League
2. Rashtriya Swayamsevak Sangh
3. Hindu Mahasabha
4. Communist Party of India
5. Princely States

How many of the above political entities supported the Quit India Movement?

- (a) Only two
- (b) Only three
- (c) Only four
- (d) None of the above

**Answer:** (D)

**Explanation:**

- The Muslim League opposed the Quit India Movement as it was of the view that if the British left India in its current state, Muslims as a minority would be oppressed by the Hindu majority.
- Hindu nationalist parties like the **Hindu Mahasabha openly opposed the call for the Quit India Movement and boycotted it officially.**
- **The RSS, under M.S. Golwalkar refused to join in the Quit India Movement as well.**
- The Communist Party of India was banned at that time by the British government. In order to get the ban lifted, as well as to assist the Soviet Union in its war against Nazi Germany, it supported the British war effort, despite support for Quit India by many industrial workers.

**Hence, option (d) is correct.**

**23. Consider the following statements:**

1. The shore temple in Mamallapuram was built by Narasimhavarman II.
2. Narasimhavarman II has written the Sanskrit play Mattavilasaprahasanam.
3. In the Pallava period land grants given to the Buddhist Vihara are known as Devadhana.

**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:** (A)

**Explanation:**

- The shore temple in **Mamallapuram was built by Narasimhavarman II (Rajasimha). Hence, statement 1 is correct.**
- Mahendravarman I has written the Sanskrit play **Mattavilasaprahasanam. Hence, statement 2 is incorrect.**
- In the Pallava period land grants given to the Temples were known as Devadhana. **Hence, statement 3 is incorrect.**

**24. Consider the following statements regarding the Tagai Loans:**

1. These were low-interest loans granted by the Mughal king to the artisans
2. The aim of the loans was to protect the cultivators from the moneylenders

**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: Agricultural taxes were the main source of revenue for the Maratha administration,** as such they took various measures to expand and promote agriculture. Waste or barren land that was brought into cultivation was given to the cultivator as the **Inam land, and Tagai loans** were given to the farmers, these were the low-interest loans given by the state to the cultivators, the primary aim was to protect the farmers from the clutches of the moneylenders. **Hence, statement 1 is incorrect.**

**25. The construction of the Hanging Balcony is associated with which of the following styles of architecture?**

- (a) Mughal style
- (b) Jaunpur style
- (c) Rajput style
- (d) Bijapur style

**Answer:** (C)

**Explanation:** A Jharokha (or jharoka) is a type of overhanging enclosed balcony used in the Architecture of Rajput style in Rajasthan. **Jharokhas jutting forward from the wall plane could be used both for adding to the architectural beauty of the building itself or for a specific purpose.** One of the most important functions it served was to allow women to see the events outside without being seen themselves. Alternatively, these windows could also be used to position archers and spies. **Hence, option (c) is correct.**

**26. Consider the following statements regarding Basavanna:**

1. Basavanna was a 12th-century philosopher who rejected gender or social discrimination, superstitions and rituals.
2. He championed devotional worship that rejected temple worship.
3. He spread social awareness through his poetry, popularly known as keerthanas.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

· Basavanna was a 12th-century philosopher, statesman, **Kannada poet and social reformer during the reign of the Kalachuri-dynasty king Bijjala I in Karnataka**, India. Basavanna rejected gender or social discrimination, superstitions and rituals. **Hence, statement 1 is correct.**

· **He introduced new public institutions such as the Anubhava Mantapa** (or, the “hall of spiritual experience”), which welcomed men and women from all socio-economic backgrounds to discuss spiritual and mundane questions of life, in the open. **Basavanna championed devotional worship that rejected temple worship and rituals led by Brahmins** and replaced it with personalized direct worship of Shiva through practices such as individually worn icons and symbols like a small linga. **Hence, statement 2 is correct.**

· Basavanna spread social awareness through his poetry, popularly known as Vachanaas. **Hence, statement 3 is incorrect.**

**27. Consider the following pairs regarding festivals and the states where they are mainly celebrated.**

1. Rongali Bihu- Manipur
2. Puthandu – Tamil Nadu
3. Vishu- Kerala

**How many of the above pairs are/are incorrectly matched?**

- (a) Only one pair
- (b) Only two pairs
- (c) All three pairs
- (d) None of the pair

**Answer: (A)**

**Explanation:**

**Different festivals being celebrated in several parts of the country:**

· **Vaisakhi**- Spring harvest festival celebrated by Hindus and Sikhs. **The day marks the formation of the Khalsa Panth of warriors under Guru Gobind Singh.** It is celebrated as the first day of the month of Vaisakha according to the Hindu calendar.

· **Vishu**- It is a **Malayali festival celebrated in the South Indian state of Kerala**, Tulu Nadu region in Karnataka, bordering areas of Tamil Nadu and their diaspora communities. **The festival marks the first day of Medam**, the ninth month in the solar calendar followed in Kerala.

· **Rongali Bihu**- Celebrated in Assam. It marks the beginning of the Assamese New Year.

· **Naba Barsha**- Bengali New Year according to the Gregorian Calendar.

· **Puthandu** – It is celebrated on the first day of the Tamil month – **Chithirai** – and marks the beginning of the **Tamil New Year.**

**Hence, option (a) is correct.**

**28. Consider the following statements regarding the early nationalists of India:**

1. The Moderates campaigned for the Indianization of government services.
2. Mass participation of people was a unique feature of the early nationalist movement.

**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 moderate phase of the national movement had a narrow social base and the masses played a passive role. This was because the early nationalists lacked political faith in the masses. Because of the lack of mass participation, the Moderates could not take militant political positions against the authorities. **The Moderates campaigned for the Indianisation of government services on economic, political and moral grounds. Hence, statement 2 is incorrect.**

**29. Madhyamaka and Yogacara are philosophical traditions related to:**

- (a) Yoga
- (b) Vedanta
- (c) Tantra
- (d) Buddhism

**Answer: (D)**

**Explanation:** Madhyamaka and Yogācāra are the two main philosophical trajectories associated with the Mahāyāna stream of Buddhist thought. Madhyamaka refers to a tradition of **Buddhist philosophy and practice founded by the Indian philosopher Nāgārjuna** (150-250 CE). The foundational text of the Mādhyamaka tradition is **Nāgārjuna’s Mūlamadhyamakakārikā**. Madhyamaka thought had a major influence on the subsequent development of the Mahayana Buddhist tradition. **It is the dominant interpretation of Buddhist philosophy in Tibetan Buddhism** and has also been influential in East Asian Buddhist thought. **Yogacara is an influential tradition of Buddhist philosophy** and psychology emphasizing the study of cognition, perception, and consciousness through the interior lens of meditative and yogic practices. **Hence, option (d) is correct.**

**30. Consider the following statements:**

1. King Hala was the founder of the Satavahana dynasty.

2. King Hala authored the book Gathasaptasati in the Prakrit language.

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 founder of the Satavahana dynasty was Simuka. He was succeeded by Krishna, who extended the kingdom up to Nasik in the west. The third king was Sri Satakarni. He conquered western Malwa and Berar. He also performed asvamedha sacrifices. The seventeenth king of the Satavahana dynasty was Hala. He reigned for a period of five years. Hala became famous for his book Gathasaptasati, also called Sattasai. It contains 700 verses in the Prakrit language. Hence, statement 1 is incorrect.

31. With reference to the Curative Petition, consider the following statements:

1. The concept of "curative petitions" in Indian law draws inspiration from American judicial rulings.
2. Curative petitions are typically adjudicated by judges in private chambers.
3. The Supreme Court is not obligated to consider every curative petition submitted by convicts.
4. Filing a review petition in the Supreme Court is only permissible if a curative petition has been rejected.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

**Explanation:**

· A curative petition in India is a legal remedy available under specific circumstances, typically following a final judgment from the Supreme Court. It allows a party adversely affected by the judgment to challenge it on grounds such as a violation of natural justice, lack of a fair hearing, fraud, or a conflict with legal and equitable principles.

· The introduction of curative petitions in India can be attributed to the landmark 2002 Supreme Court case of Rupa Ashok Hurra vs. Ashok Hurra & Another. This innovation serves to prevent the misuse of legal processes and correct egregious miscarriages of justice. Hence statement 1 is incorrect.

· Furthermore, Article 137 of the Indian Constitution supports the concept of curative petitions.

· Curative petitions are typically decided by judges in their chambers unless there is a specific request for an open-court hearing. Hence statement 2 is correct.

· The Supreme Court is not obligated to entertain every curative petition submitted by convicts, as it has emphasized the need for curative petitions to be rare and approached with caution. A curative petition must be supported by a certification from a senior advocate, identifying substantial reasons for its consideration. It undergoes a review process by a panel of the three senior-most judges and the judges responsible for the original judgment, if available. Only when a majority of the judges deem it necessary will the petition be listed for hearing, preferably before the same Bench. Hence statement 3 is correct.

· A curative petition can be filed independently and does not require the prior dismissal of a review petition. The Supreme Court introduced curative petitions to ensure that its judgments do not result in miscarriages of justice. Hence, statement 4 is incorrect.

32. In the context of India's Parliamentary Government, which of the following principles are institutionally implied?

1. Cabinet members are also members of Parliament.
2. Ministers retain their positions as long as they have the Parliament's confidence.
3. The Head of State serves as the Cabinet's leader.
4. The government is accountable to Parliament and can be ousted by it.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (C)

**Explanation:**

· The Constitution of India establishes a parliamentary system of government, both at the central level (Centre) and in the states. Articles 74 and 75 pertain to the parliamentary system at the Centre, while Articles 163 and 164 relate to the states. In a parliamentary system of government, the executive branch is accountable to the legislature for its actions and policies.

· Cabinet members in India are also members of Parliament, as India follows a parliamentary form of government. Therefore, Statement 1 is correct.

· Article 75 explicitly states that the council of ministers is collectively responsible to the Lok Sabha (the lower house of Parliament). This means that all ministers share joint responsibility with the Lok Sabha for their actions and decisions. When the Lok Sabha

passes a vote of no confidence against the council of ministers, all ministers, including those from the Rajya Sabha (the upper house), must resign. **Thus, Statement 2 is correct.**

· In the parliamentary system, the **President serves as the Head of State, while the Prime Minister (the head of the Cabinet) is the Head of Government. Therefore, Statement 3 is incorrect.**

· **The parliamentary system is often referred to as a 'responsible government' because the cabinet, which constitutes the actual executive branch, is answerable to Parliament.** It remains in office as long as it enjoys the confidence of Parliament. The very essence of the parliamentary system establishes the concept of a responsible government. **Thus, Statement 4 is correct.**

**33. Consider the following statements regarding the Parliament (Prevention of Disqualification) Act, 1959, and the concept of 'Office of Profit' :**

1. The Parliament (Prevention of Disqualification) Act, 1959, provides exemptions for various positions from disqualification based on 'Office of Profit.'

2. The Act mentioned above has never been amended.

3. The Constitution of India offers a clear definition of the term 'Office of Profit.'

**How many of the statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:**

· The legal definition of an "office of profit" is not explicitly provided in the law; instead, it has evolved through court interpretations. Essentially, **it refers to a position held by an individual that provides them with financial gain, advantage, or benefit, irrespective of the amount of such profit. In the Pradyut Bordoloi vs. Swapan Roy case in 2001, the Supreme Court established that the test for determining whether a person holds an office of profit centres on the criteria of appointment.** Various factors, such as the appointing authority being the government, the government's power to terminate the appointment, the determination of remuneration by the government, the source of remuneration, and the authority associated with the position, are considered in this determination.

· **According to Article 102(1) and Article 191(1) of the Indian Constitution, Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs) are prohibited from holding an office of profit under the central or state government.** However, the Parliament (Prevention of Disqualification) Act, 1959, contains

exemptions for certain positions from disqualification. These include ministers of state and deputy ministers, parliamentary secretaries and parliamentary undersecretaries, deputy chief whips in parliament, and vice-chancellors of universities, among others. **Hence, statement 1 is correct.**

· The Parliament (Prevention of Disqualification) Act, 1959, has undergone five amendments since its inception. These amendments occurred in the years **1960, 1992, 1993, 2006, and 2013.** **Hence, statement 2 is incorrect.**

· It's important to note that the term "Office of Profit" is not explicitly defined in either the Indian Constitution or the Representation of the People Act, 1951. **Hence, statement 3 is incorrect.**

**34. Consider the following statements:**

**Assertion (A):** The judiciary in India operates independently of the executive branch.

**Reason (R):** The judiciary's role is to uphold the law and provide impartial justice, rather than favouring the government and facilitating the execution of its policies.

**Select the correct option from the following:**

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is NOT the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

**Answer: (B)**

**Explanation:**

· **Assertion (A) correctly states that the judiciary in India operates independently of the executive branch.** This is a **fundamental principle of India's democratic system**, enshrined in the Constitution, and is essential for maintaining the rule of law and upholding the rights and freedoms of citizens.

· **Reason (R) is also accurate.** The **primary role of the judiciary is indeed to uphold the law and provide impartial justice.** The judiciary's responsibility is to interpret and apply the law fairly and independently, ensuring that justice is served without any bias or favouritism, regardless of the government's policies or preferences.

· **However, while both A and R are true, Reason (R) is not the correct explanation of Assertion (A).** The independence of the judiciary is a constitutional mandate and a fundamental aspect of the democratic system, but this independence is not primarily defined by the judiciary's role in upholding the law and providing impartial justice. Instead, **it is a broader principle aimed at preventing any undue influence or interference by the executive or legislative branches**



of government in the judiciary's functioning. While the impartial administration of justice is an essential outcome of judicial independence, it is not the explanation for the independence itself, which is based on the separation of powers, appointment processes, security of tenure, and other constitutional safeguards.

35. Which of the following initiatives have been introduced by NITI Aayog?

1. Mission Karma yogi
2. National Data Analytics Platform
3. Atal Innovation Mission
4. Shoonya-Zero-Pollution Mobility campaign

Select the correct answer using the code given below:

- (a) 1 and 3 only
- (b) 2, 3, and 4 only
- (c) 1 and 2 only
- (d) 1, 2, 3, and 4

Answer: (B)

Explanation:

• **Mission Karma Yogi:** The Department of Personnel and Training (DoPT) envisions the "Mission Karma Yogi" as a national program for civil services capacity building. It aims to address the evolving needs and aspirations of citizens. The program is designed to elevate civil services through a national initiative led by a central body presided over by the Prime Minister. Therefore, Statement 1 is inaccurate.

• **National Data and Analytics Platform (NDAP):** NITI Aayog's flagship initiative, NDAP, aims to enhance access to and utilization of government data. NDAP is a user-friendly web platform that aggregates and hosts datasets from India's extensive statistical infrastructure. Its objective is to democratize data delivery by providing easy access to government datasets, implementing robust data-sharing standards, ensuring interoperability across India's data landscape, and offering user-friendly tools. Consequently, Statement 2 is correct.

• **Atal Innovation Mission (AIM):** The Indian government has established AIM within NITI Aayog to strengthen the nation's innovation and entrepreneurship ecosystem. AIM focuses on creating institutions and programs that stimulate innovation in schools, colleges, and among entrepreneurs. Therefore, Statement 3 is accurate.

• **Shoonya — Zero-Pollution Mobility campaign:** The "Shoonya — Zero-Pollution Mobility" campaign promotes the adoption of Electric Vehicles (EVs) for urban deliveries and ride-hailing services. This initiative envisions a transformative shift in the transportation sector by urgently transitioning to zero-emission vehicles. Hence, Statement 4 is correct.

36. Consider the following statements regarding the phenomenon of Gravitational lensing.

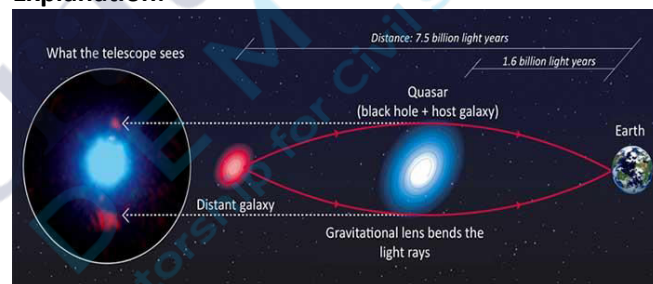
1. Gravitational lensing is opposite to Einstein's theory of general relativity.
2. A gravitational lens can occur when a huge amount of matter, like a cluster of galaxies, creates a gravitational field that distorts and magnifies the light from distant galaxies that are behind it but in the same line of sight.
3. Gravitational lenses act like natural cosmic telescopes.
4. More massive the object, the stronger is its gravitational field.

Which of the above statements is/are correct?

- (a) 1, 2, 3
- (b) 1, 2, 4
- (c) 1, 3, 4
- (d) 2, 3, 4

Answer: (D)

Explanation:



- The phenomenon of gravitational lensing occurs when a huge amount of matter, such as a massive galaxy, cluster of galaxies or a black hole, creates a gravitational field that distorts and magnifies the light from objects behind it. Hence, statement 2 is correct.
  - Gravitational lensing is based on Einstein's theory of general relativity (Mass bend light). Hence, statement 1 is not correct.
  - Normal lenses such as the ones in a magnifying glass work by bending light rays that pass through them in a process known as refraction, in order to focus the light somewhere else.
  - Similarly, the gravitational field of a massive object causes light rays passing close to that object to be bent and refocused somewhere else.
  - The more massive the object, the stronger its gravitational field and hence the greater the bending of light rays – just like using denser materials to make optical lenses results in a greater amount of refraction. Hence, statement 4 is correct.
  - In effect, gravitational lenses act like natural cosmic telescopes. Hence, statement 3 is correct.
- Hence, option (d) is correct.

### 37. Consider the following statements.

1. Massive stars with masses around 10-25 times the mass of the Sun collapse and shrink to form neutron stars.
2. A small number of neutron stars become magnetars which possess intense magnetic fields.
3. There are millions of magnetars spotted within the Milky Way Galaxy.

Which of the above statements is/are correct?

- (a) 1, 3  
(b) 1, 2  
(c) 1 only  
(d) 1, 2, 3

Answer: (B)

Explanation:

How do magnetars form?

During the course of their evolution, massive stars – with masses around 10-25 times the mass of the Sun – eventually collapse and shrink to form very compact objects called neutron stars. **A subset of these neutron stars are the so-called magnetars which possess intense magnetic fields.** These are highly dense and have breathtakingly high rotation speeds – they have **rotational periods that can be just 0.3 to 12.0 seconds.**

**Stellar fireworks**  
The study characterised a short-lived flare which briefly lit up this star

- Stars having around 10-25 times the solar mass eventually shrink to form neutron stars
- A small number of neutron stars become the so-called magnetars which possess intense magnetic fields
- Magnetars are relatively rare objects, with only about thirty having been spotted within the Milky Way so far
- Magnetars emit violent flares. It is only during a flare that they can be observed, and these flares are so short-lived that it presents a major challenge
- The observed giant flare lasted approximately 160 milliseconds and during this time the flare spewed as much energy that our Sun will radiate in 1,00,000 years



**Distant star:** An artist's illustration of the magnetar which is about 13 million light years away, in the direction of NGC 253, a prominent galaxy in the Sculptor group of galaxies.  
■ BIRKELAND CENTRE FOR SPACE SCIENCE, UNIVERSITY OF BERGEN AND MOUNT VISUAL

**Note–** This picture explains every aspect of the question. **Magnetars are relatively rare objects, with only about thirty having been spotted within the Milky Way so far. Hence, statement 3 is not correct while statement 1 and 2 are correct. Hence, option (b) is correct.**

Additional Informations–

What is a Magnetar?

- Magnetars are **the most magnetic stars in the universe.**
- It is a **rare compact type of neutron star** teeming with energy and magnetism.
- It is **an exotic type of neutron star**, its defining feature is that it has an ultra-powerful magnetic field.

- The field is about 1,000 times stronger than a normal neutron star and about a trillion times stronger than the Earth's.
- **Magnetars are relatively rare objects**, with only about **thirty having been spotted within the Milky Way so far.**

What is the recent study?

- The **studied magnetar is about 13 million light years away**, in the direction of the NGC 253, a prominent galaxy in the Sculptor group of galaxies.
- Its flare spewed within a few tenths of a second as much energy as the Sun would shed in 100,000 years.
- It was **captured accidentally on April 15, 2020, by the Atmosphere-Space Interactions Monitor instrument (ASIM) of the International Space Station.**
- This is the first study to characterise such a flare from such a distant magnetar.

How do magnetars form?

- During the course of their evolution, massive stars – with masses around 10-25 times the mass of the Sun – eventually collapse and shrink to form very compact objects called neutron stars.
- **A subset of these neutron stars is the so-called magnetars which possess intense magnetic fields.**
- These are highly dense and have breathtakingly high rotation speeds – they have **rotational periods that can be just 0.3 to 12.0 seconds.**

What characterises Magnetars?

(1) Violent flares

- The **observed giant flare lasted approximately 160 milliseconds** and during this time 1039 joules of energy was released.
- The flare spewed as much energy in a tenth of a second that our Sun will radiate in 100,000 years.

(2) Starquakes

- Eruptions in magnetars are believed to be due to instabilities in their magnetosphere, or **“starquakes” produced in their crust – a rigid, elastic layer about one kilometre thick.**
- This causes waves in the magnetosphere, and interaction between these waves causes dissipation of energy.

38. Consider the following statements.

1. Web 1.0 was the first generation of the global digital communications network.
2. Web 1.0 is often referred to as “read and write” internet, where users were able to communicate with servers and other users leading to the creation of the social web.

3. Web 3.0 is used to refer to the next generation of Internet – a “read-write-execute” web with decentralization.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 1, 2
- (c) 1, 3
- (d) 2, 3

**Answer: (C)**

**Explanation:**

### Web 1.0 / 2.0 / 3.0 Summary

Crawl	Walk	Run
Web 1.0	Web 2.0	Web 3.0
Mostly Read-Only	Wildly Read-Write	Portable & Personal
Company Focus	Community Focus	Individual Focus
Home Pages	Blogs / Wikis	Lifestreams / Waves
Owning Content	Sharing Content	Consolidating Content
Web Forms	Web Applications	Smart Applications
Directories	Tagging	User Behavior
Page Views	Cost Per Click	User Engagement
Banner Advertising	Interactive Advertising	Behavioral Advertising
Britannica Online	Wikipedia	The Semantic Web
HTML / Portals	XML / RSS	RDF / RDFS / OWL

- Web 1.0 was the **first generation of the global digital communications network**. It is often referred to as the “read-only” Internet made of static web-pages that only allowed for passive engagement. **Hence, statement 1 is correct and statement 2 is not correct.**
- **The next stage in the evolution of the web was the “read and write” Internet.** Users were now able to communicate with servers and other users leading to the creation of the social web. **This is the world wide web that we use today.** Web 3.0 is an evolving term that is used to refer to the next generation of Internet – a “read-write-execute” web – with decentralization as its bedrock. **Hence, statement 3 is correct.**
- It speaks about a **digital world, built leveraging the blockchain technology**, where people are able to interact with each other without the need of an intermediary. **Web 3.0 will be driven by Artificial Intelligence and machine learning** where machines will be able to interpret information like humans.

**39. Consider the following statements regarding Fibre optics technology.**

1. The data transmission in fibre optic technology is performed in the form of light rays.
2. The signal transmission phenomenon of fibre optics is a function of total internal reflection.

3. Fibre optics are highly sensitive to electromagnetic and radio frequency interference.

**Which of the above statements is/are correct?**

- (a) 1, 2
- (b) 1, 3
- (c) 2, 3
- (d) 1, 2, 3

**Answer: (A)**

**Explanation:**

- Fibre optics or optical fibre is a **flexible, transparent, glass-drawn strands of micro diameter**. The manufacturing material of fibre optic strands can be plastic or glass (Silica) according to the requirement. **The optical fibre technology is basically the transmission of light through these thin strands of optical fibre.** In this technology, multiple optical fibres are bundled together to form a fibre optic cable for signal transmission purposes. **The data transmission in fibre optic technology is performed in the form of light rays. Hence, statement 1 is correct.** **The transmission principle of fibre optics is detailed as follows.**

- The signal transmission phenomenon of fibre optics is a function of total internal reflection. **Hence, statement 2 is correct.**
- Basically, fibre optic transmits data in the form of a photon beam that is a light wave. **Reflection and refraction are characteristics of the light wave.**
- When the light beam enters the core diameter, it incidents on the core at a small incident angle.
- However, due to the low refractive index of the cladding material, the light beam faces total reflection inside the core. This is called **total internal reflection**.
- Due to the higher incident angle than the critical angle, the phenomenon of total internal reflection repeats periodically causing the light beam to travel in a zigzag manner.
- By following the total internal reflection several times, the light beam reaches the receiving end of the fibre.
- Fibre optics are highly immune to electromagnetic and radio frequency interference. This helps in uninterrupted signal transmission via fibre optic cables. **Hence, statement 3 is not correct.**

**40. Consider the following statements regarding Quantum Technology.**

1. Quantum computers compute in qubits.
2. It has the potential to rapidly accelerate the development of artificial intelligence.
3. Earthquakes, Tsunamis, drought and floods may become more predictable with quantum applications.

4. The country's first quantum computing-based telecom network link is now operational in the national capital.

**Which of the above statements is/are correct?**

- a) 1, 2
- b) 2, 3
- c) 1, 2, 3
- d) 1, 2, 3, 4

**Answer:** (D)

**Explanation:**

- Quantum Technology is based on the principles of Quantum mechanics that was developed in the early 20th century to describe nature in the small — at the scale of atoms and elementary particles.
- **Conventional computers process information in 'bits' or 1s and 0s**, following classical physics under which our computers can process a '1' or a '0' at a time.
- **Quantum computers compute in 'qubits'** (or quantum bits). They exploit the properties of quantum mechanics, the science that governs how matter behaves on the atomic scale. **Hence, statement 1 is correct.**

**What can quantum computers do?**

- Quantum computers aren't just about doing things faster or more efficiently. They'll let us do things that we couldn't even have dreamed of without them. Things that even the best supercomputer just isn't capable of. **They have the potential to rapidly accelerate the development of artificial intelligence. Google is already using them to improve the software of self-driving cars.** They'll also be vital for modelling chemical reactions. **Hence, statement 2 is correct.**
- **Tsunamis, drought, earthquakes and floods may become more predictable with quantum applications.** The collection of data regarding climate change can be streamlined in a better way through quantum technology. This in turn will have a profound impact on agriculture, food technology chains and the limiting of farmland wastage. **Hence, statement 3 is correct.**
- The country's first quantum computing-based telecom network link is now operational in the national capital. **Hence, statement 4 is correct.**

**Hence, option (d) is correct.**

**Difference between Quantum Computing and Classical Computing**

Quantum Computing	Classical Computing
Calculates with Qubits, that can have values 0 or 1 or both simultaneously	Calculates with transistors, that can have values either 0 or 1
Power increases exponentially in proportion to the number of Qubits	Power increases linearly with the number of transistors
Have high error rates	Have lower error rates
Operates at close to absolute zero temperature	Operates at room temperature
Much secured to work with	Less secured to work with
Suited for big/complex tasks, such as optimization problems, data analysis and simulations	Suited for everyday processing tasks

**41. Consider the following statements regarding Red Sanders.**

1. Red Sanders is a flora species that is endemic to a distinct tract of forests in the Eastern Ghats region of Andhra Pradesh.
2. Red Sanders is also listed in Appendix II of the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES).
3. Operation Rakth Chandan is related to the surveillance of the export of Red Sanders.
4. The export of Red Sanders from India is prohibited as per the Foreign Trade Policy.

**Which of the above statements is/are correct?**

- (a) 1, 2, 3
- (b) 2, 3, 4
- (c) 1, 2
- (d) 1, 2, 3, 4

**Answer:** (D)

**Explanation:**

• The **Directorate of Revenue Intelligence (DRI) had recently recovered 14.63 MT of Red Sanders.** Intelligence was developed by DRI that red sanders logs were concealed in an export consignment declared to contain "assorted toiletries", for being smuggled out of the country. **Accordingly, Operation Rakth Chandan was launched** and close surveillance was kept on the suspect export consignment. **Hence, statement 3 is correct.**

• Red Sanders is a flora species that is endemic to a distinct tract of forests in the Eastern Ghats region of Andhra Pradesh **and falls under the 'endangered list' in the International Union for Conservation of Nature (IUCN) Red List.** Hence, **statement 1 is correct.**

• **Red Sanders is also listed in Appendix II of the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES).** Hence, **statement 2 is correct.**

• Its rich hue and therapeutic properties are responsible for its high demand across Asia, particularly China, for use in cosmetics, medicinal products and high-end furniture/woodcraft. **The export of Red Sanders from**

India is prohibited as per the Foreign Trade Policy.  
Hence, statement 4 is correct.  
Hence, option (d) is correct.

42. Consider the following statements regarding Snow Leopard.

1. Spiti Valley of Himachal Pradesh provides a good habitat for the Snow leopard and its prey species.
2. Siberian ibex and blue sheep are the important prey species for Snow leopards.
3. They are Classified as 'Critically Endangered' by the International Union for Conservation of Nature (IUCN) Red List and listed in Schedule-I species of the Indian Wildlife (Protection) Act, 1972.

Which of the above statements is/are correct?

- (a) 1, 2
- (b) 1, 3
- (c) 2, 3
- (d) 1, 2, 3

Answer: (A)

Explanation:

· The study under the National Mission on Himalayan Studies revealed a strong link between habitat use by Snow Leopards and their prey species Siberian ibex and blue sheep. Spiti Valley possessed a good habitat in and outside the protected areas which could support a viable population of both snow leopard and its prey species. Hence, statement 1 is correct.

· Classified as 'Vulnerable' by the International Union for Conservation of Nature (IUCN) Red List and listed in Schedule-I species of the Indian Wildlife (Protection) Act, 1972, snow leopards are elusive mountain cats whose survival depends primarily on wild ungulates. Hence, statement 3 is not correct.

· Higher up in the mountains, predators such as snow leopards regulated the populations of herbivores such as the blue sheep and Siberian ibex, thereby safeguarding the health of grasslands and a long-term absence of snow leopards could cause trophic cascades as ungulate populations would likely increase, leading to depletion of vegetation cover. Hence, statement 2 is correct.

· Snow leopards have a vast but fragmented distribution across the mountainous landscape of central Asia, which covers different parts of the Himalayas such as Ladakh, Himachal Pradesh, Uttarakhand, and Sikkim.

Hence, option (a) is correct.

43. Mosses is a bioindicator. What do you understand by this statement?

1. It reflects changes to ecosystems such as pollution.
2. It cannot be cloned or genetically engineered.
3. It does not contain RNA.

Select the correct answer code:

- (a) 1 only
- (b) 2, 3
- (c) 3 only
- (d) 1, 2

Answer: (A)

Explanation:

· Mosses are a common flowerless plant found in all cities, especially in damp (humid) or shady locations. It generally absorbs water and nutrients from their immediate environments.

· So, according to scientists, delicate mosses found on rocks and trees in cities around the world can be used as a low-cost bioindicator to monitor urban pollution and to measure the impact of atmospheric change.

· As a bioindicator, Mosses responds to pollution or drought stress by changing its shape, density or disappearance. This characteristic will allow scientists to calculate atmospheric alterations and air pollution.

Statements 2 and 3 are not related to the statement 'Mosses is a bioindicator'.

Hence, option (a) is correct.

44. Consider the following statements about Coalbed Methane (CBM).

1. CBM is formed during the process of coalification (the transformation of plant material into coal).
2. Water discharges from CBM development can potentially pollute downstream water sources.
3. CBM can be used as feedstock for fertilisers.

Which of the above statements is/are correct?

- (a) 1, 2
- (b) 1, 3
- (c) 2, 3
- (d) 1, 2, 3

Answer: (D)

Explanation:

· Coalbed methane (CBM) is an unconventional form of natural gas found in coal deposits or coal seams. CBM is formed during the process of coalification (the transformation of plant material into coal). Hence, statement 1 is correct.

· CBM can be used for power generation, as compressed natural gas (CNG) auto fuel, as feedstock for fertilisers, industrial uses such as cement production, rolling mills, steel plants, and methanol production. Hence, statement 3 is correct.

· CBM production behaviour is complex and difficult to predict in the early stages of recovery. Another concern is the effect water discharges from CBM development could potentially have on downstream water sources. Disposal of the highly salinized water that must be removed in order to release the methane

creates a challenge, as its introduction into freshwater ecosystems could have adverse effects. Hence, **statement 2 is correct.**

Hence, **option (d) is correct.**

#### Additional Information-

Coalbed methane (CBM): CBM, like **shale gas, is extracted from what is known as unconventional gas reservoirs — where gas is extracted directly from the rock that is the source of the gas** (shale in the case of shale gas and coal in case of CBM). The methane is held underground within the coal and is extracted by drilling into the coal seam and removing the groundwater. The resulting drop in pressure causes the methane to be released from the coal.

#### 45. Consider the following statements regarding Gas Hydrates

1. Gas hydrates occur naturally in some marine sediments and within permafrost.
2. Their decomposition can release large amounts of methane that could impact Earth's climate.
3. Sudden release of pressurised methane gas from ocean bases may cause submarine landslides, which in turn can trigger tsunamis.

Which of the above statements is/are correct?

- (a) 1, 2
- (b) 1, 3
- (c) 2, 3
- (d) 1, 2, 3

Answer: (D)

**Explanation:** Gas hydrates are **ice-like crystalline minerals that form when low molecular weight gas** (such as methane, ethane, or carbon dioxide) combines with water and freezes into a solid under low temperature and moderate pressure conditions. • **Most gas hydrates are formed from methane (CH<sub>4</sub>), which has led to the terms "gas hydrate" and "methane hydrate" often being used interchangeably.** • On Earth, gas hydrates occur naturally in some marine sediments and within and beneath permafrost. Hence, **statement 1 is correct.**

• They are also speculated to form on other planets. • **Gas hydrate deposits may contain roughly twice the carbon contained in all reserves of coal, oil, and conventional natural gas combined, making them a potentially valuable energy resource.** Their decomposition can release large amounts of methane, which is a greenhouse gas that could impact Earth's climate. Hence, **statement 2 is correct.**

• Sudden release of pressurized methane gas may cause submarine landslides, which in turn can trigger tsunamis. Hence, **statement 3 is correct.**

Hence, **option (d) is correct.**

#### 46. Consider the following statements about the Indian Councils Act of 1909.

1. It increased the size of the legislative councils, both Central and provincial.
2. For the first time, it provided for the association of Indians with the executive Councils of the Viceroy and Governors.
3. It introduced a system of communal representation for Muslims and Christians.

How many of the above statements is/ are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

**Explanation:** The **Indian Councils Act of 1909 is also known as Morley-Minto Reforms.** It considerably increased the size of the legislative councils, both Central and provincial. **It provided (for the first time) for the association of Indians with the executive Councils of the Viceroy and Governors.** It introduced a **system of communal representation** for Muslims by accepting the concept of a 'separate electorate'. Under this, the Muslim members were to be elected only by Muslim voters. Hence, **statement 3 is incorrect.**

#### 47. Consider the following:

1. Right to make salt in coastal villages for personal consumption and sale.
2. Right to peaceful and non-aggressive picketing
3. Acceptance of Gandhiji's suggestion for enquiry into police excesses
4. Release of all political prisoners not convicted of violence

Which of the above are included under the Gandhi-Irwin Pact?

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 2 and 4
- (d) All of the above

Answer: (C)

**Explanation:**

• **The Gandhi-Irwin Pact placed the Congress on an equal footing with the government.**

• **Irwin on behalf of the government agreed on—**

- immediate release of all political prisoners not convicted of violence;
- remission of all fines not yet collected;
- return of all lands not yet sold to third parties;
- lenient treatment to those government servants who had resigned; right to make salt in coastal villages for personal consumption (not for sale);

- right to peaceful and non-aggressive picketing; and
- withdrawal of emergency ordinances.

**The viceroy, however, turned down two of Gandhi's demands—**

- public inquiry into police excesses, and
- commutation of Bhagat Singh and his comrades' death sentence to life sentence.

Gandhi on behalf of the Congress agreed—

- to **suspend the civil disobedience movement**, and
- to participate in the **next Round Table Conference**

**48. Consider the following statements regarding Dholavira:**

- Here the walls were made of sandstone or limestone instead of mud bricks in many other Harappan sites.
- It was a hub of manufacturing jewellery made of shells and semi-precious stones.
- Extensive mortal remains of humans have been discovered at Dholavira.

**How many of the above statements is/are correct?**

- Only one
- Only two
- All three
- None

**Answer: (B)**

**Explanation: The site has a fortified citadel, a middle town and a lower town with walls made of sandstone or limestone instead of mud bricks in many other Harappan sites.** Archaeologists cite a cascading series of water reservoirs, outer fortification, two multi-purpose grounds — one of which was used for festivities and as a marketplace — nine gates with unique designs, and funerary architecture featuring tumulus — hemispherical structures like the Buddhist Stupas— as some of the unique features of the Dholavira site. **While, unlike graves at other IVC sites, no mortal remains of humans have been discovered at Dholavira.** Remains of a copper smelter indicate that Harappans, who lived in Dholavira, knew metallurgy. It is **believed that traders of Dholavira used to source copper ore from present-day Rajasthan Oman and UAE and export finished products.** It was also a hub of manufacturing jewellery made of shells and semi-precious stones, like agate and used to export timber. **Hence, statement 3 is incorrect.**

**49. Rekhapida, pidhadeul and khakra are classifications of the temple architecture of:**

- Rajasthan
- Odisha
- Assam
- Tamil Nadu

**Answer: (B)**

**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 (b) is correct.**

**50. Consider the following statements, with reference to the views of Namdev, a bhakti saint:**

- As per Namdev, the eternal reality of Brahmana is neither nirguna nor saguna.
- Namdev opposed the principles of Vaishnavism and built his popular movement against Vaishnavist elitism.

**Which of the above statements is/are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Answer: (D)**

**Explanation: His philosophy contains both nirguna and saguna Brahman elements, with monistic themes. Nirguna Brahman means the eternal reality with no qualities of its now, similar to nothingness. Saguna means those with divine qualities such as love, light, compassion etc.** Namdev was influenced by Vaishnavism and became widely known in India for his devotional songs set to music. The literary works of Namdev were influenced by **Vaishnava philosophy. Hence, both statements are incorrect.**

**51. Consider the following statements regarding 'Objectives resolution':**

- The resolution laid down the fundamentals and philosophy of the constitutional structure.
- This Resolution was not unanimously adopted by the Constituent Assembly.
- It missed out on the safeguards for minorities, backward and tribal areas.

**How many of the above statements is/are correct?**

- Only one
- Only two
- All three
- None

**Answer: (A)**

**Explanation: In December, 1946, Jawaharlal Nehru moved the historic 'Objectives Resolution' in the Assembly. It laid down the fundamentals and philosophy of the constitutional structure. It included**

the major values and ideals of sovereignty, republic, fundamental rights, directive principles, non-interference etc. It sought to secure to ideals mentioned in the Preamble. It provided adequate safeguards for minorities, backward and tribal areas, and depressed and other backward classes. **This Resolution was unanimously adopted by the Assembly on January 22, 1947.** It influenced the eventual shaping of the constitution through all its subsequent stages. **Its modified version forms the Preamble of the present Constitution. Hence, only statement 1 is correct.**

52. Article 368 gives Parliament the power to amend the Constitution and describes its procedure. Consider the following statements regarding the legal position with regard to the amendment of this article itself.

1. The article can be amended by the Parliament only if the amendment does not destroy the basic structure of the Constitution.
2. The article can be amended by the Parliament only if a bill to this effect was introduced 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: (A)

**Explanation:** An amendment of the Constitution can be initiated only by the introduction of a bill for the purpose in either House of Parliament (Lok Sabha & Rajya Sabha) and not in the state legislatures. The bill can be introduced either by a minister or by a private member and does not require prior permission of the president. **Hence, statement 2 is incorrect.**

53. A resolution of disapproval of a national emergency is different from a resolution approving the continuation of a proclamation in which of the following respects?

1. Disapproval of emergency requires the approval of both houses, whereas approval of proclamation can be done only by the Lok Sabha.
2. Disapproval requires a special majority, whereas approval requires a simple majority.

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: (C)

**Explanation:** A resolution of disapproval is different from a resolution approving the continuation of a proclamation in the following two respects:

· **The first one (disapproval) is required to be passed by the Lok Sabha only, while the second one needs to be passed by both Houses of Parliament.** The first one is to be adopted by a simple majority only, while the second one needs to be adopted by a special majority. This is done to put greater safeguards as an emergency in an extraordinary measure and must be resorted to only in exceptional circumstances. **Hence, both statements are incorrect.**

54. Consider the following statements regarding Fundamental Duties:

1. The Part IV-A of the Constitution which consists of only one Article 51-A specifies the eleven Fundamental Duties.
2. The 91st Constitutional Amendment Act of 2002 added one fundamental duty to the constitution.
3. Like the Directive Principles, the Fundamental duties are also non-justiciable in nature.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:**

· The original constitution did not provide for the Fundamental Duties of the citizens. **These were added during the operation of internal emergency (1975–77) by the 42nd Constitutional Amendment Act of 1976 on the recommendation of the Swaran Singh Committee.** The 86th Constitutional Amendment Act of 2002 added one more fundamental duty.

· **The Part IV-A of the Constitution (which consists of only one Article 51-A) specifies the eleven Fundamental Duties viz.,** to respect the Constitution, national flag and national anthem; to protect the sovereignty, unity and integrity of the country; to promote the spirit of common brotherhood amongst all the people; to preserve the rich heritage of our composite culture and so on.

· The fundamental duties serve as a reminder to citizens that while enjoying their rights, they have also to be quite conscious of the duties they owe to their country, their society and to their fellow citizens. **However, like the Directive Principles, the duties are also non-justiciable in nature.**

**Hence, statement 2 is incorrect.**

55. The Directive Principles resemble the 'Instrument of Instructions' enumerated in the:



- (a) Montague Chelmsford Act 1919
- (b) Nehru Report, 1928
- (c) Government of India Act of 1935
- (d) Objectives Resolution, 1946

**Answer:** (C)

**Explanation:** Dr B R Ambedkar had said 'the Directive Principles are like the instrument of instructions, which were issued to the Governor-General and to the Governors of the colonies of India by the British Government under the Government of India Act of 1935.' **What is called Directive Principles is merely another name for the instrument of instruction.** The only difference is that they are instructions to the legislature and the executive. **Hence, option (c) is correct.**

**56. Which of the following factors affect the onset and intensity of monsoon in India?**

1. Shift of the ITCZ in summer over the Ganga plain
2. Heating of the Tibetan plateau in Indian summer
3. Presence of the tropical easterly jet stream over the Indian peninsula during summer.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** The monsoons are experienced in the tropical area roughly between 20° N and 20° S. To understand the mechanism of the monsoons, the following facts are important:

- a. The differential heating and cooling of land and water creates low pressure on the landmass of India while the seas around experience comparatively high pressure.
- b. The **shift of the position of Inter Tropical Convergence Zone (ITCZ) in summer, over the Ganga plain** (this is the equatorial trough normally positioned about 5°N of the equator – also known as the monsoon trough during the monsoon season).
- c. The **presence of the high-pressure area, east of Madagascar**, approximately at 20°S over the Indian Ocean. The intensity and position of this high-pressure area affect the Indian Monsoon.
- d. The Tibetan plateau gets intensely heated during summer, which results in strong vertical air currents and the formation of high pressure over the plateau at about 9 km above sea level.
- e. **The movement of the westerly jet stream** to the north of the Himalayas and the **presence of the tropical easterly jet stream** over the Indian peninsula during summer.

**Hence, all statements are correct.**

**57. If high pressure develops over North-western India, it may lead to:**

- (a) Torrential rains brought by thunderstorms in the region
- (b) Sudden spike in the temperature in the region.
- (c) Dry winds blow from the north-west region towards the south-east region
- (d) Attraction of South-west Monsoon currents

**Answer:** (C)

**Explanation:** Due to a low temperature in the winter season, **high pressure develops over north-western India.** In contrast, low pressure is found over south India, the Arabian Sea and the Bay of Bengal. Therefore, **winds blow from north-west to south-east.** Hence, option (c) is correct.

**58. Consider the following statements regarding Jet streams:**

1. Jet streams are some of the strongest winds in the atmosphere.
2. They are faster in winter when the temperature differences between tropical, temperate, and polar air currents are greater.
3. They help bring summer monsoons to the Indian Ocean.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** Jet streams are some of the strongest winds in the atmosphere. Their speeds usually range from 129 to 225 kilometres per hour, but they can reach more than 443 kilometres per hour. **They are faster in winter when the temperature differences between tropical, temperate, and polar air currents are greater.**

At most times in the Northern and Southern Hemispheres, **there are two jet streams: a subtropical jet stream centred at about 30 degrees latitude and a polar-front jet stream whose position varies with the boundary between polar and temperate air.** A reverse jet stream blows toward the west in tropical high altitudes during the Northern Hemisphere summer. It is **associated with the heating of the Asian continent** and may help bring summer monsoons to the Indian Ocean. **Hence, all statements are correct.**

**59. Consider the following statements:**

1. The expansion created by the “Big Bang” continues even to the present day.
2. After the Big Bang, the Universe became highly opaque and temperatures started rising till the atmosphere was formed.

**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 Big Bang Theory considers the following stages in the development of the universe.

i. In the beginning, all **matter forming the universe existed in one place in the form of a “tiny ball”** (singular atom) with an unimaginably small volume, infinite temperature and infinite density.

ii. **At the Big Bang the “tiny ball” exploded violently. This led to a huge expansion. It is now generally accepted that the event of the big bang took place 13.7 billion years before the present.** The expansion continues even to the present day. As it grew, some energy was converted into matter. There was particularly rapid expansion within fractions of a second after the bang. Thereafter, the expansion has slowed down. **Within the first three minutes of the Big Bang event, the first atom began to form.**

iii. Within 300,000 years from the Big Bang, the temperature dropped to 4,500K (Kelvin) and gave rise to atomic matter. The universe became transparent. **Hence, statement 2 is incorrect.**

**60. The thickness of the troposphere is greater at the equator rather than at the poles because of:**

1. The rotation of the earth pushes the atmosphere near the equator to greater heights.
2. Convection currents leading to thermal expansion of the atmosphere at the equator.

**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 troposphere is thicker at the equator than at the poles because the equator is warmer. The convection currents of air expand the thickness of the troposphere (atmosphere). Thus **the simple reason is thermal expansion of the atmosphere at the equator and thermal contraction near the poles.** Also, the rotation of the earth causes centrifugal force which is strongest near the equator and pushes the atmosphere to greater heights. The thickness of the troposphere

also varies with season. The troposphere is thicker in the summer and thinner in the winter all around the planet. **Hence, both statements are correct.**

**61. Consider the following statements regarding the incremental capital-output ratio (ICOR):**

1. The incremental capital-output ratio (ICOR) is the amount of capital required to produce one unit of output.
2. The lower the ICOR, the less efficient we are in the use of capital.
3. Reducing the cost of capital helps in reducing ICOR.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

· The incremental capital-output ratio (ICOR) is the **amount of capital required to produce one unit of output.** The higher the ICOR, the less efficient we are in the use of capital.

· ICOR is determined by a variety of factors including **technology, skill of manpower, managerial competence and macroeconomic policies.** Thus, delays in the completion of projects, lack of complementary investments in related sectors and the non-availability of critical inputs can all lead to a rise in ICOR. **Hence, statement 2 is incorrect.**

**62. 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
- (b) 1, 2 and 3
- (c) 2, 3 and 4
- (d) 1, 2, 3 and 4

**Answer: (D)**

**Explanation:**

· **Microfinance is a form of financial service that 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.**

**63. Consider the following statements:**

1. The Reserve Bank of India (RBI) normally pays dividends to the Central Government from the surplus income it earns on investments and valuation changes on its dollar holdings and the fees it gets from printing currency.
2. The Reserve Bank of India (RBI) has developed an Economic Capital Framework (ECF) for determining the allocation of funds to its capital reserves so that any risk contingency can be met.
3. The RBI cannot bank on the Contingency Fund in case of any emergency requirement.

**How many of the above statements is/are incorrect?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (A)**

**Explanation:** The RBI normally pays the dividend from the surplus income it earns on investments and valuation changes on its dollar holdings and the fees it gets from printing currency, among others. **The Reserve Bank of India (RBI) has developed an Economic Capital Framework (ECF) for determining the allocation of funds to its capital reserves so that any risk contingency can be met as well as to transfer the profit of the RBI to the government.** The RBI can bank on the Contingency Fund in case of any emergency requirement. **Hence, statement 3 is incorrect.**

**64. 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, or exported, the BoP will be zero.** In this

case, the fiscal deficit need not be zero since a developing country may adopt an expansionary fiscal policy to tackle poverty and unemployment. **Hence, option (d) is correct.**

**65. Consider the following statements about 'Fiat Money':**

1. It is a currency that a government has declared to be legal tender.
2. Its value increases during hyperinflation.
3. It is backed by a physical commodity.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (A)**

**Explanation:** Fiat money is a currency that a government has declared to be legal tender, but it is not backed by a physical commodity. The value of fiat money is derived from the relationship between supply and demand rather than the value of the material from which the money is made. **Because fiat money is not linked to physical reserves, it risks becoming worthless due to hyperinflation. Hence, only statement 1 is correct.**

**66. Consider the following statements regarding "DigiLocker":**

1. It is a flagship initiative of the Ministry of Electronics & IT (MeitY) under the Digital India program.
2. Documents in the DigiLocker system are deemed to be at par with original physical documents.
3. It is a platform to issue/store and digitally verify government documents and certificates.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:** DigiLocker is a flagship initiative of MeitY under the Digital India program. **It is a platform to issue/store and digitally verify government documents and certificates.** Documents in the DigiLocker system are deemed to be at par with original physical documents under the Information Technology Rules, 2016. Digital Locker is aimed at minimizing the usage of physical documents and enabling the sharing of e-documents across agencies. **Hence, all the statements are correct.**

67. The term “MIMO (multiple input, multiple output)” often seen in news is related to which of the following?

- (a) Wireless communications
- (b) Biotechnology
- (c) Power grid technology
- (d) Hybrid technology

**Answer:** (A)

**Explanation:** MIMO (multiple input, multiple output) is an antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver). The antennas at each end of the communications circuit are combined to minimize errors, optimize data speed and improve the capacity of radio transmissions by enabling data to travel over many signal paths at the same time. Hence, option (a) is correct.

68. Which of the following statements is not correct regarding the National Super Computing Mission?

- (a) PARAM PORUL is a state-of-the-art Supercomputer at NIT Warangal.
- (b) PARAM PORUL is based on Direct Contact Liquid Cooling technology.
- (c) PARAM Shivay was the first Supercomputer assembled indigenously.
- (d) The majority of the components used to build PARAM PORUL have been manufactured and assembled within the country.

**Answer:** (A)

**Explanation:** PARAM PORUL is a state-of-the-art Supercomputer at NIT Tiruchirappalli under Phase 2 of the National Supercomputing Mission (NSM). The majority of the components used to build PARAM PORUL have been manufactured and assembled within the country. It is based on Direct Contact Liquid Cooling technology to obtain high-power usage effectiveness thereby reducing the operational cost. Under NSM, to date 15 supercomputers have been installed across the nation with a computing capacity of 24 petaflops. PARAM Shivay was the first Supercomputer assembled indigenously. Hence, statement (a) is not correct.

69. Consider the following statements regarding “hermit”:

- 1. It is a new spyware with the capability to affect both Android and iOS devices.
- 2. It is commercial spyware used by governments.

**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:** Hermit is a new spyware with the capability to affect both Android and iOS devices. Hermit is a commercial spyware known to be used by governments with victims in Kazakhstan, Italy and northern Syria. Hence, both statements are correct.

70. Consider the following statements regarding “Nuclear Fusion”:

- 1. It is a process in which the splitting of nucleuse happens.
- 2. It takes place in a state of matter called plasma.

**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:** Nuclear Fusion is a process by which two light atomic nuclei (for example tritium and deuterium) combine to form a single heavier (Helium) one while releasing massive amounts of energy. Fusion reactions take place in a state of matter called plasma, a hot, charged gas made of positive ions and free-moving electrons with unique properties distinct from solids, liquids, or gases. Hence, statement 1 is incorrect.

71. Consider the following statements:

- 1. Ecotone is a zone of junction between two or more diverse ecosystems.
- 2. Ecotone is always larger than a biome.
- 3. A well-developed ecotone may contain some unique organisms which might be absent in the adjacent ecosystems.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Ecotone is a zone of junction between two or more diverse ecosystems. E.g. the mangrove forests represent an ecotone between marine and terrestrial ecosystems. It may be very narrow or quite wide, but not larger than a biome which is a much larger entity. Well-developed ecotones contain some organisms which are entirely different from that of the adjoining communities. Hence, statement 2 is incorrect.

72. Consider the following statements regarding the benefits of Pulses on the Environment:

1. Pulses perform biological fixation of environmental nitrogen.
2. Pulses enhance soil fertility and reduce the consumption of major fertilisers required for the cultivation of food crops.
3. The roots of pulses and legumes contain soil-enriching bacteria collectively known as Rhizobium.

How many of the above statements is/are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

**Explanation:** The roots of pulses and legumes contain soil-enriching bacteria collectively known as Rhizobium. Therefore pulses perform biological fixation of environmental nitrogen. They also increase organic matter in the soil, improve quality and maintain its biodiversity. Pulses enhance fertility and reduce the consumption of major fertilisers required for the cultivation of food crops by millions of tonnes globally. Hence, all statements are correct.

73. Consider the following statements:

1. Chemosynthetic bacteria obtain their energy from the oxidation of inorganic molecules.
2. Chemosynthetic bacteria cannot survive without the presence of sunlight.

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 energy required for life within the biosphere usually comes from the sun. But Chemosynthetic bacteria are organisms that use inorganic molecules as a source of energy and convert them into organic substances. They do not need sunlight for their survival. Chemosynthetic bacteria, unlike plants, obtain their energy from the oxidation of inorganic molecules, rather than photosynthesis. Chemosynthetic bacteria use inorganic molecules, such as ammonia, molecular hydrogen, sulfur, hydrogen sulfide and ferrous iron to produce the organic compounds needed for their subsistence. Most chemosynthetic bacteria live in environments where sunlight is unable to penetrate and which are

considered inhospitable to most known organisms. Hence, statement 2 is incorrect.

74. Consider the following statements:

1. In the aquatic environment, the sediment characteristics often determine the type of benthic animals that can thrive there.
2. Like humans, plants also have mechanisms to maintain internal temperature.
3. Very small animals are rarely found in Polar Regions since thermoregulation is energetically expensive for these animals.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

**Explanation:**

· The mechanisms used by most mammals to regulate their body temperature are similar to the ones that we humans use. We maintain a constant body temperature of 37°C. In summer, when the outside temperature is more than our body temperature, we sweat profusely.

· The resulting evaporative cooling, similar to what happens with a desert cooler in operation, brings down the body temperature. In winter when the temperature is much lower than 37°C, we start to shiver, a kind of exercise which produces heat and raises the body temperature. Plants, on the other hand, do not have such mechanisms to maintain internal temperatures.

· Thermoregulation is energetically expensive for many organisms. This is particularly true for small animals like shrews and hummingbirds. Heat loss or heat gain is a function of surface area. Since small animals have a larger surface area relative to their volume, they tend to lose body heat very fast when it is cold outside; then they have to expend much energy to generate body heat through metabolism. This is the main reason why very small animals are rarely found in Polar Regions.

Hence, statement 2 is incorrect.

75. Which of the following are the key elements that lead to variation in the physical and chemical conditions of different habitats?

1. Temperature
2. Pathogens
3. Soil
4. Predators
5. Competitors
6. Light

**How many of the above options are correct?**

- (a) Only three
- (b) Only four
- (c) Only five
- (d) All six

**Answer:** (D)

**Explanation:** The most important ones are **temperature, water, light and soil**. We must remember that the physico-chemical (abiotic) components alone do not characterise the habitat of an organism completely; the habitat includes biotic components – **pathogens, parasites, predators and competitors** – of the organism with which they interact constantly. **Hence, all are correct.**

**76. Consider the following statements:**

- 1. Buddhism and Jainism are part of the Shraman tradition.
- 2. Stupa, Vihara and Chaitya are part of only Buddhist religion
- 3. Yaksha worship is characteristic of all three main religions that is Buddhism, Hinduism and Jainism.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The sixth century BCE marks the beginning of new religious and social movements in the Gangetic valley in the form of Buddhism and Jainism which were part of the shraman tradition. **Stupa, Vihara and chaitya are part of Buddhist and Jaina monastic complexes but the largest number belongs to the Buddhist religion.** The yakshas are a broad class of nature spirits, usually benevolent, but sometimes mischievous or capricious, connected with water, fertility, trees, the forest, treasure and wilderness. **They appear in Hindu, Jain and Buddhist texts, as well as ancient and medieval era temples of South Asia and Southeast Asia as guardian deities. Hence, statement 2 is incorrect.**

**77. 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 painting sites from south India

**Answer:** (D)

**Explanation:** The above-mentioned sites are Neolithic painting 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.**

**78. With respect to the Indian freedom struggle, how is the word “Swadeshi” different from “boycott”?**

- 1. Swadeshi was essentially an economic movement, boycott was not.
- 2. While Swadeshi attracted the lower strata of Indian society, Boycott attracted the higher strata.

**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 people had adopted the twin programmes of ‘Boycott’ and ‘Swadeshi’ as parts of one and the same movement. **These two words are two sides of the same coin and both were used as economic as well as political tools.** Boycott referred to the boycott of British goods in order to register a protest with the British public against the grave injustice inflicted upon Bengal. **Boycott was a seemingly negative programme and Swadeshi as its positive corollary was accepted along with.** Swadeshi meant the use of, and encouragement to, native products as against foreign goods. Thus, the Boycott and Swadeshi movement brought all classes of Indian society, particularly in Bengal to a common platform for a national cause. **Hence, both statements are incorrect.**

**79. Consider the following regarding Palaeolithic age:**

- 1. The Palaeolithic period was a short period of the prehistoric period.
- 2. Ostriches were found in India during the Palaeolithic period.
- 3. It is characterized by the use of knapped stone tools, although wood and bone tools cannot be ascribed to this age.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:**

· The Palaeolithic period extends from 2 million years ago to about 12,000 years ago. This long stretch of time is divided into the **Lower, Middle and Upper Palaeolithic**. This long span of time covers 99% of human history. **Hence, statement 1 is incorrect.**

· The Palaeolithic Age is characterized by the use of knapped stone tools, although at the time humans also used wood and bone tools. **Hence, statement 3 is incorrect.**

· Stone tools found during this period are generally tiny and are called microliths. Microliths were probably stuck onto handles of bone or wood to make tools such as saws and sickles. **Ostriches were found in India during the Palaeolithic period.** The climate during the Palaeolithic Age consisted of a set of glacial and interglacial periods in which the climate periodically fluctuated between warm and cool temperatures. **Hence, statement 2 is correct.**

**80. In Mughal India, Malikana was a tax portion related to:**

- (a) Service taxes
- (b) Military expeditions
- (c) Custom duties
- (d) Land revenue

**Answer:** (A)

**Explanation:** In the Mughal Empire, zamindars had hereditary rights to collect land revenues which could go up to 25 percent of the revenue. They generally made collections from the individual peasants at rates fixed by tradition or by themselves and paid a fixed tax to the state. **The difference between their collections and the amount paid to the state was their personal income.** If the state demand reached the maximum that the peasant could pay, a deduction of 10 percent was made from the total amount of revenue and paid to the Zamindars as malikana. **Hence, option (a) is correct.**

**81. Consider the following statements:**

1. Article 44 of the Indian constitution says, "The state shall endeavour to secure a Uniform Civil Code for the citizens throughout the territory of India."

2. A Uniform Civil Code (UCC) would provide for one law for the entire country, applicable to all religious communities in their personal matters such as marriage, divorce, inheritance, and adoption.

3. The principles laid down in Part IV of the Indian Constitution are fundamental in the governance of the country and shall be enforceable by any court 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:** A UCC would provide for one law for the entire country, applicable to all religious communities in their personal matters such as marriage, divorce, inheritance, adoption, etc. **Article 44 of the Indian constitution says, "The state shall endeavour to secure a Uniform Civil Code for the citizens throughout the territory of India."** Article 44 is one of the Directive Principles of State Policy, described in Part IV of the Constitution. According to Article 37, "The provisions contained in this Part shall not be enforceable by any court, but the principles therein laid down are nevertheless fundamental in the governance of the country and it shall be the duty of the State to apply these principles in making laws." **Hence, statement 3 is incorrect.**

**82. Consider the following statements:**

1. According to Article 200 of the Constitution of India, the Governor can reserve a bill for the consideration of the President only if the Governor forms an opinion that the Bill would endanger the position of the High Court.

2. The Constitution of India does not mention the grounds on which a Governor may withhold his assent to a Bill.

**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:** Article 200 of the Constitution provides certain options for the Governor to exercise when a Bill reaches him from the Assembly. The provision concerned makes it clear that a Bill can be reserved for the consideration of the President only if the Governor forms an opinion that the Bill would endanger the position of the High Court by whittling away its powers. **The Constitution does not mention any other type of Bill which is required to be reserved for the consideration of the President.** The fact that the Constitution does not mention the grounds on which a Governor may withhold assent to a Bill shows that this

power should be exercised by the Governor extremely sparingly and after very careful consideration of the consequences of such action. **Hence, both statements are correct.**

**83. The Parliament cannot amend these provisions which form the 'basic structure of the Constitution, that include:**

1. Freedom and dignity of the individual
2. Principle of equality
3. Effective access to justice
4. Principle of reasonableness

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3
- (b) 1, 2 and 4
- (c) 1, 2 and 3
- (d) 1, 2, 3 and 4

**Answer: (D)**

**Explanation:** Even though the basic structure doctrine was given by the SC, it has yet to define or clarify as to what constitutes the 'basic structure' of the Constitution. **It is not mentioned anywhere in the constitution, and our understanding of the basic structure comes from the various judgements of the court.**

**The following have emerged as 'basic features' of the Constitution:**

1. **Supremacy of the Constitution;** Sovereign, democratic and republican nature of the Indian polity; Secular character of the Constitution.
2. **Separation of powers between the legislature, the executive and the judiciary;** Federal character of the Constitution; Unity and integrity of the nation; Welfare state (socio-economic justice).
3. **Judicial review;** Freedom and dignity of the individual; Parliamentary system; Rule of law; Harmony and balance between Fundamental Rights and Directive Principles; Principle of equality.
4. **Free and fair elections; Independence of Judiciary;** Limited power of Parliament to amend the Constitution; Effective access to justice; Principle of reasonableness; Powers of the Supreme Court under Articles 32, 136, 141 and 142.

**84. Consider the following statements regarding the President's rule that is imposed under Article 356 of the Constitution:**

1. It cannot be imposed without the written recommendation of the Governor of the concerned state.
2. Every proclamation of the President's rule must be approved by both houses of Parliament within a stipulated time.

**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:**

· **Article 356 empowers the President to issue a proclamation if he is satisfied that a situation has arisen in which the government of a state cannot be carried on in accordance with the provisions of the Constitution.**

Notably, the president can act either on a report of the governor of the state or otherwise (i.e. even without the governor's report).

· **A proclamation imposing the President's Rule must be approved by both Houses of Parliament within two months from the date of its issue.** If approved by both the Houses of Parliament, the President's Rule continues for six months. **Hence, statement 2 is correct.**

**85. A federal government means a government in which:**

- (a) There is a division of powers between the Central and state governments; and also between the federal and state judiciaries
- (b) All the powers are vested in the national government and the regional governments derive their authority from the national government.
- (c) A large number of powers are vested in the national government and the regional governments, with some independent powers, derive their authority from the national government
- (d) Powers are divided between the national government and the regional governments by the Constitution and both operate in their respective jurisdictions independently

**Answer: (D)**

**Explanation: A federal government is one in which powers are divided between the national government and the regional governments by the Constitution itself and both operate in their respective jurisdictions independently.** In a federal model, the national government is known as the Federal government the Central government or the Union government and the regional government is known as the state government or the provincial government. **Hence, option (d) is correct.**

**86. With reference to the Damodar River, consider the following statements.**

1. Damodar River originates from Chota Nagpur plateau.



2. It flows through the rift valley.
3. It is famous as a biological desert.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** The Damodar River originates from **the Chota Nagpur plateau**. This fault flows through the rift valley. **The long route between Giridih and Durgapur is called a biological desert due to pollution.**

**87. India-Sri Lanka is situated between-**

1. Palk Strait
2. New Moore Island
3. Gulf of Mannar
4. Piram Island

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer:** (B)

**Explanation:** India is separated from Sri Lanka by the **Gulf of Mannar and the Palk Strait**. New Moore Island is located in the Bay of Bengal near West Bengal, while Piram Island is located in the Bay of Khambhat.

**88. Consider the following statements:**

1. The natural embankment landform is related to the floodplain.
2. The loop developed by rivers in flood and deltaic plains is called Visarp.

**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:**

· **Natural embankments and slippery barriers are some of the important landforms associated with flood plains.** Natural levees are found along the banks of large rivers. When water spreads over the banks during a flood, due to the low velocity of water, large size debris gets deposited in the form of long ridges on the side banks of the river. **Natural embankments are high along the river and have a gentle slope away from the river.** When the river water recedes or the

river changes its course in horizontal conditions, it forms a series of natural embankments.

· In the wide floodplains and delta plains, the rivers would hardly flow in straight routes. **Loop-like channel patterns develop on floodplains or deltaic plains - called escarpments.** Visarp is not a topography but a type of channel pattern.

**89. Which two island countries are India's neighbours in the Indian Ocean?**

- (a) Mauritius and Seychelles
- (b) Sri Lanka and Maldives
- (c) Indonesia and the Philippines
- (d) Fiji and Papua New Guinea

**Answer:** (B)

**Explanation:**

· **Mauritius and Seychelles are located in the Indian Ocean, but they are not neighbours of India.** They are located in the western Indian Ocean, while India is located in the northern Indian Ocean.

· **Indonesia and the Philippines are countries located to the southeast of India, and they are part of the Southeast Asian region.** They are not considered direct neighbours of India in the Indian Ocean. Indonesia is an archipelago of thousands of islands, and the Philippines consists of over 7,000 islands.

· **Fiji and Papua New Guinea are island nations, but they are located in the Pacific Ocean, much further east of India.** They are not considered neighbours of India in the Indian Ocean region.

· **Sri Lanka is situated to the southeast of India. The Palk Strait, a narrow body of water, separates the Indian state of Tamil Nadu from northern Sri Lanka.** The Gulf of Mannar also lies between southern India and northern Sri Lanka.

· **Maldives is an archipelago located southwest of India in the central Indian Ocean. It is composed of a chain of coral islands and atolls.** Due to its proximity to India's south-western coast, Maldives is another crucial neighbour in the Indian Ocean.

· **Fiji and Papua New Guinea are located in the South Pacific Ocean.**

**90. Consider the following pairs:**

Farming	Meaning
1. Sericulture	maintenance of honey
2. Viticulture	production of grapes
3. Apiculture	cultivation of silkworms
4. Horticulture	art of growing plants

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer:** (B)

**Explanation:**

- **Sericulture, or silk farming**, is the cultivation of silkworms to produce silk.
- **Viticulture** (from the Latin word for vine) is the science, production, and study of grapes.
- **Beekeeping or Apiculture** is the maintenance of honey bee colonies, commonly in man-made hives, by humans.
- **Horticulture** is the science and art of growing (plants) -fruits, vegetables, flowers, and any other cultivar.

**91. Consider the following statements regarding the International Finance Corporation (IFC):**

1. It is an arm of the International Monetary Fund (IMF) that offers investment, advisory, and asset-management services.
2. It encourages private-sector development in developing countries.
3. IFC also focuses on sustainable agriculture, healthcare and education.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The International Finance Corporation (IFC) is an international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in developing countries. **The IFC is a member of the World Bank Group and is headquartered in Washington, D.C. in the United States. It was established in 1956, as the private-sector arm of the World Bank Group, to advance economic development by investing in for-profit and commercial projects for poverty reduction and promoting development. Since 2009, the IFC has focused on a set of development goals that its projects are expected to target. Its goals are to increase sustainable agriculture opportunities, improve healthcare and education, increase access to financing for microfinance and business clients, advance infrastructure, help small businesses grow**

**revenues, and invest in climate health. Hence, statement 1 is incorrect.**

**92. Which of the following factors can lead to a 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 changes 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 changes in consumer behaviour.

**93. The general rise in Gini Coefficient may indicate:**

- (a) Government policies are not inclusive and benefit the rich more than the poor.
- (b) Increasing foreign exchange reserves due to high export potential.
- (c) Budget surplus in consecutive financial years.
- (d) Government policies are inclusive and benefit the disadvantaged groups.

**Answer:** (A)

**Explanation:** The Gini Coefficient is a popular statistical measure to gauge the rich-poor income or wealth divide. **It measures inequality of a distribution — be it of income or wealth — within nations or States. Its value varies anywhere from zero to 1; zero indicates perfect equality and one indicates perfect inequality.** Gini Coefficients can be used to compare the income distribution of a country over time as well. An increasing trend indicates that income inequality is rising independent of absolute incomes. **A general rise in the Gini Coefficient indicates that government**

policies are not inclusive and may be benefiting the rich more than the poor.

94. Consider the following statements regarding Opportunity cost:

1. Opportunity costs represent the potential benefits that an individual, investor, or business misses out on when choosing one alternative over another.
2. For companies, opportunity costs do not show up in the financial statements but are useful in planning by management.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (C)

**Explanation:** Opportunity costs represent the potential benefits that an individual, investor, or business misses out on when choosing one alternative over another. To properly evaluate opportunity costs, the costs and benefits of every option available must be considered and weighed against the others. **Opportunity cost is a strictly internal cost used for strategic contemplation; it is not included in accounting profit and is excluded from external financial reporting.** For example, a company decides to buy a new piece of manufacturing equipment rather than lease it. The opportunity cost would be the difference between the cost of the cash outlay for the equipment and the improved productivity vs. how much money could have been saved in interest expense had the money been used to pay down debt. **Hence, both statements are correct.**

95. Consider the following statements regarding GDP deflator:

1. It shows the increase in gross domestic product has happened on account of higher prices rather than an increase in output.
2. The GDP deflator contains only those goods and services that household's purchase for consumption.

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 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 an 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. **Hence, statement 2 is incorrect.**

96. "Ethylene glycol" often mentioned in news for health concerns finds application in which of the following?

1. Hydraulic brake fluids
2. Stamp pad inks
3. Ballpoint pens
4. Solvents, paints
5. Cosmetics
6. Plastics

Select the correct answer using the code given below:

- (a) 1, 2 and 3
- (b) 3, 4, 5 and 6
- (c) 1, 3 and 6
- (d) All of the above

Answer: (D)

**Explanation:** Ethylene glycol is a colourless and odourless alcoholic compound that can be fatal if consumed. It is mostly used as an automotive antifreeze and as a raw material for manufacturing polyester fibres. It is also found in several products such as: hydraulic brake fluids, stamp pad inks, ballpoint pens, solvents, paints, cosmetics, and plastics. **Hence, option (d) is correct.**

97. Which one of the following is the purpose of 'Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP)', a scheme of the Government?

- (a) To regularise over-the-counter drug sale
- (b) To increase the penetration of Ayurvedic medicines
- (c) To provide generic medicines at much lower prices
- (d) To increase private investment in medicinal research

Answer: (C)

**Explanation:** Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP) is a campaign launched by the Department of Pharmaceuticals in association with Central Pharma Public Sector Undertakings. It provides generic medicines at much lower prices. **Hence, statement (c) is correct.**

98. Consider the following statements regarding Norovirus:

1. It causes gastrointestinal illness leading to severe vomiting and diarrhoea.
2. It can be easily killed by most hand sanitisers and disinfectants as well as by warming up food.
3. Transmission mode of the virus is usually via contaminated surfaces or food as well as through the oral-faecal route.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:**

· Norovirus is a **group of viruses that leads to gastrointestinal illness**. It causes inflammation of the lining of the stomach and intestines, in addition to severe vomiting and diarrhoea. **Hence, statement 1 is correct.**

**Norovirus is resistant to many disinfectants and can heat up to 60°C.** Therefore, merely steaming food or chlorinating water does not kill the virus. The virus can also survive many common hand sanitisers. **Hence, statement 2 is incorrect.**

· The virus can be transferred from an infected to a healthy individual through contaminated surfaces or food. **The virus can primarily be transmitted from oral-faecal.** Disease outbreaks typically occur aboard cruise ships, in nursing homes, dormitories, and other closed spaces. **Hence, statement 3 is correct.**

**99. Consider the following statements:**

1. INS Vagir is an Arihant class of fighter naval vessel.
2. India at present only operates diesel-electric submarines.
3. INS Vagir has the capability of operating in a wide range of Naval combat including anti-warship and anti-submarine operations.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

**Answer: (C)**

**Explanation:**

· INS Vagir is the **fifth diesel-electric Kalvari-class submarine**. **Hence, statement 1 is incorrect.**

· India currently operates a group of nuclear-powered submarines and diesel-electric submarines. **Hence, statement 2 is also incorrect.**

· INS Vagir has the capability of operating in a wide range of Naval combat including **anti-warship and anti-submarine operations**. Hence, statement 3 is correct.

**100. Recently, announced 'PM-PRANAM' scheme in Budget 2023-24 is related to which of the following?**

- (a) To promote tourism in the religious circuit;
- (b) Restoration of archaeological sites;
- (c) Promoting alternative fertilizers and balancing the use of chemical fertilizers;
- (d) Providing benefits to farmers on agricultural loans.

**Answer: (C)**

**Explanation:** In the Budget Finance minister announced 'PM-PRANAM' scheme - "**PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth**" will be launched to incentivize States and Union Territories to **promote alternative fertilizers and balanced use of chemical fertilizers**. **Hence, option (c) is correct.**

**101. Consider the following statements regarding Kakapo (owl parrot):**

1. It is a large, nocturnal and flightless parrot.
2. It is found only in the Arunachal Pradesh state of India.
3. It is listed as Critically Endangered on the IUCN Red List.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** It is a **large, nocturnal, flightless, lek-breeding parrot**. It has a pale owl-like face. It consists of moss green mottled with yellow and black above and similar but more yellow below. **These are remarkable and unusual birds, found only in Aotearoa New Zealand.** They only breed every few years, triggered by the availability of certain forest foods such as the fruits of the native rimu tree. **It is listed as Critically Endangered in the IUCN Red List.** A lek is an aggregation of males that gather to engage in competitive displays that may entice visiting females who are surveying prospective partners for copulation. **Hence, statement 2 is incorrect.**

**102. With reference to 'The International Solar Alliance (ISA)', consider the following statements:**

**Statement 1** - It is a member-driven platform promoting solar energy deployment to enhance energy access, security, and transition in member countries.

**Statement 2-** ISA's 'Towards 1000' strategy targets \$1,000 billion in solar investments by 2050, providing clean energy to 1 billion people and installing 1,000 GW of solar capacity.

**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:**

· The International Solar Alliance (ISA) is a member-driven platform promoting solar energy deployment for energy access, security, and transition. **It focused on Least Developed Countries (LDCs) and Small Island Developing States (SIDS). Hence, statement 1 is correct.**

· ISA's 'Towards 1000' strategy seeks \$1 trillion in solar investments by 2030, providing clean energy to 1 billion people and installing 1,000 GW of solar capacity, reducing global solar emissions by 1 billion tonnes of CO<sub>2</sub> annually. **Hence, statement 2 is incorrect.**

103. 'Bhoramdeo Wildlife Sanctuary' which was recently in the news is located in:

- (a) Chhattisgarh
- (b) West Bengal
- (c) Rajasthan
- (d) Jharkhand

**Answer:** (A)

**Explanation:** It is situated in the Kawardha district of Chhattisgarh. It is named after the famous 11th-century Bhoramdeo Temple situated near the Sanctuary. It shares a border with Kanha National Park in Madhya Pradesh, making it an important tiger habitat in central India. **Hence, option (a) is correct.**

104. 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 of tiger population it is a part of the 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.**

105. Consider the following statements:

- 1. Chemosynthetic bacteria obtain their energy from the oxidation of inorganic molecules.
- 2. Chemosynthetic bacteria cannot survive without the presence of sunlight.

**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 energy required for life within the biosphere usually comes from the sun. But **Chemosynthetic bacteria are organisms that use inorganic molecules as a source of energy and convert them into organic substances.** They do not need sunlight for their survival.

· **Chemosynthetic bacteria, unlike plants, obtain their energy from the oxidation of inorganic molecules, rather than photosynthesis.** Chemosynthetic bacteria use inorganic molecules, such as ammonia, molecular hydrogen, sulfur, hydrogen sulfide and ferrous iron to produce the organic compounds needed for their subsistence. Most chemosynthetic bacteria live in environments where sunlight is unable to penetrate and which are considered inhospitable to most known organisms. **Hence, statement 2 is incorrect.**

106. Consider the following statements regarding Kushinagar:

- 1. It is an important Buddhist pilgrimage site, where it is believed that Gautam Buddha delivered his last sermon.

2. Kushinagar is among the few places in India where Buddha is depicted in reclining form.

3. The present Kushinagar is identified with Kushinara, the capital of Mallas which was one of the sixteen mahajanapadas of the 6th century BCE.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Kushinagar is a town in the Kushinagar district of the Indian state of Uttar Pradesh. **It is an important Buddhist pilgrimage site, where Buddhists believe Gautam Buddha attained Mahaparinirvana after his death. The present Kushinagar is identified with Kusavati (in the pre-Buddha period) and Kushinara (in the post-Buddha period).** Kushinara was the capital of Mallas which was one of the sixteen mahajanapadas of the 6th century BCE. Kushinagar is among the few places in India where Buddha is depicted in reclining form. Buddha delivered his last sermon at Vaishali. **Hence, statement 1 is incorrect.**

107. **During the period of Guptas, the designation 'Sarthavaha' was used for:**

- (a) Minister of War and peace
- (b) Chief judicial officer
- (c) Chief banker
- (d) Leader of the merchant caravans

**Answer:** (D)

**Explanation:** Kings adopted a number of steps to win the support of men who were powerful, either economically, or socially, or because of their political and military strength. For instance: Some important administrative posts were hereditary. This means that sons succeeded fathers to these posts. For example, the poet **Harishena was a maha-danda-nayaka, or chief judicial officer**, like his father. Besides, important men probably had a say in local administration. These included **the nagarashreshthi or chief banker or merchant of the city, the sarthavaha or leader of the merchant caravans, the prathama-kulika or the chief craftsman**, and the head of the kayasthas or scribes. **Hence, option (d) is correct.**

108. **According to Katyayana, consider the following statements regarding the judicial system during the Gupta period:**

- 1. The Court of Justice was attended by the king as the highest court of appeal.
- 2. On certain occasions representatives of commercial institutions were invited to assist the king.

3. Ordeal as a means of proof was not permitted.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Katyayana describes the judicial process at length. **The court of justice was attended by the king as the highest court of appeal.** He was assisted by the judges, ministers, Chief priests, brahmins, and assessors, varying in accordance with the needs of the individual cases. **On certain occasions, representatives of commercial institutions were also invited to assist the king.** Recognized judicial bodies were the guild, the folk assembly or council, a substitute appointed by the king in his own place (generally a brahman), and the king himself. **Judgment was based either on the legal texts' social usage or the edict of the king (which could not contradict the first two to any great extent).** Evidence was based on any or all of three sources, documents, witnesses, or the possession of incriminating objects. **Ordeal as a means of proof was not only permitted but used. Hence, statement 3 is incorrect.**

109. **Consider the following statements:**

- 1. The cave is carved into the hard-monolithic granite rock face of Barabar hills, flanked to its left by the smaller Sudama cave.
- 2. The ornamentation on the "curved architrave" of the cave consists of carvings of elephants on their way to the stupas.

**The above statements refer to:**

- (a) Udayagiri Caves
- (b) Lomas Rishi caves
- (c) Kanheri Caves
- (d) Elephanta Caves

**Answer:** (B)

**Explanation:** Lomas Rishi Cave is carved into **the hard-monolithic granite rock face of Barabar hills, flanked to its left by the smaller Sudama cave.** This rock-cut cave was carved out as a sanctuary. **It was built during the Ashokan period of the Maurya Empire in the 3rd century BC, as part of the sacred architecture of the Ajivikas.** The hut-style facade at the entrance to the cave, which was meant as a milk shed, had an impact on South Asian rock-cut architecture. It became a model for all such arched entrance portals built at many other Buddhist and Jain caves in India, such as the much bigger **Buddhist Chaitya halls of Ajanta or Karli in Maharashtra. Hence, option (b) is correct.**

110. Consider the following statements regarding **Bakasht lands in British India**:

1. Bakasht lands were those which the tenants lost to zamindars, mostly during the Depression years, by virtue of non-payment of rent.
2. A legislative exercise was undertaken by the Congress Ministries for the reduction of rent and the restoration of Bakasht lands.

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 Bakasht lands issue became a major ground of contention between the Bihar Provincial Kisan Sabha and the Congress Ministry. The Congress Ministry had initiated legislation for the reduction of rent and the restoration of Bakasht lands. **Bakasht lands were those which the occupancy tenants had lost to zamindars, mostly during the Depression years (the 1930s), by virtue of nonpayment of rent, and which they often continued to cultivate as sharecroppers.** However, the formula that was finally incorporated into the legislation on the basis of an agreement with the zamindars did not satisfy the radical leaders of the Kisan Sabha. The legislation gave a certain proportion of the lands back to the tenants on condition that they pay half the auction price of the land. Besides, certain categories of land had been exempted from the operation of the law. **Hence, both statements are correct.**

111. Consider the following statements:

1. The Constitution of India prohibits the court from initiating proceedings against a Governor or the President for any act done in the exercise of their powers.
2. The Constitution of India does not fix any timeline for the Governor to decide the question of assent to a Bill.
3. The governor's action of withholding assent to a Bill cannot be struck down as unconstitutional by the courts.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** Article 361 of the Constitution prohibits the court from initiating proceedings against a

**Governor or the President for any act done in the exercise of their powers.** They enjoy complete immunity from court proceedings.

It may be noted that the Governor while declaring that he withholds assent will have to disclose the reason for such refusal. **If the grounds for refusal disclose mala fide or extraneous considerations or ultra vires, the Governor's action of refusal could be struck down as unconstitutional. This point has been settled by a constitutional bench of the Supreme Court in Rameshwar Prasad and Ors. vs Union Of India and Anr.**

Since the Constitution does not fix any timeline for the Governor to decide the question of assent, he can wait for any length of time without doing anything. Not fixing any timeline does not and cannot mean that the Governor can indefinitely sit on the Bill that has been passed by an Assembly.

**Hence, statement 3 is incorrect.**

112. Consider the following statements regarding the **Split verdict delivered by the Supreme Court**:

1. A split verdict is passed when the Supreme Court Bench cannot decide one way or the other in a case, either by a unanimous decision or by a majority verdict.
2. Split verdicts can happen even when the Bench has an odd number of judges.
3. In case of a split verdict, the case is heard by a larger Bench.

How many of the above statements is/are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (A)

**Explanation:** A split verdict is passed when the Bench cannot decide one way or the other in a case, either by a unanimous decision or by a majority verdict. **Split verdicts can only happen when the Bench has an even number of judges. This is why judges usually sit in Benches of odd numbers (three, five, seven, etc.)** for important cases, even though two-judge Benches — known as Division Benches — are not uncommon. In case of a split verdict, the case is heard by a larger Bench. The larger Bench to which a split verdict goes can be a three-judge Bench of the High Court, or an appeal can be preferred before the Supreme Court. **Hence, only statement 2 is incorrect.**

113. The Constitution defines the territorial limits of the legislative powers vested in the Centre and the states in which of the following ways?

1. The Parliament can make not only territorial laws within India but also 'extra-territorial laws' that are applicable to Indian citizens throughout the world.
2. The laws made by a state legislature are not applicable outside the state, except when there is a sufficient nexus between the state and the object.

**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 Parliament can make laws for the whole or any part of the territory of India. **The territory of India includes the states, the union territories, and any other area for the time being included in the territory of India. A state legislature can make laws for the whole or any part of the state.** The laws made by a state legislature are not applicable outside the state, except when there is a sufficient nexus between the state and the object. **The Parliament alone can make 'extra-territorial legislation'.** Thus, the laws of the Parliament are also applicable to Indian citizens and their property in any part of the world. **Hence, both statements are correct.**

**114. Consider the following statements regarding the Comptroller and Auditor General of India (CAG):**

1. CAG is an extra-constitutional body that is the head of the Indian Audit and Accounts Department.
2. The duty of CAG is to uphold the Constitution of India and the laws of Parliament in the field of financial administration.
3. CAG is the guardian of the public purse and controls the financial system of the country at both levels- the centre and state.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** The Constitution of India provides for an independent office of the Comptroller and Auditor General of India (CAG) in **Chapter V under Part V. The CAG is mentioned in the Constitution of India under Article 148 – 151.** He is the head of the Indian Audit and Accounts Department. **He is the guardian of the public purse and controls the financial system of the country at both levels- the centre and state.** His duty is to uphold the Constitution of India and the laws of

Parliament in the field of financial administration. **Hence, statement 1 is incorrect.**

**115. Consider the following statements:**

1. The guidelines for the registration of political parties are issued under the Representation of the People Act, 1951.
2. The Election Commission of India (ECI) has statutory power to enforce internal democracy in political parties to remind parties to conduct elections and to ensure that their leadership is renewed, changed or re-elected every five years.

**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 ECI has periodically used guidelines issued for the registration of parties under **Section 29A of the Representation of the People Act, 1951** to remind parties to conduct elections and to ensure that their leadership is renewed, changed or re-elected every five years. However, the commission does not have any statutory power to enforce internal democracy in parties or to mandate elections. **Hence, statement 2 is incorrect.**

**116. Consider the following statements regarding Temperate Rainforests:**

1. Temperate rainforests are found mostly in coastal, mountainous areas.
2. Cooler temperatures and a more stable climate slow down decomposition, allowing more material to accumulate.
3. Temperate rainforests are the most biologically diverse terrestrial ecosystems in the world.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:** **Temperate rainforests are located in the mid-latitudes, where temperatures are much milder than in the tropics. Temperate rainforests are found mostly in coastal, mountainous areas.** Rainfall in these forests is produced by warm, moist air coming in from the coast and being trapped by nearby mountains. Cooler temperatures and a more stable climate slow down decomposition, allowing more material to accumulate. This productivity allows many plant



species to grow for incredibly long periods of time. **Tropical rainforests are the most biologically diverse terrestrial ecosystems in the world. Hence, statement 3 is incorrect.**

117. Which of the following lakes is not part of the Great Lakes region of North America?

- (a) Lake Ontario
- (b) Great Slave Lake
- (c) Michigan Lake
- (d) Lake Erie

**Answer: (B)**

**Explanation:** The Great Lakes also called the **Laurentian Great Lakes and the Great Lakes of North America, are a series of interconnected freshwater lakes** located primarily in the upper mid-east region of North America, on the Canada–United States border, which connect to the Atlantic Ocean through the Saint Lawrence River. **They consist of Lakes Superior, Michigan, Huron, Erie, and Ontario. Hence, option (b) is correct.**

118. Which of the following statements best describes 'Doldrums'?

- (a) Frigid zone of the earth where there is little atmospheric circulation.
- (b) High-pressure area in the subtropical region where westerlies originate.
- (c) Tropical region in the Indian Ocean where cyclones often originate.
- (d) Belt of the calm region in the equatorial region where prevailing trade winds meet.

**Answer: (D)**

**Explanation:** Doldrums, also called **equatorial calms, are equatorial regions of light ocean currents and winds within the intertropical convergence zone (ITCZ), a belt of converging winds and rising air encircling Earth near the Equator. The northeast and southeast trade winds meet there;** this meeting causes air uplift and often produces clusters of convective thunderstorms. They occur along the Equator in the Indian and western Pacific oceans and slightly north of the Equator off the African and Central American west coasts. **Hence, option (d) is correct.**

119. Consider the following statements regarding Fold Mountains:

- 1. Fold Mountains are created when large areas are broken and displaced vertically.
- 2. They are least likely to have conical peaks.

**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:** Fold mountains are created when two or more of Earth's tectonic plates are pushed together. At these colliding, compressing boundaries, rocks and debris are warped and folded into rocky outcrops, hills, mountains, and entire mountain ranges. **The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks. The Appalachians in North America and the Ural Mountains in Russia have rounded features and low elevation.** They are very old fold mountains. Block Mountains are created when large areas are broken and displaced vertically. **Hence, both statements are incorrect.**

120. Which of the following are the conditions for the emergence of a tropical cyclone?

- 1. Unstable conditions through the Troposphere,
- 2. Strong Coriolis force,
- 3. Strong vertical wind,
- 4. Large and continuous supply of warm and moist air.

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3
- (b) 1, 2 and 4
- (c) 2, 3 and 4
- (d) All of the above

**Answer: (B)**

**Explanation: Some initial conditions for the emergence of a tropical cyclone are:**

- i. Large and continuous supply of warm and moist air that can release enormous latent heat.
- ii. **Strong Coriolis force** that can prevent the filling of low pressure at the centre (absence of Coriolis force near the equator prohibits the formation of tropical cyclones between 0°-5° latitude).
- iii. Unstable condition through the troposphere that creates local disturbances around which a cyclone develops.
- iv. Finally, the **absence of a strong vertical wind wedge**, disturbs the vertical transport of latent heat. **Hence, option (b) is correct.**

121. Consider the following statements regarding the International Finance Corporation (IFC):

- 1. It is an arm of the World Bank that offers investment, advisory, and asset-management services.
- 2. It encourages private-sector development in developing countries.
- 3. IFC also focuses on sustainable agriculture, healthcare and education.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (C)

**Explanation:** The International Finance Corporation (IFC) is an international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in developing countries. **The IFC is a member of the World Bank Group and is headquartered in Washington, D.C. in the United States. It was established in 1956, as the private-sector arm of the World Bank Group, to advance economic development by investing in for-profit and commercial projects for poverty reduction and promoting development. Since 2009, the IFC has focused on a set of development goals that its projects are expected to target.** Its goals are to increase sustainable agriculture opportunities, improve healthcare and education, increase access to financing for microfinance and business clients, advance infrastructure, help small businesses grow revenues, and invest in climate health. **Hence, all statements are correct.**

**122. How would you distinguish between the revenue and capital receipts of the government?**

- 1. Revenue receipts are non-redeemable, unlike certain capital receipts.
- 2. Capital receipts are always debt-creating, unlike revenue receipts.

**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 main difference between revenue receipts and capital receipts is that in the **case of revenue receipts, the government is under no future obligation to return the amount**, i.e., they are non-redeemable. But in the case of capital receipts which are borrowings, the government is under obligation to return the amount along with interest. **Hence, statement 1 is correct.**

**Capital receipts may be debt-creating or non-debt-creating.** Examples of debt-creating receipts are—Net borrowing by the government at home, loans received from foreign governments, and borrowing from RBI. Examples of non-debt capital receipts are the recovery of loans, proceeds from the sale of public enterprises

(i.e., disinvestment), etc. These do not give rise to debt. **Hence, statement 2 is incorrect.**

**123. Consider the following statements:**

- 1. In a floating exchange rate system, market forces determine the value of a currency.
- 2. The demand for rupees in the forex market depends on foreign demand for Indian exports.
- 3. Currency appreciation encourages a country's export activity as its products and services become cheaper to buy.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer:** (B)

**Explanation:**

· In the **forex market, the supply of rupees is determined by the demand for imports and various foreign assets.** So, if there is a high demand to import oil, it can lead to an increase in the supply of rupees in the forex market and cause the rupee's value to drop. **The demand for rupees in the forex market, on the other hand, depends on foreign demand for Indian exports and other domestic assets.** So, for instance, when there is great enthusiasm among foreign investors to invest in India, it can lead to an increase in the supply of dollars in the forex market which in turn causes the rupee's value to rise against the dollar.

· **Appreciation Vs Depreciation:**

· In a **floating exchange rate system, market forces** (based on the demand and supply of a currency) **determine the value of a currency.**

· **Currency Appreciation:** It is an increase in the value of one currency in relation to another currency.

· Currencies appreciate each other for a variety of reasons, including government policy, interest rates, trade balances and business cycles.

· Currency appreciation discourages a country's export activity as its products and services become costlier to buy.

**Hence, statement 3 is incorrect.**

**124. Which of the following statements best describes the term Fiscal profligacy?**

- (a) Removing fiscal barriers and discrepancies between the tax systems of the various countries
- (b) Income tax exemption for new industries
- (c) The act of spending money in a way that is not wise
- (d) Official estimate of costs or revenues for proposed legislation

**Answer:** (C)

**Explanation:** Fiscal profligacy is the opposite of fiscal prudence. It is the **act of spending money or using something in a way that wastes it and is not wise**. The costs of fiscal profligacy at the State level can be huge. **Hence, option (c) is correct.**

**125. For India, a rise in international crude oil prices can lead to which of the following?**

1. Weakens the rupee against the dollar
2. Rise in current account deficit and fiscal deficit
3. It leads to inflation
4. Rise in edible oil prices

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3
- (b) 1, 3 and 4
- (c) 1, 2 and 4
- (d) All of the above

**Answer: (D)**

**Explanation:** India imports nearly 85% of its crude requirement. **The rise in import bills not only leads to inflation and a rise in current account deficit and fiscal deficit but also weakens the rupee against the dollar and hurts stock market sentiment.** A rise in crude oil prices also has an indirect impact on India as it leads to a rise in edible oil prices, coal prices and also that of fertiliser as they use gas as the feedstock. **Gas accounts for 80% of all fertiliser production costs.** So if a rise in crude oil prices could lead to a much enhanced import burden, it also leads to a reduction in demand in the economy which hurts growth. It could also lead to a higher fiscal deficit if the government chooses to bear the burden by way of subsidies. **Hence, all are correct.**

**126. Consider the following statements regarding Scorpene submarines:**

1. They use diesel-electric propulsion systems, with the ability to operate independently without refueling for approximately 50 days.
2. They are versatile submarines that can perform a range of tasks in coastal and open waters whereas the primary objective of Cruise Missile Submarines is to carry and launch cruise missiles.
3. They are designed for long-range strikes while Cruise Missile Submarines have a limited range.

**How many of the above statements is/are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (B)**

**Explanation:** Scorpene submarines use **diesel-electric propulsion systems, with the ability to operate**

**independently without refueling for approximately 50 days.** Scorpene submarines are versatile submarines that can perform a range of tasks in coastal and open waters whereas the primary objective of Cruise Missile Submarines is to carry and launch cruise missiles. **Hence, statements 1 and 2 are correct.**

Scorpene class submarines typically have a limited range, suited for operations in coastal and nearby open waters. Their weapons are **designed for shorter-range engagements. Cruise Missile Submarines are designed for long-range strikes. Hence, statement 3 is incorrect.**

**127. With reference to Graphics Processing Units (GPUs), consider the following statements:**

1. Graphics Processing Units (GPUs) are specialized electronic circuits or processors designed to accelerate and enhance graphics rendering tasks in computers, gaming consoles, and other devices.
2. CPUs are latency-oriented and task-parallel, while GPUs are throughput-oriented and data-parallel.

**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 global surge in artificial intelligence (AI) has been fueled by the emergence of graphics processing units (GPUs). **Graphics Processing Units (GPUs) are specialized electronic circuits or processors designed to accelerate and enhance graphics rendering tasks in computers, gaming consoles, and other devices.** Graphics Processing Units (GPUs) have revolutionized AI globally. Originally for graphics tasks, GPUs excel in deep learning by executing parallel calculations and advancing AI models with larger datasets. **CPUs are latency-oriented and task-parallel, while GPUs are throughput-oriented and data-parallel. GPUs' matrix operations make them ideal for AI. Hence, both statements are correct.**

**128. Consider the following statements regarding Hygroelectricity:**

**Statement I - Hygroelectricity is the generation of electricity from the humidity of the air.**

**Statement II - The key to harvesting electricity from humid air lies in a tiny device comprising two electrodes and a thin layer of material filled with nanopores.**

**Which of the following is correct with respect to the above statements?**

(a) Both Statement-I and Statement-II are correct and Statement-II –II is the correct explanation of Statement-I.

(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.

(c) Statement I is correct but Statement II is incorrect

(d) Statement I is incorrect but Statement II is correct

**Answer: (A)**

**Explanation:** Hygroelectricity is the generation of electricity from the humidity of the air. **It is a type of renewable energy that has the potential to be a major source of power in the future.** The key to harvesting electricity from humid air lies in a tiny device comprising two electrodes and a thin layer of material filled with nanopores. Just as clouds create electrical charges and give rise to lightning bolts during storms, this revolutionary device converts air humidity into usable electricity. **Unlike other renewable energy sources such as solar and wind, air humidity is continuously available, making it a sustainable reservoir of energy. Hence, both Statement I and Statement II are correct and Statement –II is the correct explanation of Statement I.**

129. Which of the following is/are cause/causes for the formation of rainbow?

1. Refraction
2. Dispersion
3. Reflection

**How many of the above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (C)**

**Explanation:**

· A rainbow is a multi-coloured arc that appears in the sky. **Rainbows are formed by the refraction, dispersion and reflection of sunlight in water droplets.**

· **Refraction is the bending of light, as it passes from one medium to another with a different refractive**

**index.** Water has a higher refractive index than air, so sunlight is refracted as it enters a water droplet.

· **Dispersion is the separation of white light into its component colours when it passes through a prism or other object with a varying refractive index.** The different colours of light have different wavelengths, so they are refracted at different angles.

· Reflection is the bouncing back of light when it hits a surface. The light rays that are reflected from the inside of the water droplet are the ones that we see as a rainbow.

130. Consider the following statements regarding the **FELUDA Test:**

1. It uses FnCas9 protein and guides RNA to recognize viral genes.
2. It simplifies testing and provides results faster than some other methods.

**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:**

· FELUDA stands for **FnCas9 Editor Linked Uniform Detection Assay.** It is a CRISPR-based test for the detection of viral genes. **The test uses a FnCas9 protein, which is a nuclease that can cut DNA at specific sequences.** The FnCas9 protein is guided to the target viral gene by a guide RNA (gRNA). If the target gene is present in the sample, the FnCas9 protein will cut it. This cutting event can then be detected using a variety of methods, such as lateral flow assays or fluorescence detection. **Hence, statement 1 is correct.**

· **The FELUDA test is a simple and rapid test that can be performed in a variety of settings, including point-of-care and resource-limited settings.** It has been shown to be effective in detecting a variety of viruses, including SARS-CoV-2, the virus that causes COVID-19. **Hence, statement 2 is correct.**