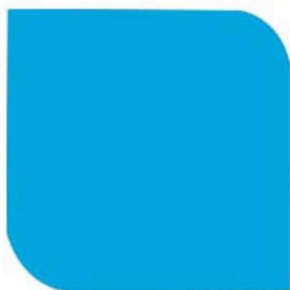
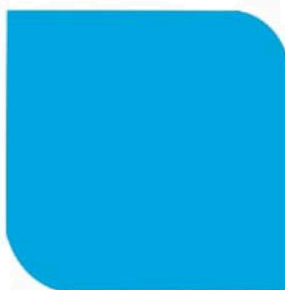
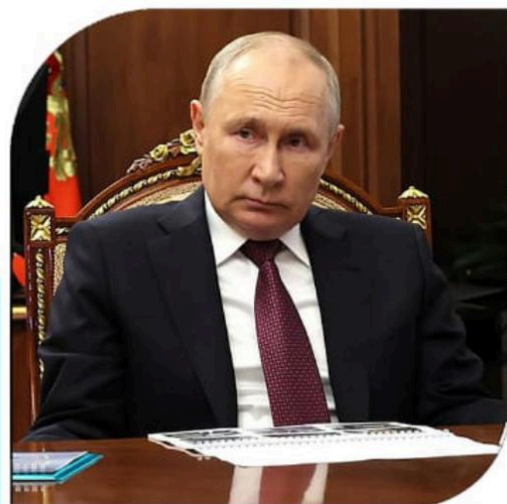


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- > **NATO SUSPENDS CFE TREATY AMID RUSSIAN WITHDRAWAL**
- > **WORKER PRODUCTIVITY AND ECONOMIC GROWTH**
- > **GLOBAL TB REPORT 2023**
- > **FRICTIONS IN CENTRE – STATE RELATIONS**
- > **MELTING OF WEST ANTARCTICA'S ICE SHEET**



**GLOBAL
TUBERCULOSIS
REPORT
2023**



TABLE OF CONTENT

Mains Daily News Analysis	2	3. Melting of West Antarctica's Ice Sheet	37
GS Paper- I	2	4. India's Deep Ocean Mission	38
1. Emergency Alert System	2	5. Artificial Intelligence Safety Summit 2023	40
2. Thousands of Earthquakes Rock Iceland	3	6. The State of Food and Agriculture 2023	41
3. NATO Suspends CFE Treaty Amid Russian Withdrawal	4	7. CAFRAL Raises Concerns over NBFC and Digital Lending Practices	43
4. Flood in Somalia	6	8. Global Tiger Numbers Rise, Southeast Asia Faces Habitat threats	44
5. Call for Safer and Healthier Working Environments: ILO	7	9. Electric Batteries and Electrochemical Cells	46
6. Global Energy Monitor's Global Coal Plant Tracker	8	10. Sand and Dust Storms	48
GS Paper-II	11	11. Seven Years of the Insolvency and Bankruptcy Code	49
1. International Biosphere Reserve Day 2023	11	GS Paper-IV	52
2. Worker Productivity and Economic Growth	13	1. President Terminates Services of an Indian Army Major	52
3. Global TB Report 2023	14	2. Ethical Perspectives on Online Gaming	53
4. Electoral Trusts Scheme, 2013	16	3. Rising Scientific Misconduct in India	55
5. India-US 2+ 2 Ministerial Dialogue	17	4. Materialism	56
6. Crowdfunding for Terrorism Financing: FATF	20	PRELIMS BOOSTER-THE HINDU & INDIAN EXPRESS	58
7. Jurisdiction of Lokpal	21	PRELIMS BOOSTER-PRESS INFORMATION BUREAU (PIB)	73
8. Frictions in Centre- State Relations	23	PLACES IN NEWS	93
9. Adultery and Related Intricacies	24	EDUFACTS	99
10. Second Voice of the Global South Summit	26	Practice MCQs on Current Affairs Subject- November 2023	104
11. Rural Wage Disparities	28	Practice MCQs on Conventional Subjects- November 2023	144
12. 2 nd CJI India Nordic- Baltic Business Conclave 2023	29		
13. Gender-Related Killings of Women and Girls	31		
14. Dollarisation and Economic Shifts	32		
GS Paper- III	34		
1. The Lewis Model and India	34		
2. Road Accidents in India- 2022	35		

Mains Daily News Analysis

GS Paper – I

1. Emergency Alert System

Why in News?

A recent **earthquake of 6.4 magnitude hit Nepal on 3rd November 2023**, followed by an aftershock, which has exposed significant shortcomings in emergency alert systems in and around Delhi.

- As tremors rattled the region, both government and private alert mechanisms failed to reach a considerable number of people who experienced palpable shaking
- Emergency alert systems are mechanisms that provide early warning and notification of impending or ongoing disasters, such as earthquakes, **cyclones, floods, landslides**, etc.

What are the Emergency Alert Systems in India?

- **Google's Android Earthquake Early Warning System:**
 - This is a feature that uses the sensors in Android smartphones to **detect seismic activity and alert users** about potential earthquakes.
 - It also collects and shares the data with seismological agencies to improve earthquake detection and analysis.
 - Google launched this feature in India in September 2023, in collaboration with the **National Disaster Management Authority (NDMA)** and the **National Centre for Seismology (NCS)**, Ministry of Earth Sciences.
 - Google's alerts are triggered based on the **Modified Mercalli Intensity (MMI)** Scale, an alternative to the Richter scale.
 - The MMI scale measures the **effects of an earthquake at a specific location**. It describes the observed effects of an earthquake, including what **people experience and what happens to buildings and objects**.
 - **The MMI scale is different from the Richter scale and has a range of 1 to 12.**
- **Cell Broadcast Alert System (CBAS):**
 - The **CBAS** represents cutting-edge technology that empowers us to **disseminate critical and time-sensitive disaster management messages** to all mobile devices within specified geographical areas, regardless of whether the recipients are residents or visitors.
 - Common applications of Cell Broadcast include delivering emergency alerts such as severe weather warnings (e.g., **Tsunamis, Flash Floods, Earthquakes**), public safety messages, evacuation notices, and other critical information.
 - It is developed in collaboration with the **Department of Telecommunications (DOT)** and the **NDMA** and other agencies to generate and disseminate the alerts.
- **Ministry of Earth Science's National Centre for Seismology (NCS):**
 - This is the agency responsible for monitoring and reporting the seismic activity in India and its neighbourhood.
 - It operates a network of seismological observatories across the country, and provides real-time data and information on earthquakes and tsunamis.
 - It also maintains a website and a mobile app, called **BhooKamp**, to provide earthquake alerts and updates to the public.

What are the Gaps and Challenges in the Emergency Alert Systems?

- **Lack of Coordination and Integration:**
 - India lacks a **single, standardized emergency alert system**, resulting in inconsistent and unreliable information for both the public and authorities.
 - Multiple agencies and platforms operate independently, causing confusion, duplication, and delays in alert generation and dissemination.
 - During recent tremors around Delhi, the NCS website and app crashed, facing a **sudden surge in traffic when real-time information on the tremors** was crucial.
 - This incident highlights significant coordination challenges in managing emergency situations.
- **Lack of Accuracy and Timeliness:**
 - The emergency alert systems in India are not able to provide **accurate and timely information** on the location, magnitude, intensity, and impact of the disasters.
 - This is due to the **limitations in the data collection**, analysis, and transmission.
- **Lack of Awareness and Preparedness:**

- The emergency alert systems in India are not able to reach and inform the masses effectively, due to the **lack of awareness and preparedness** among the public and the authorities.
 - Many people do not know how to access, interpret, and respond to the alerts, and often ignore or dismiss them as false alarms.
- There is also a lack of **public education and awareness campaigns** on the disaster risks and mitigation measures and the response mechanisms.

Way Forward

- Develop a unified emergency alert system incorporating multiple channels like SMS, voice calls, social media, and traditional mediums.
 - **Establish seamless coordination and integration with key agencies like MoES, DoT, NDMA, IMD, and NCS.**
- Leverage advanced technologies such as satellites, and **Artificial Intelligence** to enhance data collection, analysis, and transmission.
- Strengthen the infrastructure by expanding seismological observatories, deploying additional sensors, and upgrading computing capabilities.
 - Aim for **near-instantaneous alert issuance**, providing **granular details on disaster location, magnitude, and impact.**
- Inform and engage the public on disaster risks, mitigation measures, and the functionality of emergency alert systems.
- Conduct **frequent drills involving stakeholders and communities** to test and refine alert systems and response mechanisms.

2. Thousands of Earthquakes Rock Iceland

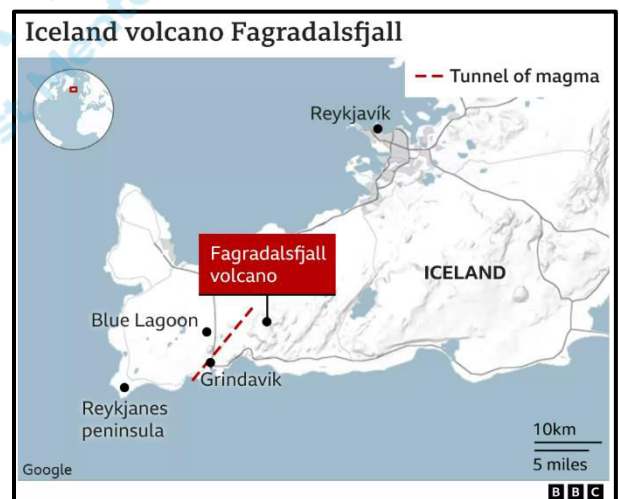
Why in News?

Iceland has declared a **state of emergency** following a series of **800 earthquakes** that struck the **southwestern Reykjanes peninsula** in less than 14 hours.

- Approximately 1,400 **earthquakes** were detected in a day, and the peninsula has experienced over **24,000 seismic events** since late October. The strongest of these earthquakes, with a magnitude of 5.2, occurred approximately 40 km from Reykjavík, Iceland's capital.

What is Happening in Iceland?

- **About Iceland:**
 - Iceland is located on the **Mid-Atlantic Ridge**, technically the longest mountain range in the world, but on the floor of the Atlantic Ocean. The ridge separates the Eurasian and North American tectonic plates — making it a hotbed of seismic activity.
 - The **Mid-Atlantic Ridge is a divergent or constructive plate boundary** where tectonic plates move away from each other, leading to the **creation of new oceanic crust**
 - This geological setting makes the region prone to frequent earthquakes, with an annual average of approximately 26,000, as reported by Perlan, a natural history museum based in Reykjavik.
 - While most of these tremors go unnoticed, the occurrence of **earthquake swarms**, characterized by **numerous small earthquakes** without a discernible mainshock, raises concerns about the **possibility of an impending volcanic eruption.**
 - **These earthquake swarms indicate heightened tectonic stress in specific areas.**
- **Notable Icelandic Volcanoes:**
 - Iceland boasts a total of 33 active volcanoes.
 - Eyjafjallajökull, one of Iceland's most famous volcanoes, erupted in 2010, causing a widespread ash cloud.
 - Other notable volcanoes include Hekla, Grímsvötn, Hóluhraun, and Litli-Hrútur, part of the Fagradalsfjall system.



How are Earthquake Swarms a Sign of Volcanic Activity?

- **Magma Formation and Movement:**

- Intense heat beneath the Earth's surface melts rocks, giving rise to magma, a flowing substance lighter than solid rock.
- The **buoyancy of magma propels it upwards**, with most of it being **confined to magma chambers deep underground**.
- **Volcanic Eruptions:**
 - While the **majority of magma cools and solidifies** over time, a **fraction erupts through vents** and fissures on the Earth's surface.
 - These eruptions are the visible outcomes of the geological processes occurring beneath the surface.
- **Earthquake Swarms as Indicators:**
 - The **movement of magma near the Earth's surface exerts force** on surrounding rock layers.
 - This force often leads to the occurrence of earthquake swarms, clusters of seismic activity in a particular region.
- **Proximity to Eruption:**
 - Magma movement underground doesn't always culminate in a volcanic eruption.
 - The **closer magma gets to the Earth's surface**, the **higher the likelihood of an eruption**, accompanied by more frequent and symptomatic earthquake swarms.

3. NATO Suspends CFE Treaty Amid Russian Withdrawal

Why in News?

Recently, **NATO (North Atlantic Treaty Organization)** has announced the formal suspension of the **Treaty on Conventional Armed Forces in Europe (CFE)**, a key **Cold War-Era Security Treaty** in response to **Russia's pullout from the deal**.

What is the Background of Russia's Pullout from CFE?

- **About CFE Treaty:**
 - The CFE Treaty, signed in **1990 and fully ratified in 1992**, aimed to prevent **massing of conventional armed forces by NATO and Warsaw Pact** countries near mutual borders during the Cold War.
 - It placed **limits on the deployment of conventional military forces** in Europe and played a significant role in **reducing tensions and arms build-up in the region**.
 - This treaty was **one of several Cold War-era agreements** involving Russia and the United States.
- **Russia's Withdrawal:**
 - Russia had suspended its participation in the CFE Treaty in 2007 and formally announced **its intention to withdraw in 2015**.
 - The recent move to finalise the withdrawal came after the Russian President signed a bill **denouncing the treaty in May 2023**.
 - Russia has blamed the US and its allies for the withdrawal, **citing their "destructive position" on the treaty**.
- **Ukraine Conflict's Impact:**
 - **Russia's invasion of Ukraine** in February 2022, which led to a **significant military presence in Ukraine**, influenced its decision to **withdraw from the treaty**.
 - The conflict has **direct implications for NATO member states** that share borders with Ukraine, such as Poland, Slovakia, Romania, and Hungary.

What are Russia's Concerns and NATO's Position?

- Russia claims CFE is no longer serves its interests because it was signed to restrict the use of conventional weapons and equipment and not other advanced weapons.
- Russia cited that preserving the CFE Treaty has become unacceptable from the standpoint of **its fundamental security interests**, citing developments in Ukraine and NATO's expansion.
- NATO underlines its commitment to reducing military risk, preventing misperceptions, and maintaining security.
- The suspension of the CFE Treaty underscores the ongoing tensions between Russia and NATO, which have significant implications for **global security and regional stability**, particularly in **Eastern Europe**.

What is the Cold War?

- The Cold War was a **period (1945-1991) of geopolitical tension** between the Soviet Union and its satellite states (the Eastern European countries), and the United States with its allies (the Western European countries) after **World War II**.
- Post World War II, the world **got divided into two power blocs** dominated by two superpowers viz. the Soviet Union and the US.

- The two superpowers were primarily engaged in an ideological war between the capitalist USA and the communist Soviet Union.
- The term "Cold" is used because there **was no large-scale fighting directly between the two sides.**

What are Other Cold-War Era NATO and USSR Treaties?

▪ The North Atlantic Treaty (1949):

- The North Atlantic Treaty, also known as the **Washington Treaty**, established NATO on 4th April, 1949.
- It was a **collective defence alliance formed by Western nations**, including the US, Canada, and various European countries.

▪ The Warsaw Pact (1955):

- The Warsaw Pact, formally known as the **Treaty of Friendship, Cooperation, and Mutual Assistance**, was signed on 14th May, 1955.
- It was a response to NATO and established a similar mutual **defence alliance among the Eastern Bloc countries**, led by the Soviet Union.
- The Warsaw Pact included the **Soviet Union, East Germany, Poland, Hungary, Czechoslovakia, Bulgaria, and Romania, among others.**

▪ The Four Power Agreement on Berlin (1971):

- This agreement, signed on 3rd September, 1971, between the **United States, the United Kingdom, France, and the Soviet Union**, addressed the **status of Berlin during the Cold War**.
- It aimed to **improve relations and ease tensions** in the divided city.

▪ The Intermediate-Range Nuclear Forces (INF) Treaty (1987):

- It was signed on 8th December, 1987, by the U.S. President and Soviet General Secretary, the INF Treaty eliminated an **entire class of intermediate-range nuclear missiles from Europe**.
- The treaty marked a significant step in **reducing Cold War tensions** and nuclear arms.

▪ The Strategic Arms Limitation Talks (SALT) and START Treaties:

- **SALT** were a **series of bilateral conferences and international treaties** signed between the United States and the Soviet Union.
- These treaties had the goal of **reducing the number of long-range ballistic missiles (strategic arms)** that each side could possess and manufacture.
- First treaty, known as SALT I, was signed in 1972.
 - By signing SALT I, the US and the USSR agreed to a limited number of ballistic missiles, as well as a limited number of missile deployment sites.



Note: In February 2023, Russia had announced to **suspend its participation in the New START Treaty**, the last remaining major military agreement with the United States.

- The New START Treaty came into force in February, 2011 between the United States of America and the Russian Federation on measures for the **further reduction and limitation of strategic offensive arms.**
- **The Helsinki Accords (1975):**
 - The Helsinki Final Act, signed in August, 1975, was not a treaty but a **declaration of principles agreed upon by 35 countries**, including NATO members and Warsaw Pact countries.
 - It aimed to improve **relations between East and West** and included commitments to respect human rights and territorial integrity.

What is NATO?

▪ About:

- **NATO, or the North Atlantic Treaty Organization**, is a political and military alliance consisting of 31 member countries.
- It was formed in 1949 to promote mutual defence and collective security among its members.

▪ Members:

- **In 1949, there were 12 founding members of the Alliance:** Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States.

- **Since then, 19 more countries have joined the Alliance:** Greece and Turkey (1952); Germany (1955); Spain (1982); Czechia, Hungary and Poland (1999); Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia (2004); Albania and Croatia (2009); Montenegro (2017); North Macedonia (2020); and Finland (2023).

- **Headquarters: Brussels, Belgium:**

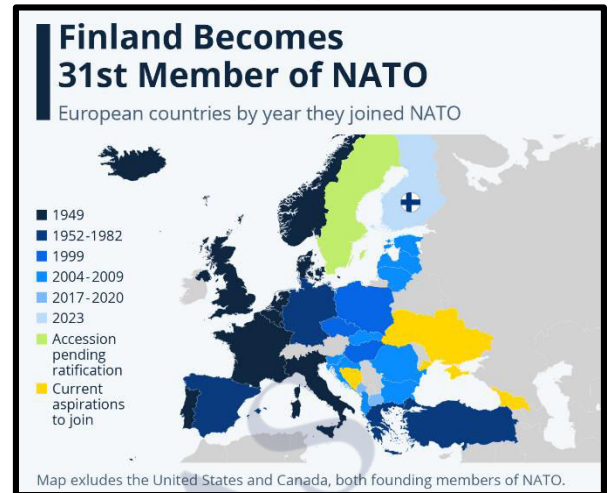
- Headquarters of Allied Command Operations: **Mons, Belgium.**

- **Special Provision:**

- **Article 5:** Article 5 of the NATO treaty is a key provision that states that an attack on one member is an attack on all members.
 - This provision has only been invoked once, **after the 9/11 terrorist attacks** in the United States.
- However, NATO's protection **does not extend to members' civil wars or internal coups.**

- **Alliances of NATO:**

- **Euro-Atlantic Partnership Council (EAPC)**
- **Mediterranean Dialogue**
- **Istanbul Cooperation Initiative (ICI)**



4. Flood in Somalia

Why in News?

Recently, the **U.N. Office for the Coordination of Humanitarian Affairs (OCHA)**, has described **Floods** that uprooted hundreds of thousands of people in Somalia and neighbouring countries in East Africa following a historic drought as a **Once-in-a-Century event.**

- The primary cause of the floods in Somalia has been attributed to torrential rainfall, exacerbated by **climatic phenomena like El Niño and the Indian Ocean Dipole.**
- The impact isn't confined to Somalia alone; neighboring Kenya has also been affected, with the death toll reaching 15 and regions like Mombasa, Mandera, and Wajir experiencing significant challenges due to the floods.

What is the Office for the Coordination of Humanitarian Affairs (OCHA)?

- OCHA is the part of the United Nations Secretariat **responsible for bringing together humanitarian actors** to ensure a coherent response to emergencies.
- OCHA also ensures there is a framework within which each actor can contribute to the overall response effort.

What is the Indian Ocean Dipole (IOD)?

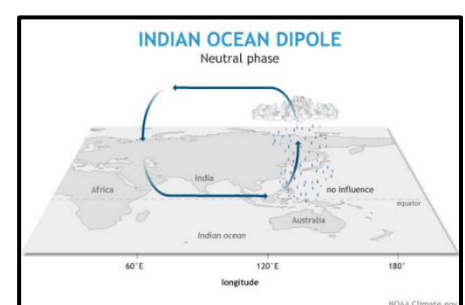
- **IOD or Indian Nino:**

- IOD, sometimes referred to as the **Indian Nino**, is similar to the **El Nino phenomenon**, occurring in the relatively smaller area of the Indian Ocean between the Indonesian and Malaysian coastline in the east and the African coastline near Somalia in the west.
 - The El Nino is the warmer-than-normal phase of the **El Nino Southern Oscillation**
 - **(ENSO) phenomenon**, during which there are generally warmer temperatures and less rainfall than normal in many regions of the world, including India.
- One side of the ocean, along the equator, gets warmer than the other.
- IOD is said to be positive when the western side of the Indian Ocean, near the **Somalia coast, becomes warmer** than the eastern Indian Ocean.
- It is negative when the western Indian Ocean is cooler.

- **Mechanism:**

- **Neutral Phase:**

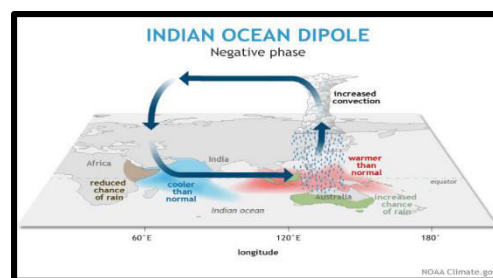
- The air circulation in the Indian Ocean basin moves from **west to east**, that is from the African coast towards the Indonesian islands, near the equator.
- At the surface, and in the opposite direction at the upper levels. That means the surface waters in the Indian Ocean get pushed from west to east.



- In a normal year, warmer waters in the western Pacific near Indonesia cross over into the Indian Ocean and make **that part of the Indian Ocean slightly warmer**. That causes the air to rise and helps the prevailing air circulation.

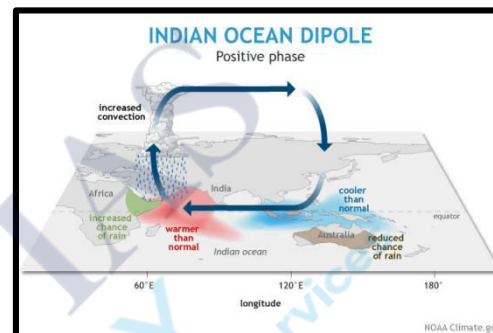
○ **Negative IOD:**

- In the years when the air circulation becomes stronger, more warm surface waters from the African coast are pushed towards the Indonesian islands, making that region warmer than usual. This causes hotter air to rise, and the cycle reinforces itself.
- This is the state of negative IOD.



- **Positive IOD:** Air circulation becomes slightly weaker than normal. In some rare cases, the air circulation even reverses direction. The consequence is that the African coast becomes warmer while the Indonesian coastline gets cooler.

- A positive IOD event is often seen developing at times of an El Niño, while a negative IOD is sometimes associated with La Niña.
- During El Niño, the Pacific side of Indonesia is cooler than normal because of which the Indian Ocean side also gets cooler. That helps the development of a positive IOD.



▪ **Impact of IOD:**

- In the Indian Ocean, IOD exhibits an ocean-atmosphere interaction that closely resembles the fluctuations observed during El Niño events in the **Pacific Ocean**. However, the IOD is considerably less powerful compared to El Niño, resulting in relatively minimal impacts.
- A positive IOD helps rainfall along the African coastline and also over the Indian sub-continent while suppressing rainfall over Indonesia, southeast Asia and Australia. The impacts are opposite during a negative IOD event.

What are the Key Facts About Somalia?

▪ **Location:**

- Somalia is situated in the **Horn of Africa**, bordered by the **Gulf of Aden** to the north, the Indian Ocean to the east, Kenya and Ethiopia to the west, and Djibouti to the northwest.

▪ **Capital:**

- Mogadishu is the capital and largest city in Somalia.

▪ **Terrain:**

- The country features **diverse landscapes including arid plains, plateaus, highlands, and mountain ranges**.
- The northern part of Somalia includes the Golis Mountains, while the southern region is characterized by savannas and grasslands.

▪ **Climate:**

- Somalia experiences a **predominantly arid to semi-arid climate with hot temperatures** and limited rainfall. The coastal areas have a more moderate climate due to the influence of the Indian Ocean.

▪ **Islands:**

- Somalia has several islands off its coast, including the Bajuni Islands and the Socotra Archipelago, which includes islands like Socotra, Abd al Kuri, and Samha. However, the Socotra Archipelago is administered by Yemen.



5. Call for Safer and Healthier Working Environments: ILO

Why in News?

Recently, the **ILO (International Labour Organization)** has released a report titled '**A Call for Safer and Healthier Working Environments**', which will be discussed at the **23rd World Congress on Safety and Health at Work (WCSHW)** in Sydney, Australia.

- The WCSHW, first held in 1955, is one of the largest international conferences for **work health and safety**. It aims to connect global leaders in safety and harm prevention from over 120 countries.

What are the Key Highlights of the Report?

- **Annual Deaths:**
 - Approximately 30 lakh (3 million) workers globally die each year due to work-related accidents and diseases.
 - **More than 63% of these deaths** occur in the **Asia-Pacific region**.
- **Major Causes of Deaths:**
 - Long working hours (55 hours or more per week) **led to the most fatalities in 2016**, accounting for nearly 7.45 lakh deaths.
 - Exposure to occupational particulate matter, **gases, and fumes resulted in around 4.5 lakh deaths**.
 - Occupational injuries caused approximately 3.63 lakh deaths.
- **Fatal Occupational Injury Rate (FOIR):**
 - Sectors such as mining and quarrying, construction, and utilities were identified as the **most hazardous globally based on fatal occupational injury rates**.
 - The FOIR is a **statistical measure used to quantify** the number of deaths resulting from work-related accidents or injuries within a specific occupational group, industry, or geographic region over a specified period.
- **ILO Conventions:**
 - So far 79 out of the 187 member countries **have ratified the ILO Occupational Safety and Health Convention**, while 62 countries have ratified the **Promotional Framework for Occupational Safety and Health Convention, 2006**.
 - **India has not ratified** both the conventions. Recently, in the wake of **Uttarkashi tunnel incident**, the Central Trade Unions had urged the Union government to ratify the conventions.
- **Work-Related Diseases:**
 - A significant portion of work-related deaths (26 lakh) is attributed to **work-related diseases**, including circulatory diseases, **malignant neoplasms (Cancerous tumours), and respiratory diseases**.
 - Changing trends in diseases due to occupational exposure, such as increased **cases of trachea, bronchus, and lung cancers attributable** to chromium exposure, and rising cases of mesothelioma due to asbestos exposure.
- **Decrease in Certain Health Risks:**
 - Deaths due to exposure to asthmagens and particulate matter, gases, and fumes have decreased by over 20%.
- **Recommendations:**
 - ILO called for five categories of **“Fundamental Principles and Rights at Work”** for ensuring safety and health at work. These principles include:
 - Freedom of association and the effective recognition of the right to collective bargaining
 - Elimination of all forms of forced or compulsory labor
 - Abolition of child labor
 - Elimination of discrimination in respect of employment and occupation
 - A safe and healthy working environment

What is the International Labor Organization?

- It is the only tripartite **United Nation (UN) agency**. It brings together governments, employers and workers of 187 member States (India is a member), to set labour standards, develop policies and devise programmes promoting decent work for all women and men.
 - It received the **Nobel Peace Prize** in 1969.
- It was established in 1919 by the **Treaty of Versailles as an affiliated agency of the League of Nations** and became the first affiliated specialized agency of the UN in 1946.
- Headquarters: Geneva, Switzerland

6. Global Energy Monitor's Global Coal Plant Tracker

Why in News?

Recently, **Global Energy Monitor (GEM)**, a not-for-profit cataloging coal projects worldwide, has released its quarterly update of **GEM's Global Coal Plant Tracker**, highlighting several key findings regarding the **status of coal power projects worldwide**.

What are the Key Findings of the GEM Report?

- **Global Trends in Coal Construction:**
 - More than 95% of coal plant capacity beginning construction in 2023 is in China, showcasing a dominance in new coal projects.
 - A decline is observed in new coal power capacity construction for the **second consecutive year**, signaling a shift away from coal in many regions.
- **Coal Capacity Under Consideration:**
 - 110 GW of coal power capacity is under consideration in 32 countries, indicating a significant amount of **Coal** projects are still being deliberated.
 - India, Bangladesh, and Indonesia lead, **comprising 83% of the proposed coal capacity outside China.**
- **Trends in Project Status:**
 - 18.3 GW of coal capacity **moved from proposed to shelved or canceled status** in the first nine months of 2023 across several countries.
 - Despite cancellations, 15.3 GW of entirely new **proposals emerged in India**, Indonesia, Kazakhstan, and Mongolia.
 - India, Indonesia, Bangladesh, and Vietnam represent 84% of the 67 GW of coal power capacity under construction outside China as of July 2023.
- **Indian Scenario:**
 - India plans to increase coal-fired power plant capacity significantly by 2032, aiming for **80 GW compared to the previously stated 27 GW in the National Electricity Plan 2022-32 (NEP).**
 - Specific states in India have seen advancements in coal plant projects, with permits granted and progress reported in states like Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, and Uttar Pradesh.
- **Recommendations:**
 - Amidst global efforts to combat climate change, the report emphasizes the urgent need to cease the construction of new unabated coal power plants to limit global warming effectively.

What is Global Energy Monitor (GEM)?

- **About:**
 - GEM develops and shares **information in support of the worldwide movement for clean energy.**
 - By studying the evolving international energy landscape and creating databases, reports, and interactive tools that enhance understanding, **GEM seeks to build an open guide to the world's energy system.**
 - Users of GEM's data and reports include the **International Energy Agency, United Nations Environment Programme, the World Bank, and the Bloomberg Global Coal Countdown.**
- **Global Coal Plant Tracker:**
 - It is an online database that identifies and **maps every known coal-fired generating unit** and every new unit proposed since 2010 (30 megawatts and larger).
 - Developed by GEM the tracker uses footnoted wiki pages to document each plant and is updated biannually, around January and July.

What is Coal?

- **About:**
 - It is a type of fossil fuel found in a form of **sedimentary rocks and is often known as 'Black Gold'.**
 - It is a conventional source of energy and is widely available. It is used as a **domestic fuel**, in industries such as iron and steel, steam engines and to generate electricity. Electricity from coal is called thermal power.
 - The leading coal producers of the world include China, US, Australia, Indonesia, India.
- **Distribution of Coal in India:**
 - **Gondwana Coal Fields (250 million years old):**
 - Gondwana coal makes **up to 98 % of the total reserves and 99 %** of the production of coal in India.
 - Gondwana coal forms India's metallurgical grade as well as superior quality coal.
 - It is found in Damodar (Jharkhand-West Bengal), Mahanadi (Chhattisgarh-Odisha), Godavari (Maharashtra), and Narmada valleys.
 - **Tertiary Coal Fields (15 – 60 million years old):**
 - Carbon content is very low but is rich in moisture and sulphur.
 - Tertiary coalfields are **mainly confined to extra-peninsular regions**
 - Important areas include Assam, Meghalaya, Nagaland, Arunachal Pradesh, Jammu and Kashmir, Himalayan foothills of Darjeeling in West Bengal, Rajasthan, Uttar Pradesh, and Kerala.

▪ **Classification:**

- **Anthracite** (80 - 95% carbon content, found in small quantities in J&K).
- **Bituminous** (60 - 80% of carbon content and is found in Jharkhand, West Bengal, Odisha, Chhattisgarh and Madhya Pradesh).
- **Lignite** (40 to 55% carbon content, high moisture content and is found in Rajasthan, Lakhimpur (Assam) and Tamil Nadu).
- **Peat** (less than 40% carbon content and it is in the first stage of transformation from organic matter (wood) to coal).



1. International Biosphere Reserve Day 2023

Why in News?

The second anniversary of **International Biosphere Reserve Day**, celebrated on **November 3**, annually highlights the critical importance of **biosphere reserves (BR)** in safeguarding our environment and promoting sustainability.

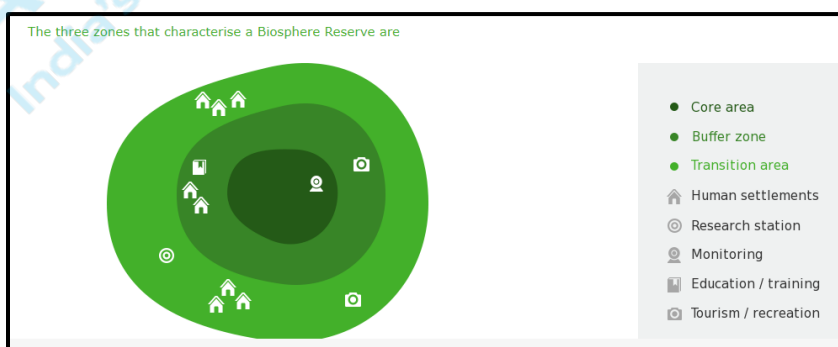
- In this context, the **United Nations Educational, Scientific and Cultural Organization (UNESCO)** partnered with the **Ministry of Environment, Forests and Climate Change** and the **National Centre for Sustainable Coastal Management**, concluded the **10th South and Central Asian Biosphere Reserve Network Meeting (SACAM)** in Chennai, India.
 - The SACAM event, themed "**Ridge to Reef**," facilitated collaboration on sustainable environmental practices in South and Central Asia.

What is World Biosphere Reserve Day?

- This day celebrates the role of biosphere reserves in **conserving biodiversity** and promoting sustainable development.
- Established by **UNESCO in 2022**, to be observed annually on November 3.
- Aims to raise awareness, share best practices, and showcase achievements of the **World Network of Biosphere Reserves (WNBR)**.

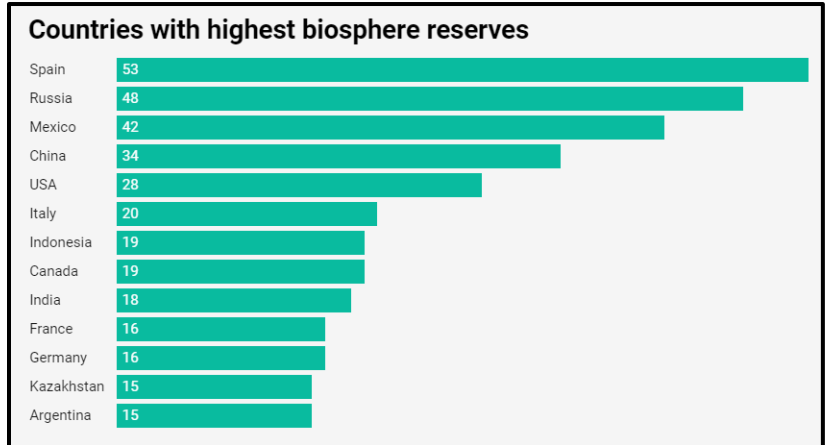
What is a Biosphere Reserve?

- **About:**
 - Biosphere reserves are 'learning places for **sustainable development**'.
 - They are sites for testing interdisciplinary approaches to understanding and managing changes and interactions between **social and ecological systems**, including **conflict prevention and management of biodiversity**.
 - They are places that provide local solutions to global challenges. Biosphere reserves include terrestrial, marine and coastal ecosystems.
 - Each site promotes solutions reconciling the conservation of biodiversity with its sustainable use.
- **Features:**
 - Biosphere reserves consist of **three main zones**:
 - The **core area** is the strictly protected zone, where natural processes and biodiversity are preserved.
 - The **buffer zone** surrounds the core area, where human activities are compatible with conservation and research objectives.
 - The **transition area** is the outermost zone, where sustainable development and human well-being are promoted.
 - Biosphere reserves are **nominated by national governments** and remain under the sovereign jurisdiction of the states where they are located.
 - Biosphere reserves are designated by **UNESCO under the Man and the Biosphere (MAB) Programme** which was launched in 1971.
 - The MAB Programme aims to improve the relationship between **people and their environment** and to foster the integration of natural and social sciences.
 - The MAB Programme also supports the implementation of the **2030 Agenda for Sustainable Development** and the **post-2020 global biodiversity framework**.
- Biosphere reserves are part of the **World Network of Biosphere Reserves (WNBR)**, which currently comprises **748 sites in 134 countries, including 22 transboundary sites**.
 - The WNBR facilitates the exchange of information, knowledge, and best practices among biosphere reserves and their stakeholders.



- The WNBR also fosters cooperation and innovation for addressing global challenges such as **climate change, biodiversity loss, poverty, and pandemics.**

- Biosphere reserves are nominated by **national governments** and remain under the sovereign jurisdiction of the states where they are located.
- Biosphere reserves are also supported by other United Nations agencies, for example, the **United Nations Development Programme**, the **United Nations Environment Programme**, as well as the **International Union for Conservation of Nature.**



What is the Importance of Biosphere Reserves?

- Biosphere reserves play a crucial role as **carbon sinks, absorbing carbon dioxide** from the atmosphere and contributing to climate change mitigation.
 - Acting as **pockets of hope in the face of the climate crisis**, the UNESCO biosphere reserves are hidden oases, protecting biodiversity, reducing pollution, and enhancing climate resilience.
- Biosphere reserves act as sanctuaries for a wide variety of ecosystems, including **tropical rainforests, alpine deserts, and coastal areas**, providing habitats for countless unique and endangered plant and animal species.
 - Biosphere reserves are home to more than **250 million people**, who depend on the ecosystem services and natural resources for their livelihoods.
- They promote sustainable economic development by offering opportunities for **eco-tourism** and other environmentally friendly activities, benefiting local communities.
- Biosphere reserves also showcase how to involve **local communities**, indigenous peoples, women, youth, and other stakeholders in decision-making and management processes.

What are the Challenges for Biosphere Reserves?

- Rapid **deforestation** threatens the integrity of ecosystems within biosphere reserves.
 - Overharvesting of natural resources, such as timber and wildlife, can deplete reserves' ecological resources.
- **Habitat loss** due to human activities and urban expansion endangers various plant and animal species.
- The introduction of **invasive species disrupts the balance of native ecosystems**, impacting biodiversity.
 - Controlling and managing invasive species is an ongoing challenge.
- **Climate change** poses a significant threat, affecting the stability and resilience of ecosystems within biosphere reserves.
 - Altered weather patterns, rising temperatures, and extreme events can lead to ecosystem disturbances.
- Changes in **land use, such as agriculture, mining**, and infrastructure development, impact the natural landscape of reserves.
- Pollution from **agricultural runoff, industrial activities, and waste disposal** can harm the environment within biosphere reserves.
- Maintaining water quality and mitigating pollution is crucial for ecosystem health.
- Many biosphere reserves lack sufficient resources and funding for conservation and management efforts.

Way Forward

- **Strengthening Local Initiatives:**
 - Encouraging and supporting local communities to take an active role in managing and protecting these vital ecosystems is a critical way forward.
 - The successes of local community-driven conservation efforts, such as those in the **Sundarban Biosphere Reserve** and the **Gulf of Mannar Biosphere Reserve**, should be highlighted.
 - In the Sundarban Biosphere Reserve in India, local communities are working together to **manage mangrove forests and protect the biodiversity** of the region.
 - In the **Gulf of Mannar Biosphere Reserve** in India, local communities, including women, are contributing towards conservation efforts by forming self-help groups, while the youth are getting engaged in eco-tourism.
 - The concept of '**plastic checkpoints**' introduced in the Gulf of Mannar Biosphere Reserve can serve as a

model for addressing plastic waste in other biosphere reserves.

▪ **Empowering Sustainable Practices:**

- Promote sustainable practices within biosphere reserves, emphasizing eco-friendly tourism and community involvement.
- Encourage sustainable agriculture, responsible resource management, and waste reduction measures to minimize the ecological footprint.

▪ **Climate Resilience and Adaptation:**

- Establish **climate-resilient strategies within biosphere reserves**, including measures to combat the impacts of climate change.
- Develop adaptation plans to safeguard ecosystems and reduce vulnerabilities to changing weather patterns.

▪ **Resource Allocation and Funding:**

- Advocate for increased **financial and technical support** for biosphere reserves, enabling them to fulfill their conservation and management goals.
 - Seek collaboration with international organizations, governmental bodies, and non-profit entities to secure resources and expertise.

2. Worker Productivity and Economic Growth

Why in News?

Recently, one of the Industry Leaders, has sparked a debate over **Worker Productivity and Economic Growth** by urging young Indians to **work 70 hours per week**.

- He cited Japan and Germany as examples of countries that grew because their citizens worked harder and for longer hours to rebuild their nations in the aftermath of the **Second World War**.

What is Worker Productivity?

▪ **About:**

- The only conceptual difference between the Worker Productivity and Labor Productivity is that the 'work' in worker productivity describes **mental activities while the 'work' in labour productivity is mostly associated with manual activities**.
- Productivity of an activity is usually measured as the quantum of **output value per unit of labour (time) cost at a micro level**.
- At a **macro level**, it is measured in terms of the labor-output ratio or change in Net Domestic Product (NDP) per worker in each sector (where working hours are assumed to be 8 hours per day).

▪ **Measuring Intellectual Worker Productivity:**

- In certain sectors, particularly those involving intellectual labor, evaluating the value of output can be inherently challenging.
 - As a result, **worker productivity is often approximated** based on worker income, which can create **complications when attempting to correlate increased working hours** with higher productivity, particularly if workers don't receive fair compensation for their additional efforts.

▪ **Role of Skill in Productivity:**

- Productivity is not just about time, **it's about skill**. By investing in education, **training, health**, and other aspects of Human Capital, workers can become more efficient and create more value in the same amount of time.
- So, working fewer hours **doesn't necessarily reduce output**; it can actually **improve workers' quality of life**.
 - The economy can still grow, even if **nominal wages remain the same**, as long as workers become more skilled and productive.

Is There a Link Between Worker Productivity and Economic Growth?

- While an increase in productivity made through any sector is likely to affect the value added and the accumulation or growth in the economy, the **relationship between the two is quite complex**.
- During the period 1980 to 2015, India's **Gross Domestic Product (GDP)** expanded significantly, indicating **robust economic growth**. However, this economic growth did not uniformly benefit all segments of society.
 - In 1980, India's GDP was about USD 200 billion, which by 2015 exceeded USD 2,000 billion.
 - However, when looking at income distribution, the **middle-income group's share in the national income decreased from 48% to 29%**, and the low-income group's share dropped from 23% to 14%, during 1980-2015.
 - In contrast, the **top 10% income group saw their share increase from 30% to 58%**, indicating a growing Income Gap in the country during this period.
- This income inequality and skewed **distribution of prosperity among different income groups** is not explained by

productivity but by poor labor laws, hereditary transfer of wealth, and exorbitant pay packages.

What are the Government Schemes to Improve Productivity and Efficiency in India?

- **Skill Development Initiatives:** The government has launched various skill development programs like **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**, **National Skills Qualifications Framework (NSQF)** and **Recognition of Prior Learning (RPL)** to enhance the employability of the workforce.
- **Digital India:** The **Digital India** initiative aims to boost efficiency through digitalization and increased access to online services, reducing bureaucracy and enhancing productivity.
- **Make in India:** **Make in India** campaign encourages investment in manufacturing and promotes economic growth, creating job opportunities and enhancing productivity.
- **Startup India:** **Startup India** fosters entrepreneurship, the government introduced Startup India, offering support and incentives to startups and small businesses.
- **Ease of Doing Business Reforms:** **EoDB** reforms aim to simplify regulations, streamline business processes, and make it easier for businesses to operate, thereby increasing productivity.
- **National Industrial Corridor Development:** Developing **Industrial Corridors** across the country helps attract investment, create jobs, and stimulate economic growth.
- **Incentives for Research and Innovation:** Programs like **Atal Innovation Mission** and **Biotechnology Industry Research Assistance Council (BIRAC)** provide support and incentives for research and innovation.
- **Tax Reforms:** Implementation of the **Goods and Services Tax (GST)** simplifies taxation and boosts efficiency for businesses.

Does India have Low Worker Productivity?

- India's worker productivity isn't necessarily low, despite income-based misconceptions. The decline in **wage shares and the rise in profits since the 1980s can be attributed to various factors**, including informal employment, labor laws, and unfavorable regulations for workers.
- Kronos, a global workforce management company, has recognized Indian employees as one of the most hardworking employees in the world.
 - On the contrary, India ranks low in terms of average monthly wages.

Way Forward

- India presents a unique case and any arbitrary comparison **with others would only lead to dubious analytical inferences** and fallacious policy prescriptions.
 - For example, Japan and Germany are **neither comparable in terms of the size and quality of the labour force** nor in terms of the nature of their technological trajectories or their socio-cultural and political structures.
- Enhancing social investments, focusing on exploring domestic consumption potential for increased productivity with a human centric assessment of development achievements is the **way to a more sustainable and desirable outcome**.

3. Global TB Report 2023

Why in News?

Recently, the **World Health Organization (WHO)** has released the **Global Tuberculosis (TB) report 2023**, highlighting the high burden of TB worldwide in 2022.

- India accounted for the highest number of TB cases in the world in 2022, with 2.8 million TB cases, representing 27% of the global burden.

What are the Key Findings of the Global TB Report 2023?

- **Burden of TB:**
 - It was the world's second leading cause of death from a single infectious agent in 2022, following **Covid-19**.
 - TB caused almost twice as many deaths as **Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome stage (AIDS)**. More than 10 million people continue to fall ill with TB every year.
 - 30 high burden TB countries collectively accounted for 87% of the world's TB cases in 2022.
 - Among the top eight high burden countries, in addition to India, are Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh, and the Democratic Republic of Congo.
- **Increase in TB Diagnosis:**

- In 2022, 7.5 million people were diagnosed with TB, marking the highest figure recorded since WHO began global TB monitoring in 1995.
- **High Mortality Without Treatment:**
 - Without treatment, the death rate from TB disease is high, at about 50%.
 - However, with treatments currently recommended by WHO (a 4–6 months course of anti-TB drugs), about **85% of people with TB can be cured**.
- **Global Recovery in TB Diagnosis and Treatment:**
 - There is a **positive global recovery in the number of people diagnosed with TB** and treated in 2022, following two years of Covid-19-related disruptions.
 - Countries like India, Indonesia, and the Philippines, accounted for over 60% of the global reductions.
- **TB Incidence Rate:**
 - The TB incidence rate, which measures new cases per 100,000 population per year, increased by 3.9% between 2020 and 2022.
 - This increase **reversed the declining trend of about 2% per year** that had been observed for most of the past two decades.

What are the Findings Related to India?

- **TB Case Fatality Ratio in India:**
 - India reported a case **fatality ratio of 12%**, indicating that **12% of TB cases** in the country resulted in death.
 - The report estimates that **3,42,000 TB-related deaths occurred in India in 2022**, with 3,31,000 among HIV-negative individuals and 11,000 among those with HIV.
- **Multidrug-Resistant TB (MDR-TB):**
 - India recorded 1.1 lakh cases of multidrug-resistant TB (MDR-TB) in 2022, highlighting the continued challenge of MDR-TB as a public health crisis.

What are the Recommendations of the Report?

- Urgent action is required to end the global TB epidemic by 2030, a goal that has been adopted by all Member States of the **United Nations (UN)** and the WHO.
- **Universal Health Coverage (UHC)** is essential to ensure that all people who need treatment for TB disease or infection can access these treatments.
- Multisectoral action is **also needed to address TB determinants such as poverty**, undernourishment, HIV infection, smoking, and diabetes to reduce the number of people acquiring infection and developing TB disease.

What is Tuberculosis?

- **About:**
 - Tuberculosis is **an infection caused by Mycobacterium tuberculosis**. It can practically affect any organ of the body. The most common ones are lungs, pleura (lining around the lungs), lymph nodes, intestines, spine, and brain.
- **Transmission:**
 - It is an airborne infection that spreads through close contact with the infected, especially in densely populated spaces with poor ventilation.
- **Symptoms:**
 - Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever and night sweats.
- **Treatment:**
 - TB is a treatable and curable disease. It is treated with a standard 6-month course of 4 antimicrobial drugs that are provided with information, supervision and support to the patient by a health worker or trained volunteer.
 - Anti-TB medicines have been used for decades and strains that are resistant to 1 or more of the medicines have been documented in every country surveyed.
- **Multidrug-Resistant Tuberculosis (MDR-TB):**
 - It is a form of TB caused by bacteria that do not respond to isoniazid and rifampicin, the 2 most powerful, first-line anti-TB drugs.
 - MDR-TB is treatable and curable by using second-line drugs such as Bedaquiline.
 - Extensively **drug-resistant TB (XDR-TB)** is a more serious form of MDR-TB caused by bacteria that **do not respond to the most effective second-line anti-TB drugs**, often leaving patients without any further treatment options.

What are the Initiatives to Combat TB?

- **Global Efforts:**
 - The WHO has launched a joint initiative “**Find. Treat. All. #EndTB**” with the **Global Fund** and **Stop TB Partnership**.
 - WHO also releases the **Global Tuberculosis Report**.
- **India’s Efforts:**
 - **National Strategic Plan (NSP)** for Tuberculosis Elimination (2017-2025), The Nikshay Ecosystem (National TB information system), Nikshay Poshan Yojana (NPY- financial support), **TB Harega Desh Jeetega Campaign**.
 - Currently, **two vaccines VPM (Vaccine Projekt Management) 1002 and MIP (Mycobacterium Indicus Pranii)** have been developed and identified for TB, and are under Phase-3 clinical trial.
 - In 2018 **Nikshay Poshan Yojna** was launched, which aimed to support every Tuberculosis (TB) Patient by providing a Direct Benefit Transfer (DBT) of Rs 500 per month for nutritional needs.

4. Electoral Trusts Scheme, 2013

Why in News?

Recently, **Supreme Court** has reserved its judgment on the challenge to the central government’s Electoral Bonds Scheme.

- Before the introduction of the **Electoral Bonds (EB) Scheme** in 2018, another scheme for Electoral funding called **Electoral Trusts (ET) Scheme**, was introduced in 2013.

What is Electoral Trusts Scheme?

- **About:**
 - Electoral Trusts Scheme, 2013 was notified by the **Central Board of Direct Taxes (CBDT)**.
 - An Electoral Trust is a Trust set up by companies with the **sole objective to distribute the contributions received** by it from other Companies and individuals **to the political parties**.
 - Only the **companies registered under Section 25 of the Companies Act, 1956** are eligible to make an application for approval as an Electoral Trust. The electoral trusts have to **apply for renewal every three financial years**.
 - The scheme lays down a procedure for grant of approval to an electoral trust which will receive voluntary contributions and distribute the same to the political parties.
 - The provisions related to the electoral trust are under **Income-tax Act, 1961** and **Income tax rules-1962**.
- **Contributions to Electoral Trusts:**
 - They may receive contributions from:
 - An individual who is a citizen of India
 - A company registered in India
 - A firm or Hindu undivided family or an Association of persons or a body of individuals, resident in India.
 - They shall not accept contributions from:
 - An individual who is not a citizen of India or from any foreign entity whether incorporated or not;
 - Any other electoral trust registered under the scheme.
- **Mechanism for Distribution of Funds:**
 - For administrative expenses, the Electoral Trusts are permitted to set aside a maximum of 5% of the total funds collected during a financial year.
 - The remaining 95% of total income of the Trusts is required to be distributed to eligible political parties.
 - Parties registered under the **Representation of the People Act, 1951** are eligible to receive the contributions.
 - Electoral trust are required to keep and **maintain books of account including details of receipts, distribution and list of donors and receivers**.
- **Audit of Accounts of Electoral Trusts:**
 - Every electoral trust is required to get its accounts audited by an accountant and furnish the **audit report to the Commissioner of Income-tax** or the Director of Income-tax.

What are Electoral Bonds?

- **Electoral Bond** is a financial instrument for making donations to political parties.
- The bonds are issued in **multiples of Rs. 1,000, Rs. 10,000, Rs. 1 lakh, Rs. 10 lakh and Rs. 1 crore** without any maximum limit.

- **State Bank of India is authorised** to issue and encash these bonds, which are valid for fifteen days from the date of issuance.
- These bonds are redeemable in the designated account of a registered political party.
- The bonds are **available for purchase** by any person (who is a citizen of India or incorporated or established in India) **for a period of ten days each in the months of January, April, July and October** as may be specified by the Central Government.
- A person being an individual can buy bonds, either singly or jointly with other individuals.
- **Donor's name is not mentioned** on the bond.

How is Electoral Trust Scheme different from Electoral Bonds Scheme?

- **Transparency and Accountability:**
 - The functioning of **ETs is marked by transparency**. Contributors and beneficiaries are disclosed.
 - Electoral Trusts adhere to a robust reporting system, submitting detailed annual **contribution reports to the Election Commission of India (ECI)**. This ensures a comprehensive record of donations and their allocation.
 - On the other hand, the **EB Scheme** introduces a significant **lack of transparency**.
 - The **anonymity of donors** creates an opaque environment in the funding process, making it challenging to trace the origins of contributions.
- **Funding Trends (2013-14 to 2021-22):**
 - Data from nine financial years (2013-14 to 2021-22) show that political funding through the two government schemes shot up after the introduction of EBs, with the **bulk of donations coming through the EB scheme**.
 - Between 2017-18 and 2021-22, political parties got a total Rs 1,631 crore through ETs, while Rs 9,208 crore was donated through EBs.
- **Political Party Receipts:**
 - As per a **report by the Association for Democratic Reforms (ADR)**, a **single political party has secured 72% of the total donations** facilitated by ETs in the year 2021-22 and **57% of the funding through EBs** from 2013-14 to 2021-22.
 - The report also found that more than **55% of the funding** for political parties came through EBs.

5. India-US 2+2 Ministerial Dialogue

Why in News?

Recently, **5th Edition of the India-US 2+2 Ministerial Dialogue** took place, where both countries highlighted progress in various areas of bilateral cooperation including defense, semiconductors, emerging technology, space, health etc.

- The 2+2 meetings have been held annually with the US leaders since 2018.

What is a 2+2 Meeting?

- **About:**
 - The 2+2 meetings signify the **participation of two high-level representatives**, Ministers holding Foreign and Defence portfolios, from each of the two countries who aim to **enhance the scope of dialogue between them**.
 - Having such a mechanism enables the **partners to better understand and appreciate each other's strategic concerns** and sensitivities taking into account political factors on both sides, in order to build a stronger, more integrated strategic relationship in a rapidly changing global environment.
- **India's 2+2 Partners:**
 - The US is India's oldest and most important 2+2 talks partner.
 - Additionally, India has held **2+2 meetings with ministers from Australia, Japan, the United Kingdom and Russia**.



What are the Key Highlights of the India-US 2+2 Dialogue?

- **Defense Deals:**
 - Both nations aimed to collaboratively **co-develop and co-produce defence systems**, fostering a deeper partnership in defence technologies.

- India and the U.S. are currently negotiating deals for the purchase of MQ-9B unmanned aerial vehicles and the licensed manufacturer of General Electric's F-414 jet engine in India.
 - These deals align with India's goal of enhancing its defence capabilities.
- The Ministers **looked forward to the finalisation of a Security of Supply Arrangement (SOSA)**, a key priority in the Roadmap, which will further integrate the defence industrial ecosystems of both countries while strengthening supply chain resilience
- **Infantry Combat Vehicles and Future Plans:**
 - Both sides discussed infantry combat vehicles, particularly the Stryker, as part of the defence industry cooperation roadmap.
 - Cooperation in infantry combat systems will be formalized once the Indian military's needs are finalized, and a concrete production plan is established through collaboration between Indian and U.S. industry and military teams.
- **Advancements in Defence Technology Cooperation:**
 - Both sides reviewed the progress of the **India-U.S. Defence Industrial Ecosystem, INDUS-X**, launched in June 2023, aimed at expanding the strategic technology partnership and defence industrial cooperation.
- **Membership in Combined Maritime Forces:**
 - India's decision to become a full member of the **Combined Maritime Forces**, a multilateral construct headquartered in Bahrain, was welcomed by the Defense Secretary of the US.
 - This move signifies **India's commitment to regional maritime security**.
- **Maritime Security:**
 - Both nations **shared a focus on maritime security** in the **Indo-Pacific region**, acknowledging the **importance of safeguarding vital sea lanes** and promoting stability.
- **Space and Semiconductor Collaboration:**
 - The Ministers welcomed the rapid progress made under the India-US Initiative on **Critical and Emerging Technology (iCET)** to build science and technology and critical technology value chain collaborations in both the commercial and defence sectors.
 - They called on the respective governments, academic, research, and corporate sectors to continue to proactively build these strategic partnerships in emerging technologies **like quantum, telecom, biotechnology, Artificial Intelligence**, and semiconductors to accelerate global innovation and benefit the economies of both countries.
 - They welcomed the early meeting of the Strategic Trade Dialogue Monitoring Mechanism.
- **Discussion on Chinese Aggression:**
 - The US emphasized that the bilateral **relationship extends beyond addressing the challenges posed by China**.
- **India-Canada Row:**
 - The ongoing row between India and Canada, particularly concerning security concerns related to a **Khalistan separatist based in the US and Canada**, was addressed.
 - India communicated its position on core security concerns to its partners.
- **Israel-Hamas War:**
 - India reiterated its stance on the **Israel-Hamas Conflict**, advocating for a **two-state solution (Two countries officially demarcated and Internationally Recognised)** and the early resumption of dialogue.
 - Humanitarian assistance has been provided, emphasizing adherence to international humanitarian law and the condemnation of civilian casualties.

How have been India's Relations with the US?

- **About:**
 - The U.S.-India strategic partnership is founded on **shared values including a commitment to democracy** and upholding the rules-based international system.
 - Both have shared interests in promoting global security, stability, and economic prosperity through trade, investment, and connectivity.
- **Economic Relations:**
 - The U.S. has emerged as India's biggest trading partner in 2022-23 on account of increasing economic ties between the two countries.
 - The bilateral trade between India and the U.S. has increased by 7.65% to USD **128.55 in 2022-23 as against USD 119.5 billion in 2021-22**.
 - Exports to the U.S. rose by 2.81% to USD 78.31 billion in 2022-23 as against USD 76.18 billion in 2021-22, while imports grew by about 16% to USD 50.24 billion.
- **International Cooperations:**

- **India and the United States** cooperate closely at multilateral organizations, including the **United Nations, G-20, Association of Southeast Asian Nations (ASEAN) Regional Forum, International Monetary Fund, World Bank, and World Trade Organization.**
- The United States welcomed India joining the UN Security Council in 2021 for a two-year term and supports a reformed UN Security Council that includes India as a permanent member.
- Together with Australia and Japan, the United States and India convene as the **Quad** to promote a free and open Indo-Pacific and provide tangible benefits to the region.
- India is also one of twelve countries partnering with the United States on the **Indo-Pacific Economic Framework for Prosperity (IPEF).**
- India is a member of the **Indian Ocean Rim Association (IORA)**, at which the United States is a dialogue partner.
- In 2021, the United States joined the International Solar Alliance headquartered in India, and in 2022 the **United States Agency for International Development (USAID).**
- **Defence Pacts:**
 - India has now signed all four foundational agreements with the US; the **Logistics Exchange Memorandum of Agreement (LEMOA)** in 2016, the **Communications Compatibility and Security Agreement (COMCASA)** in 2018, and the **Basic Exchange and Cooperation Agreement for Geo-Spatial cooperation (BECA)** in 2020.
 - While the **General Security of Military Information Agreement (GSOMIA)** was signed a long time ago, an extension to it, the Industrial Security Annex (ISA), was signed in 2019.

What are the Major Challenges between India and the US?

- **US Criticism of India's Foreign Policy:**
 - If the Indian elite has long seen the world through the lens of non-alignment, alliance relationships have been at the heart of US' foreign policy since the **Second World War.**
 - India's policy of nonalignment especially during the Cold War has always been a point of concern for the West, especially the US.
 - After the 9/11 attacks, the US asked India to dispatch troops to Afghanistan; the Indian military vetoed the request.
 - When the US invaded Iraq in 2003, even then India's erstwhile PM withheld military support.
 - Even today, India refuses to toe the American line on the Russian-Ukraine war and its **import of cheap Russian oil** continues to break records.
 - Pro-US voices have often been raised demanding India to get "on the right side of history".
- **India's Engagement with US Adversaries:**
 - India has criticised the US decision to block Iranian and Venezuelan oil from the open market.
 - India has actively worked to bring Iran into the **SCO (Shanghai Cooperation Organization).**
 - India has also held 18 rounds of talks with China to resolve the **border dispute besides remaining a key participant in the China-backed Asian Infrastructure Investment Bank.**
- **US' Criticism of India's Democracy:**
 - Various US organisations and foundations, from time to time, with the tacit support of some Congressmen and Senators, come out with reports questioning the present state of democratic discourse, press and religious freedom and condition of the minorities in India.
 - Some of them include the **International Religious Freedom Report 2023 and the Human Rights Report on India 2021** by the US State Department.
- **Economic Tensions:**
 - The **Atmanirbhar Bharat Campaign** has exacerbated the view in the US that India is increasingly becoming a protectionist closed market economy.
 - Effective in June 2019, the USA decided to withdraw duty-free benefits to Indian exporters under the **GSP programme** affecting India's export-oriented sectors such as pharma, textiles, agri products and automotive parts.

Way Forward

- The partnership between the two countries is critical for ensuring a **free, open, and rules-bound Indo-Pacific region.**
- The unparalleled Demographic Dividend provides enormous opportunities for the US and Indian firms for technology transfer, manufacturing, trade and investment.
- India is emerging as a leading player in an international system that is undergoing an unprecedented transformation. It shall use its present situation to explore opportunities to further its vital interests.

6. Crowdfunding for Terrorism Financing: FATF

Why in News?

Recently, **FATF (Financial Action Task Force)** has released a report titled-"**Crowdfunding for Terrorism Financing**", highlighting that violent extremist organizations have employed well-structured networks for fundraising purposes.

- The report makes a reference to the **Popular Front of India (PFI)** as having resorted to solicitation for **funds at mosques and public places**, which were ultimately used to **procure arms and ammunition** and for training the cadres.

What is Crowdfunding?

- **About:**
 - Crowdfunding is a **dynamic fundraising method** that leverages online platforms to gather **small contributions from a large pool of individuals** for various purposes such as supporting charitable causes, funding startup ventures, or financing creative projects.
 - While crowdfunding is predominantly used for legitimate purposes, recent events have exposed its potential exploitation for illegal activities, notably **by terrorists and terrorist groups**.
 - These entities utilize fundraising platforms and social media to **solicit financial support globally for their extremist causes**.
- **Methods of Misuse for Terror Financing:**
 - Abuse of humanitarian, charitable and **non-profit causes which can act as a front to raise funds for terrorism**.
 - Dedicated **crowdfunding platforms or websites** which, given the volume and variety of activity, makes it difficult to detect illicit activity.
 - Social media **platforms and messaging apps** to allow extremists to amplify their messages and lead users to specific fundraising causes.
 - Interaction of **crowdfunding with virtual assets**, including the use of privacy coins and anonymity enhancing services such as tumblers and mixers.

What are the Key Highlights of the Report?

- **Mixed Fundraising Strategies:**
 - The PFI collected funds through solicitation at religious places, such as mosques, and public spaces.
 - Additionally, the group used modern digital methods, including the circulation of QR codes and **bank account details to encourage donations**.
 - Funds collected by the organization **involved both domestic and foreign transactions**, making the investigation challenging due to the **multi-dimensional nature of the financial flows**.
- **Diverse Use of Funds:**
 - Funds raised through crowdfunding **were not limited to a single purpose**. A portion of the **collected funds was invested in businesses and real estate projects, aiming to generate a regular income for the organization's terrorist activities**.
- **Global Context:**
 - The report places the issue of crowdfunding for terrorism financing in a global context. It highlights that while most crowdfunding activities are legitimate, terrorist organizations like ISIL (Islamic State of Iraq and the Levant) and Al-Qaeda have exploited these platforms to raise money for their activities.
- **Recommendations:**
 - The FATF report emphasizes the need for **consistent Anti-Money Laundering and Counter-Terrorist Financing (AML/CFT) regulations** on a global scale.
 - It points out that many countries do not systematically assess the risks associated with crowdfunding activities, leading to a lack of comprehensive data about its misuse.
 - FATF highlights the **cross-border nature of crowdfunding campaigns and the associated financial transfers**.
 - Countries are urged to **recognize that even if their jurisdiction does not have significant domestic terrorism activity, it can still be used as a pass-through for financial flows**.

What is PFI?

- The Popular Front of India formed in 2007 through the merger of three Muslim organizations in southern India in Tamil Nadu, emerged in the aftermath of the ban on the Students Islamic Movement of India (SIMI) and has been involved in various social and Islamic religious activities among Muslims.

- The PFI has presented itself as an organization advocating for the rights of minorities, Dalits, and **marginalized communities but has faced allegations of involvement in extremist activities.**
- In 2022, the Ministry of Home Affairs had declared the PFI along with its associates or affiliates or fronts as an **“unlawful association”**..

How to Deal with Such Organisations while Preserving Civil Liberties and Ensuring National Security?

- **Clear Legal Framework:**
 - Establish a **clear and comprehensive legal framework** that outlines the conditions under which an **organization can be designated as a threat to national security.**
 - This framework should be **based on constitutional principles**, international **Human Rights** standards, and due process.
- **Judicial Oversight:**
 - The judiciary can assess whether the government's actions are in accordance with the law and protect individuals' rights.
- **Transparency and Accountability:**
 - Maintain transparency in the **process of designating organizations as unlawful and disclose** the reasons for such actions.
 - Establish mechanisms for **accountability and oversight to prevent misuse of the legal framework.**
- **Targeted Actions:**
 - Focus on targeting individuals or entities directly **involved in criminal or terrorist activities** rather than broadly targeting an entire organization. This approach minimizes the impact on innocent members and supporters.
- **Intelligence and Surveillance:**
 - Enhance **intelligence gathering and surveillance capabilities** to monitor the activities of potential threats. Ensure that these actions are in accordance with the law and subject to oversight.
- **Public Awareness:**
 - Promote public **awareness about the dangers of extremist ideologies** and the importance of reporting suspicious activities. Encourage the public to be proactive in safeguarding national security.

7. Jurisdiction of Lokpal

Why in News?

Recently, the **Lokpal of India** stated that it cannot consider a plea from the wife of a government official in Uttar Pradesh who died by suicide, citing jurisdictional limitations.

- The official was allegedly pressured by superiors to sign completion certificates for Central government projects under the **Swadesh Darshan Scheme**.

What was the Stand Taken by the Lokpal Of India?

- **Jurisdictional Limitations of Lokpal in Uttar Pradesh Case:**
 - The Lokpal, clarified that it lacks the authority to address a complaint against the Principal Secretary, Tourism and Culture, and Director General, Tourism, Uttar Pradesh.
 - The issue, involving alleged criminal activities, falls under the **purview of criminal law and procedure**, prompting the Lokpal to declare it cannot entertain the plea.
- **Forwarding the Complaint:**
 - Despite its jurisdictional constraints, the Lokpal **took a step forward by forwarding the complaint to the Union Tourism Secretary** for further investigation.

Swadesh Darshan Scheme:

- The Swadesh Darshan Scheme was launched by the Centre in **2014-15 for the integrated development of theme-based tourist circuits**. Under the scheme, the Ministry of Tourism provides financial assistance to State governments for the development of tourism infrastructure in the country.
- The second phase of the scheme was launched **earlier in 2023**. Important circuits for promoting tourism under the scheme include:
 - **Buddhist circuit**
 - **Ramayana circuit**
 - **Spiritual Circuit etc.**

What are Lokpals?

- **About:**
 - The Lokpal and Lokayukta Act, 2013 provided for the establishment of Lokpal for the Union and Lokayukta for States.
 - These institutions are **statutory bodies without any constitutional status**.
- **Functions:**
 - They perform the function of an "**ombudsman**" and inquire into allegations of corruption against certain public functionaries and for related matters.

What comes under the Jurisdiction of Lokpal and its Powers?

- **Related to Prime Ministers (PMs) and Ministers:**
 - Jurisdiction of Lokpal includes **PMs, Ministers, Members of Parliament (MPs), Groups A, B, C and D officers and officials** of Central Government.
 - Jurisdiction of the Lokpal included the **Prime Minister** except on allegations of corruption relating to international relations, security, public order, atomic energy and space.
 - The Lokpal **does not have jurisdiction over Ministers and MPs** in the matter of anything said in Parliament or a vote given there.
- **Related to Civil Servants and Bureaucrats:**
 - Its jurisdiction also includes any person who is or has been in charge (**director/ manager/ secretary**) of **anybody/ society set up by central act or any other body financed/ controlled by central government** and any other person involved in act of abetting, bribe giving or bribe-taking.
 - The Lokpal Act mandates that all public officials should furnish the assets and liabilities of themselves as well as their respective dependents.
- **Related to Central Bureau of Investigation (CBI):**
 - It has the powers to **superintendence over, and to give direction to CBI**.
 - If Lokpal has referred a case to CBI, the investigating officer in such case cannot be transferred without the approval of Lokpal.

What are the Concerns Regarding the Working of Lokpal?

- **Lack of Fulltime Chairperson:** The Lokpal has not had a **full-time chairperson since May 2022**, raising concerns about its ability to function effectively.
- **Inaction in Dealing with Corrupt Officials:** According to a **parliamentary committee report** tabled in **Parliament** in April 2023, the **Lokpal "has not prosecuted even a single person accused of graft till date."**
 - According to data provided by the Lokpal office to the panel on Department of Personnel and Training (DoPT), since 2019-20, **the anti-corruption body received 8,703 complaints out of which 5,981 complaints were disposed of.**
 - However, the fact that no one has been prosecuted for **corruption** despite the large number of complaints received has raised concerns about the Lokpal's ability to take action against corrupt officials.
- **Lack of Transparency:** Some experts have also criticized the Lokpal's **lack of transparency and accountability**, which they say undermines its credibility and effectiveness.

Way Forward

- In order to tackle the problem of corruption, the institution of the ombudsman should be strengthened **both in terms of functional autonomy and availability of manpower**.
- Greater transparency, more **right to information** and empowerment of citizens and citizen groups is required along with a good leadership that is willing to subject itself to public scrutiny.
- Appointment of Lokpal in itself is not enough. Merely adding to the strength of investigative agencies will increase the size of the government but not necessarily improve governance.
 - The slogan adopted by the government of "**less government and more governance**", should be followed in letter and spirit.
- Moreover, Lokpal and Lokayukta must be **financially, administratively and legally independent of those whom they are called upon to investigate and prosecute**.
- Lokpal and **Lokayukta appointments must be done transparently** so as to minimize the chances of the wrong sorts of people getting in.
- There is a need for a **multiplicity of decentralized institutions with appropriate accountability mechanisms**, to avoid the concentration of too much power, in any one institution or authority.

8. Frictions in Centre-State Relations

Why in News?

In recent years, the frequency and intensity of disputes between the Centre and States have increased, weakening the Pillars of **Cooperative Federalism** and also have implications on the Indian Economy.

Note: In Cooperative federalism, the **Centre and states share a horizontal relationship**, where they “**cooperate**” in the **larger public interest**.

- It is an important tool to enable **states’ participation in the formulation** and implementation of national policies.
- Union and the states are constitutionally obliged to cooperate with each other on the matters specified in **Schedule VII of the constitution**.

What are the Issues of Centre-State Relations?

- **Background:**
 - Continuing **Economic Reforms** since 1991 has led to the **relaxation of many controls on investments**, giving some room to States, but the autonomy regarding public expenditure policies is not **absolute as State governments depend on the Centre** for their revenue receipts.
 - Several States have recently pushed back as a result of which the ‘give and take’ equation between the Centre and the States has given **way to a more hardened stand by both**, leaving little room to negotiate.
 - The increasingly fractious Centre-State ties have **chipped away at the edifice of Cooperative Federalism**.
- **Complexities of Contemporary Disputes:**
 - The areas of contention include the **homogenisation of social sector policies**, functioning of regulatory institutions and the powers of central agencies.
 - Ideally bulk of the policies in these spheres should be at the discretion of States, with an apex central body overseeing the process of resource allocation.
 - However, the **apex bodies have often attempted to increase their influence and push States** in directions that are amenable to the Centre.

What are the Constitutional Provisions Related to Centre-State Relations in India?

- **Legislative Relations:**
 - **Articles 245 to 255 in Part XI of the Constitution** deal with the legislative relations between the Centre and the states.
 - Given the federal nature of the Indian Constitution, it divides the legislative powers between the Centre and the states with respect to both the territory and the subjects of legislation.
 - Distribution of **Legislative Subjects (Article 246)**: Indian Constitution provides for a division of the subjects between the Centre and the states through three lists – **List-I (Union), List-II (State) and List-III (Concurrent)** in the Seventh Schedule.
 - **Parliament Legislation in State Field (Article 249)**: In abnormal times, the scheme of distribution is either modified or suspended.
- **Administrative Relations (Article 256-263):**
 - Articles spanning from **256 to 263 in Part XI** of the Constitution deal with the administrative relations between the Centre and the states.
- **Financial Relations (Article 256-291):**
 - Articles spanning from **268 to 293 in Part XII** of the Constitution deal with Centre – state financial relations.
 - Because India is a federal country, it adheres to the division of powers when it comes to taxation, and it is the responsibility of the Centre to allocate funds to the states.
 - **Schedule VII** describes the ability of the **Centre and states to levy taxes**.
 - The **Goods and Services Tax**, a dual structure tax, is a recent example of a financial centre-state relationship.

How Fiscal Federalism has been Compromised in Recent Times?

- **Centre Dominance and Investment Shifts:**
 - The expanded scope of the Centre's activities can lead to a scenario where it **encroaches upon States’ investment territory**.
 - For example, the Centre launched the PM Gati Shakti, where all States and UTs had to prepare and operationalise a State master plan in line with the national master plan for seamless implementation.
 - However, the flexibility of States in formulating their master plan is **curtailed by the centralisation of planning** and implementation of the national master plan, leading to **underinvestment by States**.

- Consequently, States witnessed a **decline in capital expenditure on roads and bridges**, falling to a meagre 0.58% of the gross state domestic product.
- **Peculiar Fiscal Competition:**
 - While federal systems typically witness fiscal competition between regions/states, India has seen states engaging in competition not only amongst themselves **but also with the Centre**.
 - This scenario arises **due to the Centre's augmented fiscal space**, granting it more spending power, while states **face limitations in raising non-tax revenues**.
 - Furthermore, **spending has become more concentrated** within the three largest States of **Uttar Pradesh, Maharashtra and Gujarat**, accounting for nearly half of the expenditure by 16 States between 2021-22 and 2023-24.
 - This imbalance leads to **reduced financial autonomy for states** and skews welfare provisioning dynamics.
- **Inefficiencies from Parallel Policies:**
 - Federal abrasions between the Centre and states have resulted in the emergence of 'parallel policies.'
 - For instance, the **National Pension System (NPS)** heralded a shift from a defined benefit scheme to a defined contribution scheme.
 - While most states initially adopted the NPS, some are reverting to the old pension scheme due to perceived fiscal implications.
 - The lack of trust within the federal system drives states to duplicate policies, leading to **inefficiencies and long-term fiscal repercussions on the economy**.

How can Federalism be Strengthened in India?

- **Collaborative Dialogue:**
 - Foster **open and transparent communication** between the Centre and states. Encourage regular meetings and discussions to address concerns and find common ground on issues affecting both.
- **Empower States:**
 - Devolve **more decision-making powers and resources** to states while ensuring accountability. This can empower states to take charge of their development agenda without solely relying on the Centre.
- **Cooperative Policies:**
 - Encourage cooperative policies where the **Centre and states work together to formulate and implement initiatives**. This collaboration can optimise resources and ensure comprehensive development.
- **Clarity in Roles:**
 - **Define clear roles and responsibilities** for both levels of government to **reduce overlapping jurisdictions** and conflicts. This clarity can streamline operations and prevent policy duplications.
- **Building Trust:**
 - Foster a culture of trust and cooperation through mutual respect and understanding. Establishing trust can facilitate smoother implementation of policies and reforms.

Conclusion

- A harmonious relationship between the Centre and states within a federal system is crucial for a conducive economic environment.
- Collaboration, empowerment, clarity, and trust-building are **essential components for fostering a cooperative and productive relationship**.

9. Adultery and Related Intricacies

Why in News?

The **Parliamentary Committee on Home Affairs** has suggested that **adultery should be re-instituted as a crime in the Bharatiya Nyaya Sanhita (BNS), 2023**, the proposed law to replace the **Indian Penal Code (IPC), 1860**.

What is the Legal Position on Adultery in India?

- **About Adultery:**
 - Adultery is the voluntary act of engaging in sexual relations by a married individual (man or woman) with someone other than their spouse.
- **Legal Position in India:**
 - Before 2018, the **Indian Penal Code included Section 497**, which classified adultery as a criminal act punishable by imprisonment for up to five years, a fine, or both.

- Notably, **only men could face penalties under Section 497**, while women were exempt from prosecution.
- This **ran counter to the broader definition of adultery encompassing both genders** engaging in voluntary sexual relations outside marriage.
- In a landmark case, **Joseph Shine vs Union of India (2018)**, the **Supreme Court** unanimously **struck down Section 497**.
 - The ruling highlighted discrimination and constitutional violations, asserting **Articles 14, 15, and 21** of the Indian constitution, protecting **equality, non-discrimination, and life and liberty**, respectively.
- Recently, the **Parliamentary Committee on Home Affairs** proposed re-instituting adultery as a **crime in the Bharatiya Nyaya Sanhita (BNS), 2023**.
 - However, it suggests a crucial change: **making it gender-neutral, applicable to both men and women**.
 - It argued that **Section 497 was struck down on grounds of discrimination**, and making it gender-neutral would address this deficiency.

Legal Standing V/s Legislative Action

- The recent Parliamentary Committee on Home Affairs proposal appears to challenge the legal standing of the Supreme Court.
- The **Supreme Court's decision holds as the law of the land**. While Parliament cannot directly contravene the Supreme Court's decision, it has the authority to pass legislation that addresses the judgment's basis, aiming to rectify the identified defects while potentially considering retrospective or prospective laws to align with the court's observations.
- In the **Madras Bar Association vs. Union of India (2021)** case, the Supreme Court clarified that for a validating law to be considered valid, **it must effectively rectify the flaw identified in the initial judgment**.
 - This implies that if the changes proposed by the statute had been in place during the earlier judgment, they should have addressed the issue raised in a way that prevented the flaw from being highlighted.

What are the Arguments in Favour and Against Criminalising Adultery?

- **Arguments For Criminalizing Adultery:**
 - **Preserving Marital Sanctity:** Proponents argue that **criminalizing adultery safeguards the institution of marriage**, maintaining its sanctity and traditional values within society.
 - **Deterrent Effect:** Making adultery a punishable offense **might act as a deterrent, discouraging individuals from engaging in extramarital affairs**, thereby reducing the incidence of such actions.
 - **Legal Recourse:** Criminalizing adultery provides a **legal avenue for addressing the breach of marital fidelity**, offering recourse to the aggrieved spouse for an act perceived as a violation of trust.
 - **Moral Grounds:** Some argue that adultery is **morally wrong** and should therefore be punishable under the law, **reflecting societal norms and ethical standards**.
- **Arguments Against Criminalizing Adultery:**
 - **Autonomy and Privacy:** The Supreme Court highlighted that **criminalizing adultery infringes upon individual autonomy** within marital relationships.
 - Criminalizing adultery was seen as a violation of constitutional principles, particularly **Article 21**, which safeguards the right to dignity and privacy of both spouses.
 - It was suggested that **such matters should be addressed as grounds for divorce** rather than as a criminal offense.
 - **Civil vs. Criminal Matter:** Critics argue that **adultery is primarily a civil matter, centered on breach of trust** within a marriage.
 - Treating it as a criminal offense may not be proportionate to the nature of the offense, potentially escalating the situation unnecessarily.
 - **Impact on Relationships:** Treating adultery as a criminal offense could exacerbate already strained relationships.
 - **Legal ramifications might intensify emotional distress** and damage the prospects of reconciliation between spouses.
 - **Legal Complexity:** Adultery often involves **subjective and nuanced circumstances** within relationships.
 - Attempting to legislate and prosecute such cases may lead to legal complexities, **burdening the judicial system with subjective matters**.

Conclusion

Navigating the complexities of adultery demands a nuanced approach. Balancing **legal reform, legislative actions, societal awareness** is pivotal for crafting a **fair and harmonious path forward**.

10. Second Voice of the Global South Summit

Why in News?

India recently concluded its second '**Voice of the Global South Summit**' (VOGSS), held virtually. This summit follows the inaugural summit in **January 2023**, signaling India's commitment to fostering solidarity among nations and **consolidating its leadership in the Global South**.

What are the Key Highlights of Second VOGSS?

- **Themes:** The inaugural session centered around '**Together, for Everyone's Growth, with Everyone's Trust**', while the concluding session emphasized '**Global South: Together for One Future**.'
- **Objectives of the Summit:** Disseminating **outcomes of the G20 summit** hosted by India and ensuring sustained momentum for effective implementation of G20 decisions, with a **specific focus on the interests of developing countries**.
- **Key Outcomes:**
 - **Global South Center of Excellence 'DAKSHIN':** Indian PM inaugurated this initiative, aimed at **fostering collaboration among developing nations** by serving as a knowledge repository and think tank.
 - **Thematic Discussions:** Ministerial sessions delved into a wide array of topics, including **Sustainable Development Goals, energy transition, climate finance, digital transformation, women-led development, counter-terrorism, and global institution reforms**.
 - **Call for Restraint Amid Israel-Hamas Conflict:** India articulated deep concern regarding the plight of civilians affected by the Israel-Hamas conflict.
 - He emphasized the urgent need for all **involved parties to exercise restraint**, prioritize the safety of innocent civilians, and work towards **de-escalation**.
 - **5 'Cs' for Global South:** India also called for 5 'Cs' for the Global South: **consultation, cooperation, communication, creativity and capacity building**.

What is Global South?

- **About:**
 - The **Global South**, often misconceived as a purely geographical concept, encompasses diverse countries, **drawing upon geopolitical, historical, and developmental factors**.
 - While it is not **solely defined by location**, it broadly represents nations **facing developmental challenges**.
 - Many countries included in the Global South are in the northern hemisphere, such as **India, China** and all of those in the northern half of Africa.
 - Whereas, **Australia and New Zealand**, both in the southern hemisphere, are not in the Global South.
- **Historical Context:**
 - **Brandt Line:** The line was proposed by former **German Chancellor Willy Brandt** in the 1980s as a visual depiction of the **north-south divide based upon per-capita GDP**.
 - This line symbolizes the **global economic divide**, zigzagging across continents, encompassing parts of **Africa, the Middle East, India, and China**, excluding Australia and New Zealand.
 - **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 organization of developing countries at the time.
- **Resurgence of Global South:**
 - **Economic Dynamics:**
 - **Economic Imbalances Exposed by Covid-19:** The pandemic amplified **existing economic disparities**, disproportionately impacting Global South countries due to **limited healthcare infrastructure**, disrupted supply chains, and heavy reliance on sectors vulnerable to lockdowns.



- **Shifts in Trade and Supply Chains:** Reevaluations of global supply chains post-pandemic and in **context of recent geopolitical conflicts like Russia-Ukraine war**, opened discussions on repositioning production centers, providing an opportunity for some Global South economies to restructure and enhance their roles.
- **Geopolitical Realities:**
 - The Global South's collective voice **gained traction in international forums like G20**, altering power dynamics and prompting greater consideration of their perspectives and interests.
- **Environmental and Climate Impact:**
 - **Vulnerability to Climate Change:** The Global South is **disproportionately affected by climate change**, driving discussions on **climate adaptation**, resilience-building, and the need for equitable global climate action.
 - **Renewable Energy and Sustainable Development:** Emphasis on sustainable development goals, **renewable energy investments, and environmental conservation initiatives within the Global South** attracted global attention and support.

What Evidence Showcases the Escalating Influence of the Global South?

- The establishment of the '**Loss and Damage Fund**' during **COP27 in Egypt** highlighted the **disproportionate burden faced by the Global South**.
- **Japan's G7 summit** made a commendable effort to include countries like **India and Brazil**, fostering a more inclusive dialogue.
- The expansion of **BRICS to 11 members** emphasized increased engagement with the Global South.
- The **G-77 summit in Cuba** successfully brought together numerous developing nations to address critical issues.
- The **inclusion of the 55-nation African Union in the G20** signifies a growing recognition of African nations' global significance and their valuable contributions to shaping the global order.

What are the Challenges for India as a Voice of the Global South?

- **Addressing Divergent Interests:** The Global South comprises countries with varied **political ideologies, economic structures, and geopolitical ambitions**. Harmonizing these differences to present a unified stance on global issues like trade, climate change, and security can be challenging.
- **Overcoming Power Asymmetry:** The Global South includes **both emerging powers like India, Brazil, and South Africa, alongside least developed countries**.
 - Balancing power dynamics within this group and ensuring equitable representation can be challenging, as stronger nations might overshadow the concerns of smaller, less influential countries.
- **Negotiating with Global Powers:** Advocating for the interests of the Global South amidst the dominance of global powers demands strategic negotiation skills. India must navigate its relationships with established powers like the US and the EU, ensuring that the **voice of the Global South is heard and considered in global decision-making processes**.
- **Resource Constraints:** India needs to balance its own developmental needs with its role as a representative of the Global South. Limited resources and competing domestic priorities within Global South countries often pose challenges for India.

Way Forward

- **Strengthen Regional Alliances:** Forge stronger alliances within regional blocs such as **SAARC, ASEAN, and BIMSTEC** to collectively address regional challenges, foster economic cooperation, and enhance regional stability.
- **Facilitate South-South Cooperation:** Promote collaboration and knowledge sharing among **Global South nations**, leveraging each other's strengths in areas like technology, healthcare, education, and sustainable development.
- **Advocate for Equity in Global Governance:** Push for reforms in global governance structures such as the **United Nations, IMF, and World Bank** to ensure fair representation and greater decision-making power for the Global South.
- **Address Climate Change and Sustainability:** India can lead by example in adopting sustainable practices, **investing in renewable energy, and advocate for global efforts to combat climate change** while considering the developmental needs of Global South nations.

11. Rural Wage Disparities

Why in News?

Recent data from the **Reserve Bank of India** highlights stark differences in **rural wages across different states in India**, showcasing significant disparities in earnings for farm and non-agricultural workers.

- The stark contrast in rural wages across states underscores the need for equitable distribution and policies that bridge this disparity, ensuring a more balanced livelihood for agricultural and non-agricultural workers nationwide.

What are the Major Highlights of the Rural Wages Data by RBI?

- **Rural Economic Disruptions:** During the **fiscal year 2021-22**, the rural economy faced challenges due to the **Covid-19 pandemic** affecting employment and income levels.
 - Subsequently, in the **fiscal year 2022-23**, **elevated inflation rates and increased interest rates** significantly disrupted rural demand.
 - These factors **heavily impacted job opportunities and income stability** in rural areas across the nation.
- **Rural Wage Disparities:** Rural wages in **Madhya Pradesh for agricultural and non-agricultural workers are significantly below the national average** standing at Rs 229.2 and Rs 246.3 daily, respectively, impacting the livelihoods of rural families.
 - **Kerala boasts the highest wages across various sectors**, with rural farm workers earning Rs 764.3 per day.
 - In case of wages for rural construction workers too, **Kerala and Madhya Pradesh stand at opposite ends of the spectrum at Rs 852.5 and Rs 278.7 daily**, respectively.
- **National Average Wages:**
 - Agricultural workers: Rs 345.7
 - Non-agricultural workers: Rs 348
 - Construction workers: Rs 393.3
- **Stagnant Rural Income Growth:** Despite some wage growth peaks in **2022-23**, rural income prospects remained subdued, **stagnating the real rural wage growth** and indicating an incomplete recovery in the unorganized segment of the economy.
 - For instance, **MGNREGA job demand dipped** but remained higher than pre-pandemic levels in 2022-23, signaling an **incomplete recovery**, especially in the unorganized sector.

What are the Major Factors Responsible for Wage Inequality in India?

- **Economic Development Disparities:** Regions or states with varying levels of economic development showcase **substantial wage differences**.
 - Advanced industrial regions tend to offer higher-paying non-agricultural jobs compared to agrarian-centric areas.
- **Policy Interventions:** Diverse state-level policies regarding **minimum wages, labor regulations, and social security schemes** also create wage disparities. States with stringent labor laws may offer higher wages but could also face fewer job opportunities.
- **Market Forces and Demand-Supply Dynamics:** Wage rates often align with market demand for **specific skills or labor**. Regions with higher demand and limited workforce supply in certain sectors tend to offer higher wages.
- **Cost of Living and Standard of Living:** Variations in the **cost of living, housing expenses, and other essential amenities** directly impact wage disparities. Areas with higher living standards or higher costs of necessities often offer higher wages to compensate.
- **Geographical Factors and Agricultural Cycles:** **Weather conditions and agricultural cycles** influence the availability of work in rural areas. Seasonal fluctuations and dependence on agricultural activities can lead to **seasonal wage variations**.
- **Migration and Labor Mobility:** Labor mobility from **low-wage regions to high-paying areas** creates imbalances in wages, impacting both source and destination regions' wage structures.

What are the Related Indian Government Initiatives?

- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
- **Atmanirbhar Bharat Rojgar Yojana (ABRY)**
- **National Career Service (NCS) Project**
- **Deendayal Antyodaya Yojana- National Rural Livelihood Mission (DAY-NRLM)**
 - **Rural Self Employment Training Institute (RSETI)**
- **PM Kaushal Vikas Yojna**

Way Forward

- **Agricultural Diversification:** Encouraging diversification in rural economies by promoting allied sectors such as **animal husbandry, fisheries, and agro-processing**.
 - This could generate supplementary income sources, reducing dependence solely on agriculture and **improving overall earnings**.
- **Technology Adoption and Innovation:** Integrating technological advancements into agricultural practices to enhance productivity. Access to **modern farming techniques, machinery, and market linkages can elevate rural incomes**.
- **Infrastructure Development:** Investing in rural infrastructure, including better roads, irrigation systems, and connectivity.
 - Improved infrastructure can stimulate economic activities, create job opportunities, and **attract industries to rural areas, boosting wages**.
- **Focus on Migrant Workers' Welfare:** Implementing policies safeguarding the rights and livelihoods of migrant workers. **Ensuring fair wages, adequate living conditions, and social security benefits** for this workforce can incentivize a balanced distribution of labor across states.
- **Promotion of Agri-Entrepreneurship:** Encourage and support rural entrepreneurship by providing incentives, mentorship, and market access to aspiring agripreneurs.
 - This could create a **ripple effect, generating jobs and augmenting rural incomes**.

12. 2nd CII India Nordic-Baltic Business Conclave 2023

Why in News?

Recently, the 2nd **CII (Confederation of Indian Industries)** India Nordic-Baltic Business Conclave 2023 was held in New Delhi, aiming to foster collaboration between **India and the Nordic Baltic Eight (NB8)** countries, known for their prowess in innovation and technology.

What is Nordic Baltic (NB) 8?

- The NB8 is a **regional cooperation format** that brings together the Nordic countries and the Baltic states.
 - It comprises **five Nordic countries:** Denmark, Finland, Iceland, Norway, and Sweden, along with **three Baltic states:** Estonia, Latvia, and Lithuania.
- The group shares **historical, cultural, and geographical ties**, fostering collaboration and cooperation in various fields, including politics, economics, trade, security, and culture.
- While the Nordic countries are **located in Northern Europe** and share similarities in governance, social systems, and values, the **Baltic states are situated in Northeastern Europe** and have their unique historical backgrounds and geopolitical positioning.



What are the Key Highlights of the Conclave?

- **Food Processing and Sustainability:**
 - Discussions focused on **transforming food systems towards sustainability** by sharing experiences, innovations, and best practices between India and the Nordic-Baltic nations.
 - Collaboration aimed to address global challenges with a holistic approach encompassing economic, social, and environmental dimensions.
- **Blue Economy and Maritime Cooperation:**
 - Emphasis was placed on **efficient management of the Blue Economy** to enhance **Global Supply Chain Resilience**, promote sustainable marine practices, encourage innovation, and foster greater maritime cooperation between India and the Nordic-Baltic countries.

- **Renewable Energy Integration:**
 - Deliberations **centered around India's push for Renewable Energy** integration, identifying resources, policy support, energy storage, and advanced technology initiatives.
 - The aim was to seek **support from innovative Nordic-Baltic economies** in identifying and implementing clean energy-related technologies.
- **Transition to Industry 5.0:**
 - Collaboration discussions **focused on leveraging advanced technologies like AI (Artificial Intelligence), IoT,** and smart manufacturing to enhance productivity and efficiency in the manufacturing sector.
 - The aim was to **explore how cooperation between India and Nordic-Baltic nations** could contribute to India's goal of becoming a developed nation by 2047.
- **Green Financing for Climate Action:**
 - The conclave highlighted the significance of **climate finance** in achieving green and sustainable transitions. Discussions aimed at exploring strategies and solutions to drive funding and investments, fostering greater collaboration between India and the Nordic-Baltic countries in advancing climate action.
- **Information Technology and AI Collaboration:**
 - Emphasis was placed on exploring potential areas of cooperation between India and the Nordic-Baltic countries in leveraging IT and AI to address complex societal challenges. Skill development initiatives were also discussed to enable inclusive AI and IT growth.
- **Resilient Supply Chain and Logistics:**
 - Discussions revolved around the need to build efficient and resilient supply chains, aligning with India's Logistics Policy. The conclave aimed to explore how India and the Nordic-Baltic countries could collaborate to strengthen global value chains using technological advancements.

How have the Economic Relations between India and the Nordic-Baltic countries been?

- **Trade and Investments:**
 - Cumulative **Foreign Direct Investment (FDI)** received from Nordic countries has reached a significant figure, demonstrating mutual investment interests.
 - India's combined trade in goods with the NB8 countries is currently around USD 7.3 billion and the cumulative FDI received from Nordic countries **from 2000 to 2023 is USD 4.69 billion.**
 - Moreover, the presence of over 700 Nordic companies in India and close to 150 Indian companies in the Nordic-Baltic region showcases the bilateral investment and trade partnerships.
- **Bilateral Collaborations:**
 - Specific collaborations and partnerships have been established in various domains.
 - Examples include **sustainability partnerships with Finland, a green strategic partnership with Denmark** focusing on water solutions, wind energy, and agriculture, and joint projects with Iceland in harnessing geothermal energy.
- **Sectoral Engagements:**
 - Collaboration in sectors such as renewable energy, food processing, logistics, IT, AI, maritime cooperation, and blue economy initiatives **has been identified as potential areas for joint efforts and investments.**
 - The alignment of India's ambitious renewable energy targets with the technological expertise of the **Nordic-Baltic countries** offers opportunities for collaboration.
- **Space Technology and Polar Research:**
 - There is potential for collaboration in space technology, geospatial sectors, and polar and climate research, with discussions around joint research projects and opportunities in the Arctic and Antarctic regions.
- **Global Engagement and Partnerships:**
 - Both India and the Nordic-Baltic countries are actively **engaged in global** partnerships, such as India's engagement with the **Global South through G20**, which provides opportunities for collaboration in finding solutions for sustainable growth.
 - Additionally, exploration of partnerships in joint development projects, especially in Africa, underlines the potential for expanding their collective global footprint.

Way Forward

- There is a need to expand bilateral trade by diversifying the range of traded goods and services. Focusing on sectors like renewable energy, technology, healthcare, agriculture, and manufacturing can foster mutual growth. Reducing trade barriers and enhancing market access will be crucial.
- Encourage and facilitate investments between India and the Nordic-Baltic countries. Promote joint ventures, collaborations, and technology transfer across sectors of mutual interest.

- Ensure a conducive environment for investments through favorable policies, regulatory frameworks, and ease of doing business.

13. Gender-Related Killings of Women and Girls

Why in News?

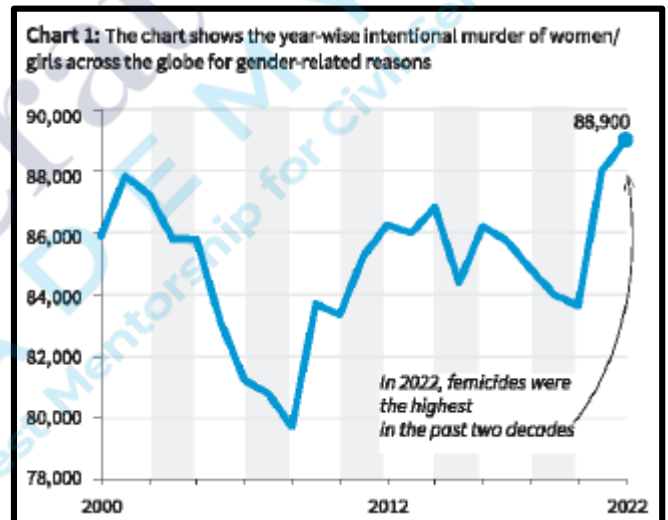
Recently, the **United Nations Office on Drugs and Crime (UNODC)** and UN Women released a study titled-Gender-related killings of women and girls (femicide/feminicide), revealing an increase in gender-related killings of women and girls in 2022.

What is Femicide/Feminicide?

- Femicide or feminicide refers to the **deliberate killing of women or girls purely because they are female**. It's a gender-based crime rooted in deeply ingrained societal attitudes and discrimination against women.
- Femicide differs from homicide in that it specifically targets individuals due to their gender, often involving situations where women are killed by their partners, family members, or individuals due to reasons like misogyny, gender-based violence, or cultural beliefs that devalue women.

What are the Key Highlights of the Study?

- Femicide Trends:**
 - Globally, nearly 89,000 women and girls were **killed intentionally in 2022**, the highest yearly number recorded in the past two decades.
 - While the overall number of homicides globally has begun to fall in 2022 after a spike in 2021, the **number of female homicides are not decreasing**.



- Perpetrator-Victim Disparity:**
 - Women are more **likely to be victims of intimate partner or family-related homicides** compared to men.
 - While most homicides worldwide are committed against men and boys (80% in 2022), women and girls are disproportionately affected by homicidal violence in the home: they represent **approximately 53% of all victims of killings** in the home and 66% of all victims of intimate partner killings.
- Continental Trends:**
 - Africa reported the **highest number of intimate partner/family-related homicides** of women in 2022, surpassing Asia for the first time in 13 years.
 - The Americas, while reporting fewer cases, exhibited relatively **higher rates of such femicides per 100,000 female population**.

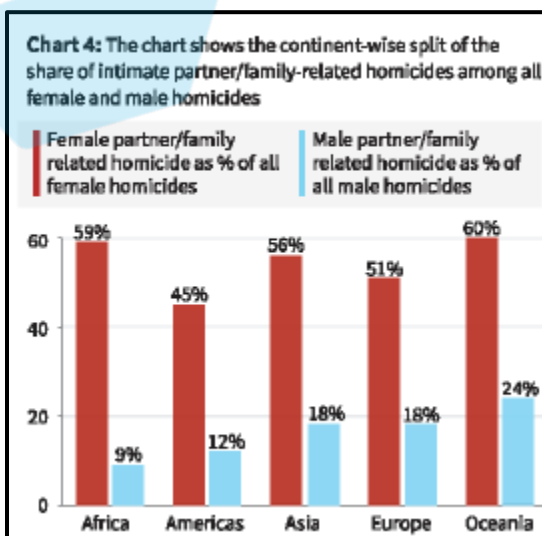
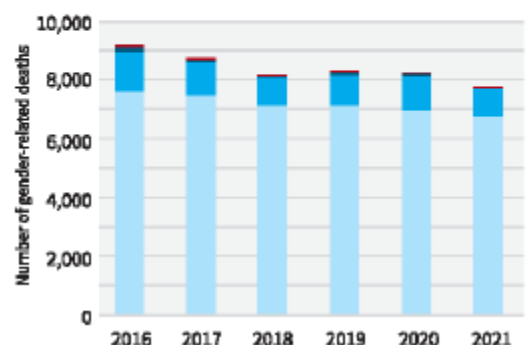


Chart 5: The chart shows the number of gender-related deaths in India between 2016-2021 and the reasons behind it

■ Honour killings | ■ Murders related to witchcraft accusations | ■ Murders related to dowry motives
■ Dowry deaths (as per Section 304B of the Penal Code)



- Regional Variations and Recent Changes:**
 - With an estimated 20,000 victims in 2022, Africa has – for the first time since 2013 surpassed Asia as the region with **the highest number of victims in absolute terms**.

- In 2022, Africa was also the region with the highest number of victims relative to the size of its female population (2.8 victims per 100,000 women).
- Between 2010 and 2022, Europe witnessed an **average reduction in the number of female intimate partner/family-related homicides** (by 21%), albeit with differences across sub-regions and with some setbacks in Western and Southern Europe, especially since the onset of the Covid-19 pandemic in 2020.
- **India-Specific Insights:**
 - India experienced a **slight decline in gender-based killings** over the past decade, although issues like dowry-related deaths, honour killings, and witchcraft accusations persist.
 - Dowry-related reasons **consistently topped the list as the leading cause of gender-related deaths** in India, with honour killings and witchcraft-related murders forming a smaller percentage.

What is the United Nations Office on Drugs and Crime (UNODC)?

- It was established in 1997 and was named as a UNODC in 2002.
- It acts as the Office for Drug Control and Crime Prevention by combining the **United Nations International Drug Control Program (UNDCP)** and the Crime Prevention and Criminal Justice Division of the United Nations Office at Vienna.

14. Dollarisation and Economic Shifts

Why in News?

Argentina, plagued by **severe inflation and widespread poverty**, faces a pivotal moment. **Dollarisation** is seen as a **potential remedy for the country's economic challenges**.

- The recently elected President of Argentina promises to replace the **Argentine Peso with the dollar**. However, the immediate implementation of dollarisation seems unlikely due to the scarcity of dollar reserves in Argentina.
- **Dollarization** is the **use or adoption of the United States Dollar** as the primary currency in a country, **replacing or supplementing the local currency**.

How Dollarisation can Save an Economy?

- **Stabilizing Inflation:** Dollarisation can potentially **curb hyperinflation by introducing a stable currency, breaking the cycle of rising prices** fueled by uncontrolled money supply. This stabilization fosters confidence in the economy, encouraging investment and consumer spending.
- **Enhanced Trade Opportunities:** A dollarized economy incentivizes **a focus on export-oriented strategies**.
 - With a stable currency, **foreign investors are more inclined to engage**, fostering foreign trade. This orientation towards exports can bolster economic growth and stability.
- **Long-Term Planning:** A stable dollar value allows for better long-term economic planning. Businesses, **both local and international, can make more accurate forecasts** and investments without being hindered by the volatility of a depreciating domestic currency.
- **Reduced Speculative Risks:** Dollarisation can **mitigate speculative risks associated with fluctuating exchange rates**.
 - This stability can attract foreign investors, as they perceive reduced risks, ultimately promoting capital inflow and economic growth.
- **Financial Discipline:** By **relinquishing control of monetary policy**, dollarisation forces governments to rely on fiscal policies for economic stability.
 - This shift **may encourage more prudent fiscal management**, potentially curbing government overspending and promoting **economic discipline**.

Experience of a Fully Dollarized Economy: Ecuador

- Ecuador's journey provides valuable insights. Despite **initial political upheaval** following dollarisation in **2000**, the **nation experienced significant economic progress**. Reduced inflation rates, lowered debt ratios, and improved social welfare showcased the potential benefits of such a move.
- However, **Ecuador's success was not solely due to dollarisation**. Booming oil and gas reserves during the 2000s contributed significantly to economic growth. Furthermore, expanded government intervention and social spending played a crucial role in sustaining prosperity.

What are the Major Challenges Related to Dollarisation?

- **Policy Constraints:** Dollarisation significantly **limits a country's ability to independently manage monetary policy**.

- Loss of **control over money supply** and interest rates can hamper the government's capacity to respond to economic downturns.
- **Economic Shock Vulnerability:** With a fixed currency, **dollarized economies might become more vulnerable to external economic shocks.**
 - They lack the flexibility of adjusting exchange rates to counterbalance sudden changes in the global economic environment.
 - The situation in Greece is a warning example of issues associated with adopting a foreign currency.
- Although there was some **growth after Greece started using the euro**, the **Eurozone crisis** showed the problems of using a currency without having control over its policies.
- Greece had to accept **strict budget cuts** and financial help in return for using the euro.
- **Limited Export Competitiveness: Loss of control over the exchange rate** can restrict a country's ability to **use currency devaluation as a tool to enhance export competitiveness.**
- **Inability to Address Internal Imbalances:** Dollarisation **may not address internal structural issues within the economy.**
 - Dependency on a foreign currency might **overshadow the need for internal reforms**, such as **productivity improvements or addressing income inequality**, crucial for sustained economic development.

Note

In 2022, the IMF observed that central banks around the globe **were not maintaining the same levels of reserves in the US dollar**, as they had done in the past.

What is De-dollarisation?

- **About: De-dollarisation** refers to a **deliberate or unintentional process** undertaken by a country or region to **reduce reliance on the US dollar** in its financial system or economy.
 - This can involve various measures aimed at decreasing the use of the dollar in **transactions, reserves, trade**, or as a standard for pricing goods and services.
- **Reasons Associated:** Governments might **pursue de-dollarisation for several reasons**, such as reducing **exposure to the impact of US monetary policy**, **asserting economic sovereignty**, **mitigating the effects of dollar fluctuations**, or seeking greater independence in global finance.
- **Strategies for De-dollarisation:** It can include diversifying currency reserves, promoting the use of alternative currencies in **trade agreements**, **establishing currency swap agreements**, or **encouraging the use of regional currencies** in financial transactions.
 - For instance, **in March 2023**, the RBI put in place the mechanism for rupee trade settlement with as many as 18 countries.
- Banks from these countries have been allowed to open **Special Vostro Rupee Accounts (SVRAs)** for settling payments in Indian Rupees.

Conclusion

Dollarisation, when **coupled with effective domestic policies**, can pave the **way for economic success**. However, its efficacy **hinges on nuanced policy execution**, balancing the advantages of **stability** with the need for independent economic strategies.

GS Paper – III

1. The Lewis Model and India

Why in News?

While the **Lewis Model has proved successful for China**, India grapples with its implementation, encountering challenges in the transition from agriculture to **industrialization**.

- Also, as manufacturing trends towards higher capital intensity, India contemplates shifting to a 'farm-as-factory' labor model in response.

What is the Lewis Model?

About:

- In **1954**, economist **William Arthur Lewis** put forth the "**Economic Development with Unlimited Supplies of Labor**".
 - For this work Lewis won **Nobel Prize in Economics** in 1979.
- The crux of the model suggested that **surplus labor in agriculture could be redirected to the manufacturing sector** by offering wages just high enough to attract workers away from the farm.
 - This shift, in theory, **would stimulate industrial growth**, enhance productivity, and lead to **economic development**.

Lewis Model and China:

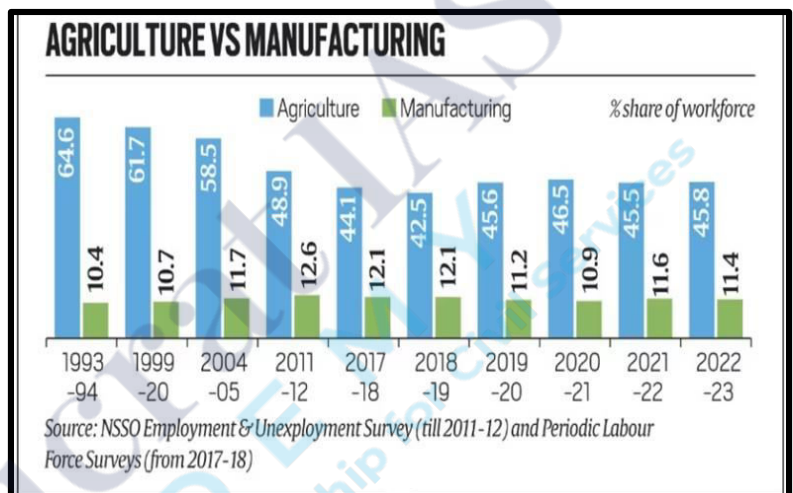
- The **model's application in China was successful**. Leveraging **surplus rural labor and demographic advantages**, China employed a **dual-track system merging market forces with state planning**.
 - This strategy attracted **foreign investment, boosted exports, and nurtured domestic industries**.
- Extensive investments in infrastructure, education, and research and development enhanced **China's productivity and competitiveness**, resulting in **rapid industrialization, poverty reduction, and a substantial transformation** of the economy.

Lewis Model and India:

- Agriculture**, historically employing the majority of India's workforce, has seen a **gradual decline in its share of employment**.
 - Contrary to expectations, **this shift has not predominantly benefited the manufacturing sector**, which has only experienced marginal growth in its share of employment.
- Employment in the manufacturing sector** has decreased to **11.4% in 2022-23** from its peak of 12.6% in 2011-12.
 - The **decrease in manufacturing employment** shows a trend of labor moving predominantly into **services and construction**, which contrasts the expected structural transformation outlined by economists Lewis.

What are the Challenges in Implementation of Lewis Model in India?

- Obstacles of Low Wages:** Low wages and inadequate social security in urban manufacturing facilities fails to entice **rural agricultural laborers to relocate, given the high costs of urban living**, posing a hurdle to the implementation of the Lewis model.
- Technological Shift in Manufacturing:** Manufacturing industries are **increasingly capital-intensive**, relying on **labor-displacing technologies like robotics and artificial intelligence**.
 - This transition **restricts the absorptive capacity** of labor-intensive sectors to accommodate surplus agricultural workers.
- Disguised Unemployment:** India faces a scenario of **disguised unemployment in the agricultural sector**, where a surplus of workers is engaged in activities that do not significantly contribute to increased productivity or income.
 - This surplus labor situation **complicates the transition of workers to other sectors**.
- Skill Mismatch:** There exists a **mismatch between the skills demanded by the industries and the skills possessed by the workforce**.



- The education system might not adequately prepare individuals for the demands of the modern job market, resulting in a skill gap that impedes labor absorption in industries.
- **Overemphasis on White-Collar Jobs:** Societal perceptions often **prioritize white-collar jobs over vocational or technical skills.**
 - This bias against **blue-collar work** can limit the workforce available for skilled trade positions and technical jobs, affecting industrial growth.

What are the Recent Government Initiatives for Growth of the Industrial Sector in India?

- **Production-Linked Incentive (PLI)** - To scale up domestic manufacturing capability.
- **PM Gati Shakti- National Master Plan** - Multimodal connectivity infrastructure project.
- **Bharatmala Project** - To Improve connectivity with North East India
- **Start-up India** - To catalyze Startup culture in India
- **Make in India 2.0** - To transform India into a global design and manufacturing hub

Note: As India pursues the advancement of its industrial sector, it should **concurrently seek complementary alternatives** to augment its growth trajectory.

What are the Alternatives to the Lewis Model for India?

- **Farm-as-Factory Model:** This model suggests a focus on **elevating the value addition and productivity within India's agricultural sector** rather than transferring workers from agriculture to manufacturing.
 - By emphasizing the promotion of **agribusiness, bio-fuels, and food processing** this approach aims to enhance employment opportunities, income generation, and innovation for rural workers.
- **Services-led Model:** This model proposes that **India should leverage its comparative advantage in services** to drive its economic growth.
 - India has a strong presence in sectors such as **information technology, business process outsourcing, tourism, health care and entertainment.**
 - These sectors can create high-skilled jobs, boost exports, and attract foreign investment.
- **Amartya Sen's Capability Approach:** Instead of focusing solely on economic growth, **Amartya Sen's Capability Approach** emphasizes enhancing individuals' capabilities and freedoms.
 - By prioritizing **education, healthcare, and social support**, this approach aims to empower individuals to pursue their own choices and opportunities.

2. Road Accidents in India-2022

Why in News?

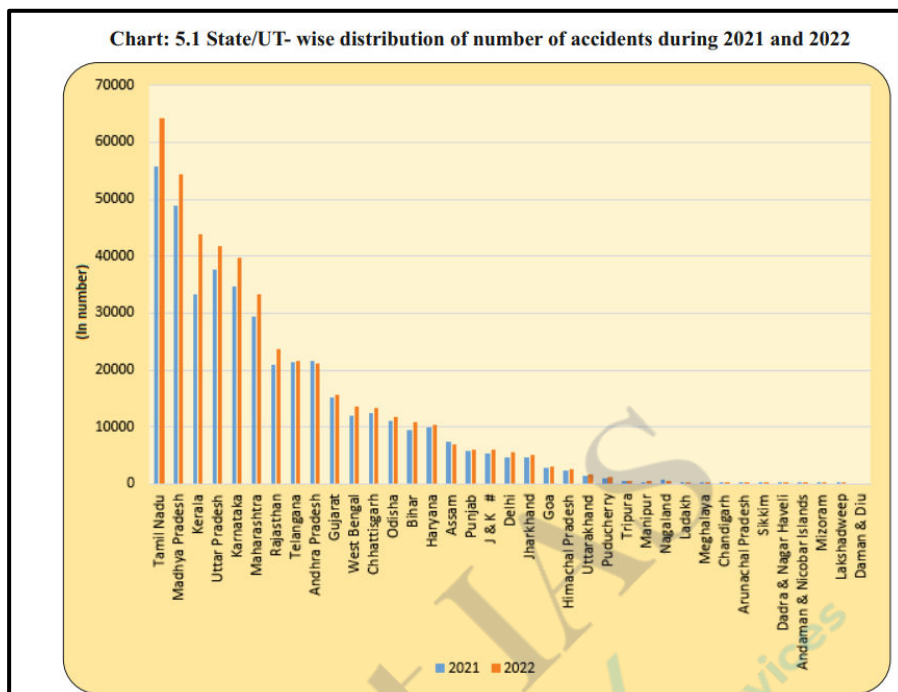
Recently, the Ministry of Road Transport and Highways has published a Report titled- '**Road Accidents in India-2022**', shedding light on the **concerning trends in road accidents and fatalities.**

- The report is based on the data/information received from police departments of States/UTs on calendar year basis in standardized formats as provided by the **United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)** under the **Asia Pacific Road Accident Data (APRAD)** base project.
- APRAD is a software tool developed specifically for the UNESCAP and its member countries to help member countries in the Asia-Pacific region develop, update, maintain, and manage road accident databases.

What are the Key Highlights of the Report?

- **Number of Road Accidents:**
 - In 2022, a total of 4,61,312 road accidents occurred in India, leading to 1,68,491 fatalities and 4,43,366 people injured.
 - These figures represent an 11.9% year-on-year increase in accidents, a 9.4% rise in fatalities, and a substantial **15.3% surge in the number of people injured** compared to the previous year.
- **Road Accident Distribution:**
 - 32.9% of accidents took place on **National Highways and Expressways**, 23.1% on State Highways, and the remaining **43.9% on other roads.**
 - 36.2% of fatalities occurred on National Highways, 24.3% on State Highways, and 39.4% on other roads.
- **Demographic Impact:**
 - Young adults in the age group of 18 - 45 years accounted for **66.5% of the victims in 2022.**

- Additionally, people in the working age group of **18 – 60 years constituted 83.4% of the total road accident fatalities.**
- **Rural vs. Urban Accidents:**
 - About 68% of road accident deaths **occurred in rural areas**, with urban areas contributing 32% to the total accident deaths in the country.
- **Vehicle Categories:**
 - Two-wheelers, for the second consecutive year, accounted for the **highest share in both total accidents and fatalities** in 2022.
 - Light vehicles, including cars, jeeps, and taxis, ranked a distant second.
- **Road-User Categories:**
 - Among road-user categories, two-wheeler riders had the **highest share in total fatalities**, representing 44.5% of persons killed in road accidents in 2022.
 - Pedestrian road-users were the second-largest group, with 19.5% of fatalities.
- **State-Specific Data:**
 - Tamil Nadu recorded the highest number of road accidents in 2022, with 13.9% of the total accidents, followed by **Madhya Pradesh with 11.8%.**
 - **Uttar Pradesh had the highest number of fatalities** due to road accidents (13.4%), followed by Tamil Nadu (10.6%). Understanding state-specific trends is essential for targeted interventions.
- **International Comparison:**
 - India has the highest number of total persons killed **due to road accidents, followed by China and the United States.**
 - Venezuela has the highest rate of persons killed per 1,00,000 population.



What is the Status of the Indian Road Network?

- India's road density at 1,926.02 per 1,000 sq.km of area in 2018-19 was higher than that of many developed countries though surfaced/paved road constituting 64.7 % of the total road length is **comparatively lower than that of developed countries.**
- National Highways constituted 2.09% of the total road length of the country in 2019.
- The balance road networks comprise of State Highways (2.9%), District Roads (9.6%), Rural Roads (7.1%), Urban Roads (8.5%) and Project Roads (5.4%).

What are the Road Accident Mitigation Measures Taken by the Ministry of Road Transport and Highways?

- **Education Measures:**
 - To create effective public awareness about road safety, the Ministry undertakes various publicity measures and awareness campaigns through social media, electronic media and print media.
 - Further, Ministry implements a scheme to provide financial assistance to various agencies for administering Road Safety Advocacy.
- **Engineering Measures:**
 - Road safety has been made an integral part of road design at planning stage. Road Safety Audit (RSA) of all highway projects has been **made mandatory at all stages.**
 - The Ministry has notified the **mandatory provision of an airbag for the passenger seated on the front seat of a vehicle**, next to the driver.
- **Enforcement Measures:**
 - The Motor Vehicles (Amendment) Act, 2019.
 - Electronic Monitoring and Enforcement of Road Safety rules (specify the detailed provisions for placement of electronic enforcement devices (speed camera, body wearable camera, dashboard camera, etc)).

What are the Initiatives Related to Road Safety?

- **Global:**
 - **Brasilia Declaration on Road Safety (2015):**
 - The declaration was signed at the second Global High-Level Conference on Road Safety held in Brazil. India is a signatory to the Declaration.
 - The countries plan to achieve **Sustainable Development Goal 3.6** i.e., to halve the number of global deaths and injuries from road traffic accidents by 2030.
 - **Decade of Action for Road Safety 2021-2030:**
 - The **UN General Assembly** adopted resolution "Improving global road safety " with the ambitious target of preventing at least 50% of road traffic deaths and injuries by 2030.
 - The Global Plan aligns with the **Stockholm Declaration**, by emphasizing the importance of a holistic approach to road safety.
 - The International Road Assessment Programme (iRAP) :
 - It is a registered charity dedicated to saving lives through safer roads.
- **India:**
 - **Motor Vehicles Amendment Act, 2019:**
 - The Act hikes the penalties for traffic violations, defective vehicles, juvenile driving, etc.
 - It provides for a **Motor Vehicle Accident Fund**, which would provide compulsory insurance cover to all road users in India for certain types of accidents.
 - It also provides for a National Road Safety Board, to be created by the Central Government.
 - **The Carriage by Road Act, 2007:**
 - The Act provides for the regulation of common carriers, limiting their liability and declaration of the value of goods delivered to them to determine their liability for loss of, or damage to, such goods occasioned by the negligence or criminal acts of themselves, their servants or agents and for matters connected therewith or incidental thereto.
 - **The Control of National Highways (Land and Traffic) Act, 2000:**
 - The Act provides for the control of land within the National Highways, right of way and traffic moving on the National Highways and also for removal of unauthorized occupation thereon.
 - **National Highways Authority of India Act, 1998:**
 - The Act provides for the constitution of an authority for the development, maintenance and management of NHs and for matters connected therewith or incidental thereto.

3. Melting of West Antarctica's Ice Sheet

Why in News?

A recent study reveals alarming predictions about the **West Antarctic ice sheet's inevitable melting** due to warming ocean waters.

- The implications of this melting are profound, with the **potential to significantly elevate global mean sea levels by 5.3 meters**, adversely affecting millions of individuals residing in vulnerable **coastal cities** worldwide, including those in India.

What do Ice Sheets Represent and How Do They Affect Sea Levels?

- **About:**
 - An ice sheet is essentially a mass of glacial ice that covers more than 50,000 square kilometers of land.
 - An ice sheet, such as the **West Antarctic ice sheet**, covers vast land areas, holding a substantial amount of **freshwater**.
 - The two major ice sheets in the world, **Greenland and Antarctica**, collectively possess around **two-thirds of the Earth's freshwater**.
 - When ice sheets gain or lose mass, they respectively **contribute to a fall or rise in global mean sea levels**.

Note

The present Antarctic ice sheet accounts for 90% of Earth's total ice volume.

- **Processes Driving West Antarctic Ice Sheet Melting:**

- Ice shelves stabilize the land-based glaciers just behind them. The melting of ice sheets occurs through various mechanisms. One key process involves **warm ocean waters eroding ice shelves**, which are the edges of an **ice sheet** floating on the ocean.
- As these ice shelves thin or disintegrate, the **glaciers behind them accelerate**, releasing **more ice into the ocean** and consequently causing sea level rise.

Note

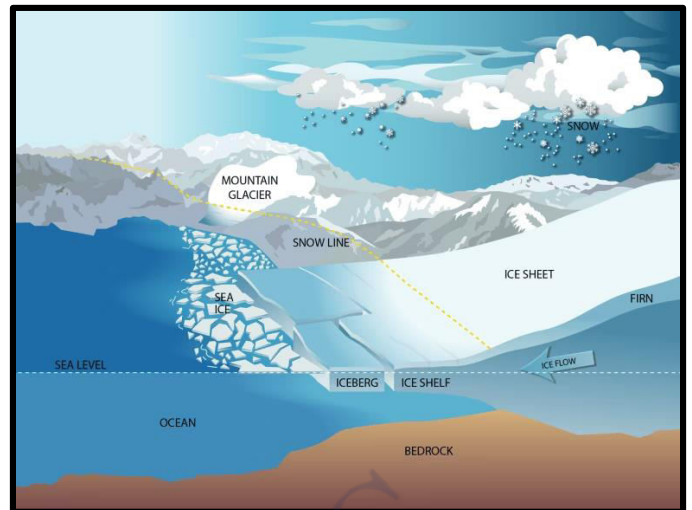
Ice shelves and ice sheets differ from **sea ice**, which constitutes the free-floating ice encircling the polar regions. Sea ice forms when seawater freezes.

▪ Current Trends and Findings:

- The recent findings are distressing, indicating a significant, **widespread warming of the Amundsen Sea** and escalating ice shelf melting across all scenarios considered.
- This projected melting will **inevitably lead to increased sea level rise**, profoundly impacting coastal communities worldwide.

▪ Implications for India and Vulnerable Coastal Regions:

- India, with its extensive coastline and dense population, is particularly susceptible to sea level rise.
- Coastal communities **might face displacement or become climate refugees** if unable to fortify against rising seas, highlighting the **urgency for adaptive strategies** such as building protective infrastructure.



What Actions has India Taken Related to Antarctica?

- India acceded to the **Antarctic Treaty in 1983**, received the consultative status on the **12th September, 1983**.
- **National Centre for Polar and Ocean Research** (erstwhile National Centre for Antarctic and Ocean Research) is India's premier R&D institution responsible for the country's research activities in the Polar and Southern Ocean realms.
- The **Indian Antarctic Act of 2022** regulates visits and activities in Antarctica, covering mineral protection, native plant conservation, and banning non-native bird introductions.
- Presently, India has **two operational research stations at Antarctica – Maitri and Bharati**.
 - **Dakshin Gangotri** was the first station to be built before **1985** but is **no longer operational**.

Way Forward

- **Environmental Protection and Conservation:** Strict adherence to the **Antarctic Treaty and associated agreements** for preserving the continent's unique environment and ecosystems.
 - This involves regulating human activities, waste management, and minimizing the environmental footprint.
- **Innovative Materials and Infrastructure:** Developing more **efficient materials and infrastructure for research stations** and vessels operating in harsh polar conditions, ensuring **minimal environmental impact**.
- **Geoengineering Techniques:** Researchers are exploring **solar radiation management to potentially slow ice melting**. In a scenario of moderated emissions, solar radiation management could be a **potent weapon against ice sheet degradation**.
 - However, these experimental methods require further investigation for efficacy and environmental effects before implementation.

4. India's Deep Ocean Mission

Why in News?

India is gearing up for a **historic Deep Ocean Mission to explore and harness the depths of the ocean**, a frontier that remains largely uncharted and holds immense potential for scientific and economic benefits.

- Countries such as the **U.S.A., Russia, China, France, and Japan** have already achieved successful deep-ocean crewed missions.

What is the Deep Ocean Mission?

▪ About:

- **Deep Ocean Mission (DOM)** is an ambitious initiative of the **Ministry of Earth Sciences (MoES)** which aims to develop technologies and capabilities for **deep sea exploration**.
- Also, DOM is one of nine missions under the **Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC)**.

▪ Key Pillars of the Mission:

- Technological Advancements for **Deep-Sea Mining and Crewed Submersibles**
- Ocean Climate Change Advisory Services
- Innovations for **Deep-Sea Biodiversity Exploration and Conservation**
- **Survey and Exploration** of Deep-Ocean Minerals
- **Harvesting Energy and Freshwater** from the Ocean
- Establishment of an **Advanced Marine Station for Ocean Biology**

▪ Major Advancement in DOM Objectives:

- **Samudrayaan and Matsya6000:** As a part of DOM, India's flagship deep ocean mission, **Samudrayaan**, was initiated in 2021 by the Minister of Earth Sciences.
 - With Samudrayaan, India is embarking on a groundbreaking crewed expedition to reach a depth of **6,000 m to the ocean bed in the Central Indian Ocean**.
 - This historic journey will be accomplished by **Matsya6000**, a **deep-ocean submersible** designed to accommodate a crew of three members.
 - It is constructed from a titanium alloy, the sphere is engineered to withstand pressures of up to 6,000 bar.



Note

The decision to target a depth of **6,000 meters** holds **strategic importance** due to the presence of valuable resources like **polymetallic nodules and sulphides**. These resources, containing essential metals, are found between depths of **3,000 to 5,500 meters**.

- **Varaha- India's Deep-Ocean Mining System:** The **National Institute of Ocean Technology**, an autonomous institute under MoES has conducted successful deep-sea locomotion trials using '**Varaha**,' an **underwater mining system**, at a depth of 5,270 meters in the central Indian Ocean.
 - These trials signified a pivotal moment in deep-sea resource exploration.

What are the Major Challenges in Deep Ocean Exploration?

- **Oceanic Pressure Challenges:** The high-pressure conditions in the deep ocean present a formidable challenge, exerting **immense pressure on objects comparable to carrying a weight of about 10,000kg per square meter**.
- **Equipment Design and Functionality:** The harsh conditions necessitate meticulously **designed equipment made from robust materials**. Electronics and instruments operate more efficiently in space or vacuum conditions, **while poorly designed objects tend to collapse or explode underwater**.
- **Challenges of Landing:** The **soft and muddy surface of the ocean bed** makes it exceptionally challenging for heavy vehicles to land or maneuver.
- **Material Extraction and Power Demands:** Extracting materials from the ocean floor requires **significant power**

and energy to pump them to the surface.

- Remotely operated vehicles are ineffective in the deep oceans due to the **absence of electromagnetic wave propagation**.
- **Visibility is limited**, with natural light penetrating only a few tens of meters underwater, unlike space observations facilitated by telescopes.
- **Other Compounded Challenges:** Varied factors such as **temperature variations, corrosion, salinity**, and others further complicate deep-sea exploration, demanding comprehensive solutions.

Note

2021-2030 has been designated by the United Nations as the '**Decade of Ocean Science**'.

Way Forward

- **Biologically-Inspired Designs:** Draw inspiration from nature, such as **marine organisms, for innovative engineering solutions**.
 - **Biomimicry** could lead to the development of structures and materials that are naturally suited to deep-sea conditions, offering increased resilience and adaptability.
- **Energy Innovation:** Develop sustainable power sources to support long-duration missions.
 - This could include advancements in energy harvesting technologies like **ocean thermal energy conversion, utilizing temperature gradients in the ocean** for power, or exploring the potential of tidal and wave energy.
- **Multi-Sensor Integration:** Integrate diverse sensor technologies to compensate for limited visibility.
 - This could involve **combining sonar, lidar, and other imaging technologies to create a comprehensive picture** of the deep-sea environment, allowing for better navigation and exploration.
- **Environmental Impact Consideration:** Ensuring that **exploration initiatives are conducted with minimal impact on deep-sea ecosystems**.
 - Establishing **international regulations and policies that govern deep-sea exploration** to ensure responsible and ethical practices, **balancing scientific advancement with environmental conservation**.

5. Artificial Intelligence Safety Summit 2023

Why in News?

The **Artificial Intelligence (AI) Safety Summit 2023 held at Bletchley Park, England** has marked a significant turning point in the global approach to tackling the **challenges posed by frontier AI technologies**.

- To tackle these challenges, 28 major countries, including the United States, China, India, and the **European Union**, signed the **Bletchley Park Declaration** at this first-ever AI Safety Summit.
- This landmark declaration seeks to create a collective understanding and coordinated approach to address the potential risks and benefits of **advanced AI systems, known as frontier AI**.

Note

- Frontier AI is defined as **highly capable foundation generative AI models** that can produce realistic and convincing outputs, such as text, images, audio, or video, on demand.

What are the Key Highlights of Artificial Intelligence Safety Summit 2023?

- **Bletchley Park Declaration:**
 - The Bletchley Park Declaration is the first global pact on tackling frontier AI risks, and it reflects a high-level political consensus and **commitment among the major AI players in the world**.
 - It acknowledges the **potential of AI to enhance human well-being** but also recognizes the **risks posed by AI, especially frontier AI**, which may cause serious harm, either deliberate or unintentional, particularly in domains like cybersecurity, biotechnology, and disinformation.
 - It emphasizes the need for **international cooperation to address AI-related risks**, as they are inherently global, and calls for collaboration among all actors, including companies, civil society, and academia.
 - The declaration also announces the establishment of a regular AI Safety Summit, which will provide a platform for **dialogue and collaboration on frontier AI safety**.
 - The **next summit will be hosted by France** within a year, and South Korea will co-host a mini virtual AI summit in the next six months.
- **India's Stance at the Summit:**
 - India has shifted from a stance of not considering AI regulation to actively **formulating regulations based on a risk-based, user-harm approach**.

- India called for a global framework for the expansion of "**ethical**" AI tools, signaling a commitment to responsible AI usage.
- India has shown interest in **establishing regulatory bodies at both domestic and international levels** to ensure the responsible use of AI.
- **Digital India Act, 2023** which is yet to Implement, is expected to introduce issue-specific regulations for online intermediaries, including **AI-based platforms**.

Key Facts About Bletchley Park

- Bletchley Park is located approximately 80 km north of London in Buckinghamshire, England.
 - During **World War II**, it served as the main site for the **British Government Code and Cypher School (GC&CS)**.
 - Bletchley Park during the war, worked on deciphering enemy messages.
 - The **Turing Bombe**, developed at Bletchley Park, is renowned for its pivotal role in breaking the **supposedly unbreakable German Enigma code**.
 - This electro-mechanical device significantly accelerated the code breaking process, contributing to the Allies' success during World War II.
 - Bletchley Park also developed the **Colossus machine**, often regarded as the world's first programmable electronic digital computer.
 - The principles and innovations developed at Bletchley Park continue to influence **modern computing and artificial intelligence**.
 - Bletchley Park is now a museum and a historic site, attracting visitors interested in its wartime history and contributions.

6. The State of Food and Agriculture 2023

Why in News?

A new report titled '**The State of Food and Agriculture 2023**', by the **Food and Agriculture Organization (FAO)** reveals the staggering hidden costs of unhealthy diets and **ultra-processed foods**, impacting both our health and the environment.

- These costs reach over USD 7 trillion annually and have far-reaching consequences.

Note:

- Hidden costs in the context of agrifood systems include **environmental expenses** from emissions and land use, **health costs related to dietary patterns**, **undernourishment** and **social costs associated with poverty** among agrifood workers.

What are the Key Findings of the State of Food and Agriculture 2023?

- **Hidden Costs of Unhealthy Diets:**
 - Unhealthy diets, characterized by the consumption of ultra-processed foods, fats, and sugars, lead to substantial hidden costs.
 - These costs exceed USD 7 trillion annually, reflecting the economic burden of **health-related issues like obesity and non-communicable diseases**.
 - Additionally, these diets result in **decreased labour productivity**, contributing to the overall hidden costs.
- **Global Impact and Economic Burden:**
 - The majority of hidden costs were generated in **upper-middle-income (39%)** and **high-income countries (36%)**, with **lower-middle-income countries at 22%** and **low-income countries at 3%**.
 - The report estimates that unhealthy diets result in hidden costs equivalent to at least USD 10 trillion annually, which accounts for nearly **10% of the global gross domestic product (GDP)**.
 - The analysis encompasses 154 countries, emphasizing the widespread implications of these dietary patterns.
- **Impact on India:**
 - India's total hidden costs in agrifood systems were approximately USD 1.1 trillion, ranking as **the third-largest globally after China and the United States**.
 - **Major Contributors in India:**
 - The burden of disease (**productivity losses from dietary patterns**) accounted for the largest share (**60%**) of hidden costs in India, followed by **social costs of poverty (14%)** and **environmental costs from nitrogen emissions (13%)**.
- **Rapid Spread of Processed Foods:**

- The consumption of highly processed foods is on the rise in **peri-urban and rural areas worldwide**.
 - Factors driving this trend include **urbanization, shifts in lifestyles, and changes in employment profiles** for both women and men.
 - Longer commuting times also contribute to the increased consumption of processed foods in these areas.
- **Urban vs. Rural Consumption Patterns:**
 - The report challenges the conventional notion that consumption patterns differ significantly between urban and rural areas.
 - Findings indicate that the diffusion of processed foods is extensive and similar across the rural-urban continuum.
 - In both **high and low-food-budget countries**, processed foods make up a **substantial share of overall consumption**, with urbanization not being the sole driver.
- **Global Food Insecurity:**
 - **Food insecurity**, particularly moderate or severe food insecurity, remained largely unchanged globally for the second consecutive year.
 - These levels are, however, significantly higher than **Pre-Covid-19 pandemic** figures.
 - The report highlights that **approximately 29.6% of the global population, corresponding to 2.4 billion people**, experienced moderate or severe food insecurity in 2022.
 - Among them, roughly 900 million individuals (**11.3% of the global population**) faced **severe food insecurity**.
 - Among the nine South Asian countries, **India had the third highest prevalence of undernourishment (233.9 million)** in the total population, after Afghanistan and Pakistan, the analysis showed.
 - The share of undernourished people in India, however, had **come down from 21.4% of the population in 2004-06 to 16.6% in 2020-22**.
 - **Low-income countries were the hardest hit** by hidden costs of agrifood systems, which **represent more than a quarter of their GDP**, as opposed to less than 12% in middle-income countries and less than 8% in high-income countries.
- **Future Projections and Undernourishment:**
 - The report projects that by 2030, **nearly 600 million people** are expected to suffer from **chronic undernourishment**.

How can the Burden of Ultra-processed Foods be Reduced?

- The burden of ultra-processed foods can be reduced by **transforming current agrifood systems** to make them **more sustainable, healthy, and inclusive**.
 - Promoting the **production and consumption of more diverse**, nutritious, and less processed foods, such as fruits, vegetables, legumes, nuts, seeds, and whole grains.
- **Regulating** the marketing, labelling, and taxation of **ultra-processed foods**, and providing **subsidies and incentives for healthier foods**.
- Improving the **access and affordability of healthy foods**, especially for low-income and vulnerable groups, through social protection, food assistance, and public procurement.
- Educating and empowering consumers to **make informed and healthy food choices**, through nutrition education, behaviour change communication, and digital technologies.
- Enhancing the **efficiency and circularity of the agrifood systems**, by reducing **food losses and waste**, improving resource use efficiency, and adopting cleaner and renewable energy sources.
- **Strengthening the governance and coordination** of the agrifood systems, by engaging multiple stakeholders, fostering innovation and research, and monitoring and evaluating the impacts and outcomes.

What are the Government Initiatives to Promote Healthy Lifestyle?

- **The National Food Security Act (NFSA), 2013.**
- **PM-POSHAN Scheme.**
- **Fit India Movement.**
- **Eat Right Movement.**
 - **Eat Right Station Certification.**
 - **Eat Right Mela.**

What is the Food and Agriculture Organization?

- **About:**
 - FAO is a specialised agency of the **United Nations** that leads international efforts to defeat hunger.

- **World Food Day** is celebrated every year around the world on 16th October. The day is celebrated to mark the anniversary of the founding of the FAO in 1945.
- With 194 member countries and the **European Union** including India, FAO works in over 130 countries worldwide.
- It is one of the UN food aid organisations based in Rome (Italy). Its sister bodies are the **World Food Programme** and the International Fund for Agricultural Development (IFAD).
- **Flagship Publications:**
 - The State of World Fisheries and Aquaculture (SOFIA).
 - The State of the World's Forests (SOFO).
 - **The State of Food Security and Nutrition in the World (SOFI).**
 - The State of Food and Agriculture (SOFA).
 - The State of Agricultural Commodity Markets (SOCO).

7. CAFRAL Raises Concerns Over NBFC and Digital Lending Practices

Why in News?

The **Centre for Advanced Financial Research and Learning (CAFRAL)**, a research body set up by the **Reserve Bank of India (RBI)**, has highlighted a growing risk in **bank financing for Non-Banking Finance Companies (NBFCs)** and identifies potential dangers in the digital lending landscape.

- Also, CAFRAL also warned about **fake/illegitimate lending apps** gathering personal data, posing potential misuse and safety risks for users.

What are the Major Concerns Raised by CAFRAL?

- **Interdependency Risks in NBFC Sector:**
 - **CAFRAL** observed that **banks mostly lend to bigger NBFCs, leading to increased cross-lending** within the NBFC sector.
 - This creates a network of inter-dependencies and contagion channels that can amplify shocks and transmit them across the system.
 - For example, the **default of IL&FS in 2018 and DHFL collapse in June 2019, triggered a liquidity crisis and a loss of confidence in the NBFC sector**, affecting the asset quality and profitability of banks that had lent to them.
- **Impact of Contractionary Monetary Policy on NBFCs:**
 - CAFRAL also found that **contractionary monetary policy leads to risk build-up in NBFCs' portfolios**.
 - When the **RBI tightens the policy rate**, NBFCs face higher borrowing costs and lower profitability.
 - To maintain their margins, **they tend to shift their lending to riskier segments such as unsecured loans, subprime borrowers, etc.** They also increase their **exposure to capital markets by investing in equities and mutual funds**.
 - These strategies expose them to **higher credit risk, market risk, and liquidity risk**, which can affect their solvency and stability.
- **Warnings About Illicit Lending Apps and Fintech Impact:**
 - It also warns about **fake/illegal digital lending apps**, pretending to be **legitimate** and gathering personal data for potential misuse.
 - Users can not easily verify the legality of these apps. There are concerns about **potential losses from online lending** affecting traditional banking if linkages between these sectors grow stronger.
 - These apps often **request extensive personal information**, posing risks to consumer safety and privacy, although some data may be genuinely necessary.
 - FinTech has increased product diversity, with **around 1100 lending apps available** for Indian Android users across 80 app stores.

Note: Digital lending refers to the **process of providing loans or credit to individuals or businesses through online platforms or digital channels** without the need for traditional physical documentation or in-person interactions.

What are NBFCs?

- **About:**
 - An **NBFC, registered under the Companies Act, 1956**, engages in various financial activities such as loans, investments in securities, leasing, insurance.
 - It excludes institutions whose **primary business falls under agriculture, industry, goods trading, services, or**

immovable property trading.

▪ **Criteria:**

- When over **50% of a company's assets are financial assets** and **more than 50% of its income is derived from these financial assets**, it indicates the company's primary involvement in financial activities.
 - Companies meeting both criteria are registered as NBFCs by the RBI.
 - The **Reserve Bank has been given the powers under the RBI Act 1934** to register, lay down policy, issue directions, inspect, regulate, supervise and exercise surveillance over these NBFCs.

Note: Companies primarily engaged in areas like **agriculture, industry, goods trading, services, or real estate** would not be regulated by the RBI, even if they conduct some financial activities. **This exclusion is determined using the '50-50 test'.**

▪ **Exemptions From Registration with RBI:**

- Under **Section 45-IA of the RBI Act, 1934**, an NBFC must obtain a registration certificate from the RBI and maintain Net Owned Funds of ₹25 lakhs (₹Two crore since April 1999) to operate as a non-banking financial institution.
- However, certain categories of NBFCs regulated by other authorities, such as **SEBI-registered Venture Capital Funds, Merchant Banking, and Stock broking companies**, are exempt from RBI registration.

▪ **Difference in NBFC and Banks:**

- **NBFCs are restricted from accepting demand deposits** from the public, unlike banks, which commonly accept these types of deposits that can be withdrawn on demand without prior notice.
- Unlike banks, **NBFCs do not form part of the payment and settlement system**. They are unable to issue cheques drawn on themselves, a standard practice offered by banks.
- Unlike banks, the **deposit insurance facility provided by institutions like the Deposit Insurance and Credit Guarantee Corporation is not available to depositors of NBFCs**.
 - In case of bank failures, this insurance offers protection to depositors, but it does not extend to NBFC depositors.

▪ **Funding:**

- NBFCs primarily finance their operations through a **mix of market borrowing and bank loans**.

Way Forward

- **Monitoring the Inter-linkages and Spillovers:** The RBI and other regulators need to **strengthen monitoring the inter-linkages and spillovers between NBFCs and banks**, as well as within the NBFC sector, using various tools such as **network analysis, stress testing, early warning indicators, etc.**
 - They also need to coordinate and cooperate with each other to ensure effective information sharing and crisis management.
- **Risk Management and Governance:** Strengthening risk management practices to identify, assess, and mitigate potential risks in NBFCs effectively.
 - **Enhancing corporate governance** and regulatory oversight to ensure **sound decision-making and transparency**.
- **Regulatory Surveillance of Digital Lending:** Strengthening regulatory oversight over digital lending applications to ensure **compliance with consumer protection laws and data privacy regulations**.
 - Implementing clear guidelines to **verify the legality and authenticity of lending apps**.

8. Global Tiger Numbers Rise, Southeast Asia Faces Habitat Threats

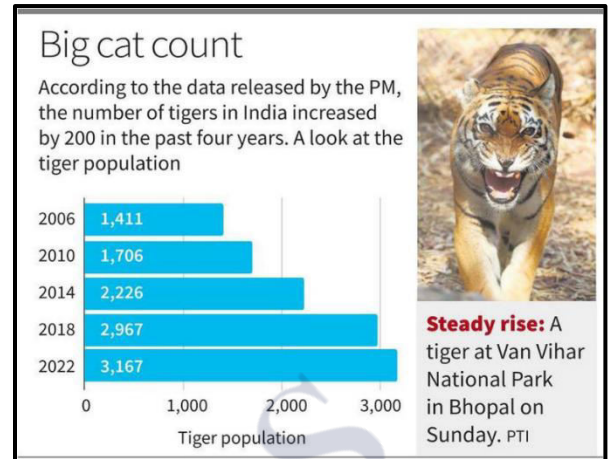
Why in News?

Countries have submitted **tiger** population numbers from 2010-2022 to the **Global Tiger Recovery Program (GTRP)** and **United Nations Convention on International Trade in Endangered Species (CITES)** under GTRP 2.0 which aims to pave the way for tiger conservation from 2023-2034.

- The St Petersburg Declaration in 2010 saw 13 tiger range countries commit to reversing the decline of the species population and double their numbers by 2022.

What is the Status of Tiger Conservation in World?

- The **wild tiger status is good in South Asia and Russia**, but the picture in Southeast Asia is grim, posing challenges to the global tiger population recovery.
- There has been an **overall increase in the tiger population by 60%, taking the number to 5,870**.
 - However, countries like **Bhutan, Myanmar, Cambodia, Lao-PDR and Vietnam** showed a decline in tiger populations, making the situation “grim” in the Tiger Range Countries (TRCs) of Southeast Asia.
- The **success of countries in South Asia like Bangladesh, Bhutan, India and Nepal** including China and Russia in North East Asia is attributed to effective measures taken for habitat conservation and protection.
 - India's wild tiger population is 3,167 in 2022. Nepal has tripled the tiger population.



What is Global Tiger Recovery Program 2.0 (2023-34)?

- Global Tiger Recovery Programme (GTRP) 2.0 was released at Thimphu on 29 July **International Tiger Day 2023** by Minister of Foreign Affairs, Royal Govt of Bhutan.
 - GTRP was launched by the **World Bank** in 2010 under the Global Tiger Initiative (GTI) to double wild tiger populations by 2022, with commitments from Tiger Range Countries (TRCs).
 - The Global Tiger Forum (GTF) became the implementing arm for the tiger agenda.
- GTRP 2.0 has been **firmed up by tiger range countries** through the intergovernmental platform of the Global Tiger Forum along with collaborators like the **Worldwide Fund for Nature (WWF)**.
 - GTRP 2.0 emphasizes on strengthening tiger governance, enhancing resources and protection, while addressing contemporary challenges like Human-Wildlife Conflict.
- The new version has retained several ongoing archetypal actions along with new ones for a differentiated approach to save the endangered wild tigers.

What are Threats to the Tiger Population in the World?

- **Prey and Tiger Poaching:** The situation is said to be challenging in the region due to widespread **prey and tiger poaching combined with other lacunae** such as inadequate patrolling, poor wildlife monitoring, forest loss for commercial needs, proximity to wildlife trade hubs and rapid infrastructure development resulting in fragmentation.
- **Low Investment in Wildlife Conservation:** Poor monitoring and low investment in wildlife conservation are other reasons for the drop in tiger populations.
- **Habitat Loss and Fragmentation:** Habitat loss and fragmentation, along with depleting biodiversity due to anthropogenic reasons among others, is another concern raised threatening the tiger conservation.
 - The report observed that loss of forest is a major factors across its ranges, with rapid decline in Southeast Asia.
- **Degradation of Tiger Habitat:** The tiger habitat has seen degradation due to deforestation, infrastructure development and illegal logging. The report emphasised the need for prey population augmentation in some patches.

What are the Suggestions Given by the Report?

- **Need of Genetically Viable Tiger Population:** The report stated that, “For a demographically and genetically viable tiger population, steps need to be taken to reverse the current trend of habitat loss, prey depletion and tiger poaching.”
 - If steps on tiger stressors are not taken, a majority of the tiger population in Southeast Asia and small populations in parts of South Asia would be lost.
- **Address Human-environmental Stress in Tiger Landscapes:** The **Tiger Conservation Landscapes (TCL)** need to be seen from the perspective of an ongoing **human-environmental stress continuum**.
 - There are ongoing agro-pastoral as well as other human-induced modifications in several TCLs. Such stressors impact the availability of welfare factors for major wild herbivores and thereby affect the relative abundance of major carnivores, including the tiger.
- **Need a Robust Policy Action:** The grim situation demands a robust policy framework supported by political will,

long-term availability of resources from the population has **increased by 60%, reaching 5,870 individuals.**

- However, the report also highlights the challenges and threats faced by the tigers, especially in Southeast Asia, where the situation is grim.

What are Initiatives Taken for Tiger Conservation?

▪ At Global Stage:

○ **St. Petersburg Declaration on Tiger Conservation:**

- This resolution was adopted In **November 2010**, by the leaders of **13 tiger range countries (TRCs)** assembled at an International Tiger Forum in **St. Petersburg, Russia.**
 - 13 TRCs are: **Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Russia, Thailand and Vietnam.**
- The resolution's **implementation mechanism** is called the **Global Tiger Recovery Program** whose overarching goal was to double the number of wild tigers from about 3,200 to more than 7,000 by 2022.

○ **Global Tiger Forum:**

- The GTF is the only intergovernmental international body established with members from willing countries to embark on a global campaign to protect the Tiger. It is **located in New Delhi, India.**
- It was formed on recommendations from an international symposium on Tiger Conservation at New Delhi, India.
- **Out of the 13 tiger range countries, seven are currently members of GTF:** Bangladesh, Bhutan, Cambodia, India, Myanmar, Nepal and Vietnam besides **non-tiger range country U.K.**

○ **Global Tiger Initiative (GTI):**

- GTI was launched in 2008 by founding partners the World Bank, **Global Environment Facility (GEF)**, Smithsonian Institution, Save the Tiger Fund, and International Tiger Coalition (representing more than 40 non-government organizations).
- **The GTI is led by the 13 tiger range countries.** It is a global alliance of governments, international organizations, civil society, the conservation and scientific community, and the private sector committed to working together toward a common agenda to save wild tigers from extinction.
- **The GTI Secretariat, based at the World Bank,** assists the 13 tiger range countries to carry out their conservation strategies and drive the global tiger conservation agenda, through planning, coordination, and continuous communication.

▪ **India:**

- **Project Tiger**
- **National Tiger Conservation Authority**
- **Tiger Census in India**
- **Wild Life (Protection) Amendment Act, 2022**

Conclusion

- While the overall increase in the global tiger population is promising, the challenges faced by Southeast Asian tigers demand immediate attention and comprehensive conservation strategies.
- The collaborative efforts of nations, guided by effective policies and sustained resources, are imperative for ensuring the continued recovery and well-being of this iconic species.

9. Electric Batteries and Electrochemical Cells

Why in News?

The **electric batteries and electrochemical cell advancements** have garnered significant attention for revolutionizing technology across sectors like **transport and energy**, steering us toward a **sustainable future.**

What are Electric Batteries and Electrochemical Cells?

▪ **Electric Batteries:**

- An **Electric battery** is a device that **stores chemical energy** and converts it into electricity.
 - Batteries are made up of **one or more electrochemical cells** that are connected to **external inputs and outputs.**
- Electric batteries have transformed our world, **enabling the proliferation of motorization and wireless technology.**
- **Major Applications:**
 - **Portable Electronics:** Powering smartphones, laptops, tablets, and wearable devices.
 - **Transportation:** Driving **electric vehicles (EVs)** for both personal and public transportation, reducing

reliance on fossil fuels.

- **Renewable Energy Storage:** Storing energy generated by solar panels and wind turbines for later use.
- **Electricity for Remote Areas:** Providing electricity in remote or off-grid locations where conventional power sources are unavailable or unreliable.

▪ **Major Types of Batteries:**

- **Solid-state battery:** It is a battery that uses solid electrodes and a solid electrolyte instead of a liquid or polymer gel electrolyte.
 - **Solid-state batteries** are used in a variety of devices, including: **pacemakers, radio frequency identifications (RFID) and wearable devices.**
- **Nickel–Cadmium battery (Ni-Cd):** They are used for **Cordless electronic appliances, drills, camcorders** and other small battery-operated devices requiring an even power discharge.
- **Alkaline Battery:** This is a type of primary battery that uses zinc and manganese dioxide as electrodes.
 - It is used for applications that require low cost and reliable power, such as **flashlights, toys, radios, and remote controls.**
- **Lithium-ion Battery:** The Li-ion battery's groundbreaking principles earned its developers the **Nobel Prize in Chemistry in 2019**, underscoring its profound impact in the 20th and 21st centuries.
 - Li-ion batteries are versatile, **powering portable devices like phones and laptops** as well as fueling **electric vehicles** such as **cars and bikes.**

▪ **Electrochemical Cells:**

- **Electrochemical cells** are devices that can **convert chemical energy into electrical energy, or vice versa.**
 - They can produce an electric current through chemical reactions, or they can use electrical energy to facilitate chemical reactions.
- Electrochemical cells, like **voltaic or galvanic cells**, operate via **redox reactions** wherein **electrons are liberated during oxidation and utilized during reduction.**
 - A standard cell comprises two sections accommodating metal electrodes immersed in specific electrolytes.
 - The electrodes, namely the **anode and the cathode, conduct electricity.**
 - The **anode, where oxidation occurs**, and the **cathode, where reduction takes place**, form the fundamental components of the cell.
- **Electrons flow from the negatively charged anode to the positively charged cathode** through an external circuit, providing power for a variety of uses.
 - Connecting these halves is a wire and a salt bridge, facilitating the movement of ions between them.
- The **energy carried by electrons dictates the source voltage**, steering the electron flow within the circuit.
 - In ideal conditions, the **source voltage is equal to the terminal voltage**, ensuring an efficient power supply.
- Advancements in cell design and materials, seen in **nickel-cadmium, zinc-copper, and modern lithium-ion cells**, showcase increased voltages and enhanced efficiency.

▪ **Related Challenges:**

- One of the well-known challenges affecting the efficiency of electrochemical cells is corrosion. For instance, in **environments with high humidity**, electrodes can gather water droplets.
 - If the atmospheric carbon dioxide levels are elevated, the **combination of water and gas leads to the formation of carbonic acid, causing corrosion** on the electrode surfaces.
- Another issue arises from **galvanic corrosion**, where one of the electrodes within a cell **deteriorates faster in the electrolyte due to its higher reactivity.**
 - For instance, in a **carbon-zinc battery**, the zinc electrode erodes more rapidly during the battery's usage.

What is the Evolutionary Trajectory of Batteries?

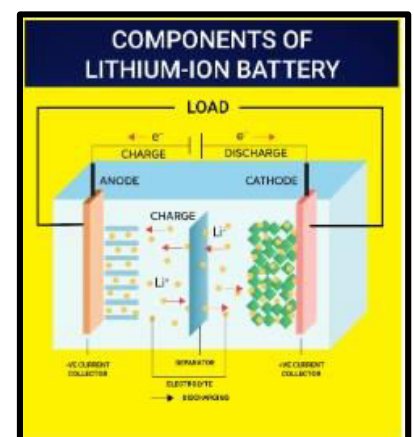
➤ **Galvani's Experimentation (1780):**

- Luigi Galvani's experiment involving **metals and frog legs** revealed a curious connection between **electrical energy and muscle movement**, laying the groundwork for future battery development.

➤ **Voltaic Pile (1800):**

- Alessandro Volta's voltaic pile marked a significant step, **generating a steady current using metal plates and electrolytes.**
 - However, its functionality remained a mystery.

➤ **Faraday's Insights (Early 19th Century):**



- Michael Faraday's groundbreaking work deciphered the mechanisms behind the cells, unveiling the roles of components like anode, cathode, and electrolyte.
- **Lithium-Ion Batteries:** This battery functions as both a voltaic and an electrolytic cell, capable of converting chemical energy into electrical energy and vice versa, enabling recharging.
 - In lithium-ion cells, **lithium metal oxide and graphite act as cathode and anode**, respectively, with a semisolid polymer gel electrolyte separating them.
 - The intercalation process enables charge and discharge phases.

Note: The Nobel Prize in Chemistry for 2019 was awarded to **John B. Goodenough, M. Stanley Whittingham, and Akira Yoshino** for their contributions to the development of the lithium-ion battery.

10. Sand and Dust Storms

Why in News?

The recent meeting of the **United Nations Convention to Combat Desertification (UNCCD)** shed light on the **far-reaching consequences of sand and dust storms** and proposed crucial policy recommendations to mitigate their effects.

What are Sand and Dust Storms?

- **About:**
 - **Sand and dust storms** are meteorological events that occur when **strong winds lift large amounts of sand and dust particles** from the ground and transport them over long distances.
 - They mainly **affect arid and semi-arid regions**, but can also impact areas far from their source.
 - Annually, over **two billion tonnes of sand and dust traverse extensive distances across the Earth's atmosphere**, creating a global phenomenon with profound implications.
 - **Sources of Sand and Dust Storms:**
 - According to the **UNCCD**, sand and dust storms are caused by **both natural and human factors**.
 - About **75% of global dust emissions originate from natural sources** in the world's drylands, such as **hyper-arid regions**, topographic depressions, and dry ancient lake beds.
 - The remaining **25% are attributed to human activities**, mainly agriculture.
 - Some of the **Anthropogenic Causes of Sand and Dust Storms** are:
 - **Unsustainable Agricultural Practices:** **Agriculture** stands as a primary anthropogenic source, with activities like **tillage, land clearing, and abandoned croplands** contributing to dust emissions.
 - **Land Use Changes:** Alterations in land use patterns, **including deforestation and urbanization**, contribute to the destabilization of surfaces, enhancing dust emissions.
 - **Water Diversion:** Excessive diversion of water from rivers for agricultural purposes can lead to the shrinkage of water bodies, creating new sources of sand and dust storms.
 - For example, **the excessive diversion of water from rivers in Central Asia** over several decades towards agriculture has shrunk the **Aral Sea**, a pre-existing lake between Kazakhstan to its north and Uzbekistan to its south.
 - It has now become the **Aralkum Desert**, a significant new source of sand and dust storms.
 - **Climate-Related Amplifiers:**
 - **Aridity and Minimal Precipitation:** High air temperatures, minimal precipitation, and arid conditions act as drivers, amplifying the likelihood and intensity of these storms.
 - **Extreme Weather Events:** Intensified wind patterns and **prolonged droughts due to climate change** exacerbate the severity and frequency of sand and dust storms.
 - **Impacts:**
 - **Environmental Impacts:**
 - **Soil Degradation:** Sand and dust storms **strip away fertile topsoil, affecting soil quality and fertility**.
 - This degradation reduces the land's ability to support vegetation, impacting agriculture and leading to desertification.
 - The loss of fertile soil also **affects water retention and nutrient availability**.
 - **Ecosystem Disruption:** These storms can alter ecosystems by burying vegetation, disrupting natural habitats, and affecting wildlife.
 - **Invasive species carried by the storms** might outcompete native species, leading to biodiversity loss and ecological imbalance.
 - **Socioeconomic Impacts:**

- **Health Effects:** Health impacts are wide-ranging, **affecting respiratory health, causing allergies,** and exacerbating existing conditions like asthma.
- Recent incidents, such as a **two-day storm in Mongolia in 2021,** illustrate the devastating impact on human lives, displacing thousands and causing casualties alongside substantial livestock losses.
- **Economic Losses:** Sand and dust storms cause substantial economic losses by **damaging infrastructure, reducing agricultural productivity, disrupting transportation,** and increasing healthcare costs.
- These events can also **impact tourism and trade,** affecting local and regional economies.
- **Social Disruption:** Disrupted daily life due to these storms can lead to social unrest, migration, and displacement.
- **Global Implications:**
 - **Transboundary Impact:** Sand and dust storms do not adhere to **geopolitical boundaries;** they can cross borders, affecting multiple countries.
 - **Climate Feedback:** The transportation of dust particles globally due to these storms can **influence climate feedback loops,** impacting weather patterns and potentially contributing to climate change.

Note: Sand and dust storms also present a formidable challenge to **achieving 11 of the 17 Sustainable Development Goals,** according to the **United Nations Food and Agriculture Organization (FAO)** report Sand and dust storms: A Guide to Mitigation, Adaptation, Policy, and Risk Management Measures in Agriculture.

What are Effective Ways to Minimize the Impacts of Sand and Dust Storms?

- **Preventive Measures:**
 - **Soil Moisture Management:** Implement effective water conservation methods to retain soil moisture and prevent desertification.
 - **Regulatory Framework:** Enforce strict land-use regulations to **curb activities leading to soil degradation and dust emissions,** such as overgrazing or improper land development.
 - **Eco-friendly Practices:** Promote sustainable **agricultural techniques like agroforestry and contour plowing** to preserve soil structure and reduce wind erosion.
- **Preparedness:**
 - **Early Warning Systems:** Developing and implementing **effective early warning systems to forecast sand and dust storms.** This allows communities to prepare and take necessary precautions.
 - **Education and Awareness:** Educating communities about the **risks, impacts, and protective measures** against sand and dust storms can help reduce vulnerability.
 - **Emergency Response Plans:** Establishing plans to respond effectively during and after sand and dust storms, including **providing shelter, medical care, and support for affected communities.**
- **Mitigation Strategies:**
 - **Infrastructure Development:** Building infrastructure like **windbreaks, barriers, or green belts** to reduce the speed and impact of wind carrying dust and sand.
 - **Technological Solutions:** Researching and investing in innovative technologies for **dust suppression and soil stabilization.**

What is the United Nations Convention to Combat Desertification?

- The **UNCCD is the only legally binding framework set up to address desertification and the effects of drought.**
 - There are currently **197 Parties** to the Convention, including **196 country Parties and the European Union.**
- The Convention based on the principles of participation, **partnership and decentralization,** is a multilateral commitment to mitigate the impact of land degradation, and protect our land so we can provide **food, water, shelter and economic opportunity to all people.**
- The Convention addresses specifically the **arid, semi-arid, and dry sub-humid areas,** known as the drylands, where some of the most vulnerable ecosystems and peoples can be found.

11. Seven Years of the Insolvency and Bankruptcy Code

Why in News?

The **Insolvency and Bankruptcy Code (IBC), introduced in 2016,** has been a transformative tool in resolving **stressed assets and improving the credit culture** in India.

- However, a recent report by CRISIL Rating highlights certain challenges that are impacting the success of the IBC as it completes seven years.

Note

- CRISIL Rating is a subsidiary of CRISIL Limited, a leading **credit rating agency** in India.
- It is a full-service rating agency that rates the entire range of debt instruments, from manufacturing companies to financial institutions.

What's Hampering the IBC's Success?

- **Falling Recovery Rates:**
 - Recovery rates have witnessed a significant **decline from 43% to 32%** between March 2019 and September 2023.
 - The recovery rate is the percentage of the admitted claims that the creditors recover from the resolution or liquidation of the corporate debtor under the IBC.
 - **Root Causes:**
 - **Limited Judicial Bench Strength:** The IBC resolution process is impeded by a **shortage of judges**, resulting in a **deceleration of case processing**. This, in turn, contributes to prolonged resolution times.
 - **Delays in Default Identification:** Time-consuming processes for identifying and acknowledging defaults contribute to reduced recovery rates. It hampers the **timely initiation of resolution proceedings**, contributing to reduced recovery rates.
 - **Impact:**
 - Diminution in asset values.
 - Sub-optimal recoveries, affecting creditors and stakeholders.
 - **Increased Resolution Time:**
 - The average resolution time has surged from **324 to 653 days**, well beyond the stipulated 330 days.
 - Resolution time is the duration between the admission of the insolvency application and the approval of the resolution plan or the order of liquidation by the **National Company Law Tribunal (NCLT)**.
 - **Root Causes:**
 - **Prolonged Pre-IBC Admission Stage:** Significant delays in this stage, **lasting 650 days in fiscal 2022 (up from about 450 days in fiscal 2019)**.
 - **Impact:**
 - Slower resolution processes.
 - Suppression of recovery rates due to delays in initiating proceedings.

What is the Insolvency and Bankruptcy Code (IBC), 2016?

About:

- The IBC, 2016 is the **bankruptcy law of India** that consolidates and amends the **existing laws relating to insolvency and bankruptcy** of corporate persons, partnership firms, and individuals.
 - Insolvency is a state where the **liabilities** of an individual or an organization **exceeds its asset** and that entity is unable to raise enough cash to meet its obligations or debts as they become due for payment.
 - Bankruptcy is when a person or company is **legally declared incapable of paying their due and payable bills**.
- The IBC aims to provide a time-bound and creditor-driven process for insolvency resolution and to improve the credit culture and business environment in the country.
- IBC resolves claims involving insolvent companies. This was intended to tackle the bad loan problems that were affecting the banking system.
- **Regulating Authority:**
 - The Insolvency and Bankruptcy Board of India (IBBI) was established under the Insolvency and Bankruptcy Code, 2016.
 - It is a statutory body, responsible for making and implementing rules and regulations for insolvency and bankruptcy resolution of corporate persons, partnership firms, and individuals in India.
 - The IBBI has 10 members, representing the Ministry of Finance, the Ministry of Corporate Affairs, and the **Reserve Bank of India**.
- **Adjudicating Authority:**
 - **National Company Law Tribunal (NCLT)** has jurisdiction over companies, other limited liability entities.
 - **Debt Recovery Tribunal (DRT)** has jurisdiction over individuals and partnership firms other than Limited Liability Partnerships.
- **Amendments in the IBC:**
 - The IBC has undergone significant amendments in the past 12 months to address emerging challenges and enhance its effectiveness.

- These amendments include the approval for the sale of assets or resolution plans on a segregated basis, an increase in the number of **NCLT benches to 16**, and extended timelines for filing claims.
- Sector-specific amendments, provisions for the audit of corporate debtors, and modifications in Form G2 have been introduced to address unique challenges.

▪ **Achievements:**

- Since its inception in 2016, **IBC has resolved Rs. 3.16 lakh crore** of debt stuck in 808 cases in seven years, according to CRISIL.
- It has resolved a significant amount of stressed assets with **better recovery rates** compared to previous mechanisms like the Debt Recovery Tribunal, the **Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002** and Lok Adalat.
- IBC has achieved higher recovery rates, with creditors realizing 32% of admitted claims on average and 169% of the liquidation value.
- In contrast, other mechanisms had recovery rates ranging from 5-20%.
- IBC's deterrent effect is evident as borrowers, fearing the loss of companies, have proactively settled over Rs. 9 lakh crore in **debt before cases entered the insolvency process**.
- This highlights a significant behavioral change among borrowers, showcasing the efficacy of the Insolvency and Bankruptcy Code in encouraging timely settlements.

How Can the IBC Overcome Challenges?

- CRISIL Rating suggested a **CDE approach** to enhance the IBC's performance, where C stands for Capacity augmentation, D for Digitalisation and E for Expansion of pre-pack resolutions to large corporates.
 - Capacity augmentation involves **enhancing the infrastructure and human resources** of key institutions like the NCLT, responsible for IBC implementation.
- This aims to boost case throughput, mitigating the backlog of 13,000 cases in different stages of resolution.
 - Digitalisation refers to creating a digital platform for **connecting all the stakeholders** involved in the IBC process.
- This will help eliminate data asymmetry, enhance transparency, and facilitate faster decision-making.
 - Expansion of the pre-packaged insolvency resolution process (PPIRP) to large corporates will help in preventing value erosion due to time.



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GS Paper – IV

1. President Terminates Services of an Indian Army Major

Why in News?

The President of India has dismissed an Indian Army Major stationed in a **Strategic Forces Command (SFC)** unit due to their involvement in serious national security breaches, as determined by an Army inquiry.

- The President utilized her authority under the **Army Act, 1950**, along with **Article 310** of the Constitution and other relevant powers, to promptly terminate his services.

What are the Ethical Concerns Involved in Army Major's Actions and Subsequent Dismissal?

- **Ethical Violations and National Security Concerns:**
 - An Army inquiry, initiated in March 2022, revealed lapses and ethical violations by the Major, including the sharing of **classified information, suspicious financial transactions, and connections with a Pakistani intelligence operative** via social media.
- The Major's possession of secret documents on electronic devices was also against Army regulations. **These actions raised significant ethical concerns and posed a threat to national security.**
- **Presidential Authority and Legal Basis:**
 - President in accordance with the powers conferred by **Section 18 of the Army Act, 1950**, and other relevant enabling powers, issued orders to terminate the services of the Major immediately.
 - This action **demonstrates the exercise of executive authority within the framework of established legal provisions**. It underscores the **commitment to uphold ethical standards and maintain the integrity of the military**.
- **Broader Implications and Ongoing Investigations:**
 - The termination orders **highlight the importance of ethical conduct, integrity, and national security in the armed forces**.
 - It is noteworthy that the Army has taken **disciplinary action against a Brigadier and a Lieutenant Colonel** for social media policy violations related to their membership in this group which drives the importance of **Code of Conduct**.
 - This case emphasizes the **Army's vigilance and proactiveness** in addressing potential breaches of security and lack of **Devotion-To-Duty**.
 - Ongoing efforts to safeguard classified military information and counter- intelligence concerns remain a critical focus for the military, not the least of which is setting high **moral standards** and adherence to **fundamental duties** as per the constitution.

What are Articles 309, 310 and 311 of the Constitution of India Related to Civil Services?

- **Part XIV** of the Constitution of India deals with Services under The Union and The State.
 - **Article 309** empowers the Parliament and the State legislature to **regulate the recruitment, and conditions of service of persons appointed**, to public services and posts in connection with the affairs of the Union or of any State respectively.
 - According to Article 310, except for the provisions provided by the Constitution, a **civil servant of the Union works at the pleasure of the President** and a civil servant under a State works at the pleasure of the Governor of that State (English doctrine of Pleasure).
- But this power of the Government is not absolute.
- **Article 311:**
 - **Article 311 (1)** says that no government employee either of an all India service or a state government shall be dismissed or removed by an authority subordinate to the own that appointed him/her.
 - **Article 311 (2)** says that no civil servant shall be dismissed or removed or reduced in rank except after an inquiry in which s/he has been informed of the charges and given a reasonable opportunity of being heard in respect of those charges.
- **Exceptions to Article 311 (2):**
 - **2 (a)** - Where a **person is dismissed or removed or reduced in rank on the ground of conduct** which has led to his conviction on a criminal charge; or

- **2 (b)** - Where the **authority empowered to dismiss or remove a person or to reduce him in rank** is satisfied that for some reason, to be recorded by that authority in writing, it is not reasonably practicable to hold such inquiry; or
- **2 (c)** - Where the **President or the Governor, as the case may be, is satisfied that in the interest of the security of the State**, it is not expedient to hold such inquiry.

What are Some of the Important Provisions of the Army Act, 1950?

- **Enlistment and Terms of Service:**
 - It specifies the procedures for enlisting and the terms of service for army personnel, including **conditions of recruitment, training, and retirement**.
 - **Discipline and Conduct:** The Army Act provides a detailed framework for maintaining discipline within the army. It outlines various offenses and penalties for misconduct, such as insubordination, desertion, disobedience, and conduct unbecoming of a soldier.
 - **Court-Martial:**
 - The Act establishes the legal framework for convening courts-martial to try military personnel accused of offenses. It defines different types of courts-martial, such as **General Court-Martial (GCM), District Court-Martial (DCM), and Summary General Court-Martial (SGCM)**.
 - **Legal Rights of Accused:** The Act outlines the legal rights and safeguards for individuals facing court-martial, including the **right to legal representation, the right to remain silent, and the right to appeal**.
 - **Detention:**
 - The Act allows for the detention of military personnel in certain circumstances, such as when they are considered a threat to the security or discipline of the army.
 - **Service Tribunals:** The **Armed Forces Tribunal Act 2007** establishes the **Armed Forces Tribunal**, a specialized judicial body to hear appeals and petitions related to military matters.
 - **Miscellaneous Provisions:** The Act contains various miscellaneous provisions, including those related to the **protection of witnesses, the appointment of Judge Advocates**, and the rules for administering oaths.
- Strategic Forces Command**
- There are **2 tri-service commands, Strategic Forces Command (SFC) and Andaman and Nicobar Command (ANC)**, which is headed by rotation by officers from the 3 Services.
 - The **SFC (Strategic Forces Command)**, looks after the delivery and operational control of the country's nuclear assets. It was created in 2003, but because it has no specific geographic responsibility and a designated role, it is not an integrated theatre command but an integrated functional command.

2. Ethical Perspectives on Online Gaming

Why in News?

The recent case of suspension of a **Police Sub-Inspector (PSI) in Pune, Maharashtra** highlights complex **ethical concerns surrounding online gaming and the responsibilities of a law enforcement officer**.

What are the Ethical Implications Surrounding the Officer's Participation in Online Gaming?

- **Arguments In Favor of Officer's Involvement in Online Gaming**
 - **Personal Freedom and Individual Rights:** The **officer, like any other citizen, has the right to engage in legal recreational activities** during personal time.
 - The officer's **use of personal funds for legal recreational activities**, including online gaming, falls under their discretionary spending and financial autonomy.
 - **Adherence to Legal Norms:** If the online gaming activity is legally permissible and the officer complies with the law, **their engagement is within the framework of legal norms** and should be respected as part of individual autonomy.
 - **Mitigation of Stress:** Online gaming, like any leisure activity, might serve as a stress-relieving tool, providing a **mental escape and relaxation** from the pressures of the job.
- **Ethics Issues Involved:**
 - **Violation of Organizational Standards:**
 - **Breach of Code of Conduct:** Engaging in online gaming without permission from the unit commander breaches the **established code of conduct within the Maharashtra State Police**, indicating a disregard for institutional regulations.
 - **Conflict with Professional Norms:** Ethically, the **officer's participation in online gaming during duty hours** conflicts with the expected professionalism and ethical standards required within law enforcement.

- **Negative Public Image and Trust Implications:**
 - **Public Perception and Trust Erosion:** Media interviews discussing **personal victories in uniform** undermine public confidence in the officer's professional integrity and the broader image of law enforcement, potentially eroding trust in the police force.
 - **Impact on Organizational Credibility:** Ethically, such conduct **damages the credibility and reputation of the entire police force**, as the officer's actions are reflective of the institution, impacting its overall image and public trust.
- **Role Model Expectations and Ethical Responsibilities:**
 - **Role as a Public Figure:** Ethically, as a law enforcement official, the officer is a public figure and is expected to **serve as a role model, setting an example of ethical behavior and responsible conduct.**

What are the Broader Ethical Issues Revolving Around Online Gaming?

- **Addiction and Mental Health:** Concerns arise from the **addictive nature of certain online gaming activities**, potentially leading to compulsive behavior, neglect of responsibilities, and adverse effects on **mental health**.
- **Financial Risk and Vulnerability:** Individuals, particularly vulnerable demographics, might face financial risks, leading to **debt or economic hardship due to excessive spending on gaming, raising ethical questions about responsible consumer engagement and corporate duty of care.**
- **Exploitation of Vulnerable Users:** Ethical concerns emerge about the potential exploitation of susceptible users who may be lured into spending beyond their means, highlighting the need for protective measures and corporate social responsibility.
- **Regulatory Ambiguity and Legal Definitions:** The distinction between skill-based **gaming and gambling lacks clear definitions**, leading to regulatory ambiguity, ethical debates, and varied interpretations about the nature of these gaming activities.
- **Corporate Responsibility and User Well-being:** Gaming companies have an ethical responsibility to ensure that their **platforms do not exploit users or foster addictive behaviors**, prioritizing user well-being over profit motives.
 - Ethical considerations revolve around promoting responsible gaming practices, protecting users, and offering resources for addiction prevention and support.
- **Impact on Social Norms:** Ethical dilemmas emerge regarding the **normalization of excessive gaming behavior in society**, potentially altering social norms and behaviors, particularly among younger demographics.

Note

Recently, the Finance Ministry of India announced a **28% Goods and Services Tax (GST) on online money gaming**, casinos, and horse racing.

Way Forward

- **Regarding Conduct of Professionals:**
 - **Clear Organizational Policies:** Establish clear and unambiguous guidelines within law enforcement agencies regarding off-duty conduct, specifying permissible and non-permissible activities, especially related to online gaming.
 - **Ethical Training and Education:** Provide ethical training and education to law enforcement officials, emphasizing the importance of upholding ethical conduct both on and off duty, ensuring they understand the impact of their actions on public perception.
 - **Strengthened Codes of Conduct:** Review and strengthen existing codes of conduct to address modern-day challenges, including guidelines for engaging in recreational activities, maintaining professional image, and the use of social media in uniform.
 - **Support and Counseling Services:** Provide support services and counseling for officers, addressing stress and promoting healthy coping mechanisms to mitigate stress, considering the challenging nature of their profession.
- **Regarding Online Gaming:**
 - **Clear Legal Definitions:** Establishing clear distinctions between **skill-based gaming and gambling**, ensuring precise legal definitions to guide regulatory measures uniformly across states.
 - **Collaborative Governance and Oversight:** Collaborate with gaming companies to promote responsible gaming practices, emphasizing user protection, addiction prevention, and measures to mitigate financial risks among users.
 - **Comprehensive Research and Analysis:** Invest in extensive research on the psychological and socio-economic impacts of online gaming, facilitating evidence-based policymaking and the development of effective regulatory measures.

3. Rising Scientific Misconduct in India

Why in News?

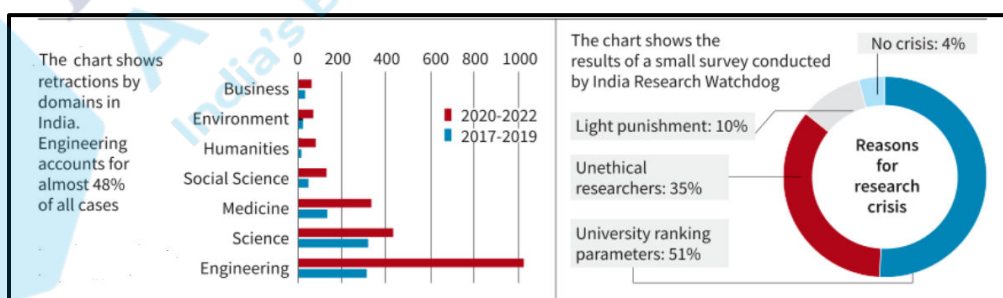
- According to a survey by **India Research Watchdog** the escalating number of **retractions in Indian research**, raising substantial concerns related to **Scientific Misconduct in India**.

What is Scientific Misconduct?

- About:**
 - Scientific misconduct can be **described as a deviation from the accepted standards** of scientific research, study and publication ethics.
 - There can be **many forms of scientific misconduct** such as Plagiarism, Misconduct involving experimental techniques, and Fraud.
 - Retractions occur when **published papers are withdrawn from the scientific literature** due to various reasons, including mistakes, data fabrication, plagiarism, and other forms of misconduct.
- Examples:**
 - When the results of a scientific investigation are reported **without giving credit to the principal investigators** whose work has been involved.
 - Scientific fraud, where authors create an article with fabricated images or data, which is then submitted to a peer-reviewed publication without approval from an independent oversight board.

What are the Statistics of Scientific Misconduct in India?

- Increases Scientific Retractions:**
 - Retractions from India have increased 2.5-times between 2020 and 2022 over the number recorded between 2017 and 2019.
- The primary reason for retractions is identified as misconduct, where authors **knowingly engage in unethical practices**.
- Quality Decline Indicators:**
 - The ratio of research output to retractions is **used as a proxy for quality, revealing an alarming drop in India**, almost halving the ratio. This indicates a **potential decline in the overall quality of research**.
- Domains of Retractions:**
 - Engineering sees a significant increase, accounting for almost 48% of all retractions, up from 36% in the period 2017-2019.
 - Additionally, the humanities **experience an extraordinary growth of 567% in retractions**.
- Reasons for Rise in Scientific Misconduct:**
 - A little more than half of the respondents believe that **university ranking parameters are behind the rise**.
 - Another 35% attributed it to **unethical researchers**, while 10% pointed to the minimal action taken when an allegation is reported or **when an offender is 'caught'**.
 - Additional factors contributing to the rise in retractions include the **compulsory publication requirement for PhD students** instituted in 2017, potentially leading to low-quality publications, and the proliferation of predatory journals.



What are the Ethical Implications of Scientific Misconduct?

- Long term Consequences:**

- Scientific misconduct, regardless of its scale, **can have far-reaching consequences**, especially when influential figures in a field are involved.
- **Breach of Academic Integrity:**
 - Scientific misconduct, including plagiarism, data fabrication, and **manipulation, constitutes a serious breach of academic** and scientific integrity. It undermines the **foundation of honest and transparent scholarly** inquiry.
- **Impact on Trust and Credibility:**
 - Unethical practices erode the trustworthiness of scientific findings, diminishing the credibility of research. This not only affects the reputation of individual researchers but also tarnishes the image of the entire scientific community.
- **Compromised Quality and Academic Rigor:**
 - The alarming drop in the ratio of research output to retractions signifies compromised quality.
 - This compromises **academic rigor, hindering the progress and advancement of knowledge**.

Way Forward

- In response to the absence of institutional efforts, some scientists have taken it upon themselves to **scrutinize collaborative work**, distinguishing between credible and flawed research to avoid tarnishing all their work.
 - However, a broader reevaluation is necessary, particularly among influential figures in science. The idealized notion that science is inherently rigorous and self-correcting needs to be revised, recognizing its complexity and the need for enhanced methods and norms.
- This requires **incorporating technology and incentives to promote continuous self-assessment** and improvement, making it a standard practice rather than a response to 'special' circumstances.

4. Materialism

Why in News?

Materialism, traced back to ancient origins, provides a coherent framework that centers on **matter** as the basis of existence.

What is Materialism?

- **About:**
 - Materialism asserts that all **existence originates from and is fundamentally composed of matter**.
 - It **refutes the existence of non-material entities**, considering all other phenomena, even intelligence, as transformations or products of matter following inherent natural laws.
- **Historical Context:**
 - Materialism has roots in ancient philosophies worldwide. In India, it found expression in **Lokāyata, Chārvāka, Bhautikvad, and Jadavāda**, among other names.
 - Lokāyata, meaning the philosophy of the people, emphasizes worldliness and instinctive materialism. Lokāyata was pioneered by **philosophers like Brhaspati, Ajita, and Jābāli**.
 - **Chārvāka highlights hedonism**, the belief that pleasure is the most important thing in life.
 - Bhautikvad focuses on the **physical or material nature of existence**.
 - Jadavāda reflects the materialists' inclination to seek the material roots of existence.
 - Early Greek philosophers also **pursued materialistic explanations for the cosmos**, notably through the **atomism of Democritus and Epicurus**.
 - Various names in different cultures signify materialist philosophies.
- **Evolution of Thought:**
 - Ancient materialists pondered the four classical elements (Mahābhūtas) and explained reality's diversity through 'svabhāva' or self-becoming.
 - The four fundamental elements were considered to be agni (fire), apa (water), vāyu (wind) and pṛthvī (earth).
 - They rejected divine providence and **denied the existence of any world beyond the singular**, observable reality, meaning they didn't believe in a higher power guiding events or the universe's destiny.
 - They also denied the **existence of any world beyond what could be directly observed** or experienced, emphasizing the importance of empirical reality as the sole reality.
- **Ethics of Materialism:**
 - The ethics of materialism did face criticism for allegedly **promoting a hedonistic lifestyle**, as reflected in the Sanskrit dictum **“yāvat jīvēt sukham jīvēt,”** which means **“as long as you live, live happily”**.
 - Materialism **did not accept any moral or ethical principles** that were derived from religious or metaphysical doctrines.

- Materialism did not deny the existence of ethics, but rather argued that ethics **should be based on human reason and experience**, and that the goal of ethics should be the maximization of pleasure and the minimization of pain for oneself and others.

What is the Philosophical Significance of Materialism?

- Materialism offers a comprehensive worldview that emphasizes empirical observation and **natural laws governing existence**.
- It **challenges religious dogma** and encourages a critical examination of reality based on tangible, observable phenomena.
- It advocated for **freedom of thought, challenging societal norms and conventions**.
- Despite shifts in dominant philosophies over time, materialist ideas persist and continue to shape contemporary scientific inquiry, particularly in understanding the fundamental nature of reality.
- Its influence spans cultures and epochs, encouraging a rational exploration of the **universe and rejecting supernatural explanations** in favor of empirical observation and understanding.



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PRELIMS BOOSTER-THE HINDU & INDIAN EXPRESS

1ST NOVEMBER

1) **Light Combat Helicopter (LCH) Prachand:** Army successfully test-fires rocket and turret guns of indigenous LCH Prachand (means fierce).

- It was **inducted into Indian Air Force in 2022**.
- LCH Prachand is a **multi-role combat helicopter**, designed and developed by **Hindustan Aeronautics Ltd**.
- Only attack helicopter in the world that can land and take off at an altitude of 5,000 metres.
- Capable of **firing air-to-ground and air-to-air missiles**.
- Fitted with 5.8-tonne twin-engine named **Shakti engine**, primarily **designed for deployment in high-altitude areas (like Siachen glacier)**.
- It has best stealth features, armored-shield systems, and dark-mode attack capability

2) **Limited Liability Partnership (LLP):** New Limited Liability Partnership (Third Amendment) Rules, 2023 notified by the **Ministry of Corporate Affairs came into force**.

- **Nature:** LLP is a hybrid between a company and a partnership.
- LLP gives the benefits of limited liability of a company and the flexibility of a partnership.
- Governed by the **Limited Liability Partnership Act, 2008**.
- **Structure:** LLP is a body corporate and a legal entity separate from its partners.
- **Members:** A minimum of 2 partners will be required for the formation of an LLP (no limit on the maximum number of partners).

3) **WTO's Dispute Settlement Body (DSB):** India calls for initiating formal talks on WTO's dispute settlement body reforms.

- General Council of WTO convenes as the DSB to deal with disputes between WTO members.
- **3 main stages of dispute settlement process:**
 - Consultations between the parties;
 - Adjudication by panels and, if applicable, by the Appellate Body;
 - Implementation of the ruling, which includes the possibility of countermeasures in the event of failure by the losing party to implement the ruling.

4) **Aralam Wildlife Sanctuary:** It is reported that Maoists opened fire at forest watchers in **Aralam Wildlife Sanctuary**.

- **Established in 1984**, located at northern most protected area of Kerala (Kannur district).
- **Forest Types:** West Coast tropical evergreen forest, West coast semi-evergreen forests, South Indian moist deciduous forest, Southern hilltop evergreen forest and plantations.
- **Fauna:** Nilgiri Wood- Pigeon *Columba elphinstonii*, Lion-tailed Macaque, etc.
- Forms watershed area of **Cheenkannipuzha and Uruttipuzha rivers**, tributaries of River Valapattanam.

2ND NOVEMBER

1) **Rajaji Tiger Reserve:** Uttarakhand government decided to establish Rajaji Tiger Reserve Conservation Foundation.

- Named after **freedom fighter C. Rajgopalachari** popularly known as "Rajaji".
- Situated along the **hills of Shivalik ranges** and in transition zone between temperate western Himalaya and central Himalaya.
- **Forest type:** Ranges from semi-evergreen to deciduous and from mixed broad-leaved to Teraigrassland.
- River: Ganga and Song
- **Flora:** Red Morning Glory, Malabar Melastome, Sal trees etc.
- **Fauna:** Leopard, Himalayan Black Bear, Sloth Bear, Spotted Deer, Barking Deer etc

2) **Curcuma kakchingense:** Researchers in Manipur have discovered a new flowering plant species named Curcuma kakchingense.

- It belongs to the **angiospermic family Zingiberaceae** which includes Curcuma, Gingers, and Cardamom.
- It is a **robust plant, as tall as eight feet, having large terminal inflorescence**.
- It has **close resemblance to Curcuma phrayawan**, a species reported from Thailand but is distinguished by having lemon yellow rhizomes with a very bitter taste.
- **Conservation status:** Data Deficient under (IUCN) Red List category.

- Until this discovery, there were **93 recorded Curcuma names as accepted species worldwide.**

3) Blue Flag Certification: India has 12 Blue Flag Beaches.

- Blue Flag is one of the **world's most recognised voluntary awards for beaches, marinas, and sustainable tourism boats.**
- It is run by the international non-governmental organisation Foundation for Environmental Education, headquartered in Copenhagen, Denmark.
- It was **started in 1985 in France** and has been implemented outside Europe since 2001.
- For the award, high standards in the four categories of **water quality, environmental management, environmental education and safety** must be met.

4) Direct Listing: Companies (Amendment) Act 2020 (Section 5) has been notified by the Ministry of Corporate Affairs

- It **amended the Companies Act 2013** and allowed direct listing for certain class of unlisted Companies to directly issue a certain class of securities in foreign stock exchanges.
- Direct listing is a process by which a **company can go public by selling existing shares instead of offering new ones.**
- It facilitates access to global capital.
- Till now, **Indian companies can access overseas equity markets only through depository receipts or by listing their debt securities on foreign market.**

3RD NOVEMBER

1) Electoral Bonds Scheme: A 5-judge Constitution Bench remarked that the **Electoral Bonds Scheme suffers from "selective anonymity" leading to an "information hole".**

- Donors, instead of investing a big sum to purchase the bond, may aggregate bonds for smaller amounts from different buyers.
- It is easier for the party in power to get that information about donations of opposition parties.
- Electoral bonds are **interest-free bearer instruments** announced in the **2017 Union Budget.**
- **State Bank of India is the only bank authorized to sell them**

2) Scheme to provide financial assistance to poor prisoners: The Home Ministry tells States to finalize

beneficiaries under the Central scheme for underprivileged prisoners.

- It **aims at enabling poor prisoners to get out of prison.**
- It requires states/UTs to identify eligible prisoners for benefit under the scheme
- The Centre would reimburse fines of up to ₹40,000 for each undertrial and ₹25,000 each for convicts languishing in jail due to financial hardship.
- It is not available for persons accused under the **Prevention of Corruption Act, UAPA, NDPS, and other serious offenses**

3) Employees' Provident Fund Organisation (EPFO): EPFO celebrated its 71st Foundation Day.

- It is a **statutory body** that came into existence under the **Employees' Provident Fund and Miscellaneous Provisions Act, of 1952**
- It is under the **administrative control of the Ministry of Labour and Employment.**
- It administers the mandatory provident fund, a basic pension scheme, and a disability/death insurance scheme.
- It is one of the **world's largest Social Security organizations** in terms of clientele and the volume of financial transactions undertaken by it.

4) Global Conference on Cooperation in Enforcement Matters (GCCEM): The inaugural GCCEM organized by the Directorate of Revenue Intelligence (DRI) recently concluded in New Delhi.

- The session focused on **narcotics, the linkage between money laundering and cross-border smuggling of contrabands including precious metals and gems, etc.**
- The session reinforces the cooperation among the Customs administrations, International organizations, and Law Enforcement Agencies in the fight against cross-border crimes.
- DRI is the **apex anti-smuggling agency of India**, working under the Central Board of Indirect Taxes & Customs, Ministry of Finance

4TH NOVEMBER

1) Legal Identity and Rights-Based Return Management Conference: It was organized by the International Organization for Migration (IOM) in Copenhagen (Denmark).

- It discussed globally, that a billion people lack a legal identity, becoming state-invisible, restricting service access and mobility.

- It was organized within framework of **IOM's Global Programme Enhancing Readmission and Legal Identity Capacities (RELICA), launched in 2022.**

- RELICA Global Programme uses an evidence-based approach to working with selected countries on readmission and legal identity, to enhance efficient migration management, etc.

- **About IMO**

- Established in 1951,
- It is a **part of the United Nations System.**
- **Mandate:** promoting humane and orderly migration for the benefit of all.
- It has **175 member states (including India)**

2) Hunger Hotspots report: The report is **launched by the Food and Agriculture Organization of UN and the World Food Programme (WFP).**

- Hunger hotspots **comprise a total of 22 countries or territories including 2 regional clusters**
- These hotspots have populations that are experiencing or are expected to experience critical levels of acute food insecurity.
- **For November 2023 to April 2024:**
 - **Burkina Faso, Mali, South Sudan and Sudan** remain at the highest concern level.
 - **Pakistan and Afghanistan** are included as Hotspots of very high concern.

3) Systematic Voters' Education and Electoral Participation (SVEEP): Election Commission of India (ECI) signed MoU with **Ministry of Education to introduce electoral literacy into the curriculum for classes 6 to 12 in all schools.**

- This is in **line with ECI's flags for programme SVEEP.**
- SVEEP was launched for **spreading voter awareness and promoting voter literacy in India.**
- **Its objective is:**
 - to increase voter turnout to 75% in Lok Sabha elections 2024
 - to enhance the quality of electoral participation in terms of informed and ethical voting

4) United Nations Office for the Coordination of Humanitarian Affairs (OCHA): OCHA has warned about rise in intimidation, and settler violence in the West Bank.

- It is part of United Nations Secretariat responsible for **bringing together humanitarian actors to ensure a coherent response to emergencies.**
- **Genesis:** In 1998, United Nations Department of Humanitarian Affairs became OCHA.

- **Mandate:** Mobilize aid, share information, support humanitarian efforts, and advocate for crisis-affected communities.
- **HQ:** Has two headquarter locations, Geneva and New York, which act as centres of global operations

6TH NOVEMBER

1) Amnesty Scheme: The Central Board of Indirect Taxes and Customs, Ministry of Finance announced the amnesty scheme.

- According to it **taxpayers, will now have additional time (till January 2024) to file appeals against demand orders.**
- Demand orders are issued under **Section 73 and 74 of the Central Goods and Services Tax Act, 2017.**
- **Sections 73 and 74** apply in cases where the department has identified a tax shortfall, lack of payment, etc.
- Beneficiaries have to pre-deposit 12.5 % of the tax demand

2) Dated Government securities (G-Secs): The government **auctioned first 50-year bond (dated G-secs) which saw strong demand from investors.**

- Previously, **the 40-year bond, was the longest-duration bond offered by India.**
- Dated G-Secs are **securities which carry a fixed or floating coupon (interest rate) which is paid on the face value, on half-yearly basis.**
- The sale of long-term bonds may help the government elongate the tenure of debt sold and keep its interest costs under control

3) Kawah Ijen Crater Lake: The Copernicus Sentinel-2 mission provided optical images of Kawah Ijen Crater Lake's unique natural phenomenon.

- Located in **East Java (Indonesia) has a pH < 0.3.**
- It is the **world's largest acidic lake.**
- It is **known as 'largest acid cauldron on Earth'** and has a volcanic origin.
- It is the **source of the extremely acidic and metal-polluted river 'Banyupahit'.**
- It emits hot, flammable sulphurous gases that ignite upon contact with Earth's oxygen-rich atmosphere and burn with an eerie, blue flame.

4) Lucy Mission: NASA's Lucy mission has discovered that the **asteroid Dinkinesh is actually a binary system of two asteroids.**

- Launched in 2021, **Lucy is the first space mission to**

explore Jupiter Trojan asteroids.

- Trojans are a group of small bodies (remnants of early solar system) that orbit the Sun in two “swarms” along the orbit of Jupiter.
- Trojan asteroids are most likely made of same primordial material that led to formation of outer planets (Jupiter, Saturn, Uranus, Neptune). **Over its 12 year mission (2021-2033), Lucy will fly past various asteroids like Eurybates, Donald Johanson, Polymele, Leucus, etc.**

7TH NOVEMBER

1) Helicobacter pylori (H. pylori): Indian researchers have developed a **two-step PCR (polymerase chain reaction) based assay for H. pylori bacteria.**

- It can **help detect H. pylori infection** and identify clarithromycin-resistant bacteria in seven hours.
- Currently, it takes weeks to identify drug sensitivity.
- There is an **increasing trend of clarithromycin-resistant H. pylori in India** leading to a decreasing success rate in treatment.
- H. pylori infection is major risk factors for **gastric cancer.**
- In India, the infection affect 60-70% of population.
- Infection is often acquired during childhood and remains in stomach throughout life if not treated.

2) Vitrimers incorporated with polyrotaxane (VPR):

Scientists in Japan have developed a new version of plastic called VPR which is **based on an epoxy resin vitrimer.**

- Vitrimers are **recent category of plastics** known for strength at low temperatures and reshaping under heat.
- However, they tend to be very brittle.
- To overcome this, **researchers added polyrotaxane to the plastic-making process which resulted in VPR.**
- **About VPR:**
 - Stronger and stretchier than the traditional version.
 - Partially biodegradable.
 - It can remember complex shapes which can be restored once it is heated

3) Lysionotus namchoomii: Lysionotus namchoomii is a new species of epiphytic plant (which grows upon another plant) discovered by Scientists of **Botanical Survey of India (BSI).**

- Native range of the genus Lysionotus is the **Himalayas, Japan and Indo-China.**
- New Species bears thick leaves and attractive

purple flowers.

- It is named in honour of **late Chau Phunkyoo Nomchoon**, a social reformer from **Arunachal Pradesh’s Khapti community.**
- **BSI established in 1890**, is the apex research organization under **the Ministry of Environment Forest and Climate Change.**
 - It carries out taxonomic studies on wild plant resources of country.

4) Maternity Leaves: The Ministry of Defence has approved the extension of the rules for **Maternity, Child Care and Child Adoption Leaves for women soldiers in the Armed Forces.**

- Now women in all ranks of the armed forces will be granted maternity leave on par with their civilian counterparts.
- Maternity leave is governed by the **Maternity Benefit Act of 1961, amended in 2017**
- It allows working women to take paid maternity leave for **twenty-six weeks for the first two children**

8TH NOVEMBER

1) Inter-Continental Ballistic Missile (ICBM): Russia test - fires **Bulava ICBM** from its **new Borei-class nuclear submarine —Imperator Alexander III.**

- It is 12-metre long and has a range of about 8,000 km.
- Borei-K class submarines are **equipped with a hydrodynamic hull that reduces boats’ acoustic signature** (combination of acoustic emissions of sound emitters in ships and submarines).
- ICBMs have a range of over 5,500 km and have nuclear weapons delivery technology.
- **North Korea, Russia, US, France, UK, China, India and Israel** documented possession of land-based ICBMs.
- **Agni-5, ICBM of India**, was developed under **Integrated Guided Missile Development Programme.**

2) Advocate-on-Record system in Supreme Court: AoR is a lawyer in the Indian legal system whois registered and authorized by SC to represent clients in that court.

- The Advocates Act provides two kinds of advocates i.e., **Senior Advocates and advocates.**
- However, the SC in the exercise of its rule-making power under **Article 145**, made a **provision for AoR system.**
- **Supreme Court Rules, 2013** prescribe eligibility criteria for an AoR.

- **Only AoR is entitled to file any matter or document before the SC.**
- Senior Advocate is not entitled to appear without AoR in SC.
- No other High Court in India has a similar provision.

3) Snake Venom: Instances of using snake venom as recreational drug (chemical substances taken for enjoyment like cannabis) are found to be increasing.

- Snakes like **cobras and Indian kraits** were most commonly used to bite on consumer's feet or tongue.
- **Neurotoxins** in snake venom have **psychoactive (mindaltering) properties.**
- Venom on entering human blood releases active metabolites like **serotonin that have psychotropic effects like hypnotic and sedative.**
- Snake bite results in paralysis, haemorrhage, kidney damage and permanent disability.
- **Medicinal uses:** Treatment of arthritis, cancer, viral diseases like measles, etc.
- Extraction and possession of snake venom without permission of **Chief Wildlife warden is a criminal offence under Wildlife Protection Act 1972.**

4) LEAP AHEAD (Launchpad for Tech Entrepreneurs towards Accelerated Growth and Pioneering AHEAD) initiative: It is a **pan-India initiative** to select tech startups for high-quality mentorship, securing investments & establishing global connections.

- LEAP AHEAD is **designed for Tech Startups with Early Traction and in the Growth stage.**
- A collaboration of **Software Technology Parks of India (STPI) and The Indus Entrepreneurs (TiE)** and a group of Investors.
- It will **enable startups to establish a product market fit, identify customer segments, grow hacking strategies, business compliance, leadership recruitment and fundraising.**
- **About STPI**
 - A premier S&T organization under **MeitY.**
 - Engaged in promoting software exports, nurturing tech startup ecosystem etc.

9TH NOVEMBER

1) International Organization for Migration (IOM): IOM has reported that around 6.9 million people are **internally displaced in the Democratic Republic of Congo.**

- **Genesis:** Established in 1951 as the **Provisional Intergovernmental Committee for the Movement of Migrants from Europe (PICMME).** It

was **renamed as IOM in 1989.**

- **About:** It is the **leading intergovernmental organization in the field of migration.** IOM is part of United Nations system, as a related organization.
- **Functions:** The IOM works on **areas of migration management: migration and development, facilitating migration, regulating migration, and addressing forced migration.**
- **Members:** It **consists of 175 Member states** (Including India) and 8 observer states

2) Pralay missile: India successfully test-fire Pralay missile.

- Developed by **Defence Research and Development Organisation** for deployment along Line of Actual Control and Line of Control.
- **Range:** 350-500 km Short-Range Ballistic Missile (SRBM).
- **Type:** Surface-to-surface missile.
- **Payload capacity:** 500-1,000 kg.
- It is a solid-fuel, battlefield missile **based on Prithvi Defence Vehicle.**
- It has ability to change its path after covering a certain range mid-air.
- It is as powerful as **Russian "Iskander" and China's "Dong Feng 12".**
- **India's other SRBMs:** Prithvi I, Prithvi II etc.

3) Solar flares: Aditya L1's payload named **High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)** has captured first glimpse of solar flares.

- Solar flare is an **intense burst of radiation coming from release of magnetic energy from Sun.**
- These are **solar system's largest explosive events.**
- They **tend to originate from regions of solar surface** that contain sunspots — darker, cooler portions of solar surface where magnetic fields are particularly strong.
- They can disturb the **Earth's ionosphere**, which in turn disturbs radio communications.
- They produce enhanced emission in wavelengths across electromagnetic spectrum - **radio, optical, UV, soft X-rays, hard X-rays and gamma-rays.**

4) Euclid Mission: Euclid mission shares its 1st full-color images of the universe.

- Euclid mission is built and operated by **European Space Agency and was launched in 2023.**
- It is a **cosmology survey mission**, optimised to determine the properties of dark energy and dark matter on universal scales.
- It'll **make a 3D-map of Universe** by observing billions of galaxies out to 10 billion light-years,

across more than a third of sky.

- It will orbit **Lagrange point 2 (L2)**.
- **Mission Lifetime:** 6 year.
- It'll take images in optical and near-infrared light

10TH NOVEMBER

1) Electoral Trusts (ETs): ETs scheme was notified in **2013** to facilitate donations to political parties by corporates and individuals.

- Any Indian citizen or India registered company can donate to an ET.
- ETs must **donate 95% of contributions** received in a financial year to political parties registered under the **Representation of the People Act, 1951**.
- ETs are required to submit to the Election Commission of India a report on contributions from individuals and companies, and their donations to parties every year.
- However, the **Electoral Bond scheme seeks to ensure anonymity for the donor**.

2) India - U.S. Defense Acceleration Ecosystem (INDUS-X): Innovations for Defence Excellence (iDEX) under **Ministry of Defence and US Department of Defence**, organised the **first INDUS-X Investors meet at New Delhi**.

- Also launched **INDUS-X Educational Series (Gurukul) initiative** which aims to help the innovators /startups to navigate in the defence eco-system of the US and India.
- Launched in **June 2023**.
- Aims to **expand strategic technology partnership and defense industrial cooperation** between governments, businesses, and academic institutions of India and the US

3) Aurora: The **Hanle and Merak observatories in Ladakh** spotted an intense red aurora.

- **Hanle is India's only dark sky reserve.** It is an area where measures are taken to reduce artificial light pollution to observe sky at night.
- Auroras are **patterns of bright lights in the sky** that are seen when particles ejected by the Sun interact with the magnetic field around the Earth.
- The phenomenon is usually visible closer to the poles.
- **Northern lights (aurora borealis) and southern lights (aurora australis) are main auroras.** They are seen in Northern Hemisphere and Southern Hemisphere, respectively.

4) Cervavac Vaccine: A study in **Lancet Oncology** reveals that the **Cervavac vaccine by the Serum Institute of India** elicits a comparable immune

response to Merck's Gardasil vaccine.

- **Cervavac is India's first indigenous quadrivalent HPV vaccine** for the prevention of cervical cancer and other HPV-associated cancers.
- HPV is a major cause of cervical cancer.
- **Cervical cancer is the second most common cancer among women in India**, accounting for about a fifth of the global burden of cervical cancer

11TH NOVEMBER

1) Indo-Pacific Maritime Domain Awareness

(IPMDA): Navy Chief during 4th Goa Maritime Conclave (GMC) highlighted the role of IPMDA.

- GMC is **Indian Navy's initiative** for multinational maritime security collaboration.
- IPMDA is a **technology and training initiative to enhance maritime domain awareness** in the Indo-Pacific region.
- It was announced at the **2022 Quad Leaders' Summit in Tokyo**.
- **Functions:**
 - Tracking of dark shipping (vessels engaging in illegal activity) and other tactical-level activities.
 - Enhance maritime view of near-real-time activities in partners' waters,
 - It integrates 3 critical regions of the **Indo-Pacific, viz. Pacific Islands, Southeast Asia, Indian Ocean Region**

2) Insolvency and Bankruptcy Code (IBC) 2016:

Supreme Court upheld **sections of IBC 2016**

- relating to the appointment of resolution professional (RP), adjudicatory process and interim moratorium.
- IBC was **introduced to overhaul the corporate distress resolution regime in India and create a time-bound mechanism for resolution**.
- It is applicable to **Companies, Limited Liability Partnerships, Partnership Firms and Individuals**.
- **It provides for:**
 - **Adjudicating Authority:** NCLT/NCLAT for Companies and LLPs and DRTs/DRATs for Individuals and Partnership Firms.
 - **Insolvency and Bankruptcy Board of India**, as a regulatory body for Insolvency Professionals, Insolvency Professional Agencies and Information Utilities

3) Central Bureau of Investigation (CBI): The Centre claimed in the Supreme Court that **the CBI is an independent agency and the Union government has no control in CBI's functioning**.

- The CBI is **not a statutory body**.
- It derives its power to investigate from **the Delhi Special Police Establishment Act, 1946**.

- It functions under **Dept. of Personnel, Ministry of Personnel, Pension & Public Grievances**.
- It is designated as the **National Central Bureau of India for INTERPOL**.
- General consent is required under section 6 of DPSE Act for the CBI to operate seamlessly within states.

4) **Pulsars:** Five new pulsars were recently discovered with FAST (Five-hundred Aperture Spherical Telescope).

- FAST is the world's largest single-dish radio telescope, located in **Chinese province Guizhou**.
- Pulsars are **rapidly rotating neutron stars** (remains of cores of massive stars that have reached the end of their lives).
- They are **highly magnetized**, and rotating at enormous speeds.
- They emit a beam of electromagnetic radiation from their magnetic poles while rotating. 'Period' of the pulsar refers to time **when pulsar appears to 'switch off' at points when the light is facing away from Earth**

14TH NOVEMBER

1) **Supreme Court's judgement on Governors:** SC in a writ petition observed that Governors can't sit on Bills passed by Assembly.

- Other Key Observation:
 - It is **not constitutionally valid for the Governor** to question how the Speaker exercised his jurisdiction on adjournments of the House.
 - The governor **could either assent to the Bills, withhold assent, and send them back with a "message"** to reconsider them or refer them to the President.
 - The governor is intended to be a **constitutional statesman** guiding the government on matters of constitutional concern

2) **UN resolution condemning Israeli settlements:**

India supports UN resolution condemning Israeli settlements in Palestine

- UN draft resolution, titled **"Israeli Settlements in Occupied Palestinian Territory, including East Jerusalem, and Occupied Syrian Golan"**, was passed with a majority.
- It was **favoured by 145 countries** (including China, France, Japan, and Russia), and opposed by seven (including US, Canada).
- The **resolution "Reaffirms that the Israeli settlements in the "Occupied Palestinian**

Territory", are **illegal** and an obstacle to peace and economic and social development

- Earlier, India had abstained from a resolution that called for an immediate, durable and sustained humanitarian truce leading to a cessation of hostilities.

3) **Lake Titicaca:** Experts have found that Lake Titicaca is **shrinking due to climate change**.

- **Location:** It is situated between **Peru (to the west) and Bolivia (to the east)**.
- It lies between Andean ranges (longest mountain range) in a vast basin that comprises most of the Altiplano (high Plateau).
- It is the **largest freshwater lake in South America**.
- It is the highest (amongst the world's large lakes) navigable body of water in the world

4) **BONGOSAGAR-23:** It is a Bilateral Exercise naval exercise between India and Bangladesh.

15TH NOVEMBER

1) **Chikungunya:** US has approved **world's first vaccine for chikungunya named Ixchiq**. It contains live, weakened version of the chikungunya virus.

- It is a viral disease transmitted by **Aedes mosquitoes**.
- Fever, arthralgia and rash are common symptoms.
- **First identified in Tanzania in 1952**, and generally seen in Africa, southeast Asia and parts of Americas.
- It can be passed from a pregnant mother to an unborn child and can be fatal to newborns.
- So far there is no treatment.
- It is included in **India's National Vector Borne Diseases Control Programme**

2) **Char Dham Pariyojana:** A portion of an under-construction **Silkyara tunnel (between Silkyara and Dandalgaon) of Char Dham all-weather highway project collapsed in Uttarkashi district, Uttarakhand**.

- **Ministry** - Ministry of Road Transport and Highways.
- **About** - For connectivity Improvement for Char-Dham (Kedarnath, Badrinath, Yamunothri & Gangotri) in Uttarakhand.
- **Significance**
 - Decrease the overall time (30% to 40%) of travel and fuel cost.
 - Helps the army in the **security of the Indian border along with China**.
 - Boost the economy and industries in Uttarakhand.

3) **Revised IIM rules notified:** Ministry of Education notified **Indian Institutes of Management (Amendment) Rules, 2023**

- Earlier in Monsoon Session 2023 parliament passed **Indian Institutes of Management (IIM) (Amendment) Act 2023** to amend **Indian Institutes of Management Act, 2017**.
- **Key highlights of rules**
 - **President will now be a Visitor at all IIMs**, with powers to
 - Appoint the chairperson of the board of governors.
 - **Board of governors is principal executive body of each IIM**
 - Appointment and removal of the directors
 - Dissolving the board for its inability to perform its duties
 - Prescribed qualifications for directors

4) **Organization of the Petroleum Exporting Countries (OPEC):** India-OPEC Energy Dialogue concluded with both parties underscoring importance of fostering enhanced cooperation.

- OPEC countries constitute 60% of India's total crude imports. **India is the world's 3rd largest importer of crude oil (behind US and China).**
- **India would account for over 28% of incremental global energy demand** during 2022-2045 (World Energy Outlook, 2023).
- OPEC is an **inter-governmental organization of 13 major oil producing countries.**
- They **constitute approximately 80 % of the world's proven oil reserves** and around 40% of global oil production.
- **Iran, Iraq, Kuwait, Saudi Arabia and Venezuela** are the founding members.

16TH NOVEMBER

1) **Mutual Legal Assistance Treaty (MLAT):** India has reportedly requested evidence from US under MLAT in connection with an attack on Indian consulate in San Francisco.

- MLAT is a **bilateral treaty/Agreement** that provides a **mechanism for seeking assistance** from other contracting States in civil and criminal matter.
- **Criminal Matters:** Assistance is sought for prevention, investigation and prosecution of crime.
- Ministry of Home Affairs is nodal Ministry
- **Civil and Commercial Matters:** Assistance is sought for service of all kinds of judicial processes, including summons etc. **Ministry of Law and Justice is nodal Ministry.**

2) **National Organ and Tissue Transplant Organization (NOTTO):** As per NOTTO data, **80% of organ recipients in India between 1995 and 2021 were men.**

- NOTTO is set up under **Ministry of Health and Family Welfare.**
- It is the **apex centre for procurement and distribution of Organs and Tissues** and registry of Organs and Tissues Donation and Transplantation in the country.
- **Transplantation of Human Organs (Amendment) Act 2011 has established two divisions:**
 - National Human Organ and Tissue Removal and Storage Network
 - National Biomaterial Centre (National Tissue Bank)

3) **Mars solar conjunction:** Mars solar conjunction impacted the NASA robotic probes on planet Mars.

- During this phenomenon, the **Sun comes between Earth and Mars.**
- Occured this year-**11th November to 25th November.**
- It happens **once every two years.**
- **Impact:** Solar conjunction can cause the sun's corona to eject ionized gas, interfering with radiosignals used to communicate with Mars spacecraft

4) **Golden Passport:** Few Indian businessmen got a golden passport.

- It is a facility offered by certain countries where **foreigners can get citizenship through significant investments.**
- **Benefits-** greatly facilitate business operations, Visa free travel, tax benefits, market penetration, etc.
- Reported to be misused for money laundering, tax evasion, etc.

17TH NOVEMBER

1) **Coconut Development Board:** Coconut Development Board (CDB) has officially **launched the "Hello Naariyal,"** Friends of Coconut Tree call centre for **coconut harvesting** and other plant management practices.

- CDB is a statutory body established under the **Coconut Development Board Act, of 1979.**
- **Nodal Ministry:** Ministry of Agriculture and Farmers Welfare.
- **Headquarters:** Kochi in Kerala.
- **Mandate:** integrated development of coconut cultivation and industry in the country with focus

on productivity increase and product diversification.

2) National Institute of Disaster Management (NIDM):

NIDM recently got global recognition as 'centre of excellence' on landslide disaster reduction for the period 2023-2026.

- NIDM is a statutory organisation under the **National Disaster Management Act 2005** (under Ministry of Home Affairs).
- It is tasked with **human resource development, capacity building, training, research, documentation**, and policy advocacy in the field of disaster management.
- **Union Home Minister** is President of NIDM

3) Kill Switch For Cancer Cells:

Scientists have reportedly discovered a 'kill switch' that triggers death of cancer cells.

- They have identified a crucial **epitope (a protein section that can activate the larger protein) on the CD95 receptor** that can cause cells to die.
- **CD95 receptors- also referred to as Fas** - send a signal that causes cancer cells to self-destruct.
- Future cancer drugs could **boost the activity of these CD95 receptors** to create a new weapon against cancer tumors.
- Cancer have been treated historically with surgery, chemotherapy and radiation

4) Innovation Handshake:

India and the US launched 'Innovation Handshake' to deepen bilateral tech ties.

- Both sides signed an MoU on "**Enhancing Innovation Ecosystems through an Innovation Handshake**".
- Innovation Handshake, as a concept was **developed under the US-India Commercial Dialogue** for better cooperation in Critical and Emerging Technologies (CET)
- **Objectives:**
 - Connect the **dynamic startup ecosystems**,
 - Address regulatory hurdles to cooperation,
 - Share information and best practices for startup fundraising and
 - Promote innovation in CET

18TH NOVEMBER

1) US-China Climate Deal:

US and China announced cooperation in addressing the climate crisis.

- Together, the **US and China** account for **38% of the world's greenhouse gases**.
- They agreed to support the **G20 Leaders**

Declaration to pursue efforts to triple renewable energycapacity globally by 2030.

- They **agreed to set reduction targets for all greenhouse gas emissions** including methane and nitrousoxide in their next set of national climate pledges.
- They aim to advance at least **5 large-scale cooperative Carbon Capture, Utilisation, and Storage(CCUS) projects** each by 2030.

2) Nest Initiative:

It is a new rating and certification initiative for green buildings launched by the **Indian Green Building Council (IGBC)**.

- **Aim:** to encourage individual house owners and the residential sector to adopt green building features.
- It emphasizes on **reducing electricity consumption, water usage, and creating healthy livingspaces**.
- IGBC is part of the **Confederation of Indian Industry (CII) was formed in the year 2001**.

3) Gamma Ray Burst (GRBs):

A new study suggests that GRBs have the potential to temporarilydestroy the ozone layer.

- These are the **most powerful and violent explosions in the known universe**.
- These brief flashes of high-energy light result from explosive events such as the birth of black holesand collisions between neutron stars.
- When a GRB erupts, it becomes the **brightest source of electromagnetic radiation in the observableuniverse**.
- GRBs are also **known to ionize molecules at the bottom of the ionosphere**, but can also affect the entire ionosphere.

4) World Energy Employment (WEE) Report 2023:

International Energy Agency (IEA) releasedthe **second edition of the WEE report**, which tracks the evolution of the energy workforce from before the pandemic to today.

- **Key findings:** The clean energy sector employs more workers than the fossil fuels sector.
- **China witnessed the largest gain in clean energy jobs** from 2019-22 followed by Europe and other Asia Pacific and India.
- Since 2019, most clean energy employment growth has been in the Solar Photovoltaic sector.
- In India, **fossil fuel employment rose above 2019 levels**

20TH NOVEMBER

1) Police Custody: The Bharatiya Nagarik Suraksha Sanhita (BNSS) Bill 2023 provides that **15-day police custody can be sought at any time during the initial investigation period (initial 60 days or 40 days as applicable).**

- It suggests that **police custody can be extended by a Magistrate beyond the initial 15 days** under the BNSS, unlike the existing provision.
- **Parliamentary Standing Committee on Home Affairs** has expressed concern over its misuse.
- The Parliamentary Committee received suggestions for establishing a general rule that police custody should be taken within the first 15 days of remand.

2) Partnership for Global Infrastructure and Investment (PGII): Union Minister for Commerce and Industry participated in the Investor Forum of the PGII.

- It is the **infrastructure plan was first announced during the G7 summit** in the UK and officially launched in 2022.
- G7 countries are **UK, USA, Canada, France, Germany, Italy, Japan, and the European Union (EU).**
- It aims to mobilize up to USD 600 billion by 2027.
- It will narrow the infrastructure gap in developing countries and accelerate progress on SDGs globally

3) Indo-Pacific Regional Dialogue (IPRD-2023): 2023 edition of IPRD concluded in New Delhi.

- IPRD is an **annual apex-level regional strategic dialogue of Indian Navy.**
- **Theme of IPRD-2023:** "Geopolitical Impacts upon Indo-Pacific Maritime Trade and Connectivity".
- IPRD-2023 was organised by **National Maritime Foundation, New Delhi**, as the Indian Navy's knowledge partner.
- IPRD aims to **review various maritime trends, regional opportunities and challenges within Indo-Pacific region, and foster exchange of solution-oriented dialogue amongst key stakeholders.**

4) Central Water Commission (CWC): According to CWC, in 2023, the **water level in reservoirs of India's southern states are low.**

- This was due to below-normal rainfall during the monsoon, especially in October (sixth driest in 123 years).
- CWC is a **premier Technical Organization** of India in the field of Water Resources.
- It is presently functioning as an attached office of the **Ministry of Jal Shakti.**
- It is charged with the responsibilities of initiating,

coordinating with the State Governments concerned, schemes for the control, conservation, and utilization of water resources.

21ST NOVEMBER

1) Project Collaboration Agreement: The Ministry of Ayush and the World Health Organization(WHO) have signed the **Traditional and Complementary Medicine 'Project Collaboration Agreement'.**

- This is the **third ' Project Collaboration Agreement'** signed by the Ministry of Ayush with WHO.
- **Objective:**
 - To **standardize Traditional and Complementary Medical Systems.**
 - Integrate their quality and safety aspects into the National Health System.
 - Disseminate them at the international level.
- During the G20 Summit in India, **WHO conducted the first Traditional Medicine Global Summit in 2023.**

2) Sea buckthorn: Sea buckthorn fruit from Ladakh has been awarded a Geographical Indication (GI) tag.

- It is the **fourth GI tag In Ladakh, after Apricot (Raktsey Karpo), Pashmina, and Ladakhi Wood Carving.**
- Sea buckthorn (*Hippophae rhamnoides*) is a plant found throughout Europe and Asia.
- In India, it is **found above the tree line in the Himalayan region**, generally in dry areas such as the cold deserts of Ladakh and Spiti.
- The GI tag is regulated by the **Geographical Indications of Goods (Registration and Protection) Act of 1999.**

3) Paramutations: In a new study, researchers have explored how paramutations work.

- Paramutations are **unusual mutations that can protect humans against viruses.**
- Mutation is any change in the sequence of bases in the DNA of a chromosome.
- A paramutation is a **small chemical modification of a chromosomal protein** that flips a nearby gene into a silenced state.
- Active and silenced versions of a paramutated gene share the same DNA sequence but their associated proteins have different modifications

4) Glyphosate: European Union allows the use of glyphosate for 10 more years.

- It is a **phosphonic acid and odourless white powder.**
- It is the **active ingredient in weed-killer** (herbicide).

- **Concern:** Non-selective nature i.e kill crop and weeds both, Involves health hazards and risk to human beings and animals.
- India has allowed its restricted use.
- There are many **glyphosate-based formulations** registered for use under the **Insecticides Act, 1968**.

22ND NOVEMBER

1) Nitrogen-9: Scientists have recently discovered nitrogen-9 nuclei which contains **7 protons and 2 neutrons**.

- It is an unusually **high proton-to-neutron ratio**.
- This disparity has a critical effect on the **isotope's stability**, influencing its decay processes as well as overall behaviour.
- It only exists for one billionth of a nanosecond.
- Nitrogen -9 is an **isotope of nitrogen**.
- Atoms with the same number of protons but different numbers of neutrons are called isotopes.
- Scientists are hopeful of expanding our current understanding of nuclear theory and quantum mechanics by this study

2) E Prime layer: As per new study, a **new layer called "E prime layer"** at the outermost part of Earth's core is a result of surface water penetrating deep into the planet

- This **alters the composition of the metallic liquid core's outermost** region proposes.
- This latest research suggests that tectonic plates carrying surface water have transported it deep into the Earth over billions of years.
- This led to the **formation of a hydrogen-rich, silicon-depleted layer** at the outer core.
- Discovery enhances our comprehension of Earth's internal mechanisms.

3) Eklavya Model Residential Schools (EMRSs):

President of India inaugurated EMRS in Odisha.

- EMRS started in **1997-98** to impart **quality education to ST children** in remote areas to enable them to avail opportunities in high and professional educational courses and get employment in various sectors.
- Each school has a capacity of 480 students, catering to students from **Class VI to XII**.
- EMRSs are set up in States/UTs with grants under **Article 275(1) of Constitution**.
- Its nodal ministry is **Ministry of Tribal Affairs**.
- Minimum of 15 acres of Land is required for establishing EMRSs

4) Cyclone Midhili: According to recent IMD update, the cyclone storm Midhili, after crossing Bangladesh coast, weakened into a deep depression and later into a depression.

- Cyclonic storm is **cyclonic disturbance in which the maximum average surface wind speed is in range of 34 to 47 knots (62 to 88 kmph)**.
- In deep depression, maximum sustained wind speed lies in the range 28 to 33 knots (50 to 61 kmph).
- Depression is a cyclonic disturbance in which **maximum sustained surface wind speed is between 17 and 33 knots (31 and 61 kmph)**

23RD NOVEMBER

1) India Australia RISE Accelerator program: Atal Innovation Mission (NITI Aayog) and Australia's national science agency (CSIRO) launched Rapid Innovation and Startup Expansion (RISE) accelerator program.

- It will support Australian and Indian circular economy startups and small-to-mid-sized enterprises(SMEs).
- A circular economy entails **markets that give incentives to reusing products, rather than scrapping them and then extracting new resources**.
- Program will be delivered virtually with opportunities to travel between both countries.
- Participating startups may also be eligible for up to Rs. 40,00,000 in non-equity grants.

2) Lancet Countdown on Health and Climate Change report 2023:

- **Key highlights**
 - Global potential loss of income from the reduction in labour capacity due to extreme heat was \$863 billion in 2022.
 - It affected **low and medium Human Development Index countries** the most (particularly agricultural sector), exacerbating global inequities
 - **Climate change is exacerbating food insecurity** by undermining crop yields, threatening food security of populations dependent on marine resources, etc.
- **Recommendation:**
 - Health-centred approach to address climate crisis,
 - Just, equitable, and rapid phase-out of fossil fuels, etc.

3) Ghol or Black spotted Crocker: Gujarat declared Ghol species as the **state fish at the Global Fisheries**

Conference India 2023.

- Ghol fish is widely distributed in **Indo-Pacific from Persian Gulf to Pacific Ocean**.
- Its swim bladders are highly priced because of their **medicinal and commercial values**.
- It is exported to countries of south-east Asia (Hong Kong, Singapore and Malaysia).
- **Usage:**
 - To **prepare isinglass** (a form of collagen used mainly for the clarification of wine and beer).
 - Traditional medicine (believed to prevent bleeding in patients with urinary problems).
 - Cosmetics

4) Gambusia (mosquitofish): A new study has revealed that two species of **mosquitofish, Gambusia affinis and Gambusia holbrooki**, have invaded various ecosystems across India.

- The species has been widely introduced worldwide as a form of **biological mosquito control**; it feeds on mosquito larvae.
- **Native:** to the U.S
- **Habitat:** shallow waters and penetrate dense vegetation growth where larvae and pupae hide.
- It is among the **prominent invasive alien species**.
- In 1928, **Gambusia was first introduced in India during British rule**.

24TH NOVEMBER

1) Nordic-Baltic Eight (NB8) nations: External Affairs Minister has said that India's engagement with the NB-8 nations has significantly strengthened in recent years.

- NB8 is an informal (non-institutionalized) regional cooperation format **established in 1992** that includes
- The five Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) and The three Baltic countries (Estonia, Latvia, and Lithuania)
- The format is unique as it includes both members and non-members of the EU (Norway and Iceland) and NATO (Sweden)

2) Exercise Vajra Prahar: It is a joint exercise conducted between the **Indian Army and US Army Special Forces**.

3) Tantalum: Researchers found the presence of tantalum in the Sutlej river sand in Punjab.

- It is a **rare metal**.
- Grey, heavy, Ductile and very hard metal.

- Possesses high corrosion resistance
- It is almost completely immune to chemical attacks at temperatures below 150°C.
- Extremely high melting point.
- Uses of tantalum:
 - In industries like **Electronics and semiconductors, nuclear power plants, aeroplanes, biomedical** etc.
 - Substitute for Platinum due to its high melting point and lower cost

4) SATHEE: Ministry of Education (MoE) asked States to encourage use of online coaching platform SATHEE (Self Assessment Test and Help for Entrance Exams).

- It is an initiative by the MoE in association with IIT-Kanpur.
- It is an open learning and assessment platform available to students at no cost.
- It uses **Artificial Intelligence (AI)** to interact with students, and can be customised to each student's pace of learning

25TH NOVEMBER

1) E-commerce cargo movement via National

Waterway-1: Inland Waterways Authority of India (IWAI) and e-commerce company Amazon signed an MoU for customer shipments via inland waterways using the river Ganga (National Waterway 1).

- Ganga (National Waterway 1) stretch from **Haldia (Sagar) and Prayagraj (1620 km)**
- It was declared as **National Waterway-1 (NW-1) in 1986**.
- **24 waterways** are already operational to date which are planned to be increased to more than **50 by 2047**.
- **Benefits of waterways:** cost and fuel-efficient, environmentally friendly.

2) DESI (Digitalisation, Education, Sustainability and Innovation) Initiative: India and Finland hold talks on Finland's DESI initiative.

- DESI initiative is a **programme of Embassy of Finland** to strengthen preferred partnership between Finland and India.
- It is **Finland's first export promotion programme with India** that spans across sectors

3) Digital Twins: Genesys International (3D mapping company), and Survey of India (Sol) announced a partnership to create digital twins of major cities and towns.

- It will provide previously unavailable data layers, including high-precision 3D data, digital terrain models, digital surface models etc.
- Digital twin is a **digital representation of a physical object, person, or process, contextualized in a digital version of its environment.**
- It can help an organization simulate real situations and their outcomes, ultimately allowing it to make better decisions.
- Sol is **National Mapping Agency of country under Department of Science & Technology**

4) Indian Green Building Council (IGBC): IGBC has introduced new green rating tools as part of its Net Zero mission to accelerate the uptake of green building projects in country.

- They include Net Zero Carbon Rating and upgraded rating systems - **Green Existing Building Rating Version 1.0, Green Factory Rating Version 2.0, and Green Campus Rating Version 1.0.**
- IGBC (HQ: Hyderabad) was established by **Confederation of Indian Industry in 2001.**
- It is **India's Premier Certification Body** for Greening of Projects.
- **IGBC vision:** To facilitate India emerge as a global leader in green buildings and green built environment by 2025.
- IGBC is founding member of **World Green Building Council** discussing global issues at COP and similar global platforms.

27TH NOVEMBER

1) 9th schedule of the Constitution: Bihar government asked Centre to include recently amended laws (raising caste-based quotas from **50% to 65%**) in **9th schedule.**

- It was added to Constitution by **1st Constitutional Amendment (1951) under Article 31B.**
- Central and state laws included in **9th schedule** cannot be challenged in courts for violation of Fundamental Rights.
- However, Supreme Court in **I R Coelho v State of Tamil Nadu (2007)**, ruled that any law added to **9th Schedule after April 24, 1973**, violating fundamental rights can be challenged if it undermines the basic structure, as outlined in **Article 21 along with Articles 14 and 19.**

2) Coseismic ionospheric perturbations (CIP): A study has revealed that even smaller earthquakes have their

reflection in the ionosphere.

- Earthquakes generate **ionospheric disturbances that are referred to as CIP.**
- Coseismic vertical crustal movements excite **acoustic waves in the atmosphere.**
- These waves propagate to reach the ionosphere, causing disturbances in electrons along the line of sight connecting ground **Global Navigation Satellite System (GNSS) receivers and satellites.**
- The CIPs can help to observe earthquake sources from space and may pave the way for deciphering earthquake precursors using space-based observations

3) Cashew crop: The Agricultural and Processed Food Products Development Authority (APEDA), facilitated the export of **over 30 tonnes of cashew on National Cashew Day (23rd November).**

- **Origin:** Native to Brazil; it was introduced in the Malabar coast in the 16th century.
- **Soil:** Well-drained deep sandy loam soils.
- **Temperature:** Range of 20 to 38 degree Celsius.
- **Relative humidity:** 60 to 95%
- **Annual precipitation:** 2000 to 3500 mm.
- **India is the second largest producer and exporter of Cashew Nuts.**
- **Major Cashew producing states:** Maharashtra, Andhra Pradesh, Odisha, Karnataka and Tamil Nadu.

4) Avian influenza A (H9N2) virus: Union Health Ministry is closely monitoring the reported outbreak of H9N2 in China.

- H9N2 is a **subtype of the influenza A virus**, which causes human influenza (rare) as well as bird flu.
- H9N2 viruses are found worldwide in wild birds and are endemic in poultry in many areas.
- Transmission of virus infection can take place due to **exposure to infected poultry or contaminated environments.**
- **Indian Council of Agricultural Research-National Institute of High-Security Animal Diseases (ICAR-NIHSAD)** has developed an '**Inactivated low pathogenic avian influenza (H9N2) vaccine for chickens.**

28TH NOVEMBER

1) India EU Trade and Technology Council (TTC):

Ahead of India EU TTC meeting, both have signed a **MoU on semiconductors** that covers cooperation in areas such as research and innovation, talent development, partnerships and exchange of market information.

- **EU and India have set up TTC** as a coordination

platform to address key trade, trusted technology and security challenges.

- It acts as key forum to deepen the strategic partnership on trade and technology between two partners.
- It was launched in 2022 and first meet was held in May 2023

2) National Cadet Corps (NCC): NCC celebrated its 75th Anniversary on November 26.

- NCC (HQ: New Delhi) is a voluntary organization which recruits cadets from high schools, colleges and Universities all over India.
- It is largest uniformed youth organisation in world formed with NCC Act of 1948.
- Aim: To develop qualities of character, courage, secular outlook, ideals of selfless service etc. among the youth to make them useful citizen.
- Ministry: Ministry of Defence.
- Motto of NCC: Unity and Discipline.

3) National Oil Spill Disaster Contingency Plan

(NOSDCP): Director General of Indian Coast Guard

(ICG) chaired 25th meeting of NOSDCP in Gujarat's Vadinar coast.

- NOSDCP promulgated by ICG (part of Ministry of Defence) in 1996.
- It is the apex plan for responding to oil spill disasters in Indian waters and is applicable to shipping, ports, and oil industries.
- ICG is Central Coordinating Authority in India for matters related to Oil Spill.
- Since 2003, NOSDCP has come under purview of National Disaster Management Authority, Ministry of Home Affairs.
- NOSDCP Objective: To establish
 - Effective system for detection and reporting of spills;
 - Record-keeping procedures to facilitate recovery of costs; etc

4) Social cost of carbon: According to a recent study extreme weather events can impede economic development over long term and raise Social Cost of Carbon (SCC).

- SCC is the cost of the damages created by one extra ton of carbon dioxide emissions.
- SCC helps reveal how much society should sacrifice to avoid climate change.
- Policymakers use SCC to quantify additional costs from carbon emissions not reflected in market prices.
- SCC aids cost-benefit analysis of a policy and set the

initial level of a domestic carbon pricing policy

29TH NOVEMBER

1) Generalised Scheme of Preferences (GSP): India is among the top beneficiaries of European Union's GSP in 2022.

- Under the scheme, the EU allows identified products originating in certain developing countries preferential access to its markets in the form of reduced or zero rates of customs duties.
- As the items become more competitive and reach a particular threshold, the GSP is withdrawn.
- The EU has already withdrawn the GSP benefit on many items.
- The present policy will now continue for another four years until 2027.
- GSP was instituted under the aegis of United Nations Conference on Trade and Development (UNCTAD).

2) Trade secrets: An Indian IT Services Company has been asked to pay \$210 million by a US jury for misappropriation of US IT services firm's trade secrets.

- These are intellectual property (IP) rights on confidential information which may be sold or licensed.
- Information is considered trade secrets, if it fulfil following criteria:
 - Commercially valuable because it is secret.
 - Known only to a limited group of persons.
 - Subject to reasonable steps taken by the rightful holder of the information to keep it secret.

3) FASTER 2.0 and electronic Supreme Court Reports

(e-SCR) portal: Chief Justice of India launched the FASTER 2.0 and a Hindi version of the e-SCR portal.

- About FASTER 2.0 portal
 - It is designed to promptly inform jail authorities, trial courts, and high courts about court orders for the release of prisoners.
 - It aims to ensure that prisoners are not held in jail longer than necessary due to delays in communication.
- About e-SCR portal
 - It provides the digital version of the apex court's judgments in the same manner they are reported in the official law report.

4) Amplifi 2.0: Ministry of Housing and Urban Affairs launched Amplifi 2.0 (Assessment and Monitoring Platform for Liveable, Inclusive, and Future-Ready Urban India).

- The portal aims to provide raw data from

Indian cities available on a single platform for academics, researchers, and stakeholders to help data-driven policymaking.

- Currently, **225 urban local bodies have been onboarded, and data of 150 cities is available on the portal.**
- **The initiative provides the opportunity to create new frameworks for Urban development based on open data obtained.**

30TH NOVEMBER

1) Shettihalli Wildlife Sanctuary (SWS): Recently, National Green Tribunal (NGT) has asked the state government to resolve the issues in the delay in the notification of eco-sensitive zone (ESZ) status for SWS.

- **ESZ is a designated area around a protected area where certain activities are regulated to minimize human impact and protect the surrounding environment.**
- **About SWS**
 - **Location-** Shimoga District of Karnataka.
 - **Declared Wildlife Sanctuary in 1974.**
 - **Main rivers-** Thunga and Kumadhathi
 - **Fauna-** Sambar, Indian Gaur, Tiger, Elephant, Sloth bear, etc
 - Mandagadde Natural Bird Sanctuary, is also a part of this Sanctuary.

2) Indian Ocean Tuna Commission (IOTC): IOTC is an intergovernmental organization responsible for the management of tuna and tuna-like species in the Indian Ocean.

- Its objective is to **ensure the conservation and**

appropriate utilization of fish stocks and encourage the sustainable development of fisheries.

- It was established within the **framework of FAO by the Agreement for the establishment of the IOTC in 1993 and entered into force in 1996**
- Its key functions and responsibilities are drawn from the **United Nations Convention on the Law of the Sea (UNCLOS).**
- **Headquarters-** Victoria, Seychelles
- India is also a Member.

3) Anganwadi Protocol for Divyang Children: Ministry of Women & Child Development launched the National Outreach Programme on the Anganwadi Protocol.

- Protocol embodies a **Social Model for Divyangjan inclusive care under the POSHAN Abhiyan**, with a step-by-step approach:
 - **Screening for early disability signs**
 - Inclusion in community events and empowering families
 - Referral support via **ASHA/ANM & Rashtriya Bal Swasthya Karyakram (RBSK) teams.**
- The protocol is in line with the **National Curriculum Framework for Foundational Stage 2022.**

4) Tritonal: Israel has been accused of using **Mk-84 bombs** in the ongoing conflict in Gaza which are generally filled with Tritonal.

- Tritonal is a **mix of one part Aluminium and three parts trinitrotoluene or TNT.**
- It is a **dangerous explosive**, especially when exposed to heat.
- Transport of Tritonal by aircraft or railways is forbidden due to its explosive characteristics

PRELIMS BOOSTER-PRESS INFORMATION BUREAU (PIB)

1ST NOVEMBER

1) Minuteman III missile: It is a **strategic weapon system using a ballistic missile of intercontinental range and first became operational in the early 1970s**. It is a three-stage, solid-fuel missile. Its range is 6,000-plus miles, and its maximum range is about 8,000 miles. **Boeing Corporation designed and manufactured this missile**. The current ICBM force consists of 400 Minuteman III missiles. It is **currently the only land-based ICBM in the US nuclear arsenal, which also includes Trident submarine-launched ballistic missiles** and nuclear weapons carried by strategic bomber aircraft.

2) Chhath Festival: It is a Hindu Vedic festival celebrated in the Indian Sub-Continent, prominently in Bihar, Jharkhand, Uttar Pradesh, some areas in Madhya Pradesh in India, and a few regions of Nepal. It is **dedicated to the Sun God (Lord Surya) and Chhathi Maiya (another name for Goddess Usha and a known sister to Lord Surya)**. It is celebrated twice a year in the months of **Chaitra (March-April) and Kartika (October-November)**. Considered to be one of the most eco-friendly religious festivals, Chhath Puja lasts for 4 days. The rituals surrounding Chhath Puja are supposedly harsher when compared to other Hindu festivals. **They involve strict fasting (without water), taking a dip in rivers/water bodies, standing in water and offering prayers, facing the sun for a prolonged period, and offering 'prasad' to the Sun during sunrise and sunset.** Any food prepared during the festival will have no salt, onion, or garlic. In recent days, both men and women have been seen fasting during this festival, but the main worshippers are mainly said to be women. Those **who fast are known as parvatin**.

3) Scabies: Scabies is a **parasitic infestation caused by a mite known as Sarcoptes scabiei**. This causes an itchy rash to form on the skin. Untreated, these microscopic mites can live on the skin for months. They reproduce on the surface of the skin and then burrow into it to lay eggs. **Scabies is often found in the skin folds**. But scabies can appear on many parts of the body. **It is contagious and can spread quickly from person-to-person through close skin contact** (e.g. living in the same residence) with an infested

individual. Scabies symptoms include severe itch, often worse at night; itchy lines (linear burrows) and bumps (papules) on the fingers, wrists, arms, legs, and belt area; larger rash in infants and small children, including on the palms, soles of the feet, ankles, and scalp. **A more severe type of scabies, called crusted scabies, makes the skin crusty and scaly and affects large areas of the body**. Scabies is easily treated. Medicated skin creams or pills kill the mites that cause scabies and their eggs. However, the itching may not stop for many weeks after treatment.

4) Light Combat Helicopter Prachand: It is **India's first indigenous multi-role combat helicopter, developed by Hindustan Aeronautics Limited (HAL)**. It is designed to meet the needs of the Indian armed forces operating in deserts and mountainous areas. **The helicopter is fitted with Shakti Engine, which is co-developed by HAL and France's Safran**. The helicopter received operational clearance in 2017. **The helicopter can carry out activities such as Combat Search and Rescue (CSAR), Destruction of Enemy Air Defence (DEAD), operations against slow-moving aircraft and Remotely Piloted Aircraft (RPAs), high-altitude bunker busting operations, counter-insurgency operations** in the jungle and urban environments, and provide support to ground forces. The helicopter will be equipped with Helina missiles, the air force version of which is called Dhruvastra

2ND NOVEMBER

1) British Academy Book Prize: This was **formerly known as the Nayef Al-Rodhan Prize**. It was established in 2013. It was established to reward and celebrate the best works of non-fiction that demonstrate rigour and originality and have contributed to public understanding of other world cultures and their interactions. **The British Academy is the UK's national academy for humanities and social sciences**. The eligible books come from the subjects that fall within those disciplines, from archaeology, history, and psychology to philosophy, languages, and cultural studies. **Nandini Das who is a Professor in the English faculty at the University of Oxford, won the award for her book 'Courting India: England, Mughal India and the Origins of Empire'** The winner gets the

£25,000 prize cash award, and each of the shortlisted works will receive £1,000 each.

2) State Food Safety Index: Recently, the Food Safety and Standards Authority of India (FSSAI) published the State Food Safety Index. **The Index is an annual assessment released by the Food Safety and Standards Authority of India (FSSAI). It was started in 2018-19 to create a competitive and positive change in the food safety ecosystem in the country.** The index will help in providing safe and nutritious food to our citizens. This index is based on the performance of the State/ UT on five significant parameters, namely, Human Resources and Institutional Data, Compliance, Food Testing, Infrastructure and Surveillance, Training and Capacity Building and Consumer Empowerment. **In the 2023 index, a new parameter called 'Improvement in SFSI Rank' was added.** The Index is a dynamic quantitative and qualitative benchmarking model that provides an objective framework for evaluating food safety across all States/UTs. **The States/UTs are classified into 3 categories, namely large states, small states, and UTs, for evaluation and assessment.**

3) Future Leaders Scholarship Programme: The scholarship programme will support 30 of the country's most talented Master's scholars over the next three years. The scholarship will cover the full cost of tuition and living expenses. **It will be for students studying Master's programmes in engineering, natural sciences, business, and medical research.** In this programme, half of the scholarships are reserved for female scholars. It will build a pathway for the most talented students in India to deepen their studies and expand their experiences at one of the world's top universities. Alongside the new scholarship programme, the university also signed a new partnership with the UK government's **Chevening Scholarships programme.** It will provide funding for an additional three Master's scholars from India over the next three years.

4) INFUSE Mission: The Integral Field Ultraviolet Spectroscopy Experiment (INFUSE) was launched from the White Sands Missile Range in New Mexico. It was launched to study the Cygnus Loop, a supernova remnant. **The INFUSE mission is expected to collect information about the remnant for a few minutes from a height of 150 miles (240 km).** Specifically, the instrument will gather light streaming from the Cygnus Loop in far-ultraviolet wavelengths. It will observe how the supernova dumps energy into the Milky Way by

catching light given off just as the blast wave crashes into pockets of cold gas floating around the galaxy. It will **study the Cygnus Loop and try to understand the life cycle of stars.**

3RD NOVEMBER

1) Lucy Mission: It is a first-of-its-kind mission of NASA that will explore Jupiter's elusive Trojan asteroids. It was successfully launched on **October 16, 2021**, from the **Kennedy Space Centre in Florida, US.** Over its **12-year mission**, Lucy will explore a record-breaking number of asteroids: it will fly by two in the belt of asteroids that circle the Sun between the orbits of Mars and Jupiter, and then 10 Trojans, which includes five asteroid targets and the satellites of three of those. Lucy will also fly by Earth three times to get a push from its gravity, making it the first spacecraft to return to the vicinity of Earth from the outer solar system. The spacecraft carries two infrared spectrometers and four cameras.

2) UNESCO Creative City: The city of Kozhikode in Kerala was added in UNESCO's Creative Cities Network (UCCN). Gwalior from Madhya Pradesh was also among the 55 new cities to join the network. These cities have been handpicked to represent seven creative fields — crafts and folk arts, design, film, gastronomy, literature, media arts, and music. Kozhikode was included in the category of literature and Gwalior in the category of music. **Kozhikode's literary tradition:** The first Malayalam novel **Kundalatha** was born in Kozhikode in 1887. It was authored by **Appu Nedungadi.** Several illustrious writers like S K Pottekkatt, Vaikom Muhammad Basheer, Uroob, Thikkodiyam, NN Kakkad, P Valsala, Akbar Kakkattil, Punathil Kunjabdulla and MT Vasudevan Nair have brought laurels for Kozhikode. The city has also produced many film and theatre professionals in the last half a century.

3) Elephanta Caves: It is a specimen of rock-cut art and architecture from the times of mediaeval India. **The Elephanta Caves are located in West India on Elephanta Island (otherwise known as the Island of Gharapuri), about 7 km from Mumbai's mainland shore.** The rock-cut Elephanta Caves were constructed in the mid-5th to 6th centuries AD, and most of them are dedicated to Lord Shiva. **There are two groups of caves on the site of the Elephanta Caves, the first is a large group of five Hindu caves, and the second is a smaller group of two Buddhist caves.** The caves are hewn from solid basalt rock.

Except for a few exceptions, much of the artwork is defaced and damaged. The caves are an expression of art, and a number of important images are sculpted here, which include 'Trimurti' or three-headed Shiva, 'Gangadhar', which is a manifestation of the river Ganga as she descends to the earth, and 'Ardhnareshwar', which is a representation of Shiva and Parvati in the same body. It is a UNESCO World Heritage Site.

4) World Biosphere Reserve Day: World Biosphere Reserve Day is celebrated on November 3 each year to raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use. On the second anniversary of World Biosphere Reserve Day, it is important to reflect on the progress made in conserving and sustainably using these vital ecosystems. **The Asian Meet in Chennai on Biosphere Reserves:** On the second anniversary of World Biosphere Reserve Day, **UNESCO successfully wrapped up the 10th South and Central Asian Biosphere Reserve Network Meeting (SACAM) in Chennai, India.** The SACAM was held in collaboration with the Ministry of Environment, Forests, and Climate Change, Govt of India, and the National Centre for Sustainable Coastal Management, **Under the theme 'Ridge to Reef', SACAM served as a forum for sharing expertise and nurturing partnerships in the domain of sustainable environmental practices within the South and Central Asia region.**

4TH NOVEMBER

1) Taurid meteor shower: The Taurid meteors are debris from the periodic Comet 2P/Encke, which has the shortest known orbital period for a comet (it takes only 3.3 years to make one complete trip around the sun). **These showers are named after the constellation Taurus.** It is unique in that it comprises **two distinct streams (i.e., Southern and Northern Taurids),** both of which have spread over time due to the gravitational influence of Jupiter. It can be seen with the naked eye and is best viewed at around midnight. **These are modest, offering fewer than 10 shooting stars per hour on peak nights.** However, November is one of the better months for shooting stars because there are many sporadic meteors.

2) National Efficient Cooking Programme: Recently, the Energy Efficiency Services Limited (EESL) launched its groundbreaking National Efficient Cooking Programme (NECP) and Energy Efficient Fans Programme (EEFP). **It is a subset of the Clean Cooking**

Scheme. It focuses on Non-Solar/Electricity-based Induction Cookstoves, aligning with the Go-electric initiative by the Ministry of Power. This programme introduces induction-based cookstoves. The target is to deploy 20 Lakh Induction cook-stoves across India. **EESL seeks to reduce the environmental impact of cooking methods, ensuring cleaner air and improved health for citizens.** EESL has also partnered with Modern Energy Cooking Services (MECS) for the large-scale deployment of induction cooktops. The deployment is expected to accelerate the acceptance and large-scale adoption of modern electric cooking devices in Indian kitchens. **It offers a cost advantage of 25-30% over traditional cooking methods, promising both energy savings and cost-effective cooking solutions.**

3) Adaptation Gap Report: According to the Adaptation Gap Report, the money being made available to developing countries for adaptation measures has been declining and is nowhere near the scale of requirement. **It has been published annually by the United Nations Environment Programme (UNEP) since** the aim of the reports is to inform national and international efforts to advance adaptation. It provides an update on the global status and progress of the adaptation process across three elements: planning, financing, and implementation. **It complements the Emissions Gap Report series and explores the implications of failing to close the emissions gap. It is co-produced by the UNEP Copenhagen Climate Centre (UNEP-CCC) and the World Adaptation Science Programme (WASP).**

Key findings: It is estimated that adaptation costs will increase significantly by 2050 for most sectors, especially under high-warming scenarios.

- **The adaptation finance needs are 10-18 times as high as the current international public adaptation fund flows.**
- The world countries must urgently cut greenhouse gas emissions and increase adaptation efforts to protect vulnerable populations.
- In 2021, funding from developed countries to developing countries for adaptation projects was 15% lower than in previous years.
- **It identifies seven ways to bridge the adaptation gap,** which include an increase in international finance flows and greater domestic mobilisation of resources.
- **Also, it calls for a reform of the global financial**

architecture to ensure greater and easier access to finance for **climate-related purposes from multilateral agencies such as the World Bank or the IMF.**

6TH NOVEMBER

1) **Bulava Ballistic Missile:** It is a new **Russian submarine-launched Intercontinental Ballistic Missile (ICBM).** Development of this missile commenced in 1998. **The first powered flight test of the Bulava missile occurred in September 2005.** It's first submerged test launch followed in December. It was **designed to be deployed onto Russia's Borey-class ballistic missile submarines (SSBNs).** It is a three-stage solid-fuel missile. It is **designed to carry multiple warheads.** Each warhead will strike a different target. It can **carry six Multiple Independent Re-entry Vehicles (MIRVs).** These MIRVs are capable of manoeuvring in-flight and re-targeting, in order to outmanoeuvre hostile air defences.

2) **Apache Attack Helicopter:** It is the world's most advanced multi-role combat helicopter. **Country of Origin:** United States. **Manufacturer:** Boeing. It is **also known as the Apache Guardian.** The AH-64E attack helicopter is the latest version of the Apache used by the US Army. **Other purchasers:** India, Egypt, Greece, Indonesia, Israel, Japan, South Korea, Kuwait, Netherlands, Qatar, Saudi Arabia, Singapore, UAE, and the UK. **It is designed and equipped with open systems architecture to incorporate the latest communications, navigation, sensor, and weapon systems.** It has greater thrust and lift, joint digital operability, improved survivability, and cognitive decision-aiding. The AH-64E includes a new integrated infrared laser that allows for easier target designation and enhanced infrared imagery that blends infrared and night vision capabilities. **The Indian Air Force has a fleet of 22 AH-64E Apache attack helicopters, and in 2020, Boeing signed an agreement with the Government of India for the acquisition of six more Apache helicopters for the Indian Army.**

3) **National Mineral Development Corporation (NMDC):** Incorporated in 1958 as a Government of India public enterprise, NMDC is India's largest producer of iron ore. It is a **Navratna public-sector enterprise under the administrative control of the Ministry of Steel.** The company is engaged in the exploration of a range of minerals, including iron ore, copper, rock phosphate, limestone, dolomite, gypsum, bentonite, magnesite, diamond, tin, tungsten, graphite, and beach sands. **It owns and operates highly mechanised iron ore mines in**

Chhattisgarh and Karnataka. It also operates the only mechanised diamond mine in India at Panna, Madhya Pradesh. **NMDC is considered to be one of the low-cost producers of iron ore in the world.** The company sells most of their high-grade iron ore production to the Indian domestic steel market, primarily pursuant to long-term sales contracts. **The registered office is located in the city of Hyderabad, Telangana.**

4) **GST Amnesty Scheme: The scheme will be open till January 31, 2024.** It will be available for entities that were unable to submit their appeals against orders issued by the tax officer on or before March 31. **The scheme aims to help those who missed the deadline for filing appeals due to various reasons, including administrative errors or unforeseen circumstances.** The entities willing to avail of the scheme will have to pre-deposit 12.5 percent of the tax demand, against 10 percent. **This initiative can also promote enhanced compliance among taxpayers.** A fair and lenient approach to appeal filing encourages better cooperation with tax authorities and a willingness to resolve disputes or clarify tax matters. **Additionally, by allowing disputes to be resolved more efficiently, the scheme may reduce the burden on the legal system. This benefits both taxpayers and the tax administration.**

7TH NOVEMBER

1) **Acute Lymphoblastic Leukaemia (ALL):** It is a **type of cancer of the blood and bone marrow**—the spongy tissue inside bones where blood cells are made. The word "acute" in **acute lymphocytic leukaemia** comes from the fact that the disease progresses rapidly and creates immature blood cells rather than mature ones. **It is the most common type of cancer in children. Symptoms include** Bleeding from the gums, Bone pain, Fever, Frequent infections, frequent or severe nosebleeds, etc. **It occurs when a bone marrow cell develops changes (mutations) in its genetic material, or DNA.** A cell's DNA contains the instructions that tell a cell what to do. Normally, the DNA tells the cell to grow at a set rate and to die at a set time. In ALL, the mutations tell the bone marrow cell to continue growing and dividing. When this happens, blood cell production becomes out of control. **The bone marrow produces immature cells that develop into leukemic white blood cells called lymphoblasts.** These abnormal cells are unable to function properly, and they can build up and crowd out healthy cells. It's not clear what causes the DNA mutations that can lead to acute lymphocytic

leukaemia. It may include chemotherapy or targeted drugs that specifically kill cancer cells.

2) Indo-Pacific Maritime Domain Awareness (IPMDA)

initiative: It was announced at the 2022 Quad Leaders' Summit in Tokyo. It was **announced to track "dark shipping" and build a "faster, wider, and more accurate maritime picture of near-real-time activities in partners' waters", integrating three critical regions in the Indo-Pacific — the Pacific Islands, Southeast Asia, and the IOR.** It is a technology and training initiative to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways. It harnesses innovative technology, such as commercial satellite radio frequency data collection, to provide partners across Southeast Asia, the Indian Ocean region and the Pacific with near real-time information on activities occurring in their maritime zones.

3) World Local Production Forum: It is an initiative of the World Health Organisation. The first WLPF was organised virtually in 2021. The **aim is to increase access to medicines and other health technologies.**

This forum provides Member States and the global community with a regular platform to shape strategies, galvanize collective action, and foster partnerships on sustainable local production to improve timely and equitable access to quality-assured health products. The Local Production and Assistance (LPA) Unit at the WLPF. **The second WLPF aims**

- To provide a global platform to discuss key challenges in **promoting local production and technology transfer.**
- To explore opportunities and mechanisms to tackle the bottlenecks.
- To **promote sustainable local production capacity** to improve access to quality, safe and effective health products and technologies.

8TH NOVEMBER

1) Krishi 24/7: It is the **first-ever AI-powered solution for automated agricultural news monitoring and analysis,** with support from Google.org. The tool scans news articles in multiple languages and translates them into English. It extracts essential information from news articles, such as **headline, crop name, event type, date, location, severity, summary, and source link,** ensuring that the ministry receives timely updates on relevant events published on the web. It addresses

the need for an efficient mechanism to identify and manage agricultural news articles of interest to aid timely decision-making. It will **aid the Department of Agriculture and Farmers Welfare (DA&FW)** to identify relevant news, generate timely alerts, and take prompt action to protect farmers' interests and promote sustainable agricultural growth through improved decision-making.

2) Project Dolphin: It is to **strengthen the marine ecology and overall health of the marine environment.** This project includes **strengthening patrolling and surveillance, improving habitat through the restoration of coastal ecosystems, removing ghost nets, and encouraging the involvement of locals with incentives.** It will be implemented at a cost of 8.13 crore rupees during 2023-2024. While 60% of the amount will be given by the Union government, the State will bear the remaining cost. This will be **helpful in improving the population of dolphin species and protecting their habitat, while at the same time improving the livelihood of the local communities.** More than nine species of marine dolphins are found in the coastal waters of Tamil Nadu. **The major habitats of the dolphins are found in the Gulf of Mannar Biosphere Reserve.**

3) Vaigai Dam: It is **constructed across the Vaigai River near Andipatti, in the Theni district of Tamil Nadu.** It was built in 1959 and is often **referred to as the lifeline of the region.** It has a height of 111 feet and can store 71 feet of water. It was **primarily built to provide water for irrigation in the Madurai district and the Dindigul district,** as well as drinking water for Madurai and Andipatti. Near the dam, the **Government of Tamil Nadu has constructed an Agricultural Research Station for researching the growing of a variety of crops.** There is a small garden, called Little Brindavan, that is located in close proximity to this dam.

4) Vaigai River: It is a river in Tamil Nadu state. It **rises in the Varushanad Hills of the Western Ghats.** It travels through the Pandya Nadu region of Tamil Nadu. It is the **major river in the fabled city of Madurai,** the capital of the ancient and prosperous Pandya kingdom located in southern Tamil Nadu. **The river finds a mention in Sangam literature dated to 300 before the Common Era.** It is **258 kilometres Vaigai gets major feed from the Periyar Dam in Kerala.** Water from the Periyar River in Kerala is diverted into the Vaigai River in Tamil Nadu via a tunnel through the Western Ghats. **Its main tributaries are**

Suruliyaru, Mullaiyaru, Varaganadhi, Manjalaru, Kottagudi, Kridhumaal, and Upparu. It finally empties into the Palk Strait near the Pamban Bridge in Ramanathapuram district. The river fulfils the drinking water requirements of five districts in Tamil Nadu, namely, **Theni, Madurai, Ramnathapuram, Sivagangai, and Dindigul.** It also provides irrigation for 200,000 hectares of agricultural land

9TH NOVEMBER

1) Climate Services Report 2023: Recently, the **World Meteorological Organization (WMO)** released **Climate Services report 2023.**

Key findings: Less than 25 per cent of health ministries across the world utilise climate information and services to monitor health risks related to climate sensitivity. It **highlights health protection as a priority in almost all countries and identifies the need for high-quality information for better decision making.** While extreme heat causes the greatest mortality of all extreme weather, heat warning services are provided to health decision makers in only half of the affected countries; Climate change mitigation leading to reducing air pollution can save lives; and Investments to improve the capabilities of the health sector to safeguard the most vulnerable are insufficient.

2) World Meteorological Organization: It is originated from the **International Meteorological Organization (IMO), which was founded in 1873.** It was established in 1950. It is the **specialized agency of the United Nations for meteorology (weather and climate),** operational hydrology and related geophysical sciences. **Currently it has a membership of 187 countries.** Its **supreme body is the World Meteorological Congress,** which consists of representatives of all members. It meets at least every four years to set general policy and adopt regulations. A 36-member Executive Council meets annually and implements policy.

Headquarters: Geneva, Switzerland.

3) Legal Literacy and legal Awareness Program: Since 2012, **Department of Justice (DoJ), Ministry of Law and Justice, Government of India has been implementing Access to Justice Scheme in North Eastern States** including Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and in UT of Jammu & Kashmir.

Major focus: Legal Empowerment of community, dissemination of simplified Information, Education

and Communication (IEC) materials in local languages and dialects and capacity development of Panchayati Raj Functionaries and Village Chiefs on formal justice delivery system. **The aim is to empower the poor and disadvantaged sections of society to seek and demand justice services.** The Programme also seeks to improve the institutional capacities of key justice service providers to enable them to effectively serve the poor and disadvantaged.

4) National Coal Index: The NCI is a **price index which reflects the change in the price level of coal on a particular month relative to the fixed base year.** This price index combines the prices of coal from all the sales channels- Notified Prices, Auction Prices and Import Prices. It has been **rolled out on 4th June 2020 and the aim is to have an index that will truly reflect the market price. The base year is FY 2017-18.** The concept and design of the Index as well as the Representative Prices have been developed by the **Indian Statistical Institute, Kolkata.** The Index is meant to encompass all transactions of raw coal in the Indian market. This **includes coking and non-coking of various grades transacted in the regulated (power and fertilizer) and non-regulated sectors.** The NCI's upward movement indicates rising demand of coal because of upcoming festive season and winter in the country, which will encourage coal producer to take maximum benefit by further scaling-up domestic coal production to meet the growing energy demands.

10TH NOVEMBER

1) Bhima River: The Bhima River (also known as the Chandrabagha River) is a major river in southwest India. It is a **major tributary of the Krishna River.** It originates in the Bhimashankar hills near Karjat on the western side of the Western Ghats, in the Pune District of Maharashtra. **Bhima flows southeast through the states of Maharashtra, Karnataka, and Telangana.** The Bhima River merges into the Krishna River at Kadlur (Raichur) in Karnataka. This **861 km-long river has the Western Ghats on the west, the Balaghat Range in the north, and the Mahadeo Hills in the south.** It runs in a well-entrenched valley, and its banks are heavily populated. **The river is rain-fed,** and the volume of the river varies based on the monsoonal changes. **Major tributaries are the Sina and Nira rivers.** Pandharpur is an important pilgrimage centre located on the right bank of Bhima River.

2) Insolvency and Bankruptcy Code, 2016: It is the

bankruptcy law of India which seeks to consolidate the existing framework by creating a single law for insolvency and bankruptcy. It **provides for a time-bound process to resolve insolvency**. The provisions of the Code are applicable to **companies, limited liability entities, firms, and individuals** (i.e. all entities other than financial service providers). **Companies have to complete the entire insolvency exercise within 180 days under the IBC**. The deadline may be extended if the creditors do not raise objections to the extension. For smaller companies, including startups with an annual turnover of Rs 1 crore, the whole exercise of insolvency must be completed in 90 days, and the deadline can be extended by 45 days. If debt resolution doesn't happen, the company goes for liquidation. **The Insolvency and Bankruptcy Board of India (IBBI) has been appointed as a regulator and it can oversee these proceedings**. IBBI has 10 members appointed by the Central Government. **IBBI regulates insolvency professionals, insolvency professional agencies, and information utilities set up under the Code**. A licensed professional administers the resolution process, manages the assets of the debtor, and provides information for creditors to assist them in decision-making.

3) Gwalior City: The city of Gwalior in Madhya Pradesh has been added to UNESCO's Creative Cities Network (UCCN) for its strong commitment to harnessing culture and creativity. **Kozhikode from Kerala was also among the 55 new cities to join the network**. All the music gharanas of the country have their origins in the Gwalior gharana. **Gharana in Hindustani music is a community of performers who share a distinctive musical style that traces to a particular instructor or region**. Before Hindustani classical music was divided into various gharanas, **Gwalior emerged as the first proper gharana of music**. Hence, the **Gwalior gharana is considered the most ancient and 'Gangotri'** (meaning origin) of Khyal raga. Khayal singing, as we know it today, emerged from dhrupad under the aegis of Gwalior gharana while incorporating the elements of qawwali.

4) Stable Auroral Arc: Recently, the **Indian Astronomical Observatory (IAO) in Ladakh captured stunning images of a rare red-colored aurora known as a Stable Auroral Arc**. It is a rare atmospheric phenomenon which was observed during a strong G3-class geomagnetic storm. Unlike auroras, which occur when charged particles from space hit the atmosphere causing it to glow, SAR arcs form differently. They are an **indication of heat energy leaking into the upper**

atmosphere from Earth's ring current system, a donut-shaped circuit carrying millions of amps around our planet. During the recent geomagnetic storm, the ring current was energised by hours of intense geomagnetic activity, with energy dissipating into these SAR arcs.

11TH NOVEMBER

1) Exercise CORPAT and Bongosagar: It is the **4th edition of the BONGOSAGAR and the 5th edition of Coordinated Patrol (CORPAT) exercise**. Both are bilateral naval exercises. **Indian Navy Ships Kuthar, Kiltan and Maritime Patrol Aircraft (MPA) Dornier participated in the exercise along with Bangladesh Navy Ships Abu Bakr and Abu Ubaidah**. CORPAT-23 also included the maiden Humanitarian Assistance and Disaster Relief (HADR) drills conducted between the two navies wherein a Search and Rescue scenario at sea was exercised. INS Kuthar is an indigenously built guided-missile Corvette, whereas INS Kiltan is an indigenously built anti-submarine Corvette.

2) National Education Day: It is **celebrated on November 11 every year (Since 2008) to mark the birth anniversary of Maulana Abul Kalam Azad, India's first education minister**. The purpose of celebrating National Education Day is to enlighten individuals about the importance of education and its positive impact on the nation's development and well-being.

Maulana Abul Kalam Azad: Maulana Abul Kalam Azad, born on November 11, 1888, was a scholar, educationist, freedom fighter, and senior leader of the Indian National Congress (INC). He **became the youngest person to serve as President of INC in 1923, at the age of 35**. He was one of the leading supporters of the non-violent civil disobedience movement that was led by Mahatma Gandhi. He was **the first Education Minister of independent India**. He served in the position from 1947 to 1958. He **was instrumental in the establishment of premier educational institutions, including the Indian Institutes of Technology (IITs) and the UGC**.

3) Vampire Viruses: They are pathogens that latch onto other viruses in order to replicate themselves. **They emerge when a bacteriophage attaches to a soil-based virus, utilising its "life" for independent survival. This viral relationship between two pathogens is called a satellite and a helper**. The satellite is the infectious strand that relies on the helper for support through its life cycle. **Satellites depend on both their host organism and helper virus**

to complete its life cycle. The satellite virus depends on the helper virus to build the protective shell that covers its genetic material, called a capsid or to help it replicate its DNA. **Most satellite viruses contain a gene that allows them to integrate into the host cell's genetic material after they enter the cell.** This enables the satellite to reproduce whenever a helper enters the cell from then on. The host cell also copies the satellite's DNA and its own when it divides.

4) Insurance Surety Bond: These bonds can be defined in their simplest form as a **written agreement to guarantee compliance, payment, or performance of an act.** These are instruments where insurance companies act as 'Surety' and provide the financial guarantee that the contractor will fulfil its obligation as per the agreed terms. Surety is a unique type of insurance because it involves a three-party agreement. **The three parties in a surety agreement are:**

Principal: The party that purchases the bond and undertakes an obligation to perform an act as promised.

Surety: The insurance company or surety company that guarantees the obligation will be performed. If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.

Obligee: The party who requires and often receives the benefit of the surety for most surety bonds, the obligee is a local, state or federal government organisation.

13th NOVEMBER

1) Kadaknath Chicken: Kadaknath, a native of Madhya Pradesh (MP), is **prominently found in the Jabua district of the state. It has black flesh and this chicken is also called black chicken or Kali Masi.** It's not just the meat, but even the organs and bones of this chicken are black. The eggs of this chicken are black as well. It **received the Geographical Indication (GI) tag in 2018.** It is known for its **high iron content and much lower cholesterol than other breeds.** It has a high protein content and is considered ideal for muscle repair and building. Kadaknath chicken is often claimed to be **beneficial for individuals with certain health conditions, such as asthma and respiratory issues.**

2) Geographical Indication (GI) Tag: It is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify

a product as originating in a given place. It is typically **used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts, and industrial products.** GI Tag ensures that no one other than those registered as authorized users is allowed to use the popular product name. **Geographical Indications are covered as a component of intellectual property rights (IPRs) under the Paris Convention for the Protection of Industrial Property.** At the international level, **GI is governed by the World Trade Organisation's (WTO's) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).**

In India, Geographical Indications registration is administered by the Geographical Indications of Goods (Registration and Protection) Act, 1999. This GI tag is valid for 10 years, following which it can be renewed. **The first product in India to be accorded the GI tag was Darjeeling tea in the year 2004-05.**

3) Kedarnath Wildlife Sanctuary (KWS): The KWS, famously known as the **Kedarnath Musk Deer Sanctuary, is located in the Rudraprayag and Chamoli districts of the state of Uttarakhand.** It was named after the famous Hindu temple of Kedarnath, which lies outside the northern border of the sanctuary. Its alternate name comes from its primary purpose of protecting the endangered Himalayan musk deer. It is the **largest protected area in the western Himalayas.** It lies in the upper catchment of the Alaknanda and Mandakini Rivers. It is **bordered by Kedarnath, Mandani and Chaukhamba peaks in the north.** The area falls under the West Himalayan Zone in the Palearctic realm. It is **covered with temperate forests.** The higher and upper regions possess the sub-alpine and alpine coniferous forests. At high altitude, lush green meadows envelope the entire region.

4) Mount St Helens: A report by the US Geological Survey (USGS) revealed that around 400 earthquakes have been recorded under Mount St Helens since mid-July this year. It is a **volcanic peak in the Cascade Range of southwestern Washington, United States of America. It is part of the larger Pacific Ring of Fire.** The volcano was formed during four eruptive stages beginning about 275,000 years ago and has been the most active volcano in the Cascade Range during the Holocene. **Its eruption on May 18, 1980, was one of the greatest volcanic explosions ever recorded in North America.**

14th NOVEMBER

1) Vadhavan Port: It is a proposed Rs 75,000 crore container port project at Vadhavan in Maharashtra. **The port will be developed as a joint venture by the Jawaharlal Nehru Port Authority (JNPA) and the Maharashtra Maritime Board (MMB).** The new port has a natural draft of about 20 metres close to the shore, making it possible for it to handle bigger vessels. It will enable the call of container vessels of 16,000- 25,000 TEUs (twenty-foot equivalent units) capacity, giving **advantages of economies of scale and reducing logistics cost.** It will be designed to handle around 254 million tonnes (MT) of cargo. It will be **developed as a Green Port.** It is planning to provide green fuel to ships coming to the port, and the construction and operations are planned to keep in mind the environmental issues.

2) Birsa Munda: He was a folk hero and a tribal freedom fighter hailing from the Munda tribe. He **spearheaded an Indian tribal mass movement that arose in the Bihar and Jharkhand belts in the early 19th century under British colonisation.** Munda rallied the tribals to fight against the forceful land grabbing carried out by the British government, which would turn the tribals into bonded labourers and force them to abject poverty. He influenced his people to realise the importance of owning their land and asserting their rights over it. As a reaction to the **introduction of the Zamindari system, or Permanent settlement in tribal areas, Birsa Munda in 1894 declared "Ulgulan", or revolt, against the British and the Dikus – the outsiders.** He created a faith called 'Birsait'.

Known as 'Dharti Abba' or the Earth **Father, Birsa Munda stressed the need for the tribals to study their own religion and not forget their cultural roots.** Birsa Munda propagated the principles of Hindu religion. He died on June 9, 1900, at age 25. His struggle against exploitation and discrimination against tribals led to a big hit against the British government in the form of the **Chotanagpur Tenancy Act being passed in 1908.** The act restricted the passing on of land from the tribal people to non-tribals. In recognition of his impact on the national movement, **the state of Jharkhand was created on his birth anniversary in 2000.** November 15, the birth anniversary of Birsa Munda, was declared '**Janjatiya Gaurav Divas by the Central Government in 2021.**

3) Arrow-3 Missile Defence System: It is an **exo-atmospheric anti-ballistic missile defence system** for long-range threat engagement. The missile was **jointly developed by Israel Aerospace Industries and the**

Missile Defence Agency in the US. Initially deployed in 2017, **Arrow-3 is the top layer of Israel's sophisticated air-defence network.** It is designed to take out ballistic missiles while they are still outside of the atmosphere. It **uses two-stage solid-fueled interceptors to engage short- and medium-range ballistic missiles and consists of a launcher, radar, and battle management system.** It provides a range of 2,400km and can intercept threats at an altitude of 100km. It has early warning and fire control radar. It provides extended-range acquisition as well as multi-target acquisition and tracking capabilities. It **uses hit-to-kill technology to destroy incoming missiles.** The missile is launched vertically, and then the direction is changed towards the estimated interception point. The **high-resolution electro-optical sensor acquires the target for the kill vehicle to hit the target and destroy the warhead.**

15TH NOVEMBER

1) Kangri: The Kangri, also known as **Kanger or Kangid,** is earthenware filled with glowing embers and encased in pretty handmade wicker baskets. It is a **portable and moving heater that Kashmiris keep in their pheran,** a long woollen cloak reaching down to the knees worn by people during the frosty winters. **A pot can hold about 250 grams of charcoal, and the fire, lasts for hours, under a pheran.** It keeps people warm during the harsh winter months, when temperatures can drop below minus 20 degrees. It is **known for its outer shell made of willow wicker reeds that grow abundantly in the wetlands of north Kashmir's Ganderbal district.** These reeds can reach eight feet in height and are harvested during autumn, just before demand for the fire pots swells. These then go through a multi-layered process of scraping and peeling to get rid of the bark, soaking, boiling, and drying before they are ready to be woven around a bowl-shaped clay pot. The earthenware is decorated with colourful threads, mirrorwork, and sequins and is about six inches (150 mm) in diameter.

2) Trishakti Prahar: It is a **joint military exercise involving the Indian Army, the Indian Navy, and the Indian Air Force.** It seeks to create new strategies and assess operational capabilities in the context of modern warfare. During the exercise, all three wings of the Indian Army actively engage in live practice sessions, simulating real war scenarios with complete coordination. The exercise includes long-range attacks by reconnaissance aircraft, emphasizing precision and high-volume attacks to effectively neutralize hypothetical adversaries. It **involves a**

diverse array of military assets, including various types of howitzers, helicopters, and weaponry. Fighter aircraft, Apache attack helicopters, Chinook heavy lift helicopters, and various Navy aircraft contribute to the multifaceted nature of the exercise.

3) Tadoba-Andhari Tiger Reserve (TATR): It is located in the Chandrapur district in Maharashtra. It is the largest and oldest Tiger Reserve of Maharashtra. The reserve has corridor linkages with Nagzira-Navegaon and Pench Tiger Reserves within the State. Biogeographically, the reserve falls in the Central plateau province of the Deccan Peninsula. The habitat has undulating topography in the north and is rich in biodiversity.

Vegetation: Southern Tropical Dry Deciduous. There are two lakes and one waterway in the reserve, **Tadoba Lake, Kolsa Lake, and the Tadoba River.** It is blessed with thick forests covered with teak trees and other vegetation such as crocodile bark, salai, tendu, karaya gum, and mahua madhuca. The reserve is adorned with patches of grass and bamboo shrubberies. The notable faunal species include the tiger, leopard, sloth bear, wild dog, gaur, chital, and sambar.

4) One Station One Product scheme: It is an initiative by the Indian Railways, under the Ministry of Railways. It was launched with a vision to promote 'Vocal for Local'. It provides uniquely designed sale outlets for locals to sell indigenous products nationwide. This scheme is designed by the National Institute of Design, Ahmedabad. It aims to build each railway station as a promotional hub and showcasing local and indigenous manufacturing products. Under the scheme, the allotment is done to all eligible applicants on a rotational basis. This scheme is providing welfare of local artisans, potters, weavers, tribals etc. The eligible applicant will be allotted a temporary stall or kiosk for a period of 15 days on deposition of Rs 1,000 with Railways. Sale outlets are provided at stations nationwide, allotted through a tendering process. The zonal railways will identify the stations, eligible products and the vendors.

16TH NOVEMBER

1) PM-PVTG Development Mission: The Prime Minister will launch the PM-PVTG Development Mission in a bid to empower the tribals on the birth anniversary of Birsa Munda, which has been celebrated as Janjatiya Gaurav Diwas. The Rs 24,000-

crore project is aimed at the development of the PVTGs. It has been designed to bring critical infrastructure like power, water, road connectivity, housing, education, and healthcare to the PVTG communities living in remote villages. Under the scheme, about 11 interventions like the PM-Gram Sadak Yojana, PM-Gram Awaas Yojana, Jal Jeevan Mission, and others will be taken to these target villages through the coordinated work of nine ministries. In addition, saturation will be ensured for schemes such as the Pradhan Mantri Jan Arogya Yojana, Sickle Cell Disease Elimination, TB Elimination, 100 percent immunisation, PM Surakshit Matritva Yojana, PM Matru Vandana Yojana, PM Poshan.

2) Indo-Pacific Economic Framework for Prosperity (IPEF): It is a regional arrangement to build cooperation and economic integration in the Indo-Pacific region. It was launched by United States President Joe Biden on May 23, 2022. This framework is intended to advance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness for member economies. IPEF will seek to complement and build on existing regional architecture and support the global rules-based trading system. It currently includes 14 partner countries: Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, the United States, and Vietnam. The economic framework broadly rests on four pillars: Trade, Supply chain resilience, Clean Energy, Decarbonization, and Infrastructure, Taxes and anti-corruption measures. The IPEF is not a Free Trade Agreement (FTA), but it allows members to negotiate the parts they want to.

India and IPEF: India has been actively participating in the IPEF, but not in all pillars. India has decided to opt out of the trade pillar of the IPEF as most issues promoted by the IPEF do not align with India's trade policies.

3) Sagar Kavach: The exercise, conducted semi-annually, is a collaborative effort with active participation from various central and state agencies, showcasing a unified approach to fortifying India's coastal defences. Coordinated by the Indian Coast Guard, 'Sagar Kavach' brings together an amalgamation of forces, including the Indian Navy, Coastal Police/State Police, Intelligence Bureau, Customs, CISF, Department of Port, Department of Fisheries, Directorate General of Lighthouse and

Lightships (DGLL), and Kadalora Jagiratha Samithi. The exercise is designed to address the unique complexities of the coastal terrain, ensuring that security mechanisms are robust and adaptive to various scenarios

4) **India International Science Festival:** It will be held at the **Campus of Translational Health Science and Technology Institute (THSTI) and Regional Centre for Biotechnology (RCB)** of the Department of Biotechnology in Faridabad.

Theme: 'Science and Technology Public Outreach in Amrit Kaal'. **IISF 2023 aims to provide a platform for inspiring the public at large and individuals with diverse levels of interests.** The IISF is dedicated to fostering creativity in Science, Technology and Innovation for the advancement of prosperous India. It is an **initiative of the Ministry of Science and Technology and the Ministry of Earth Sciences in association with Vijnana Bharati.** In 2021, the Department of Space and the Department of Atomic Energy became an integral part of IISF.

17TH NOVEMBER

1) **Worldwide Governance Indicators:** It is released by the **World Bank.** It provides a ranking of **215 countries and territories.** It is based on **six dimensions of governance:** Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption.

These indicators are designed to help researchers and analysts assess broad patterns in perceptions of governance across countries and over time. The **World Bank compiles the Worldwide Governance Indicators using data from more than 30 think tanks,** international organisations, non-governmental organisations, and private firms deemed credible. **The WGI was developed in 1999 by two World Bank researchers, Daniel Kaufmann and Aart Kraay.** The data are updated annually in September

2) **Leonid meteor shower:** It is brought about by the **dust and debris** abandoned by the comet Tempel-Tuttle. It is commonly peaking in mid-November. The **shower is called after the Leo constellation,** from which the meteors appear to radiate. **This Tempel-Tuttle comet circles the sun at regular intervals of 33 years.** When the comet passes near the sun, it warms up and delivers a tonne of material, shaping a dense

cloud of dust and gas around it. **This cloud follows the comet's circle and fans out over the long run.** Every year, the Earth crosses the orbit of Tempel-Tuttle in mid-November and, in some cases, experiences the comet's dust cloud. When this occurs, the dust particles enter the earth's atmosphere at high speed (around 70 km/s) and catch fire, creating bright streaks of light in the sky. These are what we see as the meteors, the Leonid meteor shower. The Leonids are noted for sometimes causing meteor storms, as described by a higher influx of meteors.

3) **Exercise MITRA SHAKTI:** It is a **joint military exercise between India and Sri Lankan army.** This year is the ninth edition of the exercise. The **Indian contingent, of 120 personnel, is being represented mainly by troops from the MARATHA LIGHT INFANTRY Regiment.** Personnel from the Indian Air Force and the Sri Lankan Air Force are also participating in the exercise, which makes the ninth **'Mitra Shakti' the first bilateral and bi-service exercise** between the two countries. **The aim of the exercise is to jointly rehearse the conduct of sub-conventional operations under Chapter VII of the United Nations Charter.**

4) **Wasp-107b:** It is a **newly discovered exoplanet situated 200 light-years away in the Virgo constellation.** The mass of WASP-107b is 30.5 Earths, and it takes only six days to orbit its home star, which is slightly cooler and less massive than our sun. It **shares Jupiter's size but possesses the mass of Neptune,** making it less dense than other gas giants. The planet's low density allowed astronomers to look 50 times deeper into the atmosphere of the planet compared to observations achieved for more dense planets, like Jupiter.

18TH NOVEMBER

1) **Exclusive Economic Zone (EEZ):** The concept of an **exclusive economic zone (EEZ) was adopted through the 1982 United Nations Convention on the Law of the Sea (UNCLOS).** EEZ, as defined under UNCLOS, is an **area of the ocean extending up to 200 nautical miles (370 km) immediately offshore from a country's land coast** in which that country retains exclusive rights to the exploration and exploitation of natural resources.

Under international law, within its defined EEZ, a coastal nation has: **Sovereign rights for the purpose of exploring, exploiting, conserving, and managing the natural resources of the seabed, subsoil, and waters above it.** Jurisdiction is provided for in

international law with regard to the establishment and use of artificial islands, installations, and structures; marine scientific research; and the protection and preservation of the marine environment. Other rights and duties are provided for under international law. Other States have the right for their ships and aircraft to traverse the EEZ and its airspace and to lay cable and pipelines.

2) **Zorawar Light Tank:** It is an indigenously designed and developed Light Tank. It was **developed by the Defence Research and Development Organisation (DRDO) in collaboration with Larsen & Toubro Limited**. It is designed to operate in varying terrains, from high-altitude areas and marginal terrains to island territories. It will be highly transportable for rapid deployment to meet any operational situation. It will be equipped with all the modern technologies, such as **artificial intelligence, drone integration, a high degree of situational awareness, and amphibious operation capability**. It will weigh less than 25 tonnes with a high power-to-weight ratio as well as superior firepower and protection.

3) **Measles:** It is a highly contagious and serious airborne disease. It is **caused by a virus in the paramyxovirus family** and is normally passed through direct contact and the air. The virus infects the respiratory tract and then spreads throughout the body, causing severe disease, complications, and even death. **The first sign of measles is usually a high fever, beginning about 10 to 14 days after exposure to the virus and lasting four to seven days.** A runny nose, cough, red and watery eyes, and small white spots inside the cheeks can develop in the initial stage. A rash erupts after several days, usually on the face and upper neck. The rash spreads over about three days, eventually reaching the hands and feet, and lasts five to six days before fading. Any non-immune person (not vaccinated or vaccinated but not developed immunity) can become infected. Unvaccinated young children and pregnant women are at the highest risk of severe measles complications. No specific antiviral treatment exists for measles.

4) **Coconut Development Board:** It is a **statutory body established by the Government of India**. It was established for the integrated development of coconut production and utilisation in the country, with a focus on productivity increases and product diversification. It **functions under the administrative control of the Ministry of Agriculture and Farmers**

Welfare, Government of India.

Headquarters: Kochi in Kerala. It has regional offices in Bangalore in Karnataka, Chennai in Tamil Nadu, Guwahati in Assam, and Patna in Bihar.

Functions include:

- Adopting measures for the development of the coconut industry.
- Imparting technical advice to those engaged in coconut cultivation and industry.
- Providing financial and other assistance for the expansion of the area under coconut.
- Encouraging adoption of modern technologies for processing of coconut and its products.
- Adopting measures to get incentive prices for coconut and its products.

20TH NOVEMBER

1) **Sophisticated Analytical & Technical Help Institutes (SATHI):** It is an **initiative by the Department of Science and Technology** to boost access to research and testing facilities and address problems of accessibility, maintenance, redundancy, and duplication of expensive equipment in Institutions. These Centres will be equipped with major analytical instruments and advanced manufacturing facilities which are usually not available at Institutes / Organisations. It would encourage and ensure the establishment of a National Network of Laboratories and testing facilities tightly linked to global standards. **SATHI facilities will be used for 80% of their available time by external users, e. outside of the host institutes and the remaining 20% of their available time by internal users of the host institute.** The facilities provided by the SATHI may be utilized by any user or organization upon payment of nominal charges. **The duration of support for the SATHI Project will be for a period not exceeding 4 years.**

2) **Pradhan Mantri Mudra Yojana (PMMY):** It is a **flagship scheme of the Government of India to extend affordable credit to micro and small enterprises.** Mudra schemes are designed to bring enterprises into the formal financial system or to "fund the unfunded". **It enables a small borrower to borrow from all Public Sector Banks such as PSU Banks, Regional Rural Banks and Cooperative Banks, Private Sector Banks, Foreign Banks, Micro Finance Institutions (MFI), and Non Banking Finance Companies (NBFC) for loans upto Rs 10 lakhs for non-farm income-generating activities.** Any Indian

citizen who has a business plan for a non-farm sector income-generating activity such as manufacturing, processing, trading, or the service sector and whose credit need is less than Rs 10 lakh can approach either a bank, MFI, or NBFC for availing of Micro Units Development & Refinance Agency Ltd. (MUDRA) loans under PMMY.

Types of loans provided: Under the aegis of PMMY, MUDRA has already created the following products-**Shishu:** covering loans up to 50,000/-; **Kishor:** covering loans above 50,000/- and up to 5 lakh; **Tarun:** covering loans above 5 lakh and up to 10 lakh. There is no subsidy for the loan given under PMMY.

3) Indira Gandhi Peace Prize: The Indira Gandhi Prize for Peace, Disarmament, and Development was instituted in the memory of the former prime minister by a trust in her name in 1986. It consists of a monetary award of 25 lakh rupees along with a citation. The award is given to individuals or organisations that work towards ensuring international peace and development, ensuring that scientific discoveries are used to further the scope of freedom and better humanity, and creating a new international economic order. **Past recipients of this award include:**

Mikhail Gorbachev, former leader of the Soviet Union (1987); **UNICEF** (1989), **Jimmy Carter**, former president of the US (1997), UN and its secretary-general **Kofi Annan** (2003), **Angela Merkel**, chancellor of Germany (2013), **Indian Space Research Organisation** (2014), Former Prime Minister of India, **Manmohan Singh** (2017), **Sir David Attenborough** (2019), **Pratham NGO** (2021).

4) Greenwashing: It is the process of conveying a false impression or misleading information about how a company's products are environmentally sound. **Greenwashing involves making an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly or have a greater positive environmental impact than they actually do.** In addition, greenwashing may occur when a company attempts to emphasize sustainable aspects of a product to overshadow its involvement in environmentally damaging practices. Companies can also greenwash initiatives with vague claims that don't provide real data or scientific validation for the claims. For example, a car vendor claims that a vehicle is eco-friendly because it is more fuel-efficient while failing to mention or consider the larger industrial impact of vehicle manufacturing on the environment.

1) Technology Development Board: It is a statutory body constituted under the **Technology Development Board Act, 1995**. It aims to promote the development and commercialization of indigenous technology and the adaptation of imported technology for wider application. The **board consists of 11 Board members**. It provides equity capital or loans to industrial concerns and financial assistance to research and development institutions. The Fund has been receiving grants from the Government of India out of the cess collections from the industrial concerns under the provisions of the **Research and Development Cess Act, 1986, as amended in 1995**.

2) Small Industries Development Bank of India (SIDBI): It was established under an Act of Parliament in 1990. It is the **Principal Financial Institution engaged in the promotion, financing & development of the Micro, Small and Medium Enterprises (MSMEs) sector** and the coordination of the functions of the various institutions engaged in similar activities.

Objective: To offer loans (both direct and indirect) to MSMEs to help in addressing the development and financial gaps in the ecosystem of MSMEs. It **helps MSMEs in acquiring the funds they require to grow the market**, develop and commercialize their technologies and innovative products. It was made responsible for administering the Small Industries Development Fund and National Equity Fund.

3) Project Collaboration Agreement: It aims to bridge Traditional and Complementary Medical Systems with the mainstream of the National Health System, a key initiative outlined in the **Traditional Medicine Global Strategy 2025-34 to be prepared by the WHO** with the support of the Ministry of Ayush. The **objective is to standardize Traditional and Complementary Medical Systems**, incorporating their quality and safety aspects into the National Health System, and disseminating these practices on an international scale. This strategy will play a crucial role in achieving the objective of elevating Traditional and Complementary Medical Systems within the national health framework. **The major goal of this agreement is the strengthening of training and practice in the field of the Complementary Medicine System, specifically 'Siddha.'** Additionally, the formulation of guidelines for the listing of Traditional and Complementary Medicines, safety protocols, and related efforts are outlined. The **Ministry, in**

collaboration with the WHO, will also develop an International Herbal Pharmacopoeia focusing on herbs found in South-East Asia. This marks the third collaboration between the Ministry of Ayush and the WHO, with previous agreements signed in 2016 and 2017 focusing on taking Traditional Medical systems like Yoga, Ayurveda, Unani, and Panchakarma to the global level and strengthening the Ayurveda, Unani, and Siddha medical systems.

4) International Film Festival of India (IFFI): It was founded in 1952 under the patronage of the first Indian Prime Minister, Jawaharlal Nehru, and was organized by the Films Division, Government of India. The first edition of the event was held in Mumbai, which in the subsequent years moved to Calcutta, Delhi, Madras, and Trivandrum. Since its third edition, the event has become competitive. IFFI was moved to Goa permanently in 2004, and since then it has become a competitive and annual event. Since then, the Government of Goa and the Ministry of Information and Broadcasting jointly conduct this festival. It is the only film festival in South Asia that is accredited by the International Federation of Film Producers and Associations (FIAPF). The IFFI aims to provide a common platform for the cinemas of the world to project the excellence of film art, contributing to the understanding and appreciation of the film cultures of different nations in the context of their social and cultural ethos, and promoting friendship and cooperation among people around the world. It also inspires and encourages Indian cinema to stand on par with international ones and showcase its potential.

22ND NOVEMBER

1) Atmospheric Waves Experiment (AWE): It is a first-of-its-kind NASA experimental attempt aimed at studying the interactions between terrestrial and space weather. It is planned under NASA's Heliophysics Explorers Programme. This mission will study the links between how waves in the lower layers of the atmosphere impact the upper atmosphere and, thus, space weather. It will be launched and mounted on the exterior of the Earth-orbiting International Space Station (ISS). From the vantage point, it will look down at the Earth and record the colourful light bands, commonly known as airglow. The new NASA mission will try to understand the combination of forces that drive the Space weather in the upper atmosphere. It will measure the airglow at mesopause (about 85 to 87 km above the

Earth's surface), where the atmospheric temperatures dip to minus 100 degrees Celsius. At this altitude, it is possible to capture the faint airglow in the infrared bandwidth, which appears to be the brightest, enabling easy detection. It will be able to resolve waves at finer horizontal scales than what satellites can usually see at those altitudes, which is part of what makes the mission unique. The health of the ionosphere, whose lower layers sit at the edge of space, is important for maintaining seamless communication.

2) Exercise VAJRA PRAHAR: It is a joint exercise conducted between the Indian Army and the US Army Special Forces. It aims at sharing best practises and experiences in areas such as joint mission planning and operational tactics. It is the 14th Edition of the Indo-US Joint Special Forces exercise "VAJRA PRAHAR 2023," which commenced at the Joint Training Node, Umroi. The US contingent is represented by personnel from the 1st Special Forces Group (SFG) of the US Special Forces. The Indian Army contingent is led by Special Forces personnel from the Eastern Command. The first edition was conducted in 2010 in India, and the 13th edition of the Indo-US Joint Special Forces exercise was conducted at the Special Forces Training School (SFTS), Bakloh (HP). The current edition is being conducted in Umroi Cantonment, Meghalaya from 21st November to 11th December 2023. It is also a platform to enhance inter-operability and strengthen defence cooperation between the armies of India and the United States of America

3) SATHEE (Self Assessment Test and Help for Entrance Exams) Portal: It is a new initiative by the Ministry of Education to provide a free learning and assessment platform for students. It will help students gain access to training and coaching for competitive examinations for free. The platform aims to bridge the gap for students in society who are not able to afford the costly entrance exam guidance and coaching. It will have preparation materials for students in English, Hindi, and other regional languages of India so that students can prepare for exams like JEE and NEET. It will be useful for candidates who will be preparing for CAT, GATE, UPSC, etc. It will also allow candidates to gain experience in coaching centres. The platform will have videos made by the faculty members of IITs and IISc to help students prepare for the competitive examinations. The videos would also help students learn concepts and revise topics they are weak at. It makes use of an indigenously developed AI

programme called Prutor, which was developed by IIT-Kanpur.

Features include: Preparation material for entrance exams, including JEE and NEET, Video solutions in regional languages for entrance exams, JEE and NEET entrance exam preparation ideas webinars Students' stories of struggles and achievement and Solve with me sessions.

23RD NOVEMBER

1) International Tropical Timber Council: Recently, the 59th International Tropical Timber Council (ITTC) concluded on **November 17, 2023**, with major decisions. It is the governing body of the International Tropical Timber Organisation (ITTO). It **meets at least once a year to discuss a wide-ranging agenda aimed at promoting sustainable tropical forest management and the trade of sustainably produced tropical timber.**

Major decisions: The countries agreed to endorse eight projects related to sustainable forest management and related objectives. The session also approved and adopted a budget of \$7.1 million for the coming financial year 2024-25. **The council also approved a trial measure that will allow ineligible members to submit project proposals and concept notes.** Members who have fallen behind on their financial contributions and are thus ineligible will be allowed to submit one project and concept note for every two years of arrears paid.

2) Exercise AUSTRALIND-23: It was **instituted in 2022, and the first edition was conducted in Mahajan, Rajasthan.** It is planned to be an annual training event to be conducted alternatively in India and Australia. **The aim of the exercise is to foster collaborative partnerships and share best practises between the two sides.** This year, the exercise will be conducted in **Perth, Australia, from November 22nd to December 6th, 2023.** The Indian Army contingent, comprising 60 personnel from a battalion of the Gorkha Rifles will take part in this exercise. The joint exercise will promote the exchange of ideas and jointly rehearse tactics, techniques and procedures for conducting tactical operations.

3) Rapid Innovation and Startup Expansion (RISE): The India Australia RISE Accelerator is delivered in partnership between **CSIRO, Australia's national science agency, and Atal Innovation Mission (AIM), the Government of India's flagship initiative to promote a culture of innovation and entrepreneurship.** This initiative focuses on startups

and small to mid-sized enterprises (SMEs) in India and Australia working on circular economy technologies and solutions. With a focus on Environment and Climate Technology, the program will be tailored to accelerate start-ups working on a range of areas: **Climate Smart Agriculture, Clean Energy, Circular Economy and Waste Management, Climate Smart Mobility.**

4) Inter Command Ocean Sailing Race 2023: The race features four 40-footer sailboats, **INSV Bulbul, INSV Neelkanth, INS Kadalpur, and INSV Hariyal, promising an adventurous journey in the Arabian Sea.** Each sailboat has a crew of eight personnel from three naval commands and a combined team from Andaman and Nicobar Command, including Delhi area.

The race will cover an approximate distance of 667km between the start point at Naval Base, Kochi, and Goa in about five days. The boats are expected to skillfully leverage the winds and proceed to Goa without the use of engines. The race is special from its previous edition as it includes a mixed crew comprising both men and women officers and sailors, symbolising gender neutrality and providing equal opportunity to all. **The race is being organised by Southern Naval Command under the aegis of the Indian Naval Sailing Association, based at Naval Headquarters, New Delhi.** The event is coordinated by the Indian Navy's Offshore Sailing Club based at ASW School, Kochi, and the Ocean Sailing Node based at INS Mandovi, Goa. The Navy uses the race to enhance risk-management abilities and technical skills, as well as instil a spirit of adventure among its crew.

24TH NOVEMBER

1) Psyche Mission: It is a NASA mission that will explore a 140-mile-wide (225-kilometer) metallic asteroid called 16 Psyche. The spacecraft will enter the **16 Psyche asteroid's orbit in 2029** and spend two years mapping the asteroid's topography, scanning the surface, taking pictures, and more, with the aim of gaining information about its makeup as well as learning how metal core asteroids and planets are formed. **The objectives of the mission include determining the age of regions on the asteroid, studying its formation, characterizing its topography, and studying dips in the asteroid's gravity.** Through the mission, scientists also hope to explore an unknown building block of planet formation: iron cores. It will also be the first time that

a spacecraft will study a world made not of rocks and ice but of metal. With the Psyche mission, scientists have a chance to study how terrestrial planets were formed without having to carve up the Earth.

2) AGNI Initiative: It is to provide a **platform for Ayurveda practitioners to report their innovative practises and experiences in various disease conditions**, along with promoting the culture of evidence-based practise among Ayurveda practitioners.

Objectives: To promote the culture of reporting evidence-based practise among Ayurveda practitioners.

- To document the reported successful therapeutic regimens for various disease conditions involving **single drug/ Formulation/ Procedures for the purpose of education and academics**.
- To identify interested Ayurveda practitioners for collaboration in the creation of a database through applications and capacity building through training in research methods and good clinical practises.
- To undertake research for **mainstreaming pragmatic practises through scientific validation and evidence-based appraisal**.

3) Global Digital Public Infrastructure Repository: It is created by the **Ministry of Electronics and Information Technology (MeitY)**. It is a comprehensive resource hub, pooling essential lessons and expertise from G20 members and guest nations. **Its primary aim is to bridge the knowledge gap in the choices and methodologies required for the design, construction, deployment, and governance of DPIs.** The GDPIR showcases the information in a standardised format from countries and organisations that have developed DPIs at scale, incorporating elements such as maturity scales, source codes (where available), and governance frameworks. **Currently, the GDPIR features 54 DPIs from 16 countries.** The DPIs from India that have been incorporated in the GDPIR are: **Aadhaar, Unified Payments Interface (UPI), DigiLocker, Umang, eSanjeevani, API Setu, Co-WIN, Government e-marketplace, Diksha, E-Hospital, Poshan Tracker and Ayushman Bharat Digital Mission (ABDM).**

4) Investor Risk Reduction Access Platform: It has been developed to reduce risks faced by investors in the

eventuality of technical glitches at the trading member's end at both the primary site and disaster recovery site. **Its purpose is to provide investors with an opportunity to square off/close their open positions and cancel pending orders using the IRR platform in case of technical glitches or unforeseen outages that render the trading member's site inaccessible.** It has been designed to reduce risks for investors participating in the market. It is not meant for taking fresh positions or orders, but only to cancel the pending orders. This platform will be available to trading members supporting **internet-based trading (IBT) and Security Trading through Wireless Technology (STWT)** for their investors. However, it will not be accessible for algo trading and institutional clients. It has been jointly developed by all the stock exchanges – **BSE, NSE, NCDEX, MCX and Metropolitan Stock Exchange of India (MSE)**

25TH NOVEMBER

1) Credit Guarantee Trust for Micro and Small Enterprises (CGTMSE) Scheme: It was **launched in 2000**. The corpus of CGTMSE is being contributed by the **Government of India and the Small Industries Development Bank of India (SIDBI) in the ratio of 4:1**. Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) is jointly set up by the **Ministry of Micro, Small, & Medium Enterprises (MSME), the Government of India, and the Small Industries Development Bank of India (SIDBI)** to catalyse the flow of institutional credit to Micro & Small Enterprises (MSEs). CGTMSE has been instrumental in providing guarantee cover to collateral and/or third-party guarantee-free credit facilities extended by eligible Member Lending Institution [MLIs] to MSEs.

2) Exercise SURYA KIRAN: It is a joint military exercise between the Indian army and the Nepali army. It is **an annual event and is conducted alternately in the two countries**. The Indian Army contingent, **comprising 354 personnel, is being led by a battalion from the Kumaon Regiment**. The Nepal Army contingent is represented by the Tara Dal Battalion. **The aim of the exercise is to enhance interoperability in jungle warfare, counter-terrorism operations in mountainous terrain, humanitarian assistance, and disaster relief under the United Nations Charter on peacekeeping operations.** The exercise will focus on the employment of drones and counter-drone measures, medical training, aviation aspects and environment conservation. The exercise will provide a platform for soldiers from India and

Nepal to exchange ideas and experiences, share best practises, and foster a deeper understanding of each other's operational procedures.

3) **Sangai:** Recently, the Manipur government expressed its reservations to the Centre over a hydro-electric modernisation plan in the state's famous Loktak Lake, saying it could be detrimental to Sangai deer. It is subspecies of Eld's deer that is endemic to Manipur.

It also has immense cultural relevance to Manipur. It is found only in Keibul Lamjao National Park; the largest single mass of phumdi is in Loktak Lake – in Manipur's Bishnupur district. It is a medium-sized deer with uniquely distinctive antlers and extremely long brow tines, which form the main beam. The forward protruding beam appears to come out from the eyebrow, hence called the brow-antlered deer. It has a dark reddish-brown winter coat, which turns paler in summer. The deer walks on the hind surface of its pasterns with mincing hops over floating foliage and is hence also called the **Dancing Deer**.

IUCN: Critically Endangered, The Wildlife (Protection) Act, 1972: Schedule-1

4) **Digital Twin:** Recently, the **Survey of India (SoI)** and **Genesys International**, a leading Indian mapping company, announced a strategic tie-up for a three-dimensional (3D) digital twin-mapping programme in India. It is a virtual depiction of a real-world entity, be it a product, process, person or location, capable of comprehending and gauging its tangible counterparts. The twin digital copy will also help policymakers understand how infrastructure will function in different situations, such as high-footprint events, an increase in population, or natural disasters. The strategic partnership aims to create digital twins of major cities and towns, leveraging Genesys' all-India highly accurate navigable maps. The Genesys constellation of sensors and SOI's recently launched **Continuously Operating Reference Stations (CORS)** network allow for real-time high-precision positioning data.

27TH NOVEMBER

1) **e-SCR portal:** It was an initiative by the **Supreme Court (SC)** of India to provide the digital version of the apex court's judgements in the same manner they are reported in the official law report. It provides free access to about 34,000 judgements of the SC to lawyers, law students, and the common public. **These**

verdicts will be available on the apex court website, its mobile app, and on the judgement portal of the National Judicial Data Grid (NJDG). It is a free service available for lawyers across the country. The **Supreme Court has developed a search engine with the help of the National Informatics Centre** comprising elastic search techniques in the database of e-SCR. The search facility in e-SCR provides for free text search, search within search, case type and case year search, judge search, year and volume search, and bench strength search options.

2) **Ayushman Bharat Health Account (ABHA):** ABHA is a randomly generated 14-digit number used for the purposes of uniquely identifying persons, authenticating them, and threading their health records (only with their informed consent) across multiple systems and stakeholders. People can opt-in to create a digitally secure ABHA, which allows them to access and share their health data with participating healthcare providers and payers. **It helps citizens maintain their health records at one place. It allows users, insurance companies, and hospitals to access health records digitally.** It will enable easy digital access to lab reports, prescriptions, consultation details, and diagnoses from verified doctors by presenting the Health ID. In addition, it will digitally connect the hospitals across the country with each other. **Having an ABHA health ID card is not mandatory.** People can choose to register for the facility or erase their information from the ABHA database if they want to opt out of this facility.

3) **Guru Nanak:** Guru Nanak (1469–1539), also referred to as **Baba Nanak**, was the founder of Sikhism and the **first of the ten Sikh Gurus**. He was born on April 15, 1469, in Rai Bhoi di Talwandi, now Nankana Sahib, Pakistan. **Guru Nanak Dev spread the message of 'Ek Omkar'** which means that God is one and is present everywhere. He propagated the idea that any person could connect with God by worshipping him with a clean conscience. **Guru Nanak laid the foundation for the three pillars of Sikhism: Naam Japna (meditating on God's name), Kirat Karni (honest and truthful living), and Vand Chakna (sharing with others, especially those in need).** He was a poet, a mystic, a philosopher, and a singer who denounced ritualism as well as discrimination against women and those of lower socioeconomic status. **Guru Nanak rejected the caste system and promoted the idea of equality** among all people, regardless of their background, caste, or gender. He **introduced the concept of "Sangat" (community)**, where all could

come together to worship. All his teachings are composed together to form the sacred book called Guru Granth Sahib, the central holy religious scripture of Sikhism

4) **Booker Prize:** It is the **world's leading literary award for a single work of fiction**. Founded in the UK in 1969, the Booker Prize initially rewarded Commonwealth writers and now spans the globe: it is open to anyone regardless of origin. It **aims to promote the finest in fiction by rewarding the best novel of the year written in English**. The Booker Prize awards any novel originally written in English and published in the UK and Ireland in the year of the prize, regardless of the nationality of the author. The novel must be an original work in English (not a translation). It **must be published by a registered UK or Irish imprint; self-published novels are not eligible**. The winner receives £50,000, and each of the shortlisted authors will be given £2,500.

The Booker Prize Foundation: It is a **registered charity established in 2002**. Since then, it has been responsible for the award of the **Man Booker Prize for Fiction and for the Man Booker International Prize since its inauguration in 2005**.

28TH NOVEMBER

1) **Rythu Bandhu Scheme:** The Rythu Bandhu scheme, also known as the **Farmer's Investment Support Scheme (FISS)**, is a **welfare programme for farmers started by the Telangana government in 2018**. The objective of this scheme is twofold:

- to provide a timely cash grant for the initial investment needs of farmers
- to ensure that farmers do not fall into the debt trap.

Under the scheme, financial assistance of Rs 5,000 per acre per farmer each season is directly transferred to each farmer's account. **This financial support was distributed biannually, allocated for both the kharif and rabi harvests**. The assistance can be used for the purchase of inputs like seeds, fertilizers, pesticides, labour, and other investments in the field operations of Farmer's choice for the crop season. **The scheme is open to all resident farmers in the state who own land**. Farmers cultivating the land in the forest, a **majority of them from Scheduled Tribe communities and having a Record of Forest Rights (ROFR) document, are also eligible to receive benefits** under the scheme. It is the **country's first direct farmer investment support**

scheme where cash is paid directly to the beneficiary.

2) **AstroSat:** It is **India's first dedicated multi-wavelength space observatory** aimed at studying celestial sources in X-ray, optical, and UV spectral bands simultaneously. **AstroSat, with a lift-off mass of 1515 kg, was launched by the Indian launch vehicle PSLV from Satish Dhawan Space Centre, Sriharikota, on September 28, 2015, into a 650 km orbit**. The spacecraft control centre at **Mission Operations Complex (MOX) of ISRO Telemetry, Tracking and Command Network (ISTRAC), Bengaluru**, manages the satellite during its entire mission life. **The minimum useful life of the AstroSat mission is around 5 years**. It carries a total of five scientific payloads, enabling imaging and studying the temporal and spectral properties of galactic and extra-galactic cosmic sources in a wide range of wavelengths on a common platform. Scientific Objectives is to understand high energy processes in binary star systems containing neutron stars and black holes, Estimate magnetic fields of neutron stars, Study star birth regions and high energy processes in star systems lying beyond our galaxy, Detect new, briefly bright X-ray sources in the sky, Perform a limited deep-field survey of the Universe in the Ultraviolet region.

3) **Gulf of Aden:** It is an **extension of the Indian Ocean, tucked between the Arabian Peninsula and the African continent**. The gulf is named after "Aden," a port city on Yemen's coast. It is **bounded to the south by Somalia and the Socotra Islands (part of Yemen), to the north by Yemen, to the east by the Arabian Sea, and to the west by Djibouti**. The gulf is connected to the Somali Sea to the south by the Guardafui Channel and to the Red Sea on the west by the Strait of Bab el Mandeb. **The dominant relief feature of the gulf's terrain is the Sheba Ridge**, an extension of the Indian Ocean ridge system, which extends along the middle of the gulf. It is also a **critical part of the Suez Canal shipping route**, which connects the Red Sea and the Mediterranean Sea. Some of the major cities near the gulf include **Aden, Mukalla, Ahnwar, Balhaf, Berbera, Bosaso, and Djibouti City**.

4) **Sagittarius C (Sgr C):** It is the **star-forming region known to be situated approximately 300 light-years from the Milky Way's central supermassive black hole, Sagittarius A***. It is revealing a bustling cluster of protostars within an infrared-dark cloud. These nascent stars are in the process of accumulating mass, their outflows glowing intensely in the infrared

spectrum, akin to embers in a cosmic bonfire. **The cloud that protostars are emerging from is so dense that the light from stars behind it cannot reach Webb.** Scattered throughout are smaller infrared-dark clouds, akin to celestial voids against the starry backdrop, signalling the birthplaces of future stars. Webb's Near-Infrared Camera (NIRCam) has detected extensive emissions from ionised hydrogen on the periphery of the dark cloud, highlighted in a striking cyan hue.

29TH NOVEMBER

1) Fattah 2: Fattah, which means **conqueror in Farsi**, is a hypersonic ballistic missile. It was **developed by Iran**. It is a new version of its **first domestically made hypersonic ballistic missile named 'Fattah'**. It is equipped with a hypersonic glide vehicle (HGV) warhead that can manoeuvre and glide at hypersonic speed. It **uses a liquid-fuel rocket propellant**. The precision-guided two-stage missile can hit targets within a range of 1500 kilometres with a velocity of Mach 15. It can make quick turns to avoid defence systems. It is **equipped with a warhead** that has a spherical engine running on solid fuel and movable nozzles that allow it to change course when outside the atmosphere to accurately help it evade air-defence systems.

2) International Sugar Organisation (ISO): ISO is an **inter-governmental body** completely devoted to improving conditions in the world sugar market. **Its 87 member states represent 87% of global production, 64% of consumption, 92% of sugar exports, and 34% of sugar imports.** ISO is based in London. The ISO exists to administer the internationally negotiated 1992 International Sugar Agreement (ISA), the **objectives of which are:**

- to ensure **enhanced international cooperation** in connection with world sugar matters and related issues.
- to provide a **forum for intergovernmental consultations** on sugar and on ways to improve the world sugar economy.
- to facilitate trade by collecting and providing information on the world sugar market and other sweeteners.
- to encourage increased demand for sugar, particularly for non-traditional uses.
- To fulfil these objectives, the ISO undertakes many distinct activities, including workshops, seminars, and its long-established and widely-recognized statistical and analytical work.

3) National Cadet Corps: It is a **Tri-Services organisation**, comprising the **Army, Navy and Air Force**, engaged in grooming the youth into disciplined and patriotic citizens. It **came into existence under the National Cadet Corps Act XXXI of 1948 under the Ministry of Defence (MoD)**. It is a voluntary organisation that recruits cadets from high schools, colleges, and universities all over India. The cadets are given basic military training in small arms and parades. They are given preference in military service over normal candidates during selections.

Aims: To develop qualities of character, courage, comradeship, discipline, leadership, secular outlook, the spirit of adventure and sportsmanship and ideals of selfless service among the youth to make them useful citizens.

- To **create a human resource of organised, trained, and motivated youth** to provide leadership in all walks of life, including the Armed Forces, and be always available for the service of the nation.
- To **create a suitable environment** to motivate the youth to take up a career in the armed forces.
- It is headed by the **Director General (DG)**, an Army officer of the rank of Lieutenant General.
- **Headquarters:** New Delhi.

4) INS Imphal: It is the third in the Visakhapatnam-class stealth-guided missile destroyers. It is **among the largest destroyers constructed in India, with an overall length of 164 metres and a displacement of over 7500 tonnes.** The ship boasts a high indigenous content of approximately 75%, which includes Medium Range Surface-to-Air missiles, BrahMos surface-to-surface missiles, Indigenous Torpedo Tube Launchers, Anti-Submarine Indigenous Rocket Launchers (Larsen & Toubro, Mumbai) 76mm Super Rapid Gun Mount (BHEL, Haridwar). **The crest design depicts the Kangla Palace on the left and 'Kangla-Sa' on the right.** The Kangla Palace is an important historical and archaeological site in Manipur and was the traditional seat of the past kingdom. With a dragon's head and lion's body, the 'Kangla-Sa' is a mythical being from Manipur history and is symbolic as the guardian/protector of its people. **'Kangla-Sa' is also the state emblem of Manipur.** It is the first capital warship to be named after a city in the northeast, Imphal, the capital of Manipur.

30TH NOVEMBER

1) Angkor Wat: It is the **largest religious monument** in the world. It was **built by the Khmer King Suryavarman II in the first half of the 12th century**. It was originally dedicated to the Hindu god Vishnu before becoming a Buddhist temple by the end of the 12th century. In 1992, the **temple complex was named a UNESCO World Heritage Site**. Sandstone blocks were used to build the structure. It is protected by a 15-foot-high wall and a wide moat. It covers an area of 200 acres. **The temple has five major towers symbolising the peaks of Mount Meru, believed to be the abode of the gods in Hindu and Buddhist mythology.** Thousands of bas-reliefs depicting important deities and figures in Hindu and Buddhist religions, as well as key events in their narrative traditions, adorn the temple walls. It is **located in the northwestern province of Siem Reap in Cambodia**. The city of Angkor, home to Angkor Wat, was the capital of the Khmer Empire and thrived between the 9th and 15th centuries. Angkor itself stretches over 400 km² and is now home to the magnificent remains of a variety of temples, including **Angkor Wat, Angkor Thom, Bayon Temple, and Ta Prohm**.

2) Sindhudurg Fort: It is a historical fort that occupies an islet in the Arabian Sea, just off the coast of Maharashtra in western India. **The fortress lies on Kurte Island, very near the coast of Malvan town in Sindhudurg District in the Konkan region of Maharashtra, 450 kilometres south of Mumbai. The fort was built by Chhatrapati Shivaji Maharaj of the Maratha Empire.** The construction of the fort began in 1664 and took three years to complete. **The main objective was to counter the rising influence of foreign colonisers (English, Dutch, French, and Portuguese merchants) and to curb the rise of the Siddis of Janjira.** As many as 52 bastions with embrasures for cannons guard its walls. One can enter the fort through the Dilli Darwaja, the main gate. Because of its architectural design, the gate is visible only from close quarters and seems to be part of the walls. It is **surrounded by several smaller forts, such as Padmagad, Rajkot, and Sarjekot Forts.** A handprint

and footprint of the Maratha King are embedded on a slab within the fort. A small temple dedicated to the Chhatrapati also finds a place within the bounds of the fort.

3) Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN): The PM- JANMAN (comprising Central Sector and Centrally Sponsored Schemes) to **focus on 11 critical interventions through nine ministries, including the Ministry of Tribal Affairs.** The scheme aims to provide crucial interventions such as permanent housing, road connectivity, piped water supply, mobile medical units, hostel construction, 'Anganwadi' facilities, skill development centres. Other than the 11 critical interventions, the following interventions of other Ministries will be part of Mission: **Ministry of Ayush will set up Ayush Wellness Centre as per existing norms, and Ayush facilities will be extended to PVTG habitations through Mobile Medical Units.** The Ministry of Skill Development and Entrepreneurship will facilitate skill and vocational training in PVTG habitations, multipurpose centres and hostels as per the suitable skills of these communities.

4) Ayushman Arogya Mandir: The Government of India announced in 2018 that **1.5 lakh HWCs would be created in the country by transforming existing sub-health centres and primary health centres to deliver comprehensive primary health care and declared this as one of the two components of Ayushman Bharat.** It was decided the Centre would provide 60% of the funding and, in turn, states would follow its design manual. To date, 61 lakh AB-HWCs have been made functional across the country, which is higher than the initial target. The AB-HWCs provide maternal and child healthcare services, including primary-level care for emergencies and trauma, including free drugs and diagnostic services, among other things.

The new tagline of AB-HWCs is Arogyam Parmam Dhanam'.

PLACES IN NEWS

1) Thailand (Capital: Bangkok):

- Thailand has allowed Visa-free travel for Indians from **November 10, 2023 to May 10, 2024**.
- **Political boundaries**
 - It is a country in Southeast Asia.
 - **Neighbours:** Laos and Cambodia (East), Gulf of Thailand and Malaysia (South), Andaman Sea and Myanmar (West).
- **Geographical features**
 - **Drainage system:** Two river systems - Chao Phraya and Mekong.
 - Isthmus of Kra between Gulf of Thailand and Andaman Sea lies at the narrow neck of southern Myanmar and Thailand.
 - **Highest point:** Mount Inthanon



2) Bolivia (Capital: La Paz, Sucre):

- Bolivia severs diplomatic ties with Israel over disproportionate attack on Gaza.
- **Political Boundaries:**
 - It is a **landlocked country in South America**.
 - Bounded by Brazil, Paraguay, Argentina, Chile and Peru.
- **Geographical features:**
 - One-third of its territory lies in the **Andes mountains**.
 - **Highest point:** Mount Sajama
 - **Rivers:** Madeira, Paraguay and Mamoré
 - **Lake:** Lake Titicaca is the largest freshwater lake in South America and the highest of the world's large lakes.



3) Galapagos Islands:

- Two new coral reefs and seamounts discovered in Galapagos Islands.
- **Political features**
 - Situated in Eastern Pacific Ocean, ~1,000 km from Ecuadorian coast.
 - Located at confluence of three ocean currents (Humboldt current, Panama Flow and Cromwell current).
 - Consists of 13 major and 6 smaller islands.
 - Equator passes through island.
- **Geographical features**
 - Formed of lava piles and dotted with shield volcanoes, many of which are periodically active.
 - Largest Island: Isabela.
 - Highest Point: Peak of Wolf Volcano (on Isabella Island).
 - Galapagos was a wildlife sanctuary. Later, sanctuary became Galapagos National Park.
 - It is a UNESCO World Heritage site



4) Nepal (Capital: Kathmandu):

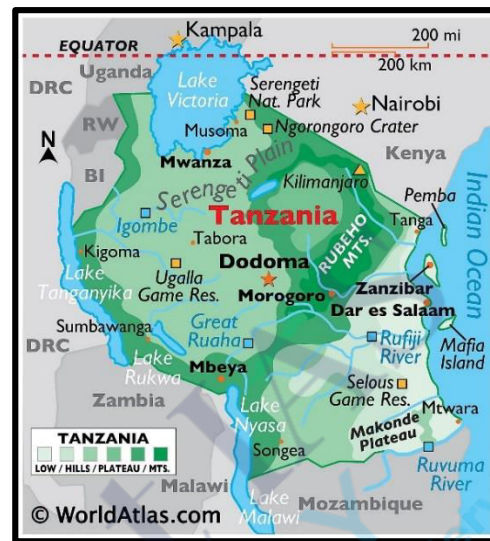
- India offered assistance to Nepal amidst the Earthquake.
- **Political features**
 - Landlocked country.
 - **Borders:** India (east, south, and west) and Tibet Autonomous Region of China (North).
- **Geographical features**
 - **Mountains:** Home to eight of the world's highest mountains and harbours Mahābhārat Range and Great Himalayan Range of Himalayas.
 - **Highest point:** Mt. Everest (8,848 m)
 - **Major rivers:**
 - **Gandak** (origin: near Dhaulagiri Tibet Nepal border)
 - **Karnali** (origin: Macha-khabab of Tibet)
 - **Kosi** (formed by confluence of Sun Kosi, Arun Kosi and Tamur Kosi all taking their origin in the Himalayan region of Nepal and Tibet)



5) Tanzania (Capital: Dodoma):

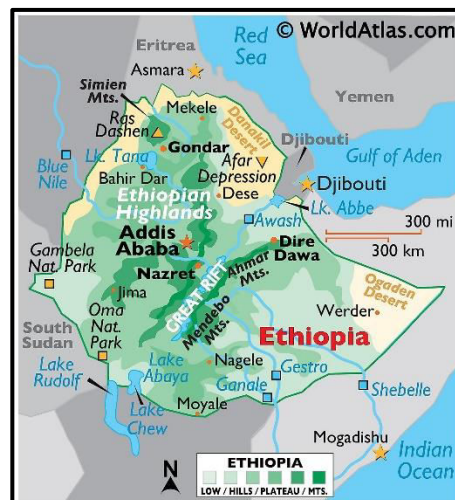
- IIT Madras establishes first international campus in Tanzania's Zanzibar.
- **Political Boundaries**
 - East African country, borders Indian Ocean, situated just south of Equator.
 - Bounded by **Uganda, and Kenya (north), Mozambique and Zambia (south and southwest), and Burundi, and Rwanda (west).**
- **Geographical features**
 - **Highest peak:** Mount Kilimanjaro
 - **Major Rivers:** River Congo, River Rufiji, and River Ruvuma.

- **Major Lake:** Lake Tanganyika (west), Lake Victoria (north), and Lake Malawi (aka Lake Nyasa).
- Parts of East African Rift pass through Tanzania, creating dramatic escarpments and volcanic features



6) Ethiopia (Capital: Addis Ababa):

- 6th Session of India-Ethiopia Joint Trade Committee held successfully in Addis Ababa.
- **Political Boundaries**
 - Landlocked country in the Horn of Africa.
 - Other country which lies in the Horn of Africa includes Djibouti, Eritrea, and Somalia.
 - Neighbouring Countries: **Eritrea (north), Djibouti (northeast), Somalia (east), Kenya (south), and South Sudan and Sudan (west).**
- **Geographical Features**
 - **Major Rivers:** Blue Nile and Awash River.
 - **Major Lakes:** Lake Tana
 - **Highest peak:** Ras Dashen



7) Myanmar (Capital: Nay Pyi Taw):

- Myanmar junta leader said Country is at risk of breaking apart due to clashes.
- **Political features**
 - Not landlocked.
 - Bordered by **China (north and northeast), Laos (east), Thailand (southeast), Bangladesh (west), and India (northwest)**.
 - **Maritime boundaries:** Andaman Sea and Bay of Bengal to south and southwest.
- **Geographical features**
 - **Mountains:** Patkai Range, Naga Hills, and Chin Hills form border between India and Myanmar.
 - **Mount Hkakabo (5,881 metres is highest peak).**
 - In south, it has Rakhine Mountains (Arakan Mountains)
 - **Plateaus:** Shan Plateau
 - **Rivers:** Irrawaddy, Salween, Chindwin, and Sittang



8) Tuvalu (Capital: Funafuti):

- Australia inked an agreement with Tuvalu to offer residency to its citizens displaced by climate change.
- **Political features:**
 - It is a **nation of nine coral islands and is not landlocked.**
 - **Bordering nations:** Kiribati and Nauru, Solomon Islands and Vanuatu, Tokelau and Fiji, Samoa, Wallis and Futuna, and Tonga.
 - **Bordering water bodies:** Located midway between Hawaii and Australia in South Pacific Ocean.
 - It is believed to be first nation to face climate change-induced complete submersion.
- **Geographical Features:**

- **Archipelago is volcanic in origin and includes both atolls and reef islands.**
- **Largest atoll:** Funafuti



9) Gulf of Guinea:

- Indian Navy has successfully conducted an Anti-Piracy patrol in the Gulf of Guinea.
- **Political features**
 - It lies in the eastern tropical Atlantic Ocean and off the western Coast of Africa.
 - The **Coastline comprises 17 countries starting from Senegal to Angola.**
- **Geographical features**
 - Major rivers like **Niger and Volta** drain into the **Gulf**.
 - Its coastline forms part of the western edge of the African tectonic plate.
 - **The region is also known for its natural resources like oil, natural gas, and minerals**



10) Dominica (Capital: Roseau):

- Dominica has announced to create world's first sperm whale reserve.
- **Political Features:**
 - It is an **Island country of Lesser Antilles in eastern Caribbean Sea.**
 - Lesser Antilles is a long arc of small islands.

- It lies between the **Guadeloupe and Marie-Galante (north) and Martinique (south).**
- **Geographical Features:**
 - Island is of volcanic formation.
 - It has a number of active volcanoes including fumaroles (volcanic vents).
 - It has **Boiling Lake which is the second-largest hot spring lake in world.**
 - **Highest Point:** Mount Morne Diablotins
 - **River:** Layou



11) Argentina (Capital: Buenos Aires):

- Javier Milei won the Argentina's Presidential elections.
- **Political Boundaries**
 - Country of South America, covering most of southern portion of continent.
 - **Bounded by Chile (south and west), Bolivia and Paraguay (north), and Brazil, Uruguay, and Atlantic Ocean (east).**
- **Geographical features**
 - **Terrain:** Rich plains of Pampas in northern half, flat to rolling plateau of Patagonia in south, rugged Andes along western border.
 - **Highest Point:** Cerro Aconcagua
 - **Major rivers:** Parana, Paraguay, Uruguay etc.



12) Suriname (Capital: Paramaribo):

- An illegal gold mine collapsed in Suriname.
- **Political Features:**
 - Located on the northern coast of South America and is not landlocked (opens into Atlantic Ocean).
 - **Bordering nations:** French Guiana (east), Brazil (south), and Guyana (west).
- **Geographical Features:**
 - **Vegetation:** Majorly Tropical rainforest.
 - **Major rivers:** Marowijne, Corantijn (Courantyne), Coppename, Suriname, etc.
 - **Highest Point:** Juliana
 - **Top Minerals:** One of the top producers of Bauxite in the world



13) Mozambique (Capital: Maputo):

- INS Sumedha arrived at **Maputo, Mozambique** as a part of the ongoing **Extended Operational Deployment to Africa**.
- **Historical Aspect:** Mozambique was governed from Portuguese India (Goa) until 1752.
- **Political Features:**
 - Southeast African nation bordered by the Indian Ocean to the east.
 - **Bordering nations:** Tanzania, Malawi and Zambia to the north, Zimbabwe to the west, South Africa and Swaziland to the south.
- **Geographical Features:**
 - The **Tropic of Capricorn** passes through it
 - **Major rivers:** Zambezi, Ruvuma, Maputo etc.
 - **Highest Point:** Mount Binga
 - **Minerals:** Gold, emeralds, copper, iron ore, natural gas etc.



14) Peru (Capital: Lima):

- Peru has lost more than half of its glacier surface in last six decades.
- **Political Boundaries**
 - Country in western South America.
 - Bounded with **Colombia (northeast), Brazil (east), Bolivia (southeast), Chile (south) and Ecuador (northwest)**.
 - To west, territorial waters into Pacific Ocean are claimed by Peru.
- **Geographical features**
 - **Mountain range:** Andes.
 - **Highest point:** Mount Huascarán.
 - **Major Rivers:** Amazon, Purus, Jurua etc.
 - **Major lake:** Lake Titicaca (between Peru and Bolivia).



15) Cyprus (Capital: Nicosia):

- Cyprus wins cheese trademark case against Indian company.
- **Political Boundaries**
 - Third largest island in Mediterranean Sea after Sicily and Sardinia.
 - Situated at **north-eastern corner of Mediterranean**.
 - It lies **north of Egypt, south of Turkey, west of Syria, and southeast of mainland Greece**.
- **Geographical features**
 - It has mountains like **Kyrenia and Troodos**.
 - **Highest Peak:** Mount Olympus.
 - **Longest river:** The Pedieos



16) Malaysia (Kuala Lumpur):

- From December, Malaysia has allowed Visa free entry for Indians for stay up to 30 days.
- **Political Boundaries:**
 - Thailand and Brunei (north), Singapore (south), Indonesia (southwest).
 - Malaysia consists of two non-contiguous regions i.e

- Peninsular Malaysia (West Malaysia) located in Malay Peninsula bordering South China Sea in the east.
- **Malaysia Timur (East Malaysia) located on the Island of Borneo.**
- It border South China Sea in the northwest, the Sulu Sea in the northeast, and the Celebes Sea in the southeast.
- **Geographical Features:**
 - **Major Rivers:** Pahang, Sarawak, Rajang, Kinabatangan.
 - **Highest Point:** Mt Kinabalu (4100m)



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EDUFACTS

1ST NOVEMBER

- 1) India has transitioned from the 5G rollout stage to the 5G reach-out stage. The median mobile broadband speed has increased threefold in just one year.
- 2) Hamas was created in 1987 as an offshoot of Egypt's Muslim Brotherhood seeking to fulfill its agenda through violent jihad. The United States has designated Hamas a terror organization since 1997. Many other countries, including Israel and most of Europe, see it the same way.
- 3) In 2022, **the G7 countries held 30 % of the global Gross Domestic Product (GDP)**. In 2027, that figure is projected to drop to 28 %. Considering the G20 countries, excluding the G7 countries, the GDP is expected to account for around 44.5% of the global GDP in 2027 which is around two percentage points increase from 2022.

2ND NOVEMBER

- 1) According to the 2011 Census of India, more than 25% of the population speaks two languages, while about 7% speak three languages.
- 2) The State Coastal Police have jurisdiction up to 12 nautical miles from the coast; and the Indian Coast Guard and the Indian Navy have jurisdiction over the entire maritime zone (up to 200 nautical miles), including the territorial waters.

3RD NOVEMBER

- 1) Sand, a raw material and second-most-used resource in the world is used to make concrete, asphalt and glass. About 40-50 billion tonnes of sand resources are exploited each year, but their extraction is managed and governed poorly in many countries.
- 2) There are 2 tri-service commands, Strategic Forces Command (SFC) and Andaman and Nicobar Command (ANC), which is headed by rotation by officers from the 3 Services. The SFC (Strategic Forces Command), looks after the delivery and operational control of the country's nuclear assets.
- 3) Indian Prime Minister and Prime Minister of Bangladesh recently co-inaugurated three significant Indian-assisted development projects - **Akhaura-Agartala Cross-Border Rail Link, Khulna-Mongla Port Rail Line and Maitree Super Thermal Power Project.**

4TH NOVEMBER

- 1) In the **Prakash Singh Case 2006**, the Supreme Court issued **seven directives to drive police reforms in India**, acknowledging widespread issues such as politicization, lack of accountability, and systemic weaknesses impacting overall police performance.
- 2) Over the past five years, 19 out of 20 large Indian states, including **Maharashtra, Bihar, Gujarat, and Andhra Pradesh**, have experienced a decline in their 2022 - 2023 SFSI (State Food Safety Index) scores compared to 2019.
- 3) **India is the second-largest producer of rice after China. India is the biggest exporter of rice in the world.** As per the United States Department of Agriculture (USDA), India accounted for about 40% of the total rice exports (56 million tonnes) in the world during 2022.

6TH NOVEMBER

- 1) Examples of state-sponsored cyberattacks include the **Stuxnet worm**, which targeted Iran's nuclear program, the alleged **Russian interference in the 2016 U.S. presidential election**, and the **2017 WannaCry ransomware attack**, which was linked to North Korea.
- 2) Quasi UBRI is a variant of UBI, which is defined as a transfer that is provided universally, unconditionally, and in cash. **The idea was proposed by former Chief Economic Adviser** to provide a direct cash transfer of Rs 18,000 per year to each rural household in India, except those which are **"demonstrably well-off" to tackle agrarian distress.**
- 3) **Red Blood Cells (RBCs) are also known as Erythrocytes.** RBCs contain the iron-rich protein called haemoglobin that gives blood its red colour. RBCs are the most copious blood cell produced in bone marrows. **Their main function is to transport oxygen from and to various tissues and organs.**

7TH NOVEMBER

- 1) Project Kusha led by the **Defence Research and Development Organisation (DRDO)** is an ambitious defence initiative by India aimed at **developing its long-range air defence system by 2028-29.** Project Kusha is expected to rival the effectiveness of the renowned S-400 system of **Russia and the Iron Dome system of Israel.**
- 2) In the past nine years, the food processing sector in India has attracted foreign direct investments exceeding Rs 50,000 crores, thanks to the

government's **industry-friendly and farmer-centric policies.**

3) Recently, **11 Asian and South American countries** including India signed a landmark deal in **Bogota, Colombia** to save the world's six surviving species of river dolphins from extinction. This landmark deal signifies a ray of hope in combating the severe decline of river dolphin populations, which have dwindled by a staggering 73% since the 1980s.

8TH NOVEMBER

1) The estimated brackish water area suitable for undertaking shrimp cultivation in India is around 11.91 lakhs hectare (ha) spread over 10 states and union territories. Of this only **around 1.2 lakhs ha are under shrimp farming** now and hence a lot of scope exists for entrepreneurs to venture into this field of activity.

2) The IFSC in India is regulated by the **International Financial Services Centres Authority (IFSCA)**. It is headquartered at **GIFT City, Gandhinagar in Gujarat**. In IFSC, all transactions must be in foreign currency (except INR). However, administrative and statutory expenses can be conducted in INR.

3) Cyclone Hamoon was **named by Iran**, and the word "Hamoon" is a Persian word that refers to **inland desert lakes or marshlands.**

9TH NOVEMBER

1) The National Food Security Act legally entitled upto 75% of the rural population and 50% of the urban population to receive **subsidized food grains under Targeted Public Distribution System**. About two thirds of the population therefore is covered under the Act to receive highly subsidized foodgrains.

2) In the 1950s, India and China jointly established the Five Principles of Peaceful Co-existence: Mutual respect for each other's territorial integrity and sovereignty, Mutual non-aggression, Mutual non-interference, Equality and mutual benefit, Peaceful co-existence in foreign currency (except INR). However, administrative and statutory expenses can be conducted in INR.

3) Recently, the Finance Ministry of India announced a **28% Goods and Services Tax (GST)** on online money gaming, casinos, and horse racing.

10TH NOVEMBER

1) The GRAP (Graded Response Action Plan) consists of **emergency measures designed to prevent the deterioration of air quality** after reaching specific

thresholds in the Delhi-NCR region. The **Ministry of Environment, Forests & Climate Change (MoEF&CC) notified the GRAP in 2017**. Commission for Air Quality Management in NCR & Adjoining Areas (CAQM) implements the GRAP.

2) Radioactive cooling technology is a **method designed to dissipate heat from an object by emitting thermal radiation into the atmosphere, allowing the object to become cooler**. It leads to creation of cool surfaces by emitting thermal radiation directly into the extremely cold universe (around 3 Kelvin), using the atmospheric transmission window (8 - 13 μ m). Notably, this process occurs without any reliance on electricity.

3) KAVACH's deployment cost is ₹50 lakh per kilometer, with limited coverage of approximately 1,500 km currently, posing a challenge in comprehensive implementation across the 68,000 km rail network.

11TH NOVEMBER

1) **India is the world's second-largest producer of crude steel**, with an output of 125.32 million tonnes (MT) of crude steel and 121.29 MT of finished steel production in FY23.

2) In the April-September 2023 period, India's agricultural exports declined by 11.6% compared to the previous year.

13TH NOVEMBER

1) Institutions of Eminence (IoE) Scheme is a **government's scheme to provide the regulatory architecture for setting up or upgrading of 20 Institutions** (10 from public sector and 10 from the private sector) as world-class teaching and research institutions called 'Institutions of Eminence'.

2) Implementation of energy efficiency building codes like ECBC is important as buildings in India account for 30% of total electricity consumption, a figure that is expected to touch 50% by 2042.

14TH NOVEMBER

1) The formal agreement at the 19th Conference of the Parties (COP 19) to the United Nations Framework Convention on Climate Change (UNFCCC) in **Warsaw, Poland**, in 2013, led to the establishment of the **L&D (Loss & Damages) fund**.

2) Biotechnology funding in India remains stagnant, with only a 0.0001% allocation of the GDP. Despite a temporary increase during Covid-19, funding levels haven't returned to pre-pandemic standards.

3) **India is the second-largest exporter to Ethiopia**. Indian companies rank among the top three foreign

investors in Ethiopia with existing investments totalling USD 5 billion.

15TH NOVEMBER

- 1) India stands as the **world's second-largest producer of raw silk** after China.
- 2) As per Jefferies report, 15.5% of **Total Indian Household Assets as of March 2023 are in Gold**. Gold's share is second only to Real Estate which accounts for 50.7%.
- 3) About 22% of total projects (1,745 of 7,947) of the **Smart Cities Mission** that account for 33% (out of Rs 1.70 lakh crore) of the total cost are still ongoing. The majority of projects (6,202) have been completed, emphasizing the scale and financial investment involved.

16TH NOVEMBER

- 1) The MMI (Modified Mercalli Intensity) scale measures the **effects of an earthquake at a specific location**. It describes the observed effects of an earthquake, including what people experience and what happens to buildings and objects. The **MMI scale is different from the Richter scale and has a range of 1 to 12**.
- 2) Governments are planning to produce twice as much fossil fuel in 2030 than is compatible with the **1.5°C warming limit**.
- 3) The **Supreme Court of India in 'Maneka Gandhi vs Union of India' (1978)** ruled that the right to life includes the right to human dignity.

17TH NOVEMBER

- 1) In 2022, **21 million tonnes (MT) of plastics leaked into the environment globally**. Under a business-as-usual scenario, where no significant changes are made, plastic usage would increase, resulting in a 50% rise in macroplastic leakage by 2040.
- 2) As per information given in Parliament, there **were 2 fratricide cases annually from 2019 to 2021, with one case reported in 2021**. The suspected suicide cases in the Army numbered 104, 75, and 80 during the years 2016, 2017, and 2018, respectively.
- 3) The Suez Canal is a **vital trade route that accounts for approximately 12% of global trade** passes through the Suez Canal, representing 30% of all global container traffic, and over USD 1 trillion worth of goods per annum.

18TH NOVEMBER

- 1) As per **TRAI's Indian Telecom Services Performance Indicators January–March 2023**, the internet penetration in India as of March 2023, is over 880 million, and the number of telecom subscribers as of March 2023 is over 1172 million.
- 2) **Iceland is located on the Mid-Atlantic Ridge, technically the longest mountain range in the world**, but on the floor of the Atlantic Ocean. The ridge separates the Eurasian and North American tectonic plates —making it a hotbed of seismic activity.
- 3) The **Red Sanders (Pterocarpus santalinus)**, a tree species endemic to specific districts in **Andhra Pradesh**, holds high market value and has faced threats due to illegal harvesting and smuggling.

20TH NOVEMBER

- 1) **Article 5 of the NATO treaty** is a key provision that states that an attack on one member is an attack on all members. **This provision has only been invoked once, after the 9/11 terrorist attacks in the United States**. However, NATO's protection does not extend to members' civil wars or internal coups.
- 2) A DTAA (Double Taxation Avoidance Agreement) is a **tax treaty signed between two or more countries**. Its **key objective is that tax-payers in these countries can avoid being taxed twice for the same income**. A DTAA applies in cases where a taxpayer resides in one country and earns income in another.
- 3) The nominations for the Rashtriya Vigyan Puraskar (RVP) awards will be invited every year on **14th January which would remain open till 28th February (National Science Day) every year**. These awards shall be announced on **11th May (National Technology Day) every year**. The Award Ceremony for all categories of awards will be held on **23rd August (National Space Day)**.

21ST NOVEMBER

- 1) Somalia has several islands off its coast, including the **Bajuni Islands and the Socotra Archipelago**, which includes islands like **Socotra, Abd al Kuri, and Samha**. However, the Socotra Archipelago is administered by Yemen.
- 2) Of the three major greenhouse gases, **carbon dioxide (CO₂) accounts for about 64%** of the warming effect on the climate. **Methane** ranks as the **second-largest contributor** to climate change, causing about **16% of warming**. **Nitrous oxide contributes around 7%** to the warming effect.

3) Anonymized data is any data set that does not contain personally identifiable information. It could include **aggregated information, such as the overall health data of a particular demography, weather and climate data of an area, and traffic data, among others**. It is different from personal data, which is data that relates to an identified or identifiable individual, such as email, biometrics, etc.

22ND NOVEMBER

1) According to a World Intellectual Property Organization (WIPO) report, patent applications by Indians grew **31.6% in 2022**.

2) The Supreme Court of India, in the case of **E.V.Chinnaiah vs State Of Andhra Pradesh And Ors, 2004**, asserted that **only Parliament** has the authority to create and notify **SC and Scheduled Tribes (STs) lists**. However, in another case of State of Punjab and Others versus Davinder Singh and Others, 2020 judgment, a five-judge Bench ruled that States could decide on the quantum of benefits in the lists of SCs/STs already notified without "tinkering" with them.

3) Plant Proxies refer to **indirect evidence or indicators** that scientists use to understand past environmental conditions, particularly related to plant life.

23RD NOVEMBER

1) Current pledges under the Paris Agreement set the world on a course for a **2.5-2.9°C temperature** rise above pre-industrial levels by the end of this century.

2) India-Australia relations touched a historic low when the Australian Government condemned **India's 1998 nuclear tests**. However, in 2014, **Australia signed a Uranium supply deal with India**, the first of its kind with a country that is a non-signatory to the Nuclear Non-Proliferation Treaty, in recognition of India's "impeccable" non-proliferation record.

3) Unsecured credit, excluding microfinance institutions, for large banks is only about 5-13% of their total loans. Further, loans extended to NBFCs constitute another 5-12% for banks.

24TH NOVEMBER

1) Transit anticipatory bail serves as a **form of protection for the accused against arrest until they can reach a court** with territorial jurisdiction for the alleged offense. The term "transit anticipatory bail" is not explicitly defined in the Code Of Criminal

Procedure (CrPC) or any other legislation. The SC introduced the concept of transit anticipatory bail in the case of **State of Assam v. Brojen Gogol in 1998**.

2) India ranks **12th** in a study ranking countries based on the climate change threat faced by women in agri-food systems.

3) The ICC is the **global governing body for cricket**. The formation of the Imperial Cricket Conference (as the ICC was originally called) in 1909 marked the beginning of a structured international cricketing body, initially comprising **England, Australia, and South Africa**.

25TH NOVEMBER 2023

1) Battery Waste Management Rules, 2022 provides a target for recovery of the battery material — **70% by 2024-25, then 80% by 2026, and 90% after 2026-27 onwards**,

2) The Bureau of Civil Aviation Security (BCAS) is the national regulator for civil aviation security in India. The BCAS was **initially set up as a Cell in the DGCA in January 1978** on the recommendation of the **Pande Committee**. The BCAS was reorganized into an independent department under the **Ministry of Civil Aviation in 1987**.

3) According to a research, a new mysterious layer called the **E prime layer has formed on the outer part of the Earth's core**. This happened because surface water penetrated deep into the planet, changing the composition of the outer region of the liquid metal core.

27TH NOVEMBER 2023

1) The concentration of ozone at the core of the ozone hole has decreased by 26% from 2004 to 2022, despite the efforts outlined in the **Montreal Protocol**, which aimed to reduce **human-generated chemicals that deplete the ozone layer**.

2) In the backdrop of a China-US bilateral summit held recently, India remains cautious about the emergence of a dominant Sino-American collaboration in Asia (termed 'G-2') that might sideline other global players, affecting India's strategic interests.

3) As a pioneering NASA experiment under the **Heliophysics Explorers Program, AWE (Atmospheric Waves Experiment)** aims to study the connections between lower atmospheric waves and space weather.

28TH NOVEMBER 2023

- 1) Out of the 34 States and Union Territories, **only 6 have surpassed the 50% mark** in completing social audits of works done under **MGNREGS in Gram Panchayats**.
- 2) The spotlight in the recent meeting with the Foreign Minister of Lithuania was on the unique advantages of Klaipeda port, notably its year-round ice-free status.
- 3) The Constitution of India was handwritten by **Prem Behari Narain Raizada** in a calligraphy font, and each page was decorated by artists from **Shantiniketan under the guidance of Nandalal Bose**.

29TH NOVEMBER 2023

- 1) The Constitution does not make a provision for SCS (Special Category States) and this classification was later done on the **recommendations of the 5th Finance Commission in 1969**. 30% of the Centre's Gross Budget goes to Special Category states.
- 2) Decentralised Autonomous Organisations (DAOs) are the **digital entities** that operate without centralised control and are governed by **smart contracts** and the consensus of their members, often utilising

Cryptocurrencies as a means of decision-making and resource allocation.

- 3) Transposons are dangerous little pieces of **Deoxyribonucleic Acid (DNA)** that can insert themselves into different regions of the genome, damaging it and leading to cell death.

30TH NOVEMBER 2023

- 1) Derived from Article 19(1)(a), the RTI Act is considered a fundamental right, as established in the **Raj Narain vs. State of Uttar Pradesh case**.
- 2) With a goal to **securing communication and promoting quantum science**, the Government of India announced a national mission in the Union Budget of 2020. The proposed budget for this **'National Mission on Quantum Technologies and Applications'** is Rs 8,000 crore over a period of five years.
- 3) NASA's Psyche mission aims to **explore the asteroid Psyche**, located between Mars and Jupiter. **Psyche is a rare metallic asteroid believed to be the exposed nickel-iron core of an early planet**. This mission offers a unique opportunity to directly study a planetary core, providing invaluable insights into the formation of terrestrial planets like Earth



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Practice MCQs on Current Affairs Subject- November 2023

1. Consider the following statements, with reference to Dyslexia:

1. Dyslexia is a learning disability disorder that impairs a person's ability to read.
2. Go Red campaign aims to raise awareness about dyslexia.
3. Dyscalculia is a sub-type of dyslexia that affects a person's ability to understand basic things.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The Rashtrapati Bhawan was recently lit in red in support of the 'Go Red' campaign that aims to raise awareness about dyslexia. **Dyslexia is a learning disability that impairs a person's ability to read and it can be inherited.** Although the disorder varies from person to person, common characteristics among people with dyslexia includes: **Phonological processing (the manipulation of sounds), Spelling, Rapid visual-verbal responding. Adult onset dyslexia usually occurs as a result of brain injury or dementia.** Dyscalculia is learning disorder affects a person's ability to do math which is not a subtype of dyslexia and different from it. Treatment for dyslexia should focus on the specific learning problems of affected individuals. Generally, treatment includes modifying teaching methods and the educational environment to meet the specific needs of the individual with dyslexia. **Every year International Dyslexia Awareness Month is observed in October. The theme for 2023 is 'Go Red'. The goal of this event is to eliminate discrimination, raise public awareness and eradicating the stigma attached to dyslexia and other learning disorders. Hence, statement 3 is not correct.**

2. Consider the following statements with reference to Xerography:

1. It is an image-forming process that relies on a photoconductive substance whose electrical resistance decreases when light falls on it.
2. It is an anti-photocopying feature that prevents counterfeiters from duplicating or printing currency notes using xerographic machines.

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: Xerography is the basis of the most widely used document-copying machines. **Xerography is an image-forming process that relies on a photoconductive substance whose electrical resistance decreases when light falls on it. The process was invented in the 1930s by U.S. physicist Chester F. Carlson (1906–1968) and developed in the 1940s and '50s by Xerox Corp. (then called Haloid). Hence, statement 1 is correct.** Haloid Photographic Company purchased a licence from Battelle to build a machine based on the technique. **The company trademarked the name for this machine as the "Xerox machine" in 1948 and availed the first model for sale in 1949.** Haloid itself changed its name to Haloid Xerox in 1958 and to Xerox Corporation in 1961. **Later, Xerox also introduced the laser-based photocopier.** Xerox machines refused to copy banknotes that included a particular marking of 5 small rings positioned like stars in the Orion constellation. Similar markings have since been found on the banknotes of at least 35 national banks. The Reserve Bank of India in 2005 said that the new Rs 50 notes at that time had "Omron anti-photocopying feature". "Omron anti-photocopying feature" prevents counterfeiters from duplicating or printing currency notes using xerographic machines. **Hence, statement 2 is not correct.**

3. Which of the following countries were recently removed from the FATF Grey List?

1. Cayman Islands
2. Jordan
3. Panama
4. Albania
5. South Africa

Select the correct answer using the code given below:

- (a) 1, 2, 3 and 4
- (b) 2, 3, 4 and 5
- (c) 1, 3, 4 and 5
- (d) 1, 2, 4 and 5

Answer: (A)

Explanation: Recently the Cayman Islands, British Overseas Territories were excluded from the FATF Grey List. **The Financial Action Task Force (FATF) is the global money laundering and terrorist financing**

watchdog. It is 39-member body that was established in 1989 and is based in Paris. India is one of the member of it. FATF Plenary is the decision-making body of FATF meets three times per year and holds countries to account if they do not comply with the Standards. If a country repeatedly fails to implement FATF Standards then it can be named a Jurisdiction under Increased Monitoring (the grey list) or a High Risk Jurisdiction (black list). Jurisdictions under Increased Monitoring (grey list) – Countries that are actively working with the FATF to address strategic deficiencies in their regimes to counter money laundering, terrorist financing and proliferation financing are placed under it. When a country is placed under grey list then the country has must commit to resolve swiftly the identified strategic deficiencies within agreed timeframes and is subject to increased monitoring. Along with Cayman Islands, Jordan, Panama, and Albania were also removed from the FATF Grey List. As of June 2023, the countries under grey list includes: Barbados, Bulgaria, South Africa, UAE, Yemen, Vietnam, Syria etc. Hence, option (a) is correct.

4. The Sanitary and Phytosanitary (SPS) agreement is associated with which one of the following organizations?

- (a) World Trade Organisation (WTO)
- (b) World Food Programme (WFP)
- (c) World Health Organisation (WHO)
- (d) Food and Agriculture Organisation (FAO)

Answer: (A)

Explanation: The World Trade Organization (WTO)'s Sanitary and Phytosanitary (SPS) Agreement ensures that traded products between WTO members do not spread pests and diseases and that food products do not contain harmful substances or pathogens. **The "SPS Agreement" entered into force with the establishment of the WTO on 1 January 1995. WTO has 164 member nations (including India and the United States). Hence, option (a) is correct.**

5. With reference to the Criminal Procedure Identification Act (CrPI), 2022, consider the following statements:

1. Criminal Procedure Identification Act (CrPI), 2022 grants central investigating agencies authority to collect, store, and analyze physical and biological samples such as retina and iris scans of arrested individuals.
2. The National Crime Records Bureau (NCRB) is responsible for both enacting the Act and setting up the Standard Operating Procedure (SOP).
3. The CrPI Act directly mentioned the use of DNA samples and face-matching procedures for the purpose of investigation.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Criminal Procedure Identification Act (CrPI), 2022 grants police and central investigating agencies authority to collect, store, and analyze physical and biological samples such as retina and iris scans of arrested individuals. Hence, statement 1 is correct. This legislative move aimed to enhance law enforcement capabilities and ushered in a new era in criminal identification and data management. The National Crime Records Bureau (NCRB) is responsible for both enacting the Act and setting up the Standard Operating Procedure (SOP). Hence, statement 2 is correct. The NCRB played a pivotal role in guiding police officials on the proper protocol for recording these measurements. The CrPI Act did not directly mention DNA sample collection and face-matching procedures, but the NCRB conveyed plans to implement these measures in discussions with State police officials. Hence, statement 3 is not correct.

6. Consider the following statements, with reference to World Energy Outlook 2023:

1. It is a flagship report released biennially by the International Renewable Energy Agency (IRENA).
2. The report projected that the global emissions would raise global temperatures by approximately 2.4°C.
3. For the first time, the report projected that fossil fuel demand will peak by the end of this decade.

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 World Energy Outlook 2023 was released by the International Energy Agency (IEA) which has projected that the global emissions would raise global temperatures by approximately 2.4°C. **The World Energy Outlook 2023 provides in-depth analysis and strategic insights into every aspect of the global energy system. The World Energy Outlook 2023 is released annually by the International Energy Agency (IEA) since 1998. This Outlook assesses the evolving nature of energy security for around 50 years. The Outlook examines the implications of today's**

energy trends in key areas including investment, trade flows, electrification and energy access. **The Outlook 2023 also examines what needs to happen at the COP28 climate conference in Dubai to keep the door open for the 1.5 °C goal.** The anticipated peak in fossil fuel demand by the end of this decade (2030). There is an urgent need for increased investment, diversified energy sources and geopolitical considerations in the global energy transition for positive shifts towards Net-Zero commitments. For the first time, the report projected that fossil fuel demand will peak by the end of this decade under the Stated Policies Scenario (STEPS) scenario. **Hence, statement 1 is not correct.**

7. Consider the following statements, with reference to Ice Sheet:

1. An ice sheet is essentially a mass of glacial ice that covers less than 50,000 square kilometres of land.
2. The gain of mass in the ice sheet leads to a rise in global mean sea level and loss of it leads to fall in global mean sea level.
3. Arctic ice sheet and Antarctica ice sheet are only two major ice sheet that contain about two-thirds of all the freshwater on Earth.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

Explanation: The recent study has found that the water in West Antarctica will continue to get warmer three times faster than the 20th century, leading to an increased melting of the region's ice sheet. An ice sheet is essentially a mass of glacial ice that covers more than 50,000 square kilometres of land. Ice sheets contain about 99% of the fresh water on Earth and are sometimes called continental glaciers. As ice sheets extend to the coast and over the ocean, they become ice shelves. **Greenland ice sheet and Antarctica ice sheet are only two major ice sheet that contain about two-thirds of all the freshwater on Earth.** When ice sheets gain mass, they contribute to a fall in global mean sea level and when they lose mass, they contribute to a rise in global mean sea level. **The earth have reached the point where some impacts of climate change can no longer be avoided and substantial ice loss in West Antarctica is probably one of them. Hence, all statements are not correct.**

8. Operation Sesha, sometimes seen in the news recently, is associated with which of the following?

- (a) To curb the illegal trade of Timber.
- (b) To curb child sexual abuse material in social media.

(c) To curb the increasing Narcotics substances among school students.

(d) To provide safety and security to lady passengers travelling alone.

Answer: (A)

Explanation: Recently the Union Finance Ministry launched the 4th phase of 'Operation Sesha' to curb the illegal trade of Timber, including Red Sanders. **Operation Sesha was launched in 2015 to bust organised syndicates of smugglers of precious woods.** The name Sesha has been derived from Seshachalam forest in Andhra Pradesh, bordering Karnataka. **Under this initiative, the directorate of revenue intelligence of Indian Customs works in collaboration with probe agencies of several other countries to curb illegal trade of timber.** Phase IV of 'Operation Sesha' aims to curb the illegal trade of Timber, including Red Sanders. **Hence, option (a) is correct.**

9. Recently, 'Candolleomyces albosquamosus' seen in the news. It is species of which one of the following?

- (a) Mushroom
- (b) Lichen
- (c) Algae
- (d) Fern

Answer: (A)

Explanation: Researchers at the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) in Palode have discovered a new fungus species known as Candolleomyces albosquamosus. It is **the new species of Candolleomyces, a relatively tiny genus with only 35 species recognized worldwide.** Candolleomyces albosquamosus can be found in the natural forest on dead logs or bamboo culms. **Hence, option (a) is correct.**

10. Consider the following statements regarding the Bru community:

1. They speak the Kaubru language.
2. They are a nomadic tribal tribe that lives in India's north-eastern provinces.

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: For the first time, Bru refugees will not vote in Mizoram elections because they have been relocated to Tripura on a Central Government-sponsored rehabilitation program. **Bru, also known as Reang, is a Northeastern indigenous people primarily**

found in Tripura, Mizoram, and Assam. They speak a language called "Kaubru," which has a tonal effect on the Kuki language but is essentially the Kok-Borok dialect. They are designated as a **Particularly Vulnerable Tribal Group in Tripura**. They are of **Indo-Mongoloid ancestry**. Their languages are related to Austro-Asian tribes in the Tibeto-Burman family. They are ethnically divided into two major clans, Meska and Molsoi. **Hence, both statements are correct.**

11. Consider the following statements, with reference to Road Accidents in India Report:

1. The report is released annually by the Ministry of Road Transport and Highways.
2. Road accidents and accident-related killings are higher in rural areas than urban areas.
3. Uttar Pradesh recorded the highest number of road accidents on National Highways in 2022.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The Ministry of Roads, Transport and Highways recently released the Road Accidents in India Report, 2022 which indicate that the number of accidents in 2022 have increased by 11.9% compared to 2021. **Road Accidents in India Report is released annually by the Ministry of Roads, Transport and Highways (MoRTH)**. This report is based on the data/information received from police departments of States/UTs on calendar year basis. **The most number of accidents were recorded on the Other Roads, 32.9 % was recorded in National Highways (NH) including Expressways and 43.9 % on state highways.** Over speeding is a major killer, accounting for 71.2 % of the persons killed followed by driving on the wrong side which amounts to 5.4 %. **Tamil Nadu recorded the highest number of road accidents on National Highways in 2022, whereas, the number of persons killed in road accident was the highest in Uttar Pradesh.** In 2022, about 68% of road accidents death took place in rural area where as urban area accounted for 32% of total accidents death in the country. **Among vehicle categories involved in road accidents, two-wheelers for the second consecutive year, accounted for the highest share in total accidents and fatalities during 2022.** The Electronic Detailed Accident Report (e-DAR) is a portal developed by the Ministry of Roads, Transport and Highways (MoRTH). The project will enable capture of road accidents and geo-tagging of the same through app on mobile/ tablet by first responder, which is the police. **e-DAR project is aided**

by World Bank Assistance to provide an integrated and systemic solution to problem of accidents in line with international practice. Hence, statement 3 is not correct.

12. Consider the following statements, with reference to the Three Basins Summit, 2023:

1. The summit, held at Brasilia, Brazil, aims for the preservation and restoration of the planet's three ecological lungs.
2. The three basins include Amazon, Congo and Borneo-Mekong-Southeast Asia.
3. The three global ecosystems account for 80% of the world's tropical forests and 2/3rd of the earth's biodiversity.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Recently Brazzaville Summit of the Three Basins ended with a declaration that did not result in an Alliance of the three basins. **The three global ecosystems account for 80% of the world's tropical forests and 2/3rd of the earth's biodiversity.** The central vision of the Summit is the preservation and restoration of the planet's three ecological lungs. **The objectives of the summit include:** - To promote scientific and technical cooperation, strengthen capacities and increase influence in multilateral forums for environmental advocacy. - To establish effective global governance to manage environmental and climate challenges on a planetary scale. - To develop a common strategy to stimulate investment projects aimed at combating climate change and preserving biodiversity. The three basins include Amazon, Congo and Borneo-Mekong-Southeast Asia. Three Basins Summit, 2023 was held at Brazzaville, capital of the Republic of Congo. **Hence, statement 1 is not correct.**

13. "Varaha", sometimes seen in the news recently is a part of which of the following?

- (a) Chandrayaan-3 Mission
- (b) Samudrayaan Mission
- (c) Western Ghats Spatial Decision Support System
- (d) AGNiI (Accelerating Growth of New India's Innovations)

Answer: (B)

Explanation: Varaha is ocean mining vehicle which is a part of Deep Ocean Mission which is also called as Samudrayaan Mission. **MATSYA-6000 is also a part of**

the Deep Ocean Mission. It is a self-propelled track-based seabed mining system and operates on the flexible riser technique. **Flexible riser is a class of flexible pipes which is used to connect subsea pipelines to floating offshore installations. Varaha is lowered to the ocean bed from a surface ship using a high-strength flexible cord system.** Once the vehicle reaches the ocean bed, it will be able to move around while the surface ship moves in tandem. **It uses a high-power pressure pump system to facilitate the extraction of precious polymetallic nodules. These nodules are pumped from the ocean bed to the surface ship.** This achievement marked the world's deepest dive for an underwater mining machine. **Hence, option (b) is correct.**

14. Consider the following statements regarding the SIM-Swap Scam:

1. Fraudsters can gain passwords and OTPs that allow them to access their targets' bank accounts using the SIM-Swap Scam.
2. To carry out a SIM-Swap Scam, fraudsters always demand direct communication with the victims.

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: After receiving three missed calls from unknown numbers and losing money from her bank account, a Delhi-based counsel recently became the latest victim of the SIM-Swap Scam. All banking applications are linked to phone numbers, which aid in the generation of OTPs (for transaction authentication) and the receipt of critical bank-related notifications. **In the SIM switch scam, scammers first get personal information such as phone numbers, bank account information, and addresses by phishing or vishing. Hence, statement 1 is correct.** Following the theft of the victim's SIM card and/or mobile phone, **fraudsters contact the mobile operator's retail shop, acting as the victim with a forged ID proof, and report a fake theft of the victim's SIM card and/or mobile phone. They obtain a replica SIM card as a result of this.** Notably, scammers can obtain a replica SIM card even if the original is functioning well, as they reported a theft of the original SIM card. **Unlike other scams that require scammers to deceive victims into providing OTPs and confidential information over the phone, the SIM switch fraud does not involve direct communication with the victims.** However, scammers do leave missed calls for their victims, causing them to abandon their phones and ignore the loss of network connectivity. The accused acquires control of the entire SIM when the SIM is switched. All calls and messages

are routed solely through their SIM card. Once they get control of the SIM card, they can obtain passwords and OTPs to gain access to their targets' bank accounts. **Hence, statement 2 is not correct.**

15. Consider the following statements regarding 'Improvised Explosive Devices (IEDs)':

1. IEDs are made up of several components, including an initiator, switch, main charge, power source, and a container.
2. Many ordinary items, such as fertiliser, gunpowder, and hydrogen peroxide, can be employed as explosives in IEDs.
3. Explosives must include both a fuel and an oxidizer to supply the oxygen required to sustain the reaction.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: 'Improvised Explosive Devices (IEDs)' consist of a variety of components that include an initiator, switch, main charge, power source, and a container. **Many commonly available materials, such as fertilizer, gunpowder, and hydrogen peroxide, can be used as explosive materials in IEDs.** Explosives must contain a fuel and an oxidizer, which provides the oxygen needed to sustain the reaction. **Hence, all statements are correct.**

16. Consider the following statements, with reference to Pulsars:

1. Pulsars are the neutron stars that rotate with strong magnetic fields.
2. Pulsars have very strong magnetic fields which funnel jets of particles out along the two magnetic poles.
3. "Pulsar wind nebula" are created by dead neutron stars.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: NASA celebrated Halloween by sharing the "ghost hand" in space that was caused by a pulsar. Most neutron stars are observed as pulsars. **Pulsars are rotating neutron stars observed to have pulses of radiation at very regular intervals that typically range**

from milliseconds to seconds. Pulsars have very strong magnetic fields which funnel jets of particles out along the two magnetic poles. These accelerated particles produce very powerful beams of light. Often, the magnetic field is not aligned with the spin axis, so those beams of particles and light are swept around as the star rotates. Young pulsars sometimes create jets of matter and antimatter that move away from their poles, along with an intense “wind,” creating what is known as a “pulsar wind nebula”. **NASA’s Chandra X-ray Observatory first observed this pulsar with a wind nebula shaped like a human hand labelled PSR B1509-58 in 2001.** The pulsar wind nebula is called MSH 15-52 and is located about 16,000 light-years away from our planet. **Hence, statement 3 is not correct.**

17. Consider the following pairs:

Militant Organisations	Bases (countries)
1. Hamas	Palestine
2. Hezbollah	Lebanon
3. Fatah	Israel
4. Houthis	Yemen

How many of the pairs given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) All Four

Answer: (C)

Explanation: Hamas – is an Islamist militant movement and one of the Palestinian territories’ two major political parties. It governs more than two million Palestinians in the Gaza Strip, but the group is best known for its armed resistance to Israel. **In October 2023, Hamas launched a massive surprise attack on southern Israel, killing more than 1,400 people and taking dozens more as hostages.**

Hezbollah – is a Shiite Muslim political party and militant group based in Lebanon. It was founded in the chaos of the 15-year Lebanese Civil War.

Fatah – is the main pillar of the Palestinian national movement within the Palestine Liberation Organization. It has been politically crushed and seen sagging popularity in recent years, which has given a boost to Hamas, founded in 1987.

Houthis – are a large clan belonging to the Zaidi Shia sect, with roots in Yemen. The Houthi movement, officially called Ansar Allah (Supporters of God), began in the 1990s against the dictatorship of Yemeni President Ali Abdullah Saleh. At present, the Houthis are one faction in a bloody civil war that has raged in Yemen since 2014. **Hence, pair 3 is not correctly matched.**

18. Artemisinin-based combination therapy (ACT) is used to treat which of the following diseases?

- (a) Covid-19
- (b) Malaria
- (c) Swine flu
- (d) Tuberculosis

Answer: (B)

Explanation: Artemisinin-based combination therapy (ACT) has been a highly effective treatment for non-severe cases of malaria since the early 2000s. **Plasmodium falciparum is the parasite responsible for malaria’s most dangerous form, is transmitted to humans via female Anopheles mosquitoes.** The treatment of this parasite primarily relies on the administration of artemisinin-based medications in combination with a complementary anti-malarial drug. **ACT reduces the number of parasites during the first three days of treatment, while the role of the partner drug is to eliminate the remaining parasites and cure the infection.** The failure of ACT in the Horn of Africa is a severe concern for global health, as the spread of drug-resistant strains could make it much more difficult to control the disease. **Hence, option (b) is correct.**

19. Consider the following statements, with reference to Lucy mission:

- 1. It is 12-year mission that will explore a record-breaking number of asteroids.
- 2. The mission is joint initiative of NASA and JAXA.
- 3. Lucy is the first space mission to explore a diverse population of small bodies known as the Jupiter Trojan asteroids.

How many of the pairs given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None of the above

Answer: (B)

Explanation: The Lucy space craft is set to cross the ‘Dinkinesh’, an asteroid situated in the main asteroid belt between the orbits of Mars and Jupiter. **National Aeronautics and Space Administration (NASA) has launched the Lucy mission on October 2021 and its main aim was to observe the Jupiter Trojan asteroids.** It is possible for Lucy to observe so many because it won’t stop or orbit the asteroids. **Jupiter Trojan asteroids refers to a huge group of small bodies that orbit the Sun in two “swarms.” Lucy will first fly by Dinkinesh and another asteroid in the main belt called Donaldjohnson.** The mission has been visually tracking Dinkinesh since September and it will be the first asteroid that Lucy will visit on its 12-year-long journey. **Dinkinesh is about a kilometre wide and orbits the**

Sun in the main belt of asteroids between the orbits of Mars and Jupiter. Hence, statement 2 is not correct.

20. Consider the following statements regarding the UNESCO Creative Cities Network:

1. It identifies cities with development plans that prioritize innovation and cultural sectors.
2. It has recognized Ladakh in India in the area of Gastronomy.

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, Kozhikode in Kerala and Gwalior in Madhya Pradesh were named to UNESCO's renowned list of innovative cities for their contributions to literature and music, respectively. **In 2004, UNESCO established the Creative Cities Network (UCCN).** This network presently includes around 300 cities from around the world. Its objective is putting creativity and cultural industries at the heart of their local development strategies and actively cooperating at the international level. **UNESCO recognises creative cities in seven categories: craft, folk art, media arts, film design, gastronomy, literature, and music. Hence, statement 1 is correct.** Every year, UNESCO seeks applications from towns all around the world to join its UCCN project. In India, applications go through the Ministry of Culture. **Kozhikode is home to the annual Kerala Literature Festival and various other book festivals. Gwalior has a rich musical tradition that includes classical Hindustani music, folk music, and devotional music.** In addition, the city features some prominent music institutes and holds popular festivals. **Other Indian towns added to this network: Srinagar and Jaipur are known for their crafts and folk arts.** **Mumbai: Film category** **Chennai and Varanasi are in the music category.** **Hyderabad is in the Gastronomy category.** Hence, statement 2 is not correct.

21. Consider the following statements, with reference to Elephant Corridor Report, 2023:

1. At present, there are totally 200 elephant corridors in India.
2. Karnataka has the most elephant corridors in India.
3. The elephant corridor in revenue lands and private lands are to be notified under the Wild Life (Protection) Act, 1972.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

Explanation: In the recently held standing committee meeting of the National Board for Wildlife, **Raman Sukumar, an Indian ecologist and IISc professor said that multiple inconsistencies in the elephant corridor report, 2023.** A corridor is a small patch of land that provides connectivity for elephant movement across habitats, largely within a landscape of the elephant reserve. According to the report there is increase of 62 'elephant corridors' in the country since 2010, bringing the total to 150, an increase of 40 %. **West Bengal has the most elephant corridors (26) that amounts to 17% of the total elephant corridors.** Elephants have seen increased presence in Madhya Pradesh found in Sanjay Tiger reserves and Bandhavgarh. **The decrease in corridor use is attributed to the habitat fragmentation, shrinkage and destruction.** The elephant corridor in forest areas shall be notified under the rules mentioned under the Wild Life (Protection) Act, 1972. The elephant corridor areas with revenue lands and private lands must be notified under the Environment (Protection) Act, 1986. Hence, all statements are not correct.

22. Consider the following statements, with reference to National Efficient Cooking Programme:

1. It aims to promote affordable and energy-efficient cooking coal.
2. It is an initiative of Ministry of Petroleum and Natural Gas (MOPNG).

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: Recently the Union Minister for Power and New & Renewable Energy unveiled the National Efficient Cooking Programme to revolutionize cooking practices in India. **The National Efficient Cooking Programme (NECP) introduces induction-based cookstoves, offering a cost advantage of 25-30% over traditional cooking methods. It aims to promote both energy savings and cost-effective cooking solutions by introducing affordable and energy-efficient induction-based cookstoves.** It was launched by the Energy Efficiency Services Limited (EESL), which is under Union Minister for Power and New & Renewable

Energy. By deploying 20 Lakh Induction cook-stoves across India, EESL seeks to reduce the environmental impact of cooking methods, ensuring cleaner air and improved health for citizens. **Hence, both statements are not correct.**

23. Consider the following passage:

It is a vector-borne disease transmitted by the bite of infected *Aedes* mosquitoes, mainly *Aedes aegypti* and *Aedes albopictus*. The symptoms include red eyes, headache, rashes, muscle pain and joint pain lasting for 2 to 7 days. The infection is associated with Guillain-Barré syndrome, neuropathy and myelitis in adults and children.

The above passage best describes which of the following diseases?

- (a) Zika Virus
- (b) Chikungunya
- (c) Malaria
- (d) Dengue

Answer: (A)

Explanation: Recently Karnataka has stepped up surveillance after a mosquito pool in Chickballapur was found to be positive for Zika virus. **Zika virus is a mosquito-borne virus first identified in Uganda in 1947 in a Rhesus macaque monkey. Zika virus is a vector-borne flavivirus transmitted by the bite of infected *Aedes* mosquitoes, mainly *Aedes aegypti* and *Aedes albopictus*.** Most people with Zika virus infection do not develop symptoms; those who do typically have symptoms including rash, fever, conjunctivitis, muscle and joint pain, malaise and headache that last for 2–7 days. The virus during pregnancy can cause infants to be born with microcephaly and other congenital malformations as well as preterm birth and miscarriage. The infection is associated with Guillain-Barre syndrome, neuropathy and myelitis in adults and children. **In February 2016, World Health Organisation (WHO) declared Zika-related microcephaly a Public Health Emergency of International Concern (PHEIC). WHO declared the end of the PHEIC of Zika virus in November of 2016.** Although cases of Zika virus disease declined from 2017 onwards globally, transmission persists at low levels in several countries in the Americas and other endemic regions. **Hence, option (a) is correct.**

24. With reference to Payment Aggregator (PA), consider the following statements:

- 1. They are third-party service providers that enable merchants to receive client payments.
- 2. In India, only Scheduled Commercial Banks can act as PAs.
- 3. They require permission from the Reserve Bank of India (RBI) to operate.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The Reserve Bank of India (RBI) has designated as Payment Aggregator-Cross Border (PA-CB) those organizations that facilitate cross-border payments for the import and export of goods and services. **PAs-CB enables cross-border online payments for permitted products and services import and export. A payment processor (also known as a merchant aggregator) is a third-party service provider that enables merchants to take client payments by integrating them into their websites or apps.** It enables various payment transactions, such as cash/cheque, internet payments via several payment sources, and offline touchpoints. **It enables merchants to accept bank transfers without requiring the establishment of a bank-based merchant account.** It means that a merchant does not need to open a merchant account with a bank. **The Companies Act of 2013 governs the incorporation of a PA in India. A PA might be a bank or a non-banking organization. Because a PA deals with money, the RBI requires a license.** Only non-bank payment aggregators require special permission from the RBI because 'handling funds' is regarded as a routine aspect of bank PAs' banking connections. **Amazon (Pay) India, Google India, Razorpay, Pine Labs, and others are examples. Hence, only statement 1 is correct.**

25. Consider the following statements regarding White hydrogen:

- 1. It is a potentially clean energy source that occurs naturally in the Earth's crust.
- 2. Its reserves are currently limited to the Arctic region.

Which of the above statements is/are not correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (B)

Explanation: Researchers looking for fossil fuels beneath the ground in northern France recently discovered a massive store of white hydrogen. **White hydrogen is sometimes known as "natural," "gold" or "geologic" hydrogen. It is naturally created in the Earth's crust and is thought to be a potential source of clean energy. Hence, statement 1 is correct.** It is

abundant in nature and renewable. Its deposits have been discovered all over the world, including the United States, Eastern Europe, Russia, Australia, France, and others. There could be tens of billions of tonnes of white hydrogen in the world, according to estimates. **Hence, statement 2 is not correct.**

26. Consider the following statements, with reference to Dollar/Rupee Swap:

1. In a dollar–rupee sell/buy swap, the RBI sells USD in exchange for INR and promises to buy dollar from banks after some years.
2. Only the Authorised Dealers (ADs) Category 1 banks are eligible entities to participate in this auction.
3. It is a forex tool that helps in the liquidity management.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: It is a **forex tool used by the RBI uses to sell USD in exchange for INR and promises to buy dollar from banks after some years.** Only the Authorised Dealers (ADs) Category 1 banks will be the eligible entities to participate in the auction of USD/INR Sell Buy Swaps. Swaps under the auction, once undertaken with the Reserve Bank, cannot be cancelled and no request for any modification or revision to the same will be entertained.

RBI has the following rights for the Dollar/Rupee Swap:

1. Decide on the quantum of US Dollar amount to be sold in the swap auction.
2. Accept bids for less than the aggregate notified US Dollar amount.
3. Accept marginally higher than the notified US Dollar amount due to rounding-off effects.
4. Accept or reject any or all the bids either wholly or partially without assigning any reason.

Forex swaps help in liquidity management and in a limited way, helps in keeping the currency rates in check. A dollar–rupee buy/sell swap injects INR into the banking system while sucking out the dollars and the reverse happens in a sell/buy swap. **Hence, all statements are correct.**

27. Consider the following statements, with reference to Rabies:

1. It is a vaccine-preventable, zoonotic, viral disease affecting the central nervous system.
2. Rabies is present on all continents except Antarctica and it can affect only domestic animals.

3. Bhutan is the first country to sterilise all stray dogs in its country.\

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Rabies is a **vaccine-preventable, zoonotic, viral disease affecting the central nervous system.** It can affect both domestic and wild animals. **It is present on all continents except Antarctica, with over 95% of human deaths occurring in Asia and Africa.** Rabies is one of the neglected tropical diseases (NTD) that predominantly affects already marginalized, poor and vulnerable populations. **Bhutan becomes first country to sterilise all stray dogs after 14-year-long project.** Initial symptoms of rabies include generic signs like fever, pain and unusual or unexplained tingling, pricking, or burning sensations at the wound site. People are usually infected following a deep bite or scratch from an animal with rabies, which is, in 99% of the cases, a dog. Transmission can also occur if saliva of infected animals comes into direct contact with mucosa (e.g. eyes or mouth) or fresh skin wounds. **Vaccinating dogs, including puppies, is the most cost-effective strategy for preventing rabies in people because it stops the transmission at its source. Rabies is included in WHO's 2021–2030 Roadmap for the global control of neglected tropical diseases, which sets regional, progressive targets for the elimination of targeted diseases. Hence, statement 2 is not correct.**

28. UNESCO Michel Batisse Award, sometimes seen in the news is related to which of the following?

- (a) To recognize operations that have a significant impact on the humanitarian assistance provided during war.
- (b) For a political person who provide Policy leadership for conservation of the nature.
- (c) Highest civilian award by UNESCO for person in any field of human endeavour.
- (d) For outstanding achievement in management of biosphere reserves across the globe.

Answer: (D)

Explanation: Recently the director of Gulf of Mannar biosphere reserve was selected for UNESCO Michel Batisse Award for 2023. **UNESCO Michel Batisse Award is a 12,000 USD award that is given every 2 years during the Man and the Biosphere Programme (MAB) Council, in memory of Dr Michel Batisse.** It is awarded for outstanding achievements in the management of the biosphere reserves in line with the

recommendations of the Seville Strategy. **Jagdish Bakan is the Wildlife Warden and Director of the Gulf of Mannar Biosphere Reserve in Tamil Nadu.** Jagdish Bakan won the Award for creating 'green' jobs and microcredit in Gulf of Mannar Biosphere Reserve. He has implemented several projects designed to motivate the community to take greater care of their environment. **Example, the community members have created plastic-free zones in the Dhanushkodi and Ervadi areas, where they have set up checkpoints to collect plastics from passing motorists. Hence, option (d) is correct.**

29. Consider the following statements regarding "NexCAR19":

1. NexCar19 is a sort of gene therapy developed in India that is designed to target cancer cells and treat them.
2. NexCAR19 therapy is beneficial for patients with B-cell lymphomas who have not responded to traditional cancer treatments such as chemotherapy.
3. The therapy is only available to people over the age of 30, as it did not provide effective outcomes in teens.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: NexCar19 is a **type of Chimeric Antigen Receptor T cell (CAR-T cell) and gene therapy** developed indigenously in India by **ImmunoACT**, which is a company incubated at IIT Bombay. It is designed to target cancer cells that carry the CD19 protein. **Hence, statement 1 is correct.** NexCAR19 therapy is intended for people with **B-cell lymphomas who have not responded to standard treatments like chemotherapy** and have experienced relapse or recurrence of cancer. **Hence, statement 2 is correct.**

Initially, the therapy is approved for patients aged 15 years and older and also proves beneficial for adolescents. **Hence, statement 3 is not correct.**

30. Consider the following passage:

The country lies to the south-west of the Indian mainland. It comprises nearly 1,200 low-lying coral islands sprawled across 90,000 sq km in the Indian Ocean. The Indian Navy initiated "Operation Cactus" in 1988 in response to a coup attempt.

The above-mentioned passage refers to which of the following countries?

- (a) Mauritius
- (b) Fiji
- (c) Maldives
- (d) Madagascar

Answer: (C)

Explanation: 'India Out' was a campaign slogan for **Maldives president-elect Mohamed Muizzu, who will take over the country's reins on November 17.** Yet, 35 years after the fact, India's intervention in the 1988 coup attempt in Malé codenamed Operation Cactus continues to be remembered with gratitude and fondness. **Maldives lies to the south-west of the Indian mainland, with its capital Malé slightly more than 600 km away from Thiruvananthapuram.** It comprises nearly 1,200 low-lying coral islands sprawled across 90,000 sq km in the Indian Ocean. Maumoon Abdul Gayoom (born 1937) was elected president of the Maldives in 1978, amid economic and political turmoil. Gayoom eventually went on to rule his country for 30 years, but in the 1980s, he faced three attempted coups (in 1980, 1983, and 1988), all of which were led by Maldivians who were dissatisfied with his rule. **Hence, option (c) is correct.**

31. Consider the following statements, with reference to the Advocate-on-Record System:

1. Advocate-on-Record (AoR) are a pool of Delhi-based lawyers and they can only file cases before the Supreme Court.
2. AOR system is being governed by the Supreme Court Rules, 2013.
3. Advocate-on-Record (AoR) can be appeared only before the Supreme Court and are barred to appear before the other courts.

Which of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Recently the Supreme Court recently stopped an Advocate-on-Record (AoR) for filing a frivolous case and dismissed the public interest litigation. **Advocate-on-Record (AoRs) are a pool of elite Delhi-based lawyers whose legal practice is mostly before the Supreme Court.** They can appear before other courts too. **Only an AoR can file cases before the Supreme Court.** An AoR might engage other lawyers including senior counsels to argue before the Court but the AoR is essentially the link between the litigant and the highest court of the country. The Supreme Court Rules, 2013 prescribe eligibility criteria for an AoR. An advocate has to clear an examination set by the Court itself, the advocate has to meet specific

criteria to be eligible to appear for the exam. **According to Section 30 of the Advocates Act, any lawyer enrolled with the Bar Council is entitled to practice law before any Court or tribunal in the country. Article 145 of the Constitution states that the Supreme Court is empowered to make rules and regulate its own procedure for hearing cases.** The AoR system is broadly based on the British practice of barristers and solicitors. Hence, statement 3 is not correct.

32. Consider the following statements, with reference to Project 15B:

1. The project aims to build state-of-the-art stealth guided missile destroyer that is designed by the Warship Design Bureau.
2. The Project 15B has 4 ships with overall indigenous content of the project is 75%.
3. INS Kolkata is part of the project.

Which of the above statements is/are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The guided missile destroyer, INS Surat is scheduled to be unveiled by the Chief Minister of Gujarat in presence of the Chief of the Naval Staff, at a ceremony to be held in the city of Surat. **Project 15B is aimed to build state-of-the-art stealth guided missile destroyer** which is follow-on of the Kolkata class (Project 15A) destroyers. **The project has 4 ships which are named after each city that includes:**

1. INS Visakhapatnam
2. INS Mormugao
3. INS Surat
4. INS Imphal

It is **designed by the Warship Design Bureau, the Indian Navy's in-house organization and built by Mazagon Dock Shipbuilders Ltd, Mumbai.** P15B ships will be equipped to carry and operate two multi-role helicopters. The Project 15B ships are 163 meters long and 17 meters wide, displace 7400 tonnes when fully loaded and have a maximum speed of 30 knots. The overall indigenous content of the project is approx. 75%. **INS Kolkata is not a part of the project 15 and is a part of project 15A. The Project 15A was launched in 1986 that was redesigned by Directorate of Naval Design including the modern stealth attributes.** The Kolkata class or Project 15A, of guided missile destroyers is a successor to the Delhi class. **Hence, statement 3 is not correct.**

33. With reference to Electoral Bonds, consider the following statements:

1. There is no limit to the number of electoral bonds that an individual or organization may purchase.
2. Registered political parties that received at least 1% of the vote in the most recent Lok Sabha or State Assembly elections can request a verified account from the Election Commission of India (ECI).
3. Because the donor's name and other details are not recorded on the instrument, electoral bonds are referred to as anonymous.

Which of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Electoral bonds are interest-free bearer bonds or money instruments that firms and individuals in India can purchase from **authorized State Bank of India (SBI) branches. A person or company may purchase an unlimited number of electoral bonds. Political parties that received at least 1% of the votes cast in the most recent Lok Sabha or State Assembly elections and are registered under the RPA are eligible for a verified account from the Election Commission of India (ECI).** Because the donor's name and other details are not recorded on the instrument, electoral bonds are referred to as anonymous. **Hence, all statements are correct.**

34. Consider the following statements regarding the 'World Food India 2023':

1. The Prime Minister opened the first edition of 'World Food India 2023' in New Delhi.
2. The main goal of the event is to promote India as the "food basket of the world" and to declare 2023 the International Year of Millets.

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 second edition of 'World Food India 2023' was inaugurated by the Prime Minister in New Delhi. **The primary objective of the event is to present India as the 'food basket of the world' and celebrate 2023 as the International Year of Millets.** The event aims to promote India as a global hub for the food processing industry and showcase the country's diverse food culture and heritage. It also underscores the importance of technology and sustainability in the food sector. **Hence, statement 1 is not correct.**

35. Which of the following countries developed the Bulava Ballistic Missile, which was recently in the news?

- (a) Israel
- (b) USA
- (c) Japan
- (d) Russia

Answer: (D)

Explanation: It is a new Intercontinental Ballistic Missile (ICBM) launched from a Russian submarine. The development of this missile began in 1998. **The Bulava missile's first powered flight test took place in September 2005. It was intended for use on Russia's Borey-class ballistic missile submarines (SSBNs).** It was supposed to be the backbone of Moscow's nuclear triad, with a range of about 8,000 kilometers (around 5,000 miles). **It is a solid-fuel missile with three stages. It can carry numerous warheads.** Each warhead will hit a separate target. **It has a capacity of six Multiple Independent Re-entry Vehicles (MIRVs).** These MIRVs are capable of maneuvering and re-targeting in flight in order to outmaneuver hostile air defenses. **Hence, option (d) is correct.**

36. Consider the following statements, with reference to the Indo-Pacific Maritime Domain Awareness (IPMDA):

1. IPMDA is a technology and training initiative to enhance maritime domain awareness.
2. It integrates 3 critical regions such as Pacific Islands, Southeast Asia and the Indian Ocean Region.
3. IPMDA is an initiative of Asia-Pacific Regional Coordination Mechanism.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Indo-Pacific Maritime Domain Awareness (IPMDA) aims to enhance the security and stability of the Indo-Pacific region. **Maritime Domain Awareness is the effective understanding of any activity associated with the maritime environment that could impact upon the security, safety, economy or environment.** IPMDA is a technology and training initiative to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways. **IPMDA was announced by the Quad grouping, comprising India, Australia, Japan and U.S., at the Tokyo summit in early 2022.** IPMDA harnesses innovative technology, such as commercial satellite radio frequency data collection, to provide partners across Southeast Asia, the Indian

Ocean region and the Pacific. **It seeks to track "dark shipping" and build a "faster, wider, and more accurate maritime picture of near-real-time activities in partners' waters". It integrates 3 critical regions in the Indo-Pacific region that is the Pacific Islands, Southeast Asia and the Indian Ocean Region (IOR).** Hence, **statement 3 is not correct.**

37. Consider the following statements, with reference to the Ramlila:

1. It is an annual dance-drama event that involves the traditional performance of the Ramayana epic.
2. It is performed in northern India during the festival of Dussehra that includes song, narration, recital and dialogue.
3. Ramlila is featured in the list of the Intangible Cultural Heritage of UNESCO.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Ramlila, literally means "Rama's play", is a performance of the Ramayana epic in a series of scenes that include song, narration, recital and dialogue. **It is performed across northern India during the festival of Dussehra,** held each year according to the ritual calendar in autumn. **The most representative Ramlilas are those of Ayodhya, Ramnagar and Benares, Vrindavan, Almora, Sattna and Madhubani.** This staging of the Ramayana is based on the Ramacharitmanas, one of the most popular storytelling forms in the north of the country. This sacred text devoted to the glory of Rama, the hero of the Ramayana, was composed by Tulsidas in the sixteenth century in a form of Hindi in order to make the Sanskrit epic available to all. **The majority of the Ramlilas recount episodes from the Ramacharitmanas through a series of performances lasting 10 to 12 days,** but some episodes may last an entire month. Festivals are organized in hundreds of settlements, towns and villages during the Dussehra festival season celebrating Rama's return from exile. Ramlila recalls the battle between Rama and Ravana and consists of a series of dialogues between gods, sages and the faithful. **Ramlila's dramatic force stems from the succession of icons representing the climax of each scene.** The development of mass media, particularly television soap operas, is leading to a reduction in the audience of the Ramlila plays. **Ramlila is featured in the list of the Intangible Cultural Heritage of UNESCO. Hence, all statements are correct.**

38. Consider the following statements, with reference to Operation All Clear:

1. The operation was aimed at successive crackdowns against militant groups in Assam.
2. The operation was launched by the Indian military and Assam police.

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 the 1990s, the Indian military and Assam police launched successive crackdowns against militant groups in Assam, putting them under pressure. At the same time, **Bangladesh ceased to be a place of refuge as well, with the pro-India Awami League government under Sheikh Hasina coming to power in 1996 and taking action against them.** As a consequence, these groups set up camps in southeast Bhutan, particularly in the Samdrup Jongkhar district that borders Assam. According to the Bhutan government, at the time of its crackdown, there were many militant camps in its territory. While Bhutan ignored and did not engage with the Indian insurgents in its territories in the initial years, pressure began to mount on it as it began to strain diplomatic relationships with India. Bhutan had entered into dialogue with these groups in 1998 but still been reluctant to take coercive action to drive them out, a major factor in which was the small size and inexperience of its military. The talks did not yield any outcome for the government despite five rounds of talks with the ULFA and three rounds with the NDFB. In the Bhutan Royal Assembly session of June-August 2003, a resolution was taken that the government would make one last attempt to persuade the militants to leave the country. **Operation All Clear was a military operation conducted by Royal Bhutan Army forces against Assam separatist insurgent groups in the southern regions of Bhutan. It was the first military operation by the Bhutan in 140 years against militants under 'Operation All Clear' in 2003.** On 15 December 2003, the 6000-member Royal Bhutan Army launched simultaneous attacks on the camps of all three outfits with logistical and medical assistance from the Indian Army. **In January 2004, India's Chief of Army Staff General claimed that at least 650 insurgents from the three groups had been either killed or captured. Hence, both statements are not correct.**

39. Consider the following statements regarding River Dolphins:

1. The pink river dolphin, or boto, is another name for the Amazon River dolphin.

2. The Ganges River dolphin is the largest.
3. The Indus River dolphin population has declined significantly in recent years.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: River dolphins are a group of freshwater cetaceans that inhabit various river systems across Asia and South America. **The Six Surviving River Dolphin Species include the Amazon, Ganges, Indus, Irrawaddy, Tucuxi, and Yangtze finless porpoise. The Amazon River dolphin is also known as the pink river dolphin or boto. Hence, statement 1 is correct.** The Ganges River dolphin has been recognized by the Government of India as its National Aquatic Animal. However, the Ganges River dolphin is not the largest river dolphin. **The Amazon River dolphin is the largest river dolphin. Hence, statement 2 is not correct.** Recently, Conservation efforts in populated river basins like the Indus and Yangtze have seen success. For instance, the Indus River dolphin population in Pakistan doubled due to joint stakeholder action. **Hence, statement 3 is not correct.**

40. Consider the following statements:

- Statement-I:** With Samudrayaan, India is embarking on a historic voyage to test the capacity of a deep-sea crewed expedition by reaching a depth of 6,000 metres to the ocean floor in the Central Indian Ocean.
- Statement-II:** The Central Indian Ocean bed features abundant polymetallic nodules and cobalt-rich ferromanganese crust.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement I and Statement II are correct and Statement II is the correct explanation for Statement I.
- (b) Both Statement I and Statement II are correct and Statement II is not the correct explanation for Statement I.
- (c) Statement I is correct but Statement II is incorrect.
- (d) Statement I is incorrect but Statement II is correct.

Answer: (A)

Explanation: Deep Ocean Mission (DOM) is an ambitious initiative of the Ministry of Earth Sciences (MoES) which aims to develop technologies and capabilities for deep sea exploration. Also, **DOM is one of nine missions under the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC).** Samudryaan and Matsya6000: As a part of DOM, India's flagship deep ocean mission,

Samudrayaan, was initiated in 2021 by the Minister of Earth Sciences. **With Samudrayaan, India is embarking on a groundbreaking crewed expedition to reach a depth of 6,000 m to the ocean bed in the Central Indian Ocean.**

41. Consider the following statements regarding 'Border Adjustment Tax (BAT)':

1. BAT is a duty that is proposed to be imposed on imported goods in addition to the customs levy.
2. It imposes a charge on goods or services in accordance with the origin principle of taxation.
3. BAT aims to ensure a level playing field for both foreign and domestic companies operating within a tax jurisdiction.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Border Adjustment Tax (BAT) is a duty that is **proposed to be imposed on imported goods in addition to the customs levy that gets charged at the port of entry. Hence, statement 1 is correct.**

BAT is a **fiscal measure that imposes a charge on goods or services in accordance with the destination principle of taxation.** Under this principle, a government taxes products based on the location of their sale to the final consumer rather than on the location of their production or origin. **Hence, statement 2 is not correct.**

Generally, **BAT seeks to promote "equal conditions of competition" for foreign and domestic companies supplying products or services within a taxing jurisdiction.** The World Trade Organisation (WTO) rules allow for the adjustment of certain types of internal taxes at the border under certain conditions.

The main conditions are:

- The tax must be applied equally to imports and "like" domestic products.
- The tax must be "borne" by a product and not be "direct".
- A permitted border tax adjustment must not subsidize exports.

Hence, statement 3 is correct.

42. With reference to 'Geoglyphs', consider the following statements:

1. Geoglyphs typically consist of stones or soil and are essentially natural depictions.
2. They are typically formed by clastic rocks or stone fragments, gravel, or earth.

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: A Geoglyphs is a work of art which is created by arranging or moving objects within a landscape. These objects are usually stones or earth. They are the intentional human-made renderings.

These are usually made by removing or clearing sand or stones or sometimes adding stones. This creates the contrast between the figure and the ground, enhancing visibility. **Hence, statement 1 is not correct.** They are typically formed by clastic rocks or similarly durable elements of the landscape, such as stones, stone fragments, gravel, or earth. **There are two types of Geoglyphs; namely a positive and negative Geoglyphs.**

Positive geoglyph: It is formed by the arrangement and alignment of materials on the ground in a manner akin to petroforms (which are simply outlines created using boulders).

Negative geoglyph: It is formed by removing part of the natural ground surface to create differently coloured or textured ground in a manner akin to petroglyphs.

There is another variation of a geoglyph that involves **seeding plants in a special design. The design usually takes years to see since it depends on the plants growing. This type of geoglyph is called an arboglyph. Hence, statement 2 is correct.**

43. Consider the following passage:

It is a trans-Himalayan River and a right bank tributary of the Brahmaputra River. It flows through Tibet's Lhuntese County in the Shannan Prefecture, and the Indian states of Arunachal Pradesh and Assam. It is the largest tributary of the Brahmaputra contributing 7.92% of the Brahmaputra's total flow.

The above-mentioned passage refers to which one of the following rivers?

- (a) Desang
- (b) Lohit
- (c) Subansiri
- (d) Dibang

Answer: (C)

Explanation: A landslide has damaged part of the under-construction 2000 MW Lower Subansiri Hydroelectric project in Arunachal Pradesh and Assam which has affected the flow in the Subansiri River downstream. **The Subansiri River (Chayul Chu in Tibet) is a trans-Himalayan River and a tributary (right bank) of the Brahmaputra River. It flows through Tibet's Lhuntese County in the Shannan Prefecture, and the**

Indian states of Arunachal Pradesh and Assam. The Subansiri is approx. 518 km (322 mi) long, with a drainage basin 32,640 square km (12,600 sq mi). **It is the largest tributary of the Brahmaputra contributing 7.92% of the Brahmaputra's total flow. Hence, option (c) is correct.**

44. **'Krishi 24/7' recently seen in news. It is related to which of the following?**

- (a) The first-ever TV channel launched by the private agency
- (b) The first-ever AI-powered solution for automated agricultural news monitoring and analysis
- (c) The first-ever startup launched in the field of news analysis by Farmer Producer Organization (FPO)
- (d) The first-ever e-commerce website for direct sale of farm products

Answer: (B)

Explanation: Recently, the Union Agriculture Ministry, in collaboration with the Wadhvani Institute for Artificial Intelligence (Wadhvani AI), developed 'Krishi 24/7'. **It is the first-ever AI-powered solution for automated agricultural news monitoring and analysis, with support from Google.org.** The tool scans news articles in multiple languages and translates them into English. It **extracts essential information from news articles, such as headline, crop name, event type, date, location, severity, summary, and source link, ensuring that the ministry receives timely updates on relevant events published on the web.** It addresses the need for an efficient mechanism to identify and manage agricultural news articles of interest to aid timely decision-making. **It will aid the Department of Agriculture and Farmers Welfare (DA&FW) to identify relevant news, generate timely alerts, and take prompt action to protect farmers' interests and promote sustainable agricultural growth through improved decision-making. Hence, option (b) is correct.**

45. **Consider the following statements regarding International Coffee Organization (ICO):**

- 1. International Coffee Organization (ICO) is a United Nations body that aims to strengthen the coffee sector and promote sustainable growth for the Global Coffee Value Chain.
- 2. It is the sole intergovernmental coffee organization, uniting exporting and importing governments.
- 3. The World Coffee Conference (WCC) is organised annually in India by the International Coffee Organization (ICO).

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The 5th World Coffee Conference (WCC) was held in Bengaluru, and organized by the International Coffee Organization (ICO), a UN body focused on highlighting the economic importance of coffee. **It is being held for the first time in an Asian coffee-producing country.** ICO (established in 1963, under the UN; HQ: London) serves as the only intergovernmental organization for coffee. It administers the International Coffee Agreement (ICA), an important instrument for development cooperation. Aims to strengthen the coffee sector and promote sustainable growth for the Global Coffee Value Chain (G-CVC). It is the sole intergovernmental coffee organization, uniting exporting and importing governments. **It has 43 exporting members (including India) and 6 importing members. Hence, statement 3 is not correct.**

46. **Consider the following statements, with reference to the WHO's Global Tuberculosis (TB) Report 2023:**

- 1. In 2022, tuberculosis overtook Covid-19 as the largest cause of death from a single infectious pathogen.
- 2. In 2022, 30 high-burden TB nations will account for 87% of global TB cases, with India being one of them.
- 3. Despite being a high-burden country, India has a TB death rate of less than 5%.

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 World Health Organization (WHO) released the Global Tuberculosis (TB) Report 2023, highlighting the high burden of TB worldwide in 2022. **It was the world's second leading cause of death from a single infectious agent in 2022, following Covid-19. Hence, statement 1 is not correct.** TB caused almost twice as many deaths as HIV-AIDS. More than 10 million people continue to fall ill with TB every year. 30 high-burden TB countries collectively accounted for 87% of the world's TB cases in 2022. **Among the top eight high-burden countries, besides India, are Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh, and the Democratic Republic of Congo. Hence, statement 2 is correct.** India reported a case fatality ratio of 12%, indicating that 12% of TB cases in the country resulted in death. The report estimates that 3,42,000 TB-related deaths occurred in India in 2022, with 3,31,000 among HIV-negative individuals

and 11,000 among those with HIV. **Hence, statement 3 is not correct.**

47. Consider the following statements regarding Deepfake:

1. Deepfake generators and discriminators are components of generative adversarial networks.
2. Deepfakes can help restore people's lost voices, improve artistic expression, and improve medical training and simulation.
3. Sections 67 and 67A of the Information Technology Act (2000) contain laws that address all aspects of deep fakes.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Deepfakes are synthetic media that use AI to manipulate or generate visual and audio content, usually with the intention of deceiving or misleading someone. **Deepfakes are created using a technique called generative adversarial networks (GANs), which involve two competing neural networks: a generator and a discriminator.** The generator tries to create fake images or videos that look realistic, while the discriminator tries to distinguish between the real and the fake ones.

The generator learns from the feedback of the discriminator and improves its output until it can fool the discriminator. Hence, statement 1 is correct.

Positive Applications of Deep Learning: Deep learning technology has enabled positive advancements, such as restoring lost voices and recreating historical figures. Deep learning techniques have been applied in comedy, cinema, music, and gaming to enhance artistic expression. **It enhances medical training and simulation by generating diverse and realistic medical images.** It also creates virtual patients and scenarios for simulating medical conditions and procedures, improving training efficiency. **Hence, statement 2 is correct.**

India does not have specific laws or regulations that ban or regulate the use of deepfake technology. **India has called for a global framework for the expansion of "ethical" AI tools.** Existing laws such as Sections 67 and 67A of the Information Technology (IT) Act (2000) have provisions that may be applied to certain aspects of deep fakes, such as defamation and publishing explicit material. **The Information Technology Rules, 2021, mandate the removal of content impersonating others and artificially morphed images within 36 hours.** None of the provisions or

section of the IT Act 2000 deal with each and every aspect of the Deepfakes. **Hence, statement 3 is not correct.**

48. With reference to Worker and Labour Productivity, consider the following statements:

1. Productivity in each sector is measured in terms of the labor-output ratio or the change in Net Domestic Product per worker, with working hours assumed to be 8 hours per day.
2. The distinction between Worker Productivity and Labour Productivity is that 'work' in worker productivity refers to mental activities, whereas 'labour' refers to manual tasks.

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: Productivity of activity is usually measured as the quantum of output value per unit of labour (time) cost at a micro level. **At a macro level, it is measured in terms of the labor-output ratio or change in Net Domestic Product (NDP) per worker in each sector (where working hours are assumed to be 8 hours per day).** The only conceptual difference between Worker Productivity and Labor Productivity is that the 'work' in worker productivity describes mental activities. In contrast, the 'work' in labor productivity is mostly associated with manual activities. **Hence, both statements are correct.**

49. Klyuchevskoy volcano, which has recently made the news, is located in:

- (a) Crimean Peninsula
- (b) Iberian Peninsula
- (c) Yucatan Peninsula
- (d) Kamchatka Peninsula

Answer: (D)

Explanation: Klyuchevskoy volcano erupted recently in Russia's Kamchatka Peninsula. **It is one of Kamchatka's most well-known volcanoes.** With a height of 4,750 metres, it is one of the world's tallest active volcanoes. A truncated cone with a centre crater makes up the volcano. **It is a stratovolcano.** Since 1700, it has erupted more than 50 times. **Hence, option (d) is correct.**

50. What is the primary purpose of the Indian Evidence Act Section 27?

- (a) To make all confessions acceptable in court.
- (b) To protect individuals in police custody from self-incrimination.

(c) Make an exemption for confessions that lead to the revelation of facts.

(d) Prohibit the use of confessions obtained in police custody.

Answer: (C)

Explanation: The Supreme Court has ruled that for a fact discovered to be admissible under Section 27 of the Evidence Act, it must be a direct result of information obtained from a person in custody. **Section 27 of the Evidence Act reveals an intriguing and difficult characteristic concerning the admitting of confessions within its legal framework.** Sections 25 and 26 provide protection against self-incrimination and abuse of power by police authorities, making confessions made in police custody in the absence of a magistrate inadmissible in court. **Section 27 introduces an exception by allowing the admission of confessions that result in the revelation of facts.** Section 27 of the law reads: "Provided that, when any fact is deposed to as discovered in consequence of information received from a person accused of any offence, in the custody of a police officer, so much of such information, whether it amounts to a confession or not, as relates distinctly to the fact thereby discovered, may be proved." In layman's terms, any confession made while in police custody that leads to the exposure of a fact is considered admissible in court. **This theory is based on the principle that every part of a statement made at the request of the accused while in police custody must be verified by subsequent events of discovery in order for it to be acceptable in court. Hence, option (c) is correct.**

51. Consider the following statements with respect to 'Insolvency and Bankruptcy Code, 2016'

1. It is the bankruptcy law of India which provides for a time-bound process to resolve insolvency
2. The provisions of the Code are applicable to companies, limited liability entities, firms, but not to individuals

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: It is the bankruptcy law of India which seeks to consolidate the existing framework by creating a single law for insolvency and bankruptcy. **It provides for a time-bound process to resolve insolvency. Hence Statement 1 is Correct.** The provisions of the Code are applicable to companies, limited liability entities, firms, and individuals (i.e. all

entities other than financial service providers). **Hence Statement 2 is Incorrect.**

52. Consider the following statements with respect to 'Kedarnath Wildlife Sanctuary'

1. It is the largest protected area in the western Himalayas.
2. It lies in the upper catchment of the Alaknanda and Mandakini Rivers.
3. The sanctuary was established in 1972, covering a total area of 975.20 km².
4. Its primary purpose of protect the endangered Himalayan musk deer.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (D)

Explanation:

Kedarnath Wildlife Sanctuary (KWS): • The KWS, famously known as the **Kedarnath Musk Deer Sanctuary, is located in the Rudraprayag and Chamoli districts of the state of Uttarakhand. Hence Statement 4 is Correct.**

- It was named after the famous Hindu temple of Kedarnath, which lies outside the northern border of the sanctuary.
- Its alternate name comes from its primary purpose of protecting the endangered Himalayan musk deer.
- It is the **largest protected area in the western Himalayas. Hence Statement 1 is Correct.**
- The **sanctuary was established in 1972, covering a total area of 975.20 km². Hence Statement 3 is Correct.**
- It lies in the upper catchment of the Alaknanda and Mandakini Rivers. Hence Statement 2 is Correct.
- The altitude ranges from 1,160 to 7,068 m.
- It is bordered by **Kedarnath (6940 m), Mandani (6193 m), and Chaukhamba (7068 m) peaks in the north.**
- The area falls under the West Himalayan Zone in the Palearctic realm.

53. Consider the following statements

1. It is a major tributary of the Krishna River.
2. It merges into the Krishna River at Kadlur (Raichur) in Karnataka.
3. Pandharpur is an important pilgrimage centre located on the right bank of this River.

The above-mentioned statements refer to which one of the following rivers?

- (a) Purna River
- (b) Musi River
- (c) Bhima River
- (d) Ghataprabha River

Answer: (C)

Explanation: The Bhima River is a major river in Western and South India. **It's also known as the Chandrabhaga River.** The Bhima River flows southeast for 861 kilometers (535 miles) through Maharashtra, Karnataka, and Telangana states, before joining the Krishna River. **It's a major tributary of the Krishna River. The Bhima River merges into the Krishna River at Kadlur (Raichur) in Karnataka.** The Bhima River in a well-entrenched valley, and its banks are heavily populated. The total basin area of the river is 48,631 sq. km, out of which 75 percent lie in the state of Maharashtra. **The river is rain-fed, and the volume of the river varies based on the monsoonal changes.** Major tributaries are the Sina and Nira rivers. Pandharpur is an important pilgrimage centre located on the right bank of Bhima River.

54. Which of the following released 'India Finance Report' recently.?

- (a) Reserve Bank of India
- (b) NITI Aayog
- (c) Centre for Advanced Financial Research and Learning (CAFRAL)
- (d) Ministry of Finance

Answer: (C)

Explanation: The Centre for Advanced Financial Research and Learning (CAFRAL) is an independent body set up by the Reserve Bank of India. **The first edition of the India Finance Report was published by CAFRAL.** The report took stock of India's non-bank financial companies sector, also known as the shadow banking sector. **CAFRAL raised concern over the rise in bank financing for non-banking finance companies.**

55. With reference to the National investigation Agency (NIA), consider the following statements:

1. The NIA is the Central Counter-Terrorism Law Enforcement Agency of India.
2. It is a body created by an executive resolution.
3. The agency is empowered to deal with the investigation of terror related crimes across states with special permission from the states.

How many of the statements given above is/are correct?

- (a)) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The NIA is the Central Counter-Terrorism Law Enforcement Agency of India mandated to investigate all the offences affecting the sovereignty, security and integrity of India. **Hence, statement 1 is correct.** It was **constituted under the National Investigation Agency (NIA) Act, 2008.** **Hence, statement 2 is incorrect** The agency is empowered to deal with the investigation of terror related crimes across states without special permission from the states under written proclamation from the Ministry of Home Affairs. **Hence, statement 3 is incorrect**

56. Consider the following statements:

1. The Labour Force Participation Rate (LFPR) has increased during the period 2017-18 to 2020-21
2. The Worker Population Ratio (WPR) has increased during the period 2017-18 to 2020-21.
3. While LFPR is defined as the percentage of persons employed among the persons in the population.

Which of the statement/s given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1 and 3 only

Answer: (B)

Explanation:

- The PLFS annual report available for 2020-21 shows that though the participation of women in the total labour force grew, i.e., Labour Force Participation Rate (LFPR) has gradually increased from 17.5% in 2017-18 to 25.1% in 2020-21. Hence, statement 1 is correct.
- The Worker Population Ratio (WPR) has increased from 16.5% in 2017-18 to 24.2% in 2020-21, Hence, statement 2 is correct.
- While LFPR is **defined as the percentage of persons in the labour force among the persons in the population (i.e., both employed and unemployed or seeking employment), WPR is the percentage of persons employed among the persons in the population.** Hence, statement 3 is incorrect.

57. Consider the following statement

1. Madhya Pradesh has clocked the highest growth rate in agriculture at 7.3 per cent over the period 2005-06 to 2021-22.
2. MP is the only state whose agriculture contribution to overall GDP has increased to 40 per cent, as against 18.8 percent at the all-India level.
3. MP is also the largest producer of wheat, and the second-largest milk producer after UP.

Which of the statement/s given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (A)

Explanation: Performance of GDP at the state level — their agriculture sectors in particular — over the period 2005-06 to 2021-22, for which we could get the latest data at the state level from MOSPI.

- The country averaged a GDP growth of 6.7 per cent per annum in this period and its agri GDP growth stood at 3.8 per cent per annum. **Of all the major states, Gujarat topped the list in overall GDP growth at 8.9 per cent closely followed by Uttarakhand (8.7 per cent), Telangana (8.6 per cent) and Haryana (8 per cent).** At the bottom of this list were Jammu and Kashmir (5.2 per cent), Assam (5.4 per cent), West Bengal (5.5 per cent), Uttar Pradesh (5.6 per cent) and Jharkhand (5.7 per cent).
- To analyze how inclusive this growth has been, we look at the agri-GDP growth in BIMARU states. **Madhya Pradesh has performed very well — it has clocked the highest growth rate in agriculture at 7.3 per cent.** Its overall GDP growth is a respectable 7.5 per cent. (Hence option 1 is correct)
- MP is the only state whose agriculture contribution to overall GDP has increased to 40 per cent, as against 18.8 percent at the all-India level. (Hence option 2 is correct)
- **MP is the second-largest producer of wheat (after UP), and the third-largest milk producer after UP and Rajasthan. (Hence option 3 is incorrect).** As only 1 and 2nd statements are correct, so the correct option is (a) 1 and 2 only.

58. With reference to National Mission for Enhanced Energy Efficiency (NMEEE), consider the following statements:

1. It is one of the eight missions under the National Action Plan on Climate Change (NAPCC).
2. Perform, Achieve and Trade (PAT) is the flagship program under NMEEE.

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:

- National Mission for Enhanced Energy Efficiency (NMEEE) is one of the **eight missions under the National Action Plan on Climate Change (NAPCC).** So, **statement 1 is correct.**
- Perform, Achieve and Trade (PAT) is the flagship program under the mission implemented by the **Bureau of Energy Efficiency (BEE) under the aegis of the Ministry of Power.** So, **statement 2 is correct.**

59. Consider the following statements regarding Nagarhole National Park.

1. This park was declared the 37th Tiger Reserve of India which is situated in Karnataka.
2. It is a part of the Nilgiri Biosphere Reserve.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1 only
- (c) 2 only
- (d) Neither 1 nor 2

Answer: (A)

Explanation:

- Nagarhole National Park is a national park located in Kodagu district and Mysore district in Karnataka, India. **It was declared the 37th Tiger Reserve of India in 1999. Thus statement 1 is correct.**
- It is **part of the Nilgiri Biosphere Reserve.** Hence **statement 2 is also correct.**

60. Consider following statements about PM PRANAM:

1. It will incentivise states and union territories to promote alternative fertilizers and the balanced use of chemical fertilizers.
2. The Union government had not split the separate budget for this project.
3. This Scheme is initiated by the Union Ministry of Chemical and Fertilizers of India.

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: (D)

Explanation:

- It will incentivise states and union territories to promote alternative fertilizers and the balanced use of chemical fertilizers. **Statement 1 is correct.**
- The Union government had not split the separate budget for this project. **Statement 2 is correct.**
- This Scheme is initiated by the Union Ministry of Chemical and Fertilizers of India. **Statement 3 is correct.**

61. 'The Ben Gurion Canal Project' was recently in the news. It proposed to connect which one of the pairs of water bodies?

- (a) Persian Gulf and Gulf of Oman
- (b) Mediterranean Sea and Atlantic Ocean
- (c) Gulf of Aqaba to the Mediterranean Sea
- (d) English Channel and North Sea

Answer: (C)

Explanation: The Ben Gurion Canal Project is a proposed canal project through the state of Israel. It would connect the Gulf of Aqaba to the Mediterranean Sea. **David Ben Gurion, for whom it would be named, is considered the Founding Father of Israel and was the first Prime Minister of Israel.** The canal would rival the Suez Canal, which runs through Egypt and has had many disturbances in its history, such as the Israeli blockage through **the Suez Canal and Straits of Tiran, Closure of the Suez Canal (1956–1957), Closure of the Suez Canal (1967–1975), and the 2021 Suez Canal obstruction.** It would be slightly more than 50% longer than the 120.1 mi (193.3 km) Suez Canal, at around 182 mi (292.9 km).

62. Consider the following statements in the context of Lake Titicaca:

- 1. It is the highest navigable water body in the world, located in the South American Continent.
- 2. It is the second-largest lake in South America.
- 3. More than 25 rivers empty their waters into Titicaca; the largest, the Ramis, drains about two-fifths of the entire Titicaca Basin.
- 4. Recently, the water levels at this lake reached to record lows, worsened by the El Nino weather phenomenon.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (D)

Explanation:

The water levels at Lake Titicaca are now reaching record lows, worsened by the El Nino weather phenomenon, compounding a long dry spell and rare high temperatures. **Hence Statement 4 is Correct. It is the highest navigable water body in the world, located in the Andes Mountains of South America. Hence Statement 1 is Correct.** It lies on the border between Peru to the west and Bolivia to the east. It is the second-largest lake in South America (after Maracaibo). **Hence Statement 2 is Correct.** More than 25 rivers empty their waters into Titicaca; the largest, the Ramis, draining about two-fifths of the entire Titicaca Basin, enters the north-western corner of the

lake. One small river, the Desaguadero, drains the lake at its southern end. Forty-one islands rise from Titicaca's waters, the largest of which, Titicaca Island. **Hence Statement 3 is Correct.**

63. Consider the following countries:

- 1. Australia
- 2. United Kingdom
- 3. Russia
- 4. France

With how many of the above-mentioned countries India has held 2+2 Ministerial Dialogue?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (C)

Explanation: The 2+2 meetings signify the participation of two high-level representatives, Ministers holding Foreign and Defence portfolios, from each of the two countries who aim to enhance the scope of dialogue between them.

India's 2+2 Partners: The US is India's oldest and most important 2+2 talks partner.

Additionally, India has held 2+2 meetings with ministers from **Australia, Japan, the United Kingdom and Russia.**

Recently, 5th Edition of the India-US 2+2 Ministerial Dialogue took place, where both countries highlighted progress in various areas of bilateral cooperation including defense, semiconductors, emerging technology, space, health etc.

64. Consider the following statements about Crop Residue Management (CRM) Scheme

- 1. It is a Central Sector Scheme of Ministry of Agriculture & Farmers Welfare to address the issue of stubble burning by assisting farmers.
- 2. Farmers receive financial assistance at a rate of 80% for the purchase of crop residue management machinery.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (A)

Explanation: The Crop Residue Management (CRM) Scheme is a **Central Sector Scheme of the Ministry of Agriculture & Farmers Welfare (MoA&FW) that aims to address the issue of stubble burning by assisting farmers in the procurement of crop residue management machinery. Hence Statement 1 is**

Correct.

Farmers receive financial assistance at a rate of 50% for the purchase of crop residue management machinery. **Hence Statement 2 is incorrect.**

Cooperative Societies, Farmer Producer Organizations (FPOs), and Panchayats receive financial assistance at a rate of 80% for establishing Custom Hiring Centres (CHCs).

65. Which of the following is correct regarding PET plastic.

- (a) PET plastic is a common type of plastic used to make bottles, containers, and synthetic fibres.
- (b) It is known for its transparency, lightweight nature, and recyclability.
- (c) It produces less product waste due to its resistance to breakage and denting.
- (d) All of the above

Answer: (D)

Explanation: PET plastic, or polyethylene terephthalate, is a **widely used thermoplastic polymer that is known for its versatility, durability, and recyclability.** It is commonly used to make a variety of **products, including:** Bottles and containers: PET is a popular choice for beverage bottles due to its clarity, strength, and ability to withstand high pressures. It is also used for food containers, such as yogurt tubs and deli trays.

Synthetic fibers: PET is a **major component of synthetic fibers, such as polyester and Dacron.** These fibers are used in a wide range of applications, including clothing, textiles, and industrial products.

Other applications: PET is also used in a variety of other products, such as **films, sheets, and strapping.** It is a versatile material that can be used in a wide range of applications.

PET plastic is a good choice for many applications because it is:

Transparent: PET is a **clear, transparent plastic that allows consumers to see the product inside.** This is important for food packaging, as it allows consumers to see the quality and condition of the product.

Lightweight: PET is a **lightweight plastic that is easy to transport and handle.** This makes it a good choice for packaging, as it can help to reduce transportation costs.

Recyclable: PET is a **recyclable plastic that can be processed into new products.** This helps to reduce the amount of PET plastic that ends up in landfills.

Durable: PET is a **durable plastic that is resistant to breakage and denting.** This makes it a good choice for products that need to withstand wear and tear.

66. Consider the following statements, with reference to Electoral Trusts:

1. They are interest-free bearer instruments to donate money to political parties that was announced in the 2017 Union Budget.
 2. It can be formed by any company registered under Section 25 of the Companies Act, 1956.
 3. Electoral Trusts must donate 95% of contributions received in a financial year to political parties.
- How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: An Electoral Trust is a trust set up by companies to distribute contributions received from other companies and individuals to political parties.

The Electoral Trusts Scheme was introduced by the UPA government in 2013. The scheme was meant to facilitate donations to political parties by corporates and individuals. **Hence, statement 1 is not correct. Any company registered under Section 25 of the Companies Act, 1956, can form an electoral trust.**

Under the Income-tax Act, 1961, any citizen of India, a company registered in India, or a firm or Hindu Undivided Family or association of persons living in India, can donate to an electoral trust. **Hence, statement 2 is correct.**

The electoral trusts have to apply for renewal every 3 financial years. They must donate 95% of contributions received in a financial year to political parties registered under the Representation of the People Act, 1951. The contributors' PAN (in case of a resident) or passport number (in case of an NRI) is required at the time of making contributions. **The electoral trusts route is transparent on contributors and beneficiaries. Only one contributor and one beneficiary of a particular trust is known to the public.** Electoral bonds, on the other hand, are exempt from disclosure requirements. **The key difference between the Trusts and Bonds is in the degrees of transparency they offer and the Bonds Scheme's focus on the anonymity of donors. Hence, statement 3 is correct.**

67. Consider the following statements, with reference to Red Sanders:

1. It is endemic to few districts in Andhra Pradesh.
2. It is listed as Appendix II under Convention on International Trade in Endangered Species of wild fauna and flora (CITES) since 1994.
3. India was recently included in the Review of Significant Trade process of CITES for Red Sanders.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation:

Red sanders is also known as red sandalwood, is a tree species with the scientific name **Pterocarpus santalinus**. It is endemic to few districts in Andhra Pradesh. **The species is listed as Appendix II under Convention on International Trade in Endangered Species of wild fauna and flora (CITES) since 1994.** The species has been subjected to threats of illegal harvesting and smuggling leading to their depletion from natural forest. **Red sanders wood sourced from artificially propagation (plantations) comprise a major part of legal export.** The Red sanders species was listed for Review of Significant Trade (RST) process of CITES since 2004. **India was recently removed from the Review of Significant Trade process of CITES for Red Sanders.** The CITES RST process enables disciplinary action in the form of trade suspensions directed at countries that do not meet their obligations. This is a process through which the CITES Standing Committee places increased scrutiny on the exports of a species from a country to determine if the Convention is being properly implemented. In the past, it has even led to a recommendation to suspend trade with India. Hence, statement 3 is not correct.

68. Consider the following statements, with reference to 'Cyclone Vardah':

1. It was the result of a tropical cyclone that formed in the Arabian Sea.
2. It began as a depression (low pressure) over the Andaman Sea and gradually strengthened into a cyclonic cyclone.
3. The Arabian Sea's warm sea surface temperatures and lengthier sea travel are to blame for the intensification.

How many of the statements given above are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Cyclone Vardah, a tropical cyclone, originated in the southeast Bay of Bengal. **It was created as a depression (low pressure) over the Andaman Sea and later slightly intensified further as a cyclonic storm.** The reason for the intensification can be attributed to the warm sea surface temperatures of

the Bay of Bengal and longer sea travel. **Hence, statement 1 and 3 are not correct.**

69. Consider the following statements regarding Vampire Viruses:

1. They are pathogens that attach themselves to other viruses in order to proliferate.
2. They form when a bacteriophage binds to a soil-borne virus.

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: Several 'Vampire Viruses' have just been found for the first time on US territory. They are pathogens that attach themselves to other viruses in order to proliferate. They form when a **bacteriophage attaches to a soil-based virus and uses its "life" to survive on its own.** A satellite and a helper virus interaction exist between two diseases. **The satellite is the infectious strand that relies on the helper for survival throughout its life cycle.** Satellites rely on their host organism as well as a helper virus to complete their life cycle. **The satellite virus relies on the helper virus to construct the protective shell that surrounds its genetic material, known as a capsid,** or to assist it in replicating its DNA. After entering the cell, most satellite viruses have a gene that permits them to integrate into the host cell's genetic material. From then on, anytime a helper enters the cell, the satellite will be able to replicate. When the host cell divides, it copies both the satellites and its own DNA. **Hence, both statements are correct.**

70. 'Kangri' that has recently been in the news, is related to which of the following?

- (a) Traditional dance
- (b) Musical instrument
- (c) Breed of cattle
- (d) Earthenware heater

Answer: (D)

Explanation: The Kangri, also known as **Kanger or Kangid, is pottery filled with blazing embers and housed in lovely handmade wicker baskets.** Kashmiris store a portable and moving heater in their pheran, a long woollen cloak extending down to the knees used by people during the cold winters. A pot may hold roughly 250 grammes of charcoal, and a pheran fire can endure for hours. **It keeps people warm throughout the severe winter months, when temperatures can fall below -20°F.** It is famous for its outer shell constructed of willow wicker reeds, which grow

abundantly in the marshes of Ganderbal region in north Kashmir. Hence, option (d) is correct.

71. Consider the following statements, with reference to INDUS-X Initiative:

1. It will enable the defence industries of India and the US to come together to jointly develop and produce military equipment, including the transfer of technology.
2. The Gurukul initiative is aimed to help the innovators and start-ups to navigate in the defence eco-system of the US and India.
3. INDUS-X was launched 2023 to expand strategic technology partnership and defines industrial cooperation between India and US.

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 1st INDUS-X Investors Meet held was held at Delhi ahead of 2+2 Indo-US Ministerial Dialogue. **INDUS-X stands for enhanced strategic and defence partnership between India and the US.** It is aimed at deepening the partnership between the US and Indian defence innovation sectors. **INDUS-X was launched in June 2023 to expand strategic technology partnership and defines industrial cooperation between governments, businesses, and academic institutions of India and US.** INDUS-X will focus on advancing high-tech cooperation and fostering joint research, development, and production opportunities in the defence sector. **The INDUS-X initiative will enable the defence industries of both India and the US to come together to jointly develop and produce military equipment, including the transfer of technology.** INDUS-X Investors Meet was organised by the Innovations for Defence Excellence (iDEX) under the Department of Defence Production, Ministry of Defence and US Department of Defence. The INDUS-X Educational Series (Gurukul) was also launched during the event. **INDUS-X Educational Series is named as Gurukul that aims to help the innovators and start-ups to navigate in the defence eco-system of the US and India. Hence, all statements are correct.**

72. Consider the following statements, with reference to Nayi Chetna 2.0:

1. It is a campaign that aims to advance the rights of women and gender-diverse individuals.
2. It is led by the Ministry of Women and Child Development.

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 Nayi Chetna Campaign aims to advance the rights of women and gender-diverse individuals, for a life without fear, and gender-based discrimination and violence. Campaign activities will deepen awareness on gender-based violence (GBV) amongst self-help group members and encourage GBV reporting. **It will also address social norms which sanction and help such forms of violence to prevail. Hence, statement 1 is correct.**

The campaign is to be launched on 25 November which is the International Day for the Elimination of Violence against Women. It will be observed across 34 Indian states and UTs till 23 December. **The annual campaign will be led by DAY-NRLM's self-help groups network of over 9.8 crore rural women members with the spirit of a Jan Andolan or people's movement.** Participating ministries includes: Ministry of Panchayati Raj, Ministry of Women and child development, Ministry of Home Affairs, Ministry of Law and Justice, Ministry of Information and Broadcasting, Ministry of Youth Affairs and Sports, Ministry of Education and Literacy Ministry of Social Justice and Empowerment, Ministry of Health and Family Welfare.

73. Apophis, recently seen in the news is related to which of the following?

- (a) A metric for measuring the global warming potential of a gas.
- (b) A landmark deal by UNEP that aims to halt and reverse biodiversity loss by 2030.
- (c) A near-Earth object (NEO) that was identified as one of the most hazardous asteroids that could impact Earth.
- (d) A monitoring initiative by the World Meteorological Organization (WMO) to monitor greenhouse gases.

Answer: (C)

Explanation: NASA probe to observe Apophis, an asteroid as wide as Empire State Building near-Earth encounter. Asteroid 99942 Apophis is a near-Earth object (NEO) estimated to be about 1,100 feet (340 meters) across. **Apophis was identified in 2004 as one of the most hazardous asteroids that could impact Earth.** It is a stony asteroid believed to consist mostly of silicate materials along with iron and nickel. **A radar observation campaign in March 2021, combined with precise orbit analysis, allowed astronomers to**

conclude that there is no risk of Apophis impacting our planet for at least a century. Its next approach in 2029 will bring the asteroid within a cosmic cat's whisker of Earth - less than one-tenth the moon's distance. **OSIRIS-Rex has been rebranded as OSIRIS-APEX to probe the Apophis by the NASA.** The spacecraft is set to observe the asteroid's Earth flyby as it nears and ultimately catches up with Apophis. Tidal forces could trigger landslides on Apophis and dislodge rocks and dust particles to create a comet-like tail. **Hence, option (c) is correct.**

74. Consider the following statements regarding Kashmiri saffron:

1. It is cultivated and harvested in the Karewa (highlands) of Jammu and Kashmir.
2. It is one of the only 3 Globally Important Agricultural Heritage Systems (GIAHS) of India recognised so far.

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: Kashmiri saffron, also known as **Zafran or Kesar**, is cultivated and harvested in the Karewa (highlands) of Jammu and Kashmir, especially Pampore. **Globally Important Agricultural Heritage Systems (GIAHS) by the FAO recognizes 3 agricultural heritages in India:**

1. Koraput Traditional Agriculture, Odisha
 2. Kuttanad below Sea Level Farming System, Kerala
 3. Pampore Saffron Heritage, Jammu & Kashmir
- Hence, both statements are correct.

75. The animals that are extinct now include which of the following?

1. Sumatran Elephant
2. Bali tiger
3. Japanese sea lion
4. Syrian wild ass

Select the correct answer using the code given below:

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 1, 3 and 4
- (d) 1, 2, 3 and 4

Answer: (B)

Explanation: The animals that are extinct now includes Formosan clouded leopard, Bali tiger, Schomburgk's deer, Japanese sea lion and Syrian wild ass.

Sumatran elephant is not extinct and are present between 2,400 and 2,800 in numbers. **In 2012, the Sumatran elephant was changed from "Endangered" to "Critically Endangered."**

Formosan clouded leopard – A leopard species was first described in 1862. Within the next 120 years, it went extinct in its home range in Taiwan. An extensive 15-year survey from 1997 to 2012 also failed to find any individuals.

Bali tiger – It is a tiger species was believed to have gone extinct in the 1950s. **The species was described as being the smallest tiger on the Sunda Islands.**

After a 2017 reform in taxonomy, this species was brought under *Panthera tigris sondaica*, which includes the extant Sumatran tiger.

Schomburgk's deer – **This species of deer was endemic to Thailand and resembled the barasingha.**

It was described in 1863. The deer's population dwindled after Thailand intensified rice cultivation, and was last recorded in 1938.

Japanese sea lion – This species of aquatic mammal went extinct in the 1970s. Until 2003, it was thought to be a subspecies of the California sea lion, but has since been classified as a separate species. It was driven to extinction by over-hunting and possibly submarine warfare during World War II.

Syrian wild ass – **This equine species was also called the hemippe.** It was rendered extinct by 1927 by overhunting as well as by the consequences of World War I. It was the **smallest equine species and couldn't be domesticated.**

76. Consider the following statements, with reference to City Investments to Innovate, Integrate and Sustain (CITIIS) 2.0 Programme:

1. CITIIS 2.0 envisages fostering climate-sensitive planning in Indian cities and driving investments into urban climate action through specific projects.
2. It is an initiative of the Ministry of Urban Affairs.
3. All 100 Smart Cities are eligible to seek assistance under CITIIS 2.0 programme.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: The second phase of the City Investments to Innovate, Integrate and Sustain (CITIIS) programme was recently launched by the Ministry of Housing and Urban Affairs. **CITIIS 2.0 envisages fostering climate-sensitive planning in Indian cities and driving investments into urban climate action through specific projects. The CITIIS 2.0 is an**

initiative of the Urban Affairs Ministry in collaboration with the following:

- French Development Agency (AFD),
- KfW Development Bank,
- European Union and
- National Institute of Urban Affairs (NIUA).

The programme aims to drive investments into urban climate action through competitively selected projects promoting a circular economy with a focus on integrated waste management. **CITIIS 2.0 will complement the Smart Cities Mission and converge with the Swachh Bharat Mission to enable innovation throughout the value chain of waste management in our cities.** All 100 Smart Cities are eligible to seek assistance under CITIIS 2.0 programme. Hence, all statements are correct.

77. 'Global Plastics Outlook: Policy Scenarios to 2060' Report is released by which of the following organisation?

- (a) International Union for Conservation of Nature (IUCN)
- (b) Organisation for Economic Co-operation and Development (OECD)
- (c) World Meteorological Organization (WMO)
- (d) Intergovernmental Panel on Climate Change (IPCC)

Answer: (B)

Explanation:

Global Plastics Outlook: Policy Scenarios to 2060 Report is released by the Organisation for Economic Co-operation and Development (OECD). The report states that if the present trends persist, the global plastic production will triple and exceed 1 billion tonnes by the year 2060. The report indicates that the plastic pollution will rise in almost threefold increase in plastics use driven by rising populations and incomes without any radical action taken. **The report estimates that almost 2/3rd of plastic waste in 2060 will be from short-lived items such as packaging, low-cost products and textiles.** Globally, plastic leakage to the environment is seen doubling to 44 million tonnes (Mt) a year. The build-up of plastics in lakes, rivers and oceans will more than triple, as plastic waste balloons from 353 Mt in 2019 to 1,014 Mt in 2060. About 350 million tonnes of plastic waste are generated every year of which less than 10% is recycled. The share of plastic waste that is successfully recycled is projected to rise to 17% in 2060 from 9% in 2019. The incineration and landfilling of plastic waste will continue to account for around 20% and 50% of plastic waste respectively. **Hence, option (b) is correct.**

78. Consider the following statements, with reference to the second Voice of Global South Summit:

1. This initiative brings together 125 countries of the Global South to share their perspectives and priorities on a common platform.
2. The summit is hosted by India.

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: Second Voice of Global South Summit brings together 125 countries of the Global South to share their perspectives and priorities on a common platform. This summit will focus on sharing with countries of the Global South the key outcomes achieved in various G20 meetings over the course of India's Presidency. **The summit will be structured into 10 sessions and the inaugural and concluding sessions will be at the head of state/government level, and hosted by Prime Minister Narendra Modi.** The Summit will serve as a platform to discuss ways to sustain the momentum generated towards our common aspiration of a more inclusive, representative and progressive world order. **Recently, the Prime Minister Narendra Modi also inaugurated a global centre for excellence for the Global South countries called DAKSHIN.** Hence, both statements are correct.

79. Consider the following:

1. Eye movement
2. Facial movements
3. Audio quality
4. Body Movement

How many of the above are used to identify deepfakes?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (D)

Explanation: A video that supposedly shows actress Rashmika Mandanna entering an elevator has ignited a firestorm of controversy on the internet. The original video features a British Indian girl, Zara Patel, whose face was morphed to insert Mandanna's face instead. Here's how many deep fakes can be spotted: **Unnatural Eye Movements:** Deepfake videos often exhibit **unnatural eye movements or gaze patterns.** In genuine videos, eye movements are typically smooth and coordinated with the person's speech and actions.

Mismatches in Color and Lighting: Deepfake creators may struggle to **reproduce accurate colour tones and**

lighting conditions.

Compare and Contrast Audio Quality: Deepfake videos often use AI-generated audio that may have subtle imperfections.

Strange Body Shape or Movement: Deepfakes may sometimes result in unusual body shapes or movements. Legs, for example, may appear excessively long or short, or the body may move in an unusual or distorted manner.

Artificial Facial Movements: Deepfake software may not always accurately replicate genuine facial expressions.

Unnatural Positioning of Facial Features: Deepfakes may occasionally exhibit distortions or misalignments in these features, which can signify manipulation.

Awkward Posture or Physique: Deepfakes may struggle to maintain a natural posture or physique. Hence, all are correct.

80. With reference to the Arunachal Yak churpi, consider the following statements:

1. Arunachal Yak churpi is a traditional cheese created from the milk of yaks, a kind of animal that is accustomed to high-altitude environments.
2. Arunachal Yak churpi has received Geographical Indication (GI) status.
3. Churpi is a fundamental part of the region's tangible cultural legacy and plays an important role in conserving and passing on Arunachal Pradesh's cultural heritage.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Arunachal Yak churpi is a traditional cheese made from the milk of yaks, which are a breed of cattle adapted to high-altitude regions. Arunachal Yak churpi is highly valued for its nutritional content, particularly its protein content. **Arunachal Yak churpi has been granted the Geographical Indication (GI) designation.** Churpi holds deep cultural significance in the daily lives and traditions of the people of Arunachal Pradesh. Churpi is an integral part of the tangible cultural heritage of the region and plays a vital role in preserving and passing on the cultural heritage of Arunachal Pradesh. **Hence, all statements are correct.**

81. Consider the following statements, with reference to Pahari painting:

1. Pahari painting is a style of miniature painting that developed in the independent states of the Himalayan foothills in India.

2. The roots of the miniature painting tradition traces back to the Buddhist Pala dynasty.

3. Pahari paintings is confined to religious epics such as Mahabharat and Ramayana, Puranas, and Gita.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Pahari denotes 'hilly or mountainous' in origin. **Pahari painting is a style of miniature painting that developed in the independent states of the Himalayan foothills in India.** The roots of the miniature painting tradition go back to the Buddhist Pala dynasty, which ruled Bengal and Bihar from the 8th century until the end of the 11th century. Pahari paintings demonstrate challenges in their territorial classification. **Pahari paintings featured both religious and secular subjects. Detailed paintings based on religious epics such as Mahabharat and Ramayana, Puranas, and Gita were frequently painted in the style. Basohli painting is a school of Pahari miniature painting that flourished in the Indian hill states during the late 17th and the 18th centuries, known for its bold vitality of colour and line. Miniature painting also flourished in the Deccan region between the 16th and 19th centuries. Hence, statement 3 is not correct.**

82. Consider the following statements, with reference to PM Janjati Adivasi Nyaya MahaAbhiyan:

1. It aims to ensure last-mile welfare scheme delivery and protection for Particularly Vulnerable Tribal Groups (PVTGs).
2. Under the scheme, monthly cash assistance will be provided for tribal children's education.

Which of the above 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: **PM Janjati Adivasi Nyaya MahaAbhiyan aims to ensure holistic development of tribal groups.** It is meant to ensure last-mile welfare scheme delivery and protection for Particularly Vulnerable Tribal Groups (PVTGs). The scheme aims to benefit and saturate the families and habitations with basic facilities. It is a 24,000-crore project for vulnerable tribal groups. It was **launched by the Prime Minister Shri Narendra Modi on the occasion of Janjatiya**

Gaurav Diwas (Tribal Pride Day). Modi also launched the **Viskist Bharat Sankalp Yatra**, a nationwide programme to reach out to all villages and include those eligible for various central schemes. **Hence, statement 2 is not correct.**

83. Consider the following statements, with reference to Public Safety Act (PSA), 1978:

1. It is a preventive detention law where a person can be held under preventive detention up to two years.
2. The Act extends to all over India.
3. Article 22(a) of the Constitution states that no person who is arrested shall be detained in custody without being informed.

How many of the statements given above are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Public Safety Act (PSA), 1978 is also called as The Jammu And Kashmir Public Safety Act, 1978. The act extends only to the state of Jammu and Kashmir. It is a preventive detention law where a person can be held under preventive detention up to two years. It is very similar to the National Security Act that is used by other state governments for preventive detention. **A person can be detained for the following reasons:**

- Threat to the maintenance of the public order to the state.
- Smuggling or abetting the smuggling of liquor.
- Engaging in transporting or concealing or keeping smuggled liquor.

When a person is detained under the PSA, the District Magistrate or Divisional Commissioners communicates the reason for the detention in writing, within 5 days. In exceptional circumstances, the DM can take 10 days to communicate these grounds. **Article 22(a) of the Constitution states that no person who is arrested shall be detained in custody without being informed. Hence, statement 2 is not correct.**

84. With reference to the Global TB Report 2023, consider the following statements:

1. TB is the world's highest leading cause of death from a single infectious agent in 2022.
2. India's TB mortality increased in the year 2022 as compared to year 2021.
3. There was an increase in reporting of TB cases in 2022.
4. India accounts for approximately one-fourth of the total TB cases in the world

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

Explanation: TB remained the world's second leading cause of death from a single infectious agent in 2022. **Hence, statement 1 is not correct.**

This reduced India's contribution towards global mortality from 36 per cent in the previous years to 26 percent in 2022. **Hence, statement 2 is not correct.**

There was an increase in reporting of TB cases, crossing even the pre-pandemic high with 24.2 lakh cases in 2022. **Hence, statement 3 is correct.** India accounts for 27 percent of the total TB cases globally, according to the recently released Global TB Report 2023 by the World Health Organisation. **Hence, statement 4 is correct.**

India, Indonesia, and the Philippines, which accounted for a large share (60%) of global reductions in the number of people newly diagnosed with tuberculosis in 2020 and 2021, all recovered to levels higher than in 2019.

85. Midhili, Hamoon and Mocha were in the news recently, they are:

- (a) Recent Earthquake epicenters in Nepal
- (b) Cyclones in the Indian Ocean Region
- (c) Mountain ranges in the Atlantic Ocean
- (d) Volcanic region in Hawaii Island

Answer: (B)

Explanation: Cyclone Midhili, which crossed the Bangladesh coast weakened from a 'deep depression' into a 'depression', as per the India Meteorological Department (IMD). **"Deep Depression (remnant of Cyclonic Storm "Midhili") over Tripura & adjoining Bangladesh weakened into a Depression and about 50 km east-southeast of Agartala and 160 km southwest of Silchar.** Mizoram, Tripura, and Assam witnessed rainfall of varied intensity through Friday. Meanwhile, the first day of the three-day Meghalaya Cherry Blossom Festival was cancelled due to bad weather conditions. The cyclonic storm was also expected to bring heavy rainfall in the coastal districts of West Bengal and some parts of Odisha but no major impact was felt in these areas, according to the IMD. **Cyclone Midhili is the second cyclonic formation to hit the Bangladesh coast quickly after cyclone Hamoon.** The name 'Midhili' was given by the Maldives. Countries affected by the Arabian Sea and Bay of Bengal cyclones rotationally give names of cyclones in a sequence. **Hence, option (b) is correct.**

86. Consider the following statements, with reference to Halal:

1. 'Halal' is associated with Islamic dietary laws to refer to food that is procured, processed and traded in compliance with Islamic belief.
2. It is similar to 'jhatka' which involves delivering a powerful, single blow to the back of the animal's neck, decapitating it.
3. Regional coordinating committees of the Food Safety and Standards Authority of India (FSSAI) is the official regulator for the certification of halal products.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Halal is an Arabic word that loosely translates to 'permissible' in English. In the Quran, the term 'halal' is used to designate the categories of lawful (and allowed) while 'haram' means forbidden and is used to designate the categories of unlawful (and forbidden). **The two items of food that are most commonly considered haram (non-halal) are pork (pig meat) and intoxicants (alcohol).** Even meats that are not pork must satisfy specific requirements relating to their source, the way the animal was killed, and how it was processed, to qualify as halal. **Halal is particularly associated with Islamic dietary laws to refer to food that is procured, processed and traded in compliance with Islamic belief. Hence, statement 1 is correct.**

It is similarly to the 'kashrut' dietary rules followed by orthodox Jews, who only consume food that is 'kosher', which is permitted in Jewish law. In the Indian context, halal is mostly used to refer to the slaughtering technique used by Muslims. This involves killing the livestock or poultry through a single cut to the jugular vein, carotid artery and the windpipe with a sharp knife at the front of the neck. Animals must be alive and healthy at the time of slaughter, and all blood must be drained from the carcass. **During the process, recitation of prayers, known as shahada, is also prescribed. Halal is in contrast to the 'jhatka' method, which is preferred by many Hindus and Sikhs.** Jhatka method involves delivering a powerful, single blow to the back of the animal's neck, decapitating it. Jhatka specifically involves stunning animals prior to slaughter, a practice that is not allowed in Islam. Most meat shops owned by Muslims announce their products as 'halal' whereas those owned by Hindus or Sikhs declare themselves as 'jhatka' establishments. **The halal or**

haram go beyond food, depending on any consumable item, whether they are produced in accordance with Islamic law. Hence, statement 2 is not correct.

Halal certificates simply tell a consumer whether a product meets the requirements for being considered halal or not. They do not indicate the presence of meat, or in and of themselves, have nothing to do with meat. **India does not have an official regulator for the certification of halal products.** But there are various halal certifying agencies that provide companies, products or food establishments with halal certifications. Their legitimacy lies in their name-recognition among Muslim consumers as well as recognition from regulators in Islamic countries. **Hence, statement 3 is not correct.**

87. Consider the following statements, with reference to Lunar Sample Return Mission (LSRM):

1. It aims to bring back rock or soil samples from the Tiranga point in Moon.
2. It is a proposed mission by the Indian Space Research Organisation (ISRO).
3. The Geosynchronous Satellite Launch Vehicle (GSLV) Mark-II will be used for the injection of the transfer and the re-entry modules.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Lunar Sample Return Mission (LSRM) is the proposed mission by the Indian Space Research Organisation (ISRO) to collect soil or rock samples from the Moon and bring them to Earth. **Lunar Sample Return Mission (LSRM) aims to bring back rock or soil samples from the Shiv Shakti point in Lunar.** The Shiv Shakti point is spot where Vikram had landed on the lunar South Pole. **The proposed mission will have 2 separate launch vehicles. The Geosynchronous Satellite Launch Vehicle (GSLV) Mark-II will be used for the injection of the transfer and the re-entry modules. Whereas the Launch Vehicle Mark-III will be used for the direct injection of the Ascender and the Lander module.** A robotic arm mechanism will be used for the sample collection at the Shiv Shakti point. **The LSRM, like Chandrayaan-3, is planned for one lunar day (14 Earth days) and the expected launch date is in 2028. Hence, statement 1 is not correct.**

88. Consider the following statements, with reference to State of the Cryosphere Report, 2023:

1. According to the report, Himalayas will be expected to lose 50% of its ice, if global average temperatures touch 2°C.
2. Cryosphere comprises Earth's frozen water in ice sheets, sea ice, permafrost, polar oceans, glaciers and snow.

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: Cryosphere is composed of **Earth's frozen water in ice sheets, sea ice, permafrost, polar oceans, glaciers, and snow as ground zero for climate change.** The State of the Cryosphere Report, 2023 is released by the International Cryosphere Climate Initiative. It is a network of policy experts and researchers working to preserve the Earth's cryosphere.

Key findings of the report:

1. The Himalayas are also expected to lose **50% of today's ice if global average temperatures touch 2°C.**
2. Nearly all tropical glaciers, most mid-latitude glaciers and Polar Regions will disappear even if the world manages to limit global temperature rise to 2 degrees Celsius, above the preindustrial era.
3. Sea ice around Antarctica hit an all-time low summer and winter record in 2023.
4. Water temperatures in parts of the Arctic and North Atlantic were 4-6°C higher than normal.
5. When permafrost thaws, it releases CO₂ and methane emissions, which will cause a spike in temperatures even if human emissions reach zero.
6. The Earth's ice sheets lost 7,560 billion tonnes of ice between 1992 and 2022. The last decade alone has witnessed the seven worst years of ice loss.
7. Ice sheets in Greenland and parts of Antarctica could contribute between 12-20 metres of sea-level rise at 2°C.
8. This 2°C will result in extensive, potentially rapid, irreversible sea-level rise from Earth's ice sheets and 3°C will further speed up this loss within the next few centuries.

Hence, both statements are correct.

89. Consider the following statements regarding Sea buckthorn, recently seen in the news:

1. It is a shrub that produces little orange or yellow berries high in vitamins.
2. It is most common in India's Western Ghats.

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: Ladakh's sea buckthorn fruit recently received a GI designation. **Hippophae rhamnoides (sea buckthorn) is a shrub native to Europe and Asia.** It is found in India above the tree line in the Himalayan region, mostly in arid places like the frigid deserts of Ladakh and Spiti. It grows naturally on 11,500 hectares in the Ladakh region. **It has little orange or yellow berries that are acidic in taste but high in vitamins, particularly vitamin C. Hence, statement 1 is correct.** The plant is drought-resistant and can endure temperatures ranging from minus 43 degrees Celsius to 40 degrees Celsius. Because of these two features, the shrub is an excellent plant species for establishing in cold deserts. **Sea Buckthorn berries have the unusual property of remaining intact on the shrub throughout the winter months, despite subzero temperatures.** It has a long history of use for a number of reasons. Every part of the plant, including the fruit, leaf, twig, root, and thorns, has traditionally been utilized as medicine, a nutritional supplement, fuel, and a fence. Many bird species eat the berries when other food sources are scarce in the area. **Cold desert animals like as sheep, goats, donkeys, cattle, and double-humped camels feed on the leaves, which are high in protein. As a result, it is generally known as the 'Wonder Plant,' 'Ladakh Gold,' 'Golden Bush,' or 'Gold Mine' of frigid deserts. Hence, statement 2 is not correct.**

90. Which of the following is the best description of the recently reported 'Cosmic Vine'?

- (a) A dark matter formation cluster in deep space.
- (b) A gigantic structure encompassing many galaxies.
- (c) A wormhole network connecting distant galaxies.
- (d) A space-time anomaly in the vicinity of the Milky Way galaxy.

Answer: (B)

Explanation: A team of astronomers has discovered a massive galactic structure known as the "Cosmic Vine." **It is a gigantic "vine-like structure" that spans over 13 light-years and comprises 20 galaxies.** It's also pretty old. It has a redshift of 3.44, indicating that it is in the early cosmos, according to the researchers. A redshift of 3.44 indicates that light from the Cosmic Vine travelled for between 11 and 12 billion years before arriving at JWST. To put things in perspective, current approaches place the universe's age at 13.7 billion years. **It is home to two of the most massive galaxies ever identified at such a high redshift—Galaxy A and Galaxy E, both of which are in a dormant state, indicating a slower rate of star production.** The Vine, according to researchers, could be the forerunner to a galaxy cluster, revealing insights into the genesis of

such clusters and the rise of big galaxies inside them.
Hence, statement (b) is correct.

91. Consider the following statements, with reference to Battery Waste Rules, 2022:

1. The Rules have for the first time defined measurable targets for collection and recycling within a compliance timeframe.
2. The rules include all types of batteries regardless of chemistry, shape, volume, weight, material composition and use.
3. The rules have introduced Fit for 55 package to reduce greenhouse gas emissions by 55% by 2030 by incentivising battery refurbishers.

How many of the statements given above is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The concept of Extended Producer Responsibility (EPR) serves as the foundation for Battery Waste Rules, 2022. **Under the Rules, the battery manufacturers, importers and automakers that produce products with batteries have the obligation of Extended Producer Responsibility (EPR). The Rules have mandated that EPR registration system to be managed online on a portal by the Central Pollution Control Boards (CPCB).** The collecting, recycling, and refurbishing of used batteries is the responsibility of battery manufacturers, including importers. **The rules include all types of batteries regardless of chemistry, shape, volume, weight, material composition and use.** The Rules bring within its ambit all manufacturers, producers, collection centres, importers, re-conditioners, refurbishers, dismantlers, assemblers, dealers, recyclers, auctioneers, vehicle service centres, consumers and bulk consumers. The rules cover the battery manufacturers, importers and automakers that produce products with batteries. The Rules have for the first time defined measurable targets for collection and recycling within a compliance timeframe. The rules have set the target of 90% recovery of the battery material. 70 % of battery recovery by 2024-25, then 80 % by 2026, and 90 % after 2026-27 onwards. **The “Fit for 55” package – Is a set of legislative proposals by the European Union (EU) to reduce greenhouse gas emissions by 55% by 2030. Hence, statement 3 is not correct.**

92. Consider the following statements, with reference to Hard Currency:

1. Hard currency refers to money that is issued by a nation that is seen as politically and economically stable.
2. The US Dollar is the most dominant hard currency, often considered the world’s primary reserve currency.

Which of the following 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: India in recent times have attempted to transform Indian rupee (INR) into a hard currency. **Hard currencies are widely accepted around the world for international transactions and are considered a reliable and stable store of value.** The presence of a currency as a hard currency reflects perceived stability, reliability and economic strength of its issuing country. **A hard currency is expected to remain relatively stable through a short period of time, and to be highly liquid in the forex or foreign exchange (FX) market.** Transforming a currency into a hard currency is a complex process that hinges on several pivotal factors. The process requires significant systemic changes, which could, potentially, destabilise country’s economy. India should work to make local currency settlements more robust which would allow the economy to stabilise and strengthen, making the transition smoother and less risky. **The US Dollar is the most dominant hard currency, often considered the world’s primary reserve currency.** The most tradable currencies in the world are **the U.S. dollar (USD), European euro (EUR), Japanese yen (JPY), British pound (GBP), Swiss franc (CHF), Canadian dollar (CAD) and the Australian dollar (AUD).** **Within the hard currency group, the Canadian and Australian dollars are sensitive to commodity prices. Hence, both statements are correct.**

93. ‘Freemartinism’, sometimes seen in the news is related to which of the following?

- (a) A different type of RNA gene that is cut into shorter pieces of 23-30 bases that can trap a virus.
- (b) An ideology that proposes peaceful protest for civil rights that would lead to sympathetic media coverage and public opinion.
- (c) A sexual abnormality in cattle that causes infertility in female cattle born as twins to a male.
- (d) A mathematical theory that finds connections between number theory and harmonic analysis.

Answer: (C)

Explanation: In animal husbandry, cattle that are born exhibiting characteristics of both sexes are called freemartins. **Freemartins are sterile female cattle that result from the twinning of a male and a female within the same uterus.** This phenomenon occurs in approximately 90% of such twin pregnancies in cattle. **The key reason is the exchange of blood between the male and the female fetuses during gestation.** Genetically, freemartinism is attributed to the sharing of cells carrying the Y chromosome from the male twin with the female twin. **This chromosome triggers the development of male reproductive organs in the male foetus, while the female foetus, affected by the presence of male hormones, experiences incomplete development of its reproductive system.** The end result is that the freemartin has an underdeveloped or non-functional reproductive tract. **Hence, statement (c) is correct.**

94. Consider the following statements regarding Nitrogen-9:

1. It is an unusual isotope of Nitrogen which was not considered feasible till recently.
2. Nitrogen-9 nucleus is characterised by a combination of either 5 protons and 4 neutrons, or 4 protons and 5 neutrons.
3. This proton-neutron disparity has a critical effect on the isotope's stability, influencing its decay processes as well as overall behaviour.

How many of the above statements is/are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Most nitrogen comes as the **isotope Nitrogen-14, with 7 protons and 7 neutrons.** But Scientists recently discovered hints of the new isotope, called nitrogen-9, by smashing beams of oxygen isotopes into beryllium atoms in the U.S. National Superconducting Cyclotron Laboratory. **Nitrogen-9 nucleus is characterised by 7 protons and 2 neutrons – which is an unusually high proton-to-neutron ratio.** This disparity has a critical effect on the isotope's stability, influencing its decay processes as well as overall behaviour. For one, the high proton content places nitrogen-9 atoms beyond the conventional stability thresholds. **Hence, statement 2 is not correct.**

95. Consider the following statements, with reference to Rhododendron:

1. Rhododendron is a genus of flowering plants that includes trees, shrubs and creepers.
2. Rhododendrons are indicator species for climate change and is an integral part of rituals and

mythology.

3. Rhododendrons are endemic to North Temperate Zone of the Himalayas.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: In recent times the rhododendron's development and blooming schedules are affected by rising temperatures and changed precipitation patterns. **Rhododendron is a genus of flowering plants that includes over a thousand species, including trees, shrubs and creepers.** Rhododendron, meaning rose tree in Greek, is considered an indicator species for climate change. **Rhododendrons were first recorded by Captain Hardwick in Jammu and Kashmir in 1776 where he spotted the Rhododendron arboreum.** Rhododendrons are native chiefly in the North Temperate Zone, especially in the moist acidic soil of the Himalayas and into Southeast Asia to the mountains of New Guinea. **Rhododendrons are not endemic to North Temperate Zone of the Himalayas and can be found across the world.** Darjeeling and Sikkim Himalayas comprise only 0.3% of India's geographical area but the region is home to 1/3rd (34%) of all Rhododendron types. **The most characteristic aspect of the rhododendron is its vivid and striking flowers in red, pink, white, and purple hues.** The rhododendron blossom is one of the Uttarakhand's numerous jewels and it is a representation of grace, tenacity and cultural value. The rhododendron's development and blooming schedules are affected by rising temperatures and changed precipitation patterns. **Hence, statement 3 is not correct.**

96. Consider the following statements:

1. The Jawahar Tunnel is a roadway tunnel built beneath the Rohtang Pass in the Himalayas' eastern Pir Panjal range.
2. The Atal Tunnel provides year-round road connectivity between Srinagar and Jammu.
3. The Silkyara-Barkot tunnel is part of the Central Government's planned Char Dham all-weather road project.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Atal Tunnel (also known as **Rohtang Tunnel**) is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal range of the Himalayas on the Leh-Manali Highway in Himachal Pradesh, India. Hence, statement 1 is not correct.

Jawahar Tunnel is also called the **Banihal Tunnel**. The length of the tunnel is 2.85 km. The tunnel facilitates round-the-year road connectivity between Srinagar and Jammu. Hence, statement 2 is not correct.

Recently, an under-construction **Silkyara-Barkot tunnel** along the Yamunotri National Highway in Uttarkashi district, Uttarakhand, collapsed, trapping a significant number of workers inside. The **Silkyara-Barkot tunnel** is part of the ambitious Char Dham all-weather road project of the Central Government. Hence, statement 3 is correct.

97. Consider the following statements:

1. The UNCCD is the only legally binding framework in place to address desertification and the effects of drought.
2. According to the UNCCD, natural sources account for 25% of worldwide dust emissions, while human activities account for the remaining 75%.

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 UNCCD is the only legally binding framework set up to address desertification and the effects of drought. **There are currently 197 Parties to the Convention, including 196 country Parties and the European Union. Hence, statement 1 is correct.**

According to the UNCCD, sand and dust storms are caused by both natural and human factors. About 75% of global dust emissions originate from natural sources in the world's drylands, such as hyper-arid regions, topographic depressions, and dry ancient lake beds. The remaining 25% are attributed to human activities, mainly agriculture. **Hence, statement 2 is not correct.**

98. Consider the following statements regarding **Transit Anticipatory Bail**:

1. It is requested when a case against a person is expected to be filed in a state other than the one where the individual is arrested.
2. It is defined in the Code of Criminal Procedure (CrPC).

Which of the above statements is/are not correct?

- (a) 1 only
- (b) 2 only

- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (B)

Explanation: The Supreme Court has ruled that the Sessions Court or High Court has the authority to award interim/transit anticipatory bail when the FIR is registered in a separate state rather than within the jurisdiction of the same state. **Bail is a judicial release from custody of an accused person on the condition that the accused person appear in court at a later date. Anticipatory Bail is the bail granted to a person in anticipation and apprehending arrest.** Anticipatory Bail is bail before the arrest, and the police can't arrest an individual if the Court has granted anticipatory Bail. **It is meant to be a safeguard for a person who has false accusations or charges made against him/her, most commonly due to professional or personal enmity, as it ensures the release of the falsely accused person even before he/she is arrested.** A transit anticipatory bail is sought when a case against a person has been or is likely to be filed in a state different from the one in which the person is likely to be arrested. **The purpose of transit bail is to allow the person bail, so they can approach the appropriate court in the state in which the case has been filed for anticipatory bail.** In the absence of transit anticipatory bail, the result would be that another state's police could arrest a person from their home state without them having the opportunity to apply for anticipatory bail at all. The procedure to be followed in transit anticipatory bail is exactly the same as of any other anticipatory bail application. The concept of transit anticipatory bail is not codified in Indian law but has found its identity through judicial practice and legal precedents. **Hence, statement 1 is correct.**

99. Consider the following statements, with reference to **Emissions Gap Report, 2023**:

1. It is an annual report launched by the United Nations Environment Programme (UNEP).
2. The Global greenhouse gas emissions have reduced in 2021 when compared to 2020.
3. India has contributed only 5% to the global warming during 1850-2021.

How many of the statements given above is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: According to the recent Emissions gap report, 2023, countries' current emissions pledges to limit climate change would still put the world on track to warm by nearly 3 degrees Celsius this century.

Emissions Gap Report is an annual report released by the United Nations Environment Programme (UNEP).

The report assesses countries' promises to tackle climate change compared with what is needed.

The report assessed countries' Nationally Determined Contributions (NDCs), which they are required to update every 5 years. **Key findings of the report:**

- The world faces between 2.5 C and 2.9 C of warming above preindustrial levels if governments do not boost climate action.
- The planet-warming greenhouse gas emissions must fall by 42% by 2030 to hold warming at 1.5 C.
- The chance of now limiting warming to 1.5 C is just 14%, adding to a growing body of scientific evidence suggesting the goal is dead.
- Global greenhouse gas emissions rose by 1.2% from 2021 to 2022, reaching a record 57.4 gigatonnes of carbon dioxide equivalent.
- The anticipated level of warming is slightly higher than 2022 projections, which then pointed toward a rise of between 2.4 C and 2.6 C by 2100.
- GHG emissions across the G20 also increased by 1.2 % in 2022.
- India accounts for 18% of the world population, but to date only contributed 5% of warming.

Hence, statement 2 is not correct.

100. With reference to the Technology Development Board, consider the following statements:

1. It is a statutory body which aims to promote the development and commercialization of indigenous technology.
2. It provides equity capital or loans to industrial concerns and financial assistance to research and development institutions.

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 **Technology Development Board (TDB) and the Small Industries Development Bank of India (SIDBI) have formalised a Memorandum of Understanding (MoU) to support the Micro, Small, and Medium Enterprise (MSME) sector in India.** The Technology Development Board Act of 1995 established it as a statutory body. **Its goal is to encourage the development and commercialization of indigenous technology, as well as the modification of imported technology for broader application.** It supports industrial firms with equity capital or loans, as well as financial help to research and development institutions. The Fund has received funds from the Government of India derived from cess collections

from industrial enterprises in accordance with the requirements of the Research and Development Cess Act, 1986, as modified in 1995. **Hence, both statements are correct.**

101. Consider the following statements, with reference to Tantalum:

1. Tantalum is a rare metal that is very hard and corrosion-resistant.
2. It has the highest melting point after tungsten and rhenium.
3. It is used in the production of electronic components.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Recently, a team of researchers from the Indian Institute of Technology (IIT), Ropar has found the presence of tantalum, a rare metal, in the Sutlej River sand in Punjab. **Tantalum is a rare metal that was discovered in 1802 by the Swedish chemist Anders Gustaf Ekeberg.** It is bright, very hard, silver-grey metal of Group 5 of the periodic table. **It is characterized by its high density, extremely high melting point, and excellent resistance to all acids except hydrofluoric at ordinary temperatures. It has 3rd highest melting point next to tungsten and rhenium.** As tantalum has a high melting point, it is frequently used as a substitute for platinum, which is more expensive. It possesses high corrosion resistance, because when exposed to air, it forms an oxide layer that is extremely difficult to remove, even when it interacts with strong and hot acid environments. **When pure, tantalum is ductile, meaning it can be stretched, pulled, or drawn into a thin wire or thread without breaking.** It is almost completely immune to chemical attack at temperatures below 150°C and is attacked only by hydrofluoric acid, acidic solutions containing the fluoride ion and free sulphur trioxide. It is mined in many places including Australia, Canada and Brazil. **Tantalum is non-toxic and has no known biological role.** One of the main uses of tantalum is in the production of electronic components. **The capacitors made from tantalum are capable of storing more electricity in smaller sizes without much leakage than any other type of capacitor.** Tantalum causes no immune response in mammals, so has found wide use in the making of surgical implants. **It is very resistant to corrosion and so is used in equipment for handling corrosive materials.** It is also used to make components for chemical plants, nuclear power plants, aeroplanes and missiles. Tantalum alloys can be

extremely strong and have been used for turbine blades, rocket nozzles and nose caps for supersonic aircraft. Hence, all statements are correct.

102. Consider the following statements, with reference to 'E Prime Layer':

1. It is a new earth layer that is formed in the inner most part of the earth's core.
2. It is formed as a result of surface water penetrating deep into the planet which alters the composition of liquid core's outermost region.

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: Recently, a study by an international team of researchers revealed the formation of a new enigmatic layer – E prime layer at the outermost part of Earth's core. **Earth comprises 4 primary layers that includes:**

- An 'inner core' at the planet's centre
- 'Outer core' that surrounds the inner core
- Mantle
- Crust

A new enigmatic layer or E prime layer is formed at the outermost part of Earth's core. **It is formed as a result of "surface water penetrating deep into the planet" altering the composition of the metallic liquid core's outermost region.** The material exchange between the core and mantle is small. But the experiments revealed that when water reaches the core-mantle boundary, it reacts with silicon in the core, forming silica. **Layer formation process –**

- Tectonic plates carrying surface water have transported it deep into the Earth over billions of years.
- Upon reaching the core-mantle boundary about 1,800 miles below the surface, this water initiates significant chemical changes, influencing the core's structure.

Findings by the international team –

- The team observed that sub-ducted water reacts chemically with core materials under high pressure.
- This reaction leads to the **formation of a hydrogen-rich, silicon-depleted layer at the outer core, resembling a film-like structure.**
- Silica crystals generated by this process ascend and blend into the mantle, impacting the overall composition.
- These modifications in the liquid metallic layer could potentially result in reduced density and altered seismic characteristics. **Hence, statement 1 is not correct.**

103. Consider the following statements, with reference to Indo-Pacific Economic Framework for Prosperity (IPEF):

1. IPEF was launched by the USA along with partner countries such as Australia, India, Japan and Republic of Korea.
2. The frame work has 4 main pillars that includes Trade, Supply Chains, 'Clean Energy Decarbonisation and Infrastructure' and 'Tax and Anti-Corruption'.
3. India have joined all the 4 pillars of the frame work.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The recently concluded negotiations of IPEF agreement on "fair economy" dealing with corruption would give a big support to India's efforts to bring back proceeds of crime and corruption parked overseas. **The IPEF was launched in Tokyo in May 2022.** The 14 members of the IPEF include India, US, Australia, Brunei, Fiji, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand and Vietnam. They account for 40% of the world economic output and 28% of trade. **This framework will advance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness for our economies.** Through this initiative, the IPEF partners aim to contribute to cooperation, stability, prosperity, development, and peace within the region. **The 4 pillars of the frame work includes:**

- Trade
- Supply Chains
- Clean Energy, Decarbonisation and Infrastructure
- Tax and Anti-Corruption

India has joined 3 pillars expect the trade pillar. The IPEF is designed to be flexible that the IPEF partners are not required to join all four pillars. It seeks to address the vulnerabilities and disruption in supply chains would not in any way take away the country's sovereign rights to impose export restrictions on products or change tariffs. **Under the IPEF Fair Economy Agreement members have resolved to cooperate for combating corruption and seizing proceeds of crime.** Hence, statement 3 is not correct.

104. It is indigenous to the Indo-Pacific region and has earned the moniker 'Sea Gold' due to its high market demand, notably in China. Aside from its monetary worth, it is treasured for its health benefits. Its collagen content promotes skin health

by avoiding wrinkles, gaining it the reputation of a natural anti-aging product. Furthermore, the Omega-3 in it is thought to improve newborns' IQ by stimulating brain cell proliferation.

With which of the following the above passage is related?

- (a) Abalone
- (b) Sea Cucumber
- (c) Sea Urchin
- (d) Ghol Fish

Answer: (D)

Explanation: The ghol fish is primarily found in the Indo-Pacific region. Its habitat spans from the Persian Gulf to the expansive waters of the Pacific Ocean.

Economic Significance:

- The ghol fish has a **substantial market demand in China and other Asian countries.**
- Ghol fish is also known as 'Sea Gold' for its high market value. Its meat is exported to European and Middle-Eastern countries, while the dried air bladder is in high demand, especially in China.

Benefits:

- Good for eye health and helps in maintaining eyesight.
- **Prevent ageing and wrinkles, the collagen content in the ghol fish prevents wrinkles and also keeps the elasticity of the skin intact.**
- Omega-3 content in ghol fish improves the Intelligence Quotient (IQ) of infants if fed on a regular basis – it stimulates the growth of brain cells. Hence, option (d) is correct.

105. What is the major goal of the recently publicized SATHEE Portal?

- (a) To encourage student entrepreneurship and innovation
- (b) To provide free entrance exam help and coaching
- (c) To give mental health and well-being counselling
- (d) To provide scholarships and financial aid for higher study

Answer: (B)

Explanation: The Ministry of Education (MoE) recently announced that it would write to all states to urge students to use the newly released exam preparation platform, SATHEE (Self-Assessment Test and Help for Entrance Exams). **The Ministry of Education has launched a new effort to give students with a free learning and assessment platform.** It will assist students in obtaining free training and coaching for competitive examinations. **The platform's goal is to bridge the gap for kids in society who cannot afford the expensive entrance exam guidance and coaching. It will provide students with preparation materials in English, Hindi, and other regional Indian languages so that they can prepare for exams such as JEE and NEET. It will be valuable for candidates studying for CAT,**

GATE, UPSC, and other competitive exams. It will also provide candidates with the opportunity to obtain experience in coaching centres. **The website will include videos created by IIT and IISC faculty members to assist students in preparing for competitive tests.** The videos would also assist pupils in learning concepts and revising topics in which they are weak. **It makes use of a locally produced AI program called Prutor, which was created by IIT-Kanpur. Hence, option (b) is correct.**

106. Consider the following statements regarding the Ayushman Bharat Mission:

1. The Union government will now call the existing Ayushman Bharat Health and Wellness Centres 'Ayushman Arogya Mandir'.
2. Implementing agency is National Health Authority (NHA) under the Ministry of Health and Family Welfare.
3. Beneficiaries for the scheme are picked up from the Socio-Economic Caste Census (SECC) of 2011.

How many of the above statements are correct?

- (A) Only one
- (B) Only two
- (C) All three
- (D) None

Answer: (C)

Explanation: The Union government will now call the existing **Ayushman Bharat Health and Wellness Centres 'Ayushman Arogya Mandir' with the tagline 'Arogyam Parmam Dhanam.'** Hence statement 1 is correct.

The programme is part of the Indian government's National Health Policy and is means-tested. **It was launched in September 2018 by the Ministry of Health and Family Welfare.** That ministry later established the National Health Authority as an organization to administer the program. **It is a centrally sponsored scheme and is jointly funded by both the union government and the states.** By offering services to 50 crore (500 million) people it is the world's largest government sponsored healthcare program. **Hence statement 2 is correct.**

It extends health coverage to 10 crore households or 50 crore Indians, offering a substantial cover of ₹5 lakh per family per year for medical treatment. This coverage extends to both public and private hospitals that are empaneled under the scheme. Additionally, the program facilitates cashless payment and paperless recordkeeping at the hospital or doctor's office. Eligibility for benefits is determined using criteria from the Socio Economic and Caste Census 2011. **Hence statement 3 is correct.**

107. Consider the following statements about the Special Category Status to States:

1. Presently, 10 states have special category status in India.
2. Central government covers 90% of state expenditures for centrally sponsored programs, with the remaining 10% as a zero-interest loan for Special Category States.
3. Uttarakhand, as the newest state, received this status post its separation from UttarPradesh.

How many of the above statements are correct?

- (a) Only one
- (B) Only two
- (C) All three
- (D) None

Answer: (A)

Explanation: Recognizing that some regions in the country were historically disadvantaged in contrast to the others, the **5th Finance Commission in 1969 introduced the concept of Special Category Status.**

During the 4th 5-Year plan (1969-1974), the states of Assam, Nagaland, and Jammu & Kashmir were given special status. Five more states included between 1974 and 1979 (Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tripura). Arunachal Pradesh and Mizoram added in 1990. Uttarakhand granted special status in 2001. Telangana, as the newest state, received this status post its separation from Andhra Pradesh. **Presently, 11 states have special category status: Assam, Nagaland, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tripura, Arunachal Pradesh, Mizoram, Uttarakhand, and Telangana.**

After the dissolution of the Planning Commission and the subsequent constitution of the NITI-Aayog, the recommendations of the 14th Finance Commission have been implemented, meaning that the Gadgil formula-based grants have been discontinued. But this has been compensated by the increase in devolution from the divisible pool to all states from 32% to 42%. The Centre says that the 14th Finance Commission effectively removed the concept of Special Category Status after its recommendations were accepted in 2015. **Hence statement 1 and Statement 3 are incorrect.**

The central government supports states by covering 90% of their program expenditures, with the remaining 10% as a zero-interest loan. States receive preferential treatment in funding applications and enjoy excise tax reductions to attract businesses. They are allocated a substantial 30% share of the federal budget, with access to debt reduction programs. Tax exemptions incentivize investments, and states receive preference in central funds for development projects. Flexibility to carry over unused funds allows

for effective financial planning. **Hence statement 2 is correct.**

108. Consider the following statements regarding Chavittu Nadakam:

1. Chavittu Nadakam is a folk art form closely tied to Kerala's Latin Christian heritage.
2. Its presentation bears a striking resemblance to European opera, showcasing a rich blend of cultural influences.
3. The performers wear glittering Indian Traditional costumes.

How many of the above statements are correct?

- (A) Only one
- (B) Only two
- (C) All three
- (D) None

Answer: (B)

Explanation: Chavittu Nadakam is a **Latin Christian folk art form originating in Cochin, Kerala, believed to have developed after the arrival of Portuguese missionaries.** While its costumes show European influence, historical evidence suggests Kerala had prior Western connections. **The use of Tamil and Malayalam in the playback songs and dialogue suggests its indigenous origin.** The musical play, rooted in Christian mythology, features Greco-Roman-style dress and stage decoration. This artistic expression is characterized by captivating make-up, intricate costumes, and precise gestures. **Its presentation bears a striking resemblance to European opera, showcasing a rich blend of cultural influences.** Historical debates persist regarding its creation, with some attributing it to the cultural void sensed by the Portuguese upon their arrival. **Hence statement 1 and 2 are correct. Hence statement 3 is incorrect.**

109. What material is not suitable for the accumulation of electric charge in response to mechanical stress, a phenomenon known as piezoelectricity?

- (A) DNA
- (B) Quartz
- (C) Lead zirconate titanate
- (D) Dolomite

Answer: (D)

Explanation: Piezoelectricity refers to the phenomenon where certain materials, such as **quartz or ceramics like lead zirconate titanate (PZT), and biological matter such as bone, DNA, and various proteins** produce electric charges in response to mechanical stress. **Hence Correct Answer is D.**

110. Consider the following statements regarding the Cosmic Rays:

1. Cosmic rays were discovered by Victor Hess, for which he was awarded the 1936 Nobel Prize in Physics.
2. They originate from various sources such as supernovae, active galactic nuclei and other energetic cosmic events.
3. Cosmic rays or astroparticles are high-energy particles or clusters of particles that move through space at nearly the speed of light.

How many of the above statements are correct?

- (A) Only one
- (B) Only two
- (C) All three
- (D) None

Answer: (C)

Explanation: Cosmic rays were discovered by **Victor Hess in 1912 in balloon experiments**, for which he was awarded the 1936 Nobel Prize in Physics. **Hence statement 1 is correct.**

Cosmic rays are high-energy particles, primarily composed of **protons and atomic nuclei that travel through space at nearly the speed of light**. They originate from various sources such as supernovae, active galactic nuclei and other energetic cosmic events **Hence statement 2 and 3 are correct.**

111. Consider the following statements, with reference to the recent Compressed Bio-Gas Blending Obligations (CBO):

1. CBO will be voluntary till FY 2024-2025 and mandatory from FY 2025-26.
2. It is implemented by the Ministry of Petroleum & Natural Gas.
3. CBO will be 5% of total CNG/PNG consumption from 2028-29 onwards.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: **The Ministry of Petroleum & Natural Gas recently introduced the phase wise mandatory blending of CBG in CNG (Transport) & PNG (Domestic) segments of City Gas Distribution (CGD) sector.** CBG Blending Obligation (CBO) aims to promote production and consumption of Compressed Bio-Gas (CBG) in the country. **The key objectives of the CBO include:**

1. To stimulate demand for CBG in City Gas Distribution (CGD) sector,
2. Import substitution for Liquefied Natural Gas (LNG) and
3. Saving in Forex, promoting circular economy and to assist in achieving the target of net zero emission.

It will be monitored and implemented by the Central Repository Body (CRB), Ministry of Petroleum and Natural Gas. CBO will be voluntary till FY 2024-2025 and mandatory blending obligation would start from FY 2025-26. CBO shall be kept as 1%, 3% and 4% of total CNG/PNG consumption for FY 2025-26, 2026-27 and 2027-28 respectively. From 2028-29 onwards CBO will be 5%. **Hence, all statements are correct.**

112. Consider the following statements, with reference to Chavittu Natakam:

1. It is a theatre art form that flourished at Kanyakumari in Tamil Nadu with the spread of Christianity.
2. Stamping Drama is one of the attractive features of this art where the artists produce resonating sounds by stamping the floor while dancing.

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: Recently at a stampede in Cochin University of Science and Technology, 4 students were killed including an artist who performs Chavittu Natakam. **Chavittu Natakam is a colourful and vigorous theatre form that flourished at Kodungalloor in Kerala with the spread of Christianity.** It is considered to be a folk art form noted for its attractive make-up of characters, their elaborate costumes, detailed gesture and well-defined body movements. The Portuguese are supposed to have introduced this art form in Kerala. **Chinna Thampi Pilla and Vedanayakan Pilla are considered to be the originators of this art form.** The influence of the western visual art opera can be discerned in Chavittu Natakam. Art forms like Kathakali and Kalaripayattu have also influenced Chavittu Natakam. **'Stamping Drama' is the most attractive feature of this art where the artists produce resonating sounds by stamping the floor while dancing.** This folk-drama dance takes place on a stage that is referred to as 'thattu'. The 'thattu' is laid with planks of wood. The exquisite costumes of the artistes portray the characters on stage. Generally, the costumes resemble ancient Greek-Roman soldiers and European kings. **Instruments like Chenda, Padathamber, Maddalam and Ilathalam, provides background music.** These

days Tabala, Fiddle, Flute and Bulbul are also played. **The Chavittunatakam performance opens with an invocation and the opening sequence is in the form of a Virutham.** It is a humming which is followed by a scene of a durbar and the play begins. The actors sing their lines loudly, and with exaggerated gestures stamp the wooden stage with great force. **Hence, statement 1 is not correct.**

113. Consider the following statements, with reference to Sangai Deer:

1. It is the state animal of Manipur and comes under the critically endangered category of IUCN.
2. Phumdi is the most important and unique part of Sangai's habitat.
3. It is a unique and rare species found exclusively in Khawnglung wildlife sanctuary.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The recent proposal of hydro-electric modernisation plan in the Manipur's famous Loktak Lake could be detrimental to the endangered species of Sangai deer. **Sangai Deer is also called as the Manipur Brow-antlered deer and Dancing Deer.** The Sangai is found nowhere in the world but in Manipur. It is a unique and rare species found exclusively in Manipur's Keibul Lamjao National Park (KLNPN). **Phumdi is the most important and unique part of Sangai's habitat. It is the state animal of Manipur. The IUCN Status of Sangai is Critically Endangered. It is included under the Schedule-1 of Wildlife (Protection) Act, 1972.** The Sangai population stood at 91 in 2006, 88 in 2007, 92 in 2008, 76 in 2019 and 64 in 2023. **Hence, statement 3 is not correct.**

114. Amaterasu, sometimes seen in the news recently, is related to which of the following?

- (a) A protein crucial for switching from foetal to adult haemoglobin during gene therapy.
- (b) A reproductive mechanism in which the posterior part of the body detach from the original body for mating purposes.
- (c) An extremely high-energy particle that exceeds 240 exa-electron volts (EeV).
- (d) A new species of speedy dinosaur that lived in the desert during the early Cretaceous period.

Answer: (C)

Explanation: Recently researchers have discovered an extremely high-energy particle that seemingly came

from a part of the universe where there is nothing and it was named "Amaterasu" after a Japanese goddess Amaterasu is an extremely high-energy particle that exceeds 240 exa-electron volts (EeV) and seemingly arrived from a void in space where nothing is known to exist. This energy is millions of times more powerful than the particles produced by the Large Hadron Collider, which is the most powerful accelerator ever built. It is **second only to the "Oh-My-God" particle, another high-energy cosmic ray detected in 1991.** That came in at 320 EeV. Ultra-high energy particles like Amaterasu usually travel through space quite smoothly since they don't bounce off magnetic fields, like low-energy cosmic rays but it is not in case of Amaterasu. **The scientists propose 3 explanations for the enigmatic origin of the particle. It could be from a source that we have not yet identified.** It might have been magnetically deflected much higher than current models predict. Scientists might need to rewrite their incomplete understanding of high-energy particle physics. **Hence, statement (c) is correct.**

115. Which of the following states has emerged as the only state in the country that has completed the social audit of work done under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in all village panchayats in the state?

- (a) Maharashtra
- (b) Gujarat
- (c) Kerala
- (d) Goa

Answer: (C)

Explanation: Kerala has emerged as the **only state in the country that has completed the social audit of work done under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** in all village panchayats in the state. According to the State Social Audit Unit, which cited data from the Union Rural Development Ministry, **social audits for the first six months of the current fiscal year have been completed in all 941 village panchayats in Kerala.** Apart from Kerala, only three other states have achieved more than 60 percent progress in the social audit. As per section 17 of the MGNREG Act 2005, gram sabhas in village panchayats have to monitor the execution of works within that local body and conduct mandatory regular social audits of all the projects under the scheme. **The aim of social audit is to ensure that the benefits of development schemes reach their genuine beneficiaries. Hence, option (c) is correct.**

116. Consider the following statements, with reference to Rat-Hole Mining:

1. Rat-hole mining is a method of extracting coal from narrow, horizontal coal beds.

2. This practice of mining is prevalent in Meghalaya.
3. The practice of rat-hole mining is banned in India.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: With large metal pieces hindering machine drilling in Uttarakhand tunnel rescue operation, now it has been planned to use Rat-Hole Mining method to drill the remaining few meters. **Rat-hole mining is a method of extracting coal from narrow, horizontal coal beds which is prevalent in Meghalaya. The term "rat hole" refers to the narrow pits dug into the ground, typically just large enough for one person to descend and extract coal.** Once the pits are dug, miners descend using ropes or bamboo ladders to reach the coal seams. The coal is then manually extracted using primitive tools such as pickaxes, shovels, and baskets. Once the coal seam is found, rat-hole-sized tunnels are dug horizontally through which workers can extract the coal. **Rat hole mining poses significant safety and environmental hazards.** The mines are typically unregulated, lacking safety measures such as proper ventilation, structural support, or safety gear for the workers. **The mining process can cause land degradation, deforestation, and water pollution.** They often persist due to economic factors and the absence of viable alternative livelihoods for the local population. **The National Green Tribunal (NGT) banned the practice of rat-hole mining in 2014, and retained the ban in 2015. Hence, all statements are correct.**

117. Consider the following passage:

It is covered by dry deciduous, moist deciduous and semi evergreen forests of Sahyadri hills in the Western Ghats. It is situated in the Shimoga district of Karnataka. The tree species here include Teak, Sandal, Rosewood, Honne and Nandi. The wildlife such as Elephant, Bison, Spotted deer, Tiger and Panther can be spotted here.

The above passage best describes which of the following sanctuary?

- (a) Shettihalli Wildlife Sanctuary
- (b) Bhadra Wildlife Sanctuary
- (c) Chinnar Wildlife Sanctuary
- (d) Dandeli Wildlife Sanctuary

Answer: (A)

Explanation: Recently the National Green Tribunal has set a dead line of 6 months in issuing Eco-Sensitive

Zone tag, which may resolve the confusion over the boundaries of the sanctuary. **Shettihalli Wildlife Sanctuary is situated in the Shimoga (Shivamogga) district of Karnataka and is home to a variety of flora and fauna. The sanctuary is divided into 3 zones, namely- core zone, buffer zone and tourism zone.** It was declared a wildlife sanctuary on November, 1974. The Tunga Anicut Dam is situated within the sanctuary and provides shelter for otters and water birds. **The Mandagadde Bird Sanctuary is also a part of the Shettihalli Wildlife Sanctuary.** It is covered by dry deciduous, moist deciduous and semi evergreen forests of Sahyadri hills in the Western Ghats. The tree species here include Teak, Sandal, Rosewood, Honne and Nandi. The wildlife such as Elephant, Bison, Spotted deer, Tiger and Panther can be spotted here. The hilly area forms the catchment basin for Kumadwathi River. **The sanctuary has many tourist attraction spots like Elephant camp at Sacrebyle, Mandagadde Bird Sanctuary and Tiger and Lion Safari at Thyavarekoppa. Hence, option (a) is correct.**

118. Consider the following statements, with reference to Saurauia Punduana:

1. It is a critically endangered plant species that is endemic to Sikkim in India.
2. The flowers of Saurauia Punduana turn white to pink on maturity and fruits of it are used in veterinary medicine.

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: The Saurauia Punduana were recorded for the first time in Manipur during a recent Rapid Biodiversity Assessment (RBA) field survey. **Saurauia Punduana is a critically endangered plant species under International Union for Conservation of Nature (IUCN) Red List.** The native range of this species is from Bhutan to Southeastern Tibet. Flowers of Saurauia Punduana turn white to pink on maturity. Petals are pink, ovate to obovate curled at the tip. Its fruits are spherical shining white, and are used in veterinary medicine. **In India it is distributed across Sikkim, Arunachal Pradesh and Assam. The native range of this species is from Bhutan to South-eastern Tibet that includes India, Bangladesh, Bhutan, Myanmar and Tibet. Hence, statement 1 is not correct.**

119. 'Just Transition', often seen in the news is related to which of the following?

- (a) It generally means starting a transition from unsustainable energy use to sustainable energy use.

(b) It refers to the unavoidable social and financial transition impacts caused by extreme weather events.

(c) It describes a shift to a low-carbon or net-zero economy without jeopardising the rights of workers and the needs of communities.

(d) It refers to a five-year review in which countries assess where they are in the fight against climate change.

Answer: (C)

Explanation: The term describes a shift to a low-carbon or net-zero economy without jeopardising the rights of workers and the needs of communities, which could be affected due major changes to industries like fossil fuels. **Hence, option (c) is correct.**

120. Consider the following statements regarding Guru Nanak Dev Ji:

1. Guru Nanak Dev Ji was born in the 15th century in present-day Pakistan.
2. He founded Sikhism and preached the concept of "Ik Onkar," emphasizing the belief in a single, formless divine entity.

3. Guru Nanak Dev Ji's spiritual journey included extensive travels known as "Udasis," during which he spread his teachings across different regions.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Guru Nanak Dev Ji was born on April 15, 1469, in the village of Talwandi, which is now in Pakistan and is known as Nankana Sahib. **Guru Nanak Dev Ji founded Sikhism and preached the concept of "Ik Onkar," emphasizing the belief in a single, formless divine entity that transcends all religious divisions. Guru Nanak Dev Ji's spiritual journey included extensive travels known as "Udasis," during which he traveled to various regions, spreading his teachings and promoting the message of equality, peace, and oneness. Hence, all statements are correct.**



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Practice MCQs on Conventional Subjects- November 2023

1. What are the possible actions an Election Commission can take against candidates and political parties?

1. Election Commission cannot bar candidates or leaders from campaigning for specified periods.
2. The EC monitors the adherence of political parties and candidates to the 'Model Code of Conduct'.
3. It can postpone elections to any constituency, cancel an election already notified, but cannot abrogate or annul an election already held.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The EC monitors the adherence of political parties and candidates to the 'Model Code of Conduct'. If the violations are also offences under election law and the criminal law of the land, the EC has the power to recommend registration of cases against the offenders. **However, for some violations — such as canvassing for votes during a period when electioneering is barred, making official announcements while the MCC is in force, and making appeal to voters on sectarian grounds — the EC has the power to advise or censure candidates,** in addition to directing registration of cases. In some cases, the EC may bar candidates or leaders from campaigning for specified periods. Asking individuals to leave a constituency or barring entry into certain areas are other powers that the EC may exercise. These powers are not necessarily traceable to any provision in law, but are generally considered inherent because of the sweeping and plenary nature of the EC's responsibility under the Constitution to ensure free and fair elections. Its powers extend to postponing elections to any constituency, cancelling an election already notified, and even to abrogate or annul an election already held. **Hence, only statement 2 is correct.**

2. Consider the following statements regarding the office of 'whip':

1. The office has been established by Rules of Business in each House of Parliament.
2. Only the ruling party is allowed to have a whip in each house of Parliament.

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 office of 'whip' is mentioned neither in the Constitution of India nor in the Rules of the House nor in a Parliamentary Statute. It is **based on the conventions of the parliamentary government.** Every political party, whether ruling or Opposition has its own whip in the Parliament. **He is appointed by the political party to serve as an assistant floor leader. He is charged with the responsibility of ensuring the attendance of his party members in large numbers and securing their support in favour of or against a particular issue.** He regulates and monitors their behaviour in the Parliament. The members are supposed to follow the directives given by the whip. Otherwise, disciplinary action can be taken. Hence, both statements are not correct

3. Consider the following statements:

1. The First Lok Sabha met on the eve of the first republic day.
2. India ceased to be a British dominion immediately post-enactment of the constitution.

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: First Lok Sabha met in 1952 Under GV Mavalankar. The Indian Independence Act 1947 merely converted India into a British dominion. It ceased to be dominion only after 26th January 1950. **Till 1952, the Constituent assembly itself functioned as the law-making body.** The Lok Sabha was duly constituted for the first time on 17 April 1952 after the first General Elections. **Hence, statement 2 is correct.**

4. The first Law Commission was established, under the Chairmanship of Lord Macaulay by the:

- (a) Government of India Act 1935
- (b) Charter Act of 1833
- (c) Law Commission Act, 1867
- (d) Government of India Act of 1919

Answer: (B)

Explanation: Law Reform in the ancient period was ad hoc and not institutionalised. However, since the third decade of the nineteenth century, Law Commissions were constituted by the Government from time to

time. The first law commission was established in 1834 under the Charter Act of 1833. Thereafter, the second, third and fourth Law Commissions were constituted in 1853, 1861 and 1879 respectively helped adapt English Laws to Indian conditions. The First Law Commission of Independent India was established in 1955 with the then Attorney-General of India, Mr. M. C. Setalvad, as its Chairman. Hence, option (b) is correct.

5. The Constitution lays down which of the following qualifications for a person to be chosen a member of the state legislature:

1. He must be a citizen of India.
2. He must be not less than 25 years of age in the case of the legislative council and legislative assembly.
3. He must make and subscribe to an oath or affirmation before the person authorised by the Election Commission.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The Constitution lays down the following qualifications for a person to be chosen a member of the state legislature.

- (a) He must be a citizen of India.
- (b) He must make and subscribe to an oath or affirmation before the person authorised by the Election Commission for this purpose. In his oath or affirmation, he swears
- (i) To bear true faith and allegiance to the Constitution of India
- (ii) To uphold the sovereignty and integrity of India
- (c) He must be not less than 30 years of age in the case of the legislative council and not less than 25 years of age in the case of the legislative assembly.
- (d) He must possess other qualifications prescribed by Parliament. Hence, statement 2 is not correct.

6. With reference to Union Budget, which of the following is/are covered under Capital receipts?

1. Disinvestment
2. Revenue from Income tax
3. Funds from Public Provident Fund
4. Interest and dividend on government investment

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Government receipts which either (i) create liabilities (e.g. borrowing) or (ii) reduce assets (e.g. disinvestment) are called capital receipts. Thus when govt. raises funds either by incurring a liability or by disposing off its assets, it is called a capital receipt. Two examples of Capital Receipts which create liability are Borrowing and raising of funds from Public Provident Fund and Small savings deposits.

Two examples of Capital Receipts which reduce assets are Disinvestment and Recovery of Loans.

Disinvestment by government means selling a part or whole of its shares of public sector undertakings. Funds raised from disinvestment reduce government assets. Hence, option 1 and 3 are correct.

7. Gross Domestic Capital Formation (GDCF), often seen in the Budget and Economic Surveys, essentially refers to:

- (a) Money circulation in public hands
- (b) Capitalization of the Banking sector
- (c) Direct Retail Investment in consumer goods sector
- (d) Creation of Infrastructure or durable economic assets

Answer: (D)

Explanation: Capital formation means creation of physical assets and non-physical capital consisting of public health efficiency, visible and no visible capital. Gross domestic capital formation is the addition to the capital stock within the domestic territory of a country during a year. Gross domestic capital formation includes all expenses made by household, business people and Govt, adding new durable goods to the fixed capital stock of a country. These assets are in the form of infrastructure such as buildings, roads canals, bridges, means of transport, machinery and other equipments. Hence, option (d) is correct.

8. Consider the following statements regarding difference between Consumer Price Index (CPI) and GDP deflator:

1. GDP deflator include prices of imported goods but they are not included in CPI.
2. While CPI is released by Central Statistics Office (CSO), the data on GDP deflator is released by Labour Bureau.
3. The weights are constant in CPI, but they differ according to production level of each good in GDP deflator.

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: CPI may differ from GDP deflator because:

1. The goods purchased by consumers do not represent all the goods which are produced in a country. **GDP deflator takes into account all such goods and services.**
2. CPI includes prices of goods consumed by the representative consumer; hence it includes prices of imported goods. **GDP deflator does not include prices of imported goods.**
3. The weights are constant in CPI – but they differ according to production level of each good in GDP deflator. **Ministry of Statistics and Programme Implementation (MOSPI) comes out with GDP deflator in National Accounts Statistics as price indices. Hence, only statement 3 is correct.**

9. Consider the following statements:

1. Minimum Support Price (MSP) may be both lower or higher than the prevailing market price of the particular crop.
2. All food grain procurement operations in India are undertaken by the Food Corporation of India (FCI).

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: MSP can be anything that the government considers that the farmers should fairly get. This is to help them get **fair remuneration for their produce and to motivate or demotivate them to produce a particular crop.** Hence it can be either lower or higher than the market price. For e.g. if the government wishes to discourage rice farming, it would lower the MSP of rice. **The procurement system decentralization was started in 1997 where states play a very important role in the supply chain.** Not all procurements are done by FCI. State cooperative agencies and other state-level distribution agencies also play a crucial role. **Hence, statement 1 is correct.**

10. The Agricultural Market Information System (AMIS) is an inter-agency platform to enhance food market transparency and encourage international policy coordination in times of crisis, was setup by:

- (a) World Bank
- (b) Organisation for Economic Cooperation and Development (OECD)
- (c) G20 members
- (d) World Trade Organization (WTO)

Answer: (C)

Explanation: The Agricultural Market Information System (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. Bringing together the principal trading countries of agricultural commodities, AMIS assesses global food supplies (focusing on wheat, maize, rice and soybeans) and provides a platform to coordinate policy action in times of market uncertainty. **Hence, option (c) is correct.**

11. Consider the following statements regarding Superconductivity:

1. Superconductivity is a state in which a material shows very high electrical resistance.
2. Superconducting materials can save huge amounts of energy, and be used to make highly efficient electrical appliances.
3. Superconductivity is possible only at high temperatures.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Superconductivity is a phenomenon that, so far, has been possible only at extremely low temperatures, in the range of 100°C below zero. The search for a material that exhibits superconductivity at room temperature, or at least manageable low temperatures, has been going on for decades. **Superconductivity is a state in which a material shows absolutely zero electrical resistance.** While resistance is a property that restricts the flow of electricity, superconductivity allows unhindered flow. **Because of zero resistance, superconducting materials can save huge amounts of energy, and be used to make highly efficient electrical appliances. Hence, only statement 2 is correct.**

12. A planetary-mass object is recognised as Dwarf planets if it satisfies which of the following conditions?

1. It must be in direct orbit of the sun.
2. It must have cleared the neighborhood around its orbit.
3. It must be massive enough for it to have become spherical in shape under its own gravity.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (C)

Explanation: According to the definition adopted by the International Astronomical Union (IAU) in 2006, a **dwarf planet is, “a celestial body orbiting a star that is massive enough to be rounded by its own gravity but has not cleared its neighboring region of planetesimals and is not a satellite.** In essence, the term is meant to designate any planetary-mass object that is neither a planet nor a natural satellite that fits two basic criteria. For one, it must be in direct orbit of the sun and not be a moon around another body. Second, it must be massive enough for it to have become spherical in shape under its own gravity. And, unlike a planet, it must have not cleared the neighborhood around its orbit. **Hence, statement 2 is not correct.**

13. Consider the following statements regarding Zoonotic diseases:

- (a) Zoonotic diseases are mainly infectious diseases that are naturally transmitted between vertebrate animals and humans.
- (b) Brucellosis is a zoonotic infection caused by the bacteria of the genus Brucella.
- (c) Zoonotic pathogens may be bacterial, viral or parasitic, or may involve unconventional agents.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: A zoonosis is an infectious disease that has jumped from a non-human animal to humans. **Zoonotic pathogens may be bacterial, viral or parasitic, or may involve unconventional agents and can spread to humans through direct contact or through food, water or the environment.** Various studies indicate that more than two-thirds of existing and emerging infectious diseases are zoonotic. **The transboundary impact of viral outbreaks in recent years such as the Nipah virus, Ebola, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS) and Avian Influenza.** Brucellosis is a zoonotic infection caused by the bacteria of the genus Brucella. Hence, all statements are correct.

14. Consider the following statements regarding Stem cells:

1. Stem cells are unspecialized cells capable of renewing themselves through cell division.
2. In many tissues they serve as a sort of internal repair system.
3. When a stem cell divides, each new cell will always be a stem cell.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Stem cells have the remarkable potential to develop into many different cell types in the body during early life and growth. In addition, in many tissues they serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive. When a stem cell divides, each new cell has the potential either to remain a stem cell or become another type of cell with a more specialized function, such as a muscle cell, a red blood cell, or a brain cell.

Stem cells are distinguished from other cell types by two important characteristics:

- First, they are **unspecialized cells capable of renewing themselves through cell division**, sometimes after long periods of inactivity.
- Second, under certain physiologic or experimental conditions, they can be **induced to become tissue- or organ-specific cells with special functions.**

In some organs, such as the gut and bone marrow, **stem cells regularly divide to repair and replace worn out or damaged tissues.**

Hence, statement 3 is not correct.

15. Consider the following statements:

1. The process of copying genetic information from one strand of the DNA into RNA is termed as transcription.
2. Bacteria contain only mRNA (messenger RNA) and do not have any tRNA (transfer RNA).

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (A)

Explanation: The process of copying genetic information from one strand of the DNA into RNA is termed as transcription. **In bacteria, there are three major types of RNAs: mRNA (messenger RNA), tRNA (transfer RNA), and rRNA (ribosomal RNA).** All three RNAs are needed to synthesise a protein in a cell. The

mRNA provides the template, tRNA brings amino acids and reads the genetic code, and rRNAs play structural and catalytic role during translation. **There is single DNA-dependent RNA polymerase that catalyses transcription of all types of RNA in bacteria.** RNA polymerase binds to promoter and initiates transcription (Initiation). **Hence, statement 2 is not correct.**

16. Consider the following statements regarding Ecotone:

1. A well-developed ecotone contains some organisms which are entirely different from that of the adjoining communities.
2. Mangrove forests represent an ecotone.
3. The organisms which occur primarily or most abundantly in this zone are known as edge species.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Ecotone is a zone of junction between two or more diverse ecosystems. For e.g. the mangrove forests represent an ecotone between marine and terrestrial ecosystem. Other examples are – grassland, estuary and river bank.

Characteristics of Ecotone:

1. It may be very narrow or quite wide.
2. It has the conditions intermediate to the adjacent ecosystems. **Hence it is a zone of tension.**
3. **A well-developed ecotone contains some organisms which are entirely different from that of the adjoining communities.**
4. Sometimes the number of species and the population density of some of the species is much greater in this zone than either community. This is called edge effect.
5. **The organisms which occur primarily or most abundantly in this zone are known as edge species.** In the terrestrial ecosystems edge effect is especially applicable to birds.
6. For example, the density of birds is greater in the mixed habitat of the ecotone between the forest and the desert.

Hence, all statements are correct.

17. Consider the following statements:

1. The grazing food chain is found in both Terrestrial and aquatic ecosystems.
2. The initial energy source for detritus food chain is dead organic matter.
3. The grazing and detritus food chains are not interlinked.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: A sequence of organisms that feed on one another, form a food chain. **In nature, two main types of food chains have been found: Grazing food chain and Detritus food chain.** The grazing food chain starts with producers or autotrophs as base, which is consumed by heterotrophs. **It is found in both Terrestrial and aquatic ecosystems. The Detritus food chain starts from dead organic 'matter of decaying animals and plant bodies to the microorganisms and then to detritus feeding organism called detritivores or decomposer and to other predators.** The two food chains are linked as the initial energy source for detritus food chain is the waste materials and dead organic matter from the grazing food chain. **Hence, statement 3 is not correct.**

18. Consider the following statements regarding Biomass gasification:

1. Biomass gasification is a process of converting solid biomass fuel into a gaseous combustible gas through a sequence of thermo-chemical reactions.
2. Coconut shells, groundnut shells and wheat straw can be used in biomass gasification.
3. The combustible gases generated from biomass gasification consist of only hydrogen and carbon dioxide.

How many of the above statements is/are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Biomass, a renewable organic resource, includes agriculture crop residues (such as corn stover or wheat straw), forest residues, special crops grown specifically for energy use (such as switchgrass or willow trees), organic municipal solid waste, and animal wastes. **Biomass Gasification is a process that converts organic or fossil-based carbonaceous materials at high temperatures, without combustion, with a controlled amount of oxygen and/or steam into carbon monoxide, hydrogen, and carbon dioxide.** The carbon monoxide then reacts with water to form carbon dioxide and more hydrogen. **Hence, statement 3 is not correct**

19. In dry areas of low rainfall, thorny shrubs and scrubs grow. How do such plants adapt to the low level of moisture?

1. Such plants generally have shallow roots to utilize water more efficiently.
2. Some plant leaves have thorny and waxy surface to reduce loss of moisture by transpiration.

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: They have adapted to desert conditions by developing extremely long root systems to draw water from deep underground near the water table. **The mesquite's roots are considered the longest of any desert plant and have been recorded as long as 80 feet.** Some have succulent leaves to store moisture. Some have thorny leaves to reduce water loss by transpiration. Waxy leaves protect soil moisture beneath the coating. **Hence, statement 2 is correct.**

20. Which of the following is most likely to survive in deep ocean waters?

- A. Green Algae
- B. Red Algae
- C. Brown Algae
- D. Yellow Algae

Answer: (B)

Explanation: Light is a limiting factor for life in deep oceans. Not all the colour components of the visible spectrum are available for marine plants living at different depths of the ocean. **Sunlight is broken into its seven component colours as it penetrates through the ocean water by dispersion.** Longer wavelengths cannot penetrate deeper whereas shorter wavelengths do. **Algae use photosynthesis to manufacture food. So, the ones utilizing the short wavelength for photosynthesis survive.** Red algae have red pigment (phycoerythrin) which carries out photosynthesis using only short wavelength light found in greater depths. They can be found as deep as 200 m in ocean water. **Hence, option (b) is correct.**

21. Consider the following statements regarding Individual Satyagraha:

1. After the failure of August offer Gandhi decided to initiate a limited satyagraha on an individual basis by a few selected individuals in every locality.
2. It aimed to show that nationalist patience was not due to weakness.
3. Vinoba Bhave was the first to start the individual satyagraha.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: After the failure of August offer Gandhi decided to initiate a limited satyagraha on an individual basis by a few selected individuals in every locality. **The aims of launching individual satyagraha were:**

- (i) to show that **nationalist patience** was not due to weakness;
- (ii) to express people's feeling that they were not interested in the war and that they made no distinction between Nazism and the double autocracy that ruled India; and
- (iii) to give another opportunity to the Government to accept Congress' demands peacefully.

Vinoba Bhave was the first to offer the satyagraha and Nehru, the second. By May 1941, 25,000 people had been convicted for individual civil disobedience. **Hence, all statements are correct.**

22. The ruling monarchs of which of these three chiefdoms were together called as muventars?

- (a) Hoysalas, Kakatiyas and Nayakas
- (b) Chalukyas, Rashtrakutas and Western Chalukyas
- (c) Satavahanas, Pallavas and Kadambas
- (d) Cheras, Cholas and Pandyas

Answer: (D)

Explanation: **The ruling monarchs of three chiefdoms of the Cheras, Cholas and Pandyas together were called muventars.** The Cholas ruled over the fertile Kaveri basin with Uraiyur as its capital and the important port was Puhar or Kaveripattinam. **The most important ruler of this kingdom was Karikal.** The Pandyas ruled over the pastoral and littoral parts with Madurai as capital and Korkai as important port. **Nedunjeliyan was the most famous king.** The Cheras controlled the hilly region in the west with Vanji or Karur as its capital and Muciris as the well-known port. Ashokan edicts also mention the muventars. **Hence, option (d) is correct.**

23. Consider the following statements regarding Vijayanagara Kingdom:

1. The construction of tall Raya Gopurams and Kalyana mandapam with carved pillars in the temple premises was the principal feature of Vijayanagara Kingdom.
2. The horse was the most common animal found in the pillars of the temple premises.
3. The chief items of exports were gold, silver and diamonds.

4. There was a great development in Sanskrit and Telugu literature.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All Four

Answer: (C)

Explanation: The temple building activity further gained momentum during the Vijayanagar rule. **The chief characteristics of the Vijayanagara architecture were the construction of tall Raya Gopurams or gateways and the Kalyana mandapam with carved pillars in the temple premises. Hence, statement 1 is correct.** The sculptures on the pillars were carved with distinctive features. **The horse was the most common animal found in these pillars. Hence, statement 2 is correct.**

There were a number of seaports on the Malabar coast, the chief being Cannanore. Commercial contacts with Arabia, Persia, South Africa and Portugal on the west and with Burma, Malay peninsula and China on the east flourished. The chief items of exports were cotton and silk clothes, spices, rice, iron, saltpeter and sugar. **Hence, statement 3 is not correct.**

The imports consisted of horses, pearls, copper, coral, mercury, China silk and velvet clothes. **The art of shipbuilding had developed.** Different languages such as Sanskrit, Telugu, Kannada and Tamil flourished in the regions. There was a great development in Sanskrit and Telugu literature. **The peak of literary achievement was reached during the reign of Krishna Deva Raya. He himself was a scholar in Sanskrit and Telugu. Hence, statement 4 is correct.**

24. Consider the following statements regarding the classification of lands under Akbar:

1. Parauti is land which is annually cultivated for each crop in succession and is never allowed to lie fallow.
2. Chachar is land that was allowed to lie fallow for three or four years.
3. Polaj is land left out of cultivation for a time that it may recover its strength.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The Emperor Akbar in his profound sagacity classified the lands and fixed different revenue to be paid by each.

Polaj is land which is **annually cultivated for each crop in succession and is never allowed to lie fallow.**

Parauti is land left out of cultivation for a time that it may recover its strength.

Chachar is land that was allowed to lie fallow for three or four years.

Banjar is land **uncultivated for five years and more.**

Hence, only statement 2 is correct.

25. Consider the following statements:

1. Kanishka patronised not only Buddhist scholars like Vasumitra, but also patronised important scholars like Asvagosha and Nagarjuna.

2. Kanishka sent missionaries to Central Asia and China for the propagation of Mahayana Buddhism.

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: Kanishka patronised not only Buddhist scholars like Vasumitra, but also patronised the famous physician of ancient India, Charaka. **Asvagosha and Nagarjuna** were other important scholars patronized by him. **Mahayana Buddhism came in vogue during Kanishka's rule. It was established in the Fourth Buddhist Council** convened by him where matters relating to Buddhist theology and doctrine were discussed. In Mahayana Buddhism, the Buddha came to be worshipped with flowers, garments, perfumes and lamps. **Hence, both statements are correct.**

26. A State Legislature may provide for the representation of which of the following persons in a municipality?

1. Members of the Lok Sabha and the state legislative assembly representing constituencies that comprise wholly or partly the municipal area.
2. Teachers and graduates living within the municipal area.
3. Persons having special knowledge or experience in municipal administration.

Select the correct answer using the code given below:

- (a) 1 and 3 only
- (b) 2 and 3 only
- (c) 1 only
- (d) 1, 2 and 3

Answer: (A)

Explanation: **The provision is made to augment municipal administration and the municipality may include:**

1. Persons having special knowledge or experience in municipal administration without the right to vote in the meetings of municipality.
2. The members of the Lok Sabha and the state legislative assembly representing constituencies that comprise wholly or partly the municipal area.
3. The members of the Rajya Sabha and the state legislative council registered as electors within the municipal area.
4. The chairpersons of committees (other than wards committees). **Hence, statement 2 is not correct.**

27. With reference to the 'Cantonment' boards, consider the following statements:

1. It is established for municipal administration for civilian population in the cantonment area.
2. It works under the administrative control of the Ministry of Housing and Urban Affairs.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (A)

Explanation: A cantonment board is established for municipal administration for civilian population in the cantonment area. It is set up under the provisions of the **Cantonments Act of 2006**—a legislation enacted by the Central government. It works under the administrative control of the defence ministry of the Central government. **Hence, statement 2 is not correct.**

28. Consider the following statements regarding Double Membership in Houses of Parliament:

1. If a person is elected to both the Houses of Parliament, he should exercise his option for one, otherwise, both seats become vacant.
2. If a person is elected to two seats in a House, he should exercise his option for one, otherwise, both seats become vacant.
3. If a sitting member of one House is also elected to the other House, his seat in the first House becomes vacant.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: A person cannot be a member of both Houses of Parliament at the same time. Thus, the **Representation of People Act (1951)** provides for the

following:

- (a) If a person is elected to both the Houses of Parliament, he must intimate within 10 days in which House he desires to serve. **In default of such intimation, his seat in the Rajya Sabha becomes vacant.**
- (b) If a sitting member of one House is also elected to the other House, his seat in the first House becomes vacant.
- (c) **If a person is elected to two seats in a House, he should exercise his option for one.** Otherwise, both seats become vacant.

Similarly, a person cannot be a member of both the Parliament and the state legislature at the same time. If a person is so elected, his seat in Parliament becomes vacant if he does not resign his seat in the state legislature within 14 days. **Hence, statement 1 is not correct.**

29. Which of the following principles is considered as the bedrock principle of parliamentary government?

- (a) Liberty
- (b) Sovereignty
- (c) Fraternity
- (d) Collective Responsibility

Answer: (D)

Explanation: The principle of **collective responsibility implies that the Lok Sabha can remove the ministry** (i.e., council of ministers headed by the prime minister) from office by passing a **vote of no confidence**. This is the bedrock principle of parliamentary government. The ministers are collectively responsible to the Parliament in general and to the Lok Sabha in particular (Article 75). They act as a team, and swim and sink together. **Hence, option (d) is correct.**

30. Consider the following statements:

1. Article 324 of the Constitution provides the same protection to all the election commissioners as the chief election commissioner.
2. The chief election commissioner can only be removed on the same grounds as a judge of the Supreme Court.

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 **CEC and the Election Commissioners have tenure of six years, or up to the age of 65, whichever is earlier, and enjoy the same status and receive salary and perks as available to Supreme Court judges.** The CEC and the Election Commissioners

enjoy the same decision-making power which is suggestive of the fact that their powers are at par with each other. However, Article 324(5) does not provide similar protection to the Election Commissioners and it merely says that they cannot be removed from office except on the recommendation of the CEC. **Hence, statement 2 is correct.**

31. Consider the following statements:

1. Fog is a phenomenon of small droplets remaining suspended in the air.
2. Western disturbances along the extreme northern India inhibits the development of fog over Delhi-Haryana-Punjab belt.
3. Clear sky conditions accompanied by calm winds during the day allows the fog to persist for longer than normal duration.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

Explanation: Fog is a phenomenon of small droplets remaining suspended in the air. Fog develops normally during late evening, night or early morning hours of the day, severely affecting visibility. Foggy conditions prevail over the plains of north India during the winter season and can prolong for days and sometimes even for weeks. **Fog develops over Delhi-Haryana-Punjab belt due to the passing of an active western disturbance, which cause light rain and bring fresh moisture over these regions.** Clear sky conditions accompanied by calm winds during the day allows the fog to persist for longer than normal duration. **Hence, statement 2 is not correct.**

32. Consider the following stages of Coal formation:

1. Peat deposits
2. Bituminous coal
3. Lignite
4. Anthracite coal

Arrange the above in chronological order:

- (a) 1-2-3-4
- (b) 1-3-4-2
- (c) 1-3-2-4
- (d) 1-4-3-2

Answer: (C)

Explanation: As organic material dies and is deposited in swamps or swampy lakes, the material undergoes bacterial and chemical changes to create peat deposits. Over millions of years, this peat gets buried under many layers of sediment the pressure and temperature

of the peat increases. Gradually, the **peat turns into lignite or brown coal, then sub-bituminous coal, bituminous coal, and finally hard anthracite coal.** While **coal is being formed, the decomposing organic material produces methane gas** – the main component of natural gas – **along with nitrogen and carbon dioxide.** With the pressure of being buried under sediment, most of the methane stays trapped on the surface of the coal. **Hence, option (c) is correct.**

33. Consider the following statements:

1. Garo and Khasi hills are extensions of Purvanchals in Meghalaya forming water divide between Brahmaputra and Barak River.
2. Rajmahal Hills are formed from rocks dating from the Jurassic Period and named after the town of Rajmahal which lies to the east in the state of Jharkhand.

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: Garo and Khasi hills are the extensions of peninsular part of the subcontinent. Along with the Karbi Anglong plateau, the Meghalaya plateau (comprising Garo, Khasi and Jaintia hills) is separated from the Chotanagpur plateau (part of peninsular india) by Malda fault (in Bengal). **Rajmahal Hills are formed from rocks dating from the Jurassic Period and named after the town of Rajmahal** which lies to the east in the state of Jharkhand. **Hence, statement 2 is correct.**

34. Consider the following statements regarding the physiography of India:

1. The core of the Great Himalayan is made up of limestone rocks.
2. The trough of the Narmada River is interposed between the Vindhyan and the Satpura ranges.
3. The Deccan Plateau receives heavy rainfall throughout the year as it falls on the windward side of major hills of Central and Southern India.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Limestones can't bear the heavy weight of Himalayas. The core is actually made of granite rocks. It is one of the rivers in India that flows in a rift valley, flowing west between the Satpura and Vindhya

ranges. The **Deccan Plateau is a large triangular plateau, bounded by the Vindhyas to the north and flanked by the Eastern and Western Ghats. This region is mostly semi-arid as it lies on the leeward side of both Ghats.** Much of the Deccan is covered by thorn scrub forest scattered with small regions of deciduous broadleaf forest. Climate in the Deccan ranges from hot summers to mild winters. **Hence, only statement 2 is correct.**

35. Consider the following statements regarding Ravines in India:

1. Ravines in India are a geological feature formed millions of years ago when the peninsular plate pressed against the Himalayas.
2. Ravines are mostly found in the vicinity of the Vindhyas.
3. Ravines get aggravated by soil erosion.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Ravines in India are a geological feature formed millions of years ago when the peninsular plate pressed against the Himalayas. **Almost all of India's ravines are found in the vicinity of the Vindhyas, with over 60 per cent being in Uttar Pradesh, Madhya Pradesh, Gujarat and Rajasthan,** as per the National Remote Sensing Centre, Hyderabad. However, ravines get aggravated by soil erosion, mostly caused by a flowing waterbody. The adjacent land gets eroded to form narrow depressions with sharp slopes. Over time, ravines widen, rendering land uncultivable and infertile with the erosion of the topsoil. **Hence, all statements are correct.**

36. Consider the following statements:

1. The first Five Year Plan was based on the ideas of Mahalanobis, which laid down the basic ideas regarding goals of Indian planning.
2. The Second Five Year Plan tried to build the basis for a socialist pattern of society.
3. In the first seven five-year plans, trade was characterised by import substitution strategy.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Planning, in the real sense of the term, began with the Second Five Year Plan. **The Second Plan, a landmark contribution to development planning in general,** laid down the basic ideas regarding goals of Indian planning; this plan was based on the **ideas of Mahalanobis.** In that sense, he can be regarded as the architect of Indian planning. **Industrial Policy Resolution 1956 (IPR 1956):** In accordance with the goal of the state controlling the commanding heights of the economy, **the Industrial Policy Resolution of 1956 was adopted. This resolution formed the basis of the Second Five Year Plan, the plan which tried to build the basis for a socialist pattern of society.** In the first seven plans, trade was characterised by what is commonly called an inward-looking trade strategy. Technically, this strategy is called import substitution. This policy aimed at replacing or substituting imports with domestic production. **Hence, statement 1 is not correct.**

37. Consider the following statements regarding the Importance of Fiscal Policy in India:

1. Fiscal policy plays a key role in elevating the rate of capital formation both in the public and private sectors.
2. Fiscal policy helps in providing stimulus to elevate the savings rate.
3. Fiscal policy aims to minimise the imbalance in the dispersal of income and wealth.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: In a country like India, fiscal policy plays a key role in elevating the rate of capital formation both in the public and private sectors. Through taxation, the fiscal policy helps mobilise considerable amount of resources for financing its numerous projects. **Fiscal policy also helps in providing stimulus to elevate the savings rate.** The fiscal policy gives adequate incentives to the private sector to expand its activities. **Fiscal policy aims to minimise the imbalance in the dispersal of income and wealth. Hence, all statements are correct.**

38. Consider the following statements regarding National Bank for Financing Infrastructure and Development (NaBFID):

1. NaBFID has been set up as a Development Financial Institution (DFI) to support the development of long-term infrastructure financing in India.
2. NaBFID was setup through an Executive order.
3. NaBFID shall be regulated and supervised as an All

India Financial Institution (AIFI) by the Reserve Bank of India.

4. NaBFID is funded by the Ministry of Road Transport & Highways and does not have the power to issue bonds to raise money.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

Explanation: The National Bank for Financing Infrastructure and Development (NaBFID) Act, 2021 received the assent of the President on March 28, 2021 and has come into force w.e.f. April 19, 2021.

Accordingly, NaBFID has been set up as a Development Financial Institution (DFI) to support the development of long-term infrastructure financing in India. NaBFID shall be regulated and supervised as an All India Financial Institution (AIFI) by the Reserve Bank under Sections 45L and 45N of the Reserve Bank of India Act, 1934. NaBFID was set up in 2021, by an Act of the Parliament (The National Bank for Financing Infrastructure and Development Act, 2021), with the essential objectives of addressing the gaps in long-term non-recourse finance for infrastructure development, strengthening the development of bonds and derivatives markets in India, and sustainably boosting the country's economy. The National Bank for Financing Infrastructure and Development (NaBFID) said it has raised ₹10,000 crore by issuance of listed bonds in its maiden issuance. **Hence, statement 1 and 3 are correct.**

39. Consider the following statements:

1. Minimum Support Price (MSP) may be either lower or higher than the prevailing market price of the particular crop.
2. All food grain procurement operations in India are undertaken by the Food Corporation of India (FCI).

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: MSP can be anything that the government considers that the farmers should fairly get. This is to help them get fair remuneration for their produce and to motivate or demotivate them to produce a particular crop. Hence it can be either lower or higher than the market price. For e.g. if the government wishes to discourage rice farming, it

would lower the MSP of rice. **The procurement system decentralization was started in 1997 where states play a very important role in the supply chain.** Not all procurements are done by FCI. State cooperative agencies and other state-level distribution agencies also play a crucial role. **Hence, statement 1 is correct.**

40. The Agricultural Market Information System (AMIS) is an inter-agency platform to enhance food market transparency and encourage international policy coordination in times of crisis, was setup by:

- (a) World Bank
- (b) Organisation for Economic Cooperation and Development (OECD)
- (c) G20 members
- (d) World Trade Organization (WTO)

Answer: (C)

Explanation: The Agricultural Market Information System (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. Bringing together the principal trading countries of agricultural commodities, AMIS assesses global food supplies (focusing on wheat, maize, rice and soybeans) and provides a platform to coordinate policy action in times of market uncertainty. **Hence, option (c) is correct.**

41. Consider the following statements:

1. Energy produced using various forms of ocean energy such as tidal, wave and ocean thermal energy conversion are considered as Non-Renewable Energy.
2. Osmotic energy is the energy produced from the movement of water across a membrane between a saltwater reservoir and freshwater reservoir.

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 government has declared ocean energy as Renewable Energy. Accordingly, **the Ministry of New and Renewable Energy has clarified that energy produced using various forms of ocean energy such as tidal, wave, ocean thermal energy conversion etc. shall be considered as Renewable Energy** and shall be eligible for meeting the non-solar Renewable Purchase Obligations (RPO). **Osmotic energy is a technique that produces energy from the movement of water across a membrane between a saltwater reservoir and freshwater reservoir. Hence, statement 1 is not correct.**

42. Consider the following statements regarding

Microbial Fuel Cells (MFCs):

1. These are devices that convert chemical energy to electrical energy by the oxidation of organic molecules by the action of microorganisms.
2. No moving electrons or cathode/anode are required in an MFC.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (A)

Explanation: A microbial fuel cell (MFC) is a bio-electrochemical device that harnesses the power of respiring microbes to convert organic substrates directly into electrical energy. At its core, the **MFC is a fuel cell, which transforms chemical energy into electricity using oxidation reduction reactions.** The key difference of course is in the name, microbial fuel cells rely on living biocatalysts to facilitate the movement of electrons throughout their systems instead of the traditional chemically catalyzed oxidation of a fuel at the anode and reduction at the cathode. **A MFC consists of an anode and a cathode separated by a cation specific membrane.** Microbes at the anode oxidize the organic fuel generating protons which pass through the membrane to the cathode, and electrons which pass through the anode to an external circuit to generate a current. **The trick of course is collecting the electrons released by bacteria as they respire. Hence, statement 2 is not correct.**

43. Consider the following pairs:

1. Grey hydrogen: Hydrogen not produced from fossil fuels
2. Blue hydrogen: Hydrogen generated from fossil fuels with carbon capture and storage options.
3. Green hydrogen: Hydrogen generated entirely from renewable power sources

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The sources and processes by which hydrogen is derived, are categorised by colour tabs. **Hydrogen produced from fossil fuels is called grey hydrogen;** this constitutes the bulk of the hydrogen produced today. **Hydrogen generated from fossil fuels with carbon capture and storage options is called blue**

hydrogen;

Hydrogen generated entirely from renewable power sources is called green hydrogen. In the last process, electricity generated from renewable energy is used to split water into hydrogen and oxygen. Hence, pair 1 is not correctly matched.

44. Consider the following statements regarding **Biofuels:**

1. The most common kinds of biofuels in use today are ethanol and biodiesel that represent the first generation of biofuel technology.
2. Ethanol is renewable and made from different kinds of plant materials.
3. Biodiesel is produced by combining alcohol with new and used vegetable oils and animal fats.
4. Biofuels cannot be used as rocket fuels since they have high viscosity.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (C)

Explanation: On January 31, Stardust 1.0 was launched from Loring Commerce Centre in Maine, US, becoming the first commercial space launch powered by biofuel, which is non-toxic for the environment as opposed to traditionally used rocket fuels. **Biofuels are obtained from biomass, which can be converted directly into liquid fuels that can be used as transportation fuels.** **The two most common kinds of biofuels in use today are ethanol and biodiesel** and they both represent the first generation of biofuel technology. **Ethanol, for instance, is renewable and made from different kinds of plant materials. Biodiesel on the other hand is produced by combining alcohol** with new and used vegetable oils, animal fats or recycled cooking grease. **Hence, statement 4 is not correct.**

45. Consider the following statements regarding **Block Chain Technology:**

1. It is a time-stamped series of immutable record of data that is managed by cluster of computers not owned by any single entity.
2. The blockchain network has no central authority.
3. It carries no transaction cost.

How many of the above statements are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (D)

Explanation: A blockchain is, in the simplest of terms, a time-stamped series of immutable record of data that is managed by cluster of computers not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain). **The blockchain network has no central authority** — it is the very definition of a democratized system. Since it is a shared and immutable ledger, the information in it is open for anyone and everyone to see. **A blockchain carries no transaction cost.** (An infrastructure cost yes, but no transaction cost.) **Hence, all statements are correct.**

46. Consider the following statements regarding Mangroves:

1. Mangroves are very specialised forest ecosystems of tropical and subtropical regions bordering certain sea coasts.
2. They stabilise the shoreline and act as bulwark against encroachments by the sea.
3. They do not grow in low-oxygen soil.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Mangroves are a group of trees and shrubs, sustaining in the coastal regions of the planet. **These trees grow in low-oxygen soil with slow-moving water.** These ecosystems of tropical and subtropical inter-tidal regions bordering the sheltered sea coasts and estuaries, they stabilize the shoreline and **act as a bulwark against encroachments by the sea. Hence, statement 3 is not correct.**

47. Consider the following statements:

1. Cold water corals, in general, have greater amount of zooxanthellae than warm water corals and does not build reef-like structures.
2. Cold-water corals differ from warm water corals because the former does not contain symbiotic algae for photosynthesis and grow more slowly.

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: Corals that inhabit the colder deep waters of continental shelves and offshore canyons, ranging from 50 to over 1000m depths lack zooxanthellae and may build reef-like structures or

occur solitarily. **Cold-water corals are different from their warm-water counterparts because they do not contain symbiotic algae for photosynthesis and grow more slowly.** Cold-water corals obtain all their energy from organic matter and zooplankton, which they catch from the currents drifting past. **Cold-water corals can be found over a wide range of latitudes, from tropical to Polar Regions, and from the shallow to the deep seas. Hence, statement 1 is not correct.**

48. India is a party to the Ramsar Convention and has declared many areas as Ramsar Sites. Which of the following statements best describes as to how we should maintain these sites in the context of this Convention?

- (a) Conserve all the sites for a period without any exploitation, and then allow complete use of them by future generations.
- (b) Keep all the sites completely inaccessible to man so that they will not be exploited.
- (c) Conserve all the sites through ecosystem approach and permit tourism and recreation only.
- (d) Conserve all the sites through ecosystem approach and allow their simultaneous sustainable use.

Answer: (D)

Explanation: The Ramsar Convention on Wetlands of International Importance Especially as **Waterfowl Habitat** is an international treaty for the conservation and sustainable use of wetlands. **Hence, option (d) is correct.**

49. Consider the following statements regarding International Union for Conservation of Nature (IUCN):

1. Its main aim is to mobilize the public in support of nature conservation.
2. It was involved in establishing the World Wide Fund for Nature.
3. It has observer and consultative status at the United Nations.

How many of the above statements is/are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The International Union for Conservation of Nature (IUCN) is an international organization working in the field of nature conservation and sustainable use of natural resources. It is involved in data gathering and analysis, research, field projects, advocacy, and education. IUCN's mission is to "influence, encourage and assist

societies throughout the world to conserve nature and to ensure that any use of natural resources is equitable and ecologically sustainable". Over the past decades, IUCN has widened its focus beyond conservation ecology and now incorporates issues related to sustainable development in its projects. **IUCN does not itself aim to mobilize the public in support of nature conservation. It tries to influence the actions of governments, business and other stakeholders by providing information and advice, and through building partnerships.** The organization is best known to the wider public for compiling and publishing the IUCN Red List of Threatened Species, which assesses the conservation status of species worldwide. **IUCN has observer and consultative status at the United Nations and plays a role in the implementation of several international conventions on nature conservation and biodiversity. It was involved in establishing the World Wide Fund for Nature and the World Conservation Monitoring Centre. Hence, statement 1 is not correct.**

50. Consider the following statements regarding Photochemical smog:

1. Photochemical smog is a term used to describe air pollution that is a result of the interaction of sunlight with certain chemicals in the atmosphere.
2. One of the primary components of photochemical smog is stratospheric ozone.

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: Photochemical smog (smog) is a term used to describe air pollution that is a result of the interaction of sunlight with certain chemicals in the atmosphere. **One of the primary components of photochemical smog is ozone.** While ozone in the stratosphere protects earth from harmful UV radiation, ozone on the ground is hazardous to human health. **Ground-level ozone is formed when vehicle emissions containing nitrogen oxides (primarily from vehicle exhaust) and volatile organic compounds (from paints, solvents, printing inks, petroleum products, vehicles, etc.) interact in the presence of sunlight. Hence, statement 2 is not correct.**

51. With reference to Dholavira, consider the following statements:

1. The city structure of Dholavira is divided into two parts.
2. Evidence of astronomical observatory has been received from Dholavira.

3. Evidence of the use of white stones has been found from Dholavira.

Which of the above statement(s) is/are incorrect?

- (a) 1 only
- (b) 1 and 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (A)

Explanation:

- The cities of the Harappan civilization were divided into two parts, called the **fort city in which the ruling class lived and the lower city in which the common people lived.** But Dholavira was divided into three parts i.e. **Upper Town, Middle Town and Lower Town. Hence statement 1 is incorrect.**
- Two circular structures have been found in Dholavira, which are called **astronomical observatories. Hence, statement 2 is correct.**
- Evidence of the use of white stones on a large scale has been found in the Middle Town of Dholavira. **Hence, statement 3 is correct.**

52. What is meant by the word 'Samvar' in Jainism?

- (a) The flow of Karma towards the soul due to ignorance.
- (b) Stoppage of flow of Karma towards the soul.
- (c) The cessation of pre-existing karma.
- (d) The soul becomes free from the cycle of movement

Answer: (B)

Explanation: According to Jainism, two elements exist in every living being - one is the soul and the other is the physical element that surrounds it, according to which it is the cause of the bondage of karma. Due to ignorance, karma starts getting attracted towards the soul. **This is called Asrava.** Bondage is the union of karma with the soul. By following the three jewels, the flow of karma towards the soul stops which is called Sanwar. After this the already existing karmas starts ending. This state is called **Nirjara.** When the remnant of Karma is finished, the soul attains salvation. **Hence, option (b) is correct.**

53. Consider the following statements:

1. Among the Sultans of Delhi Sultanate, Muhammad-bin-Tughlaq was the first Sultan, who participated in the festivals of Hindus.
2. Firoz Shah Tughlaq established the Public Works Department for the first time in the Sultanate period.
3. Alauddin Khilji was the first Sultan of Delhi, who imposed 'Ghari Tax' and 'Grazing Tax'.

How many statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation:

- Muhammad-bin-Tughlaq was the **first Sultan among the Sultans of Delhi Sultanate**, who participated in the festivals of Hindus (especially Holi). **Hence, statement 1 is correct.**
- **Firoz Shah Tughlat first established the Public Works Department** during the Sultanate period. **Hence, statement 2 is correct.**
- Alauddin Khilji was the first Sultan of Delhi, who imposed two new taxes. **Ghari tax** was levied on houses and huts and **grazing tax was levied on milch animals. Hence, statement 3 is correct.**

54. Consider the following statements regarding Permanent Settlement:

1. 80% of the revenue collected by the zamindars was earmarked for the government.
2. It had provision of sunset law.
3. R.C. Dutt had opposed it.

Which of the above statements is/are correct?

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2, and 3

Answer: (B)

Explanation:

- **Permanent settlement was started in 1790 for 10 years at the time of Lord Cornwallis** which was made permanent in 1793. In this arrangement, **10/11th share (90%) of the government and 1/11th share (10%) of the landlord was ensured. Hence, statement 1 is incorrect.**
- **The Permanent Settlement had a provision for the Sunset Act**, under which the Zamindari Act was auctioned off if the rent was not paid on time. **Hence, statement 2 is correct.**
- **RC Dutt supported the permanent settlement. Hence, statement 3 is incorrect.**

55. In 1940, which of the following were the reasons for proposing individual Satyagraha by the Congressmen all over the country?

1. The Congress demand for a national government was rejected.
2. Freedom of speech against the war effort was denied.
3. The British rulers were not ready to accept that India was not at war of her own free will.

4. Gandhi himself proposed Satyagraha creating more confusion for the government.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (C)

Explanation: The above statements 1, 2, 3 are correct but statement 4 is incorrect because Gandhiji and the Congress were hesitant to take advantage of Britain's crisis by waging a widespread struggle and hinder its preparations for war. That's why **Gandhiji started individual Satyagraha.**

56. Consider the following statements regarding the theory of Plate tectonics:

1. It is another name for the theory of continental drift.
2. It is the theory that Earth's outer shell is divided into several plates that glide over the mantle.
3. It discards the conventional geological view that there is convectional current flowing in the mantle.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The plates act like a hard and rigid shell compared to Earth's mantle. **This strong outer layer is called lithosphere. Plate tectonics is the modern version of continental drift, a theory first proposed by scientist Alfred Wegener in 1912.** Wegener didn't have an explanation for how continents could move around the planet, but researchers do now. **Plate tectonics is thus said to be the unifying theory of geology.** The driving force behind plate tectonics is convection in the mantle. Hot material near Earth's core rises, and colder mantle rock sinks. In terms of analogy, it is kind of a pot boiling on a stove. The convection drives plate tectonics through a combination of pushing and spreading apart at mid-ocean ridges and pulling and sinking downwards at subduction zones. **Hence, statement 2 is correct.**

57. Consider the following statements regarding Foreshocks and earthquake swarm:

1. Foreshocks are mild earthquakes that precede larger earthquakes in the same location.
2. An earthquake cannot be identified as a foreshock until after a larger earthquake in the same area occurs.

3. An earthquake swarm is a sequence of seismic events occurring in a local area within a relatively short period of time.
4. Foreshocks and earthquake swarm are mainly clustered in the north-eastern and north-western Himalayan region.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (D)

Explanation: The recent earthquakes in different parts of India, albeit of small magnitudes, have occurred due to foreshocks and swarms, a top official of the Geological Survey of India (GSI) said. **Foreshocks — mild tremor preceding earthquakes — or swarm activities — series of earthquakes — indicate release of tectonic stress and strain during the continuous deformation process**, and a detailed study of these jolts could help predict if a significant seismic event is in store. **These minor earthquakes are mainly clustered in the north-eastern and north-western Himalayan region, around the Delhi-National Capital Territory (NCT), western Gujarat and Western Maharashtra areas which have been demarcated as seismic zones IV and V. Hence, all statements are correct.**

58. Consider the following statements:

1. The temperature starts increasing with the increase in altitude in Mesosphere.
2. The temperature starts decreasing with the increase in altitude in ionosphere.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (D)

Explanation: The mesosphere lies above the stratosphere, which extends up to a height of 80 km. In this layer, **temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at the height of 80 km.** The ionosphere is located between 80 and 400 km above the mesopause. It **contains electrically charged particles known as ions, and hence, it is known as ionosphere.** Temperature here starts increasing with height. **Hence, both statements are not correct.**

59. Consider the following statements:

1. Southern ranges in eastern Himalayas have higher snowline than the northern ranges because they receive more rainfall.
2. The Eastern Ghats and Deccan Plateau are drier than Western Ghats and consequently have less diverse vegetation.

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: Himalayas are oriented east-west and their southern slopes are in direct sunshine for a larger part of the year so the snowline on the southern slopes of the ridges is higher than the northern slopes. **Also, volume of precipitation decreases from the south towards the north, therefore southern ranges in eastern Himalayas have lower snowline than the northern ranges because they receive more rainfall allowing for snow to form at lower altitudes.** The Eastern Ghats and Deccan Plateau are drier than Western Ghats and consequently have less diverse vegetation because Eastern Ghats are in the rain shadow zone of Monsoon winds, and Western Ghats receives more rainfall than both Deccan plateau and Eastern Ghats. **Hence, statement 1 is not correct.**

60. Consider the following statements regarding Deccan Plateau:

1. It is composed of the old crystalline igneous and metamorphic rocks.
2. The climate of the region varies from semi-arid in the north to tropical in most of the region with distinct wet and dry seasons.
3. It is higher along its Eastern edge gently sloping towards the Arabian Sea in the West.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Deccan Plateau is bounded by Aravalli Hills in the North-West, Hazaribagh & Rajmahal Hills in the North-East, the Western Ghats in the West and the Eastern Ghats in the East. It forms a raised triangle within the South-pointing triangle of the Indian subcontinent's coastline. **The western edge is higher and slopes towards the Bay of Bengal in the east.** The climate of the region varies from semi-arid in the north to tropical in most of the region with distinct wet and dry seasons. **Hence, statement 3 is not correct.**

61. Consider the following pairs regarding the idea of planning in India:

1. Visvesvaraya Plan – Focus on shifting the labour from industrial sector to agriculture sector.
2. Gandhian Plan – Emphasis on cottage and village level industries.
3. Bombay Plan – Emphasised on the development of essential consumer goods industries in India.

How many of the above pairs is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: In 1934, Sir M. Visvesvaraya had published a book titled “Planned Economy in India”, in which he presented a constructive draft of the development of India in next ten years. His core idea was to lay out a plan to shift labour from agriculture to industries and double up National income in ten years.

In the light of the basic principles of Gandhian economics, S. N. Agarwal authored ‘The Gandhian Plan’ in 1944 in which he put emphasis on the expansion of small unit production and agriculture. **Its fundamental feature was decentralisation of economic structure with self-contained villages and cottage industries.**

The Bombay Plan emphasizes the importance of basic industries, but also calls for the development of consumption goods industries in the early years of the plan.

Hence, pair 1 is not correctly matched.

62. Consider the following statements:

1. A product is said to be dumped when the product has been exported at a price below normal value in Indian markets.
2. Central Board of Indirect Taxes and Customs (CBIC), imposes antidumping duties in India.
3. Antidumping duty is imposed based on the recommendations of Union Finance Ministry’s investigation arm, the Directorate General of Trade Remedies (DGTR).

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Central Board of Indirect Taxes and Customs (CBIC) imposes antidumping duties. **These**

duties are imposed following recommendations of the Commerce Ministry’s investigation arm, the Directorate General of Trade Remedies (DGTR). The DGTR, conclude that these products have been exported at a price below normal value in Indian markets, which has resulted in dumping. **Hence, statement 3 is not correct.**

63. The Directorate of Enforcement is a multi-disciplinary organization under the Department of Revenue, Ministry of Finance. The statutory functions of the Enforcement Directorate include the enforcement of which of the following act/acts?

1. Prevention of Money Laundering Act, 2002 (PMLA)
2. Foreign Exchange Management Act, 1999 (FEMA)
3. Fugitive Economic Offenders Act, 2018

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: The Directorate of Enforcement is a multi-disciplinary organization mandated with investigation of offence of money laundering and violations of foreign exchange laws. **The statutory functions of the Directorate include enforcement of following Acts: The Prevention of Money Laundering Act, 2002 (PMLA):** It is a criminal law enacted to prevent money laundering and to provide for confiscation of property derived from, or involved in, money-laundering and for matters connected therewith or incidental thereto.

The Foreign Exchange Management Act, 1999 (FEMA): ED has been given the responsibility to conduct investigation into suspected contraventions of foreign exchange laws and regulations, to adjudicate and impose penalties on those adjudged to have contravened the law.

The Fugitive Economic Offenders Act, 2018 (FEOA): It is a law whereby Directorate is mandated to attach the properties of the fugitive economic offenders who have escaped from the India warranting arrest and provide for the confiscation of their properties to the Central Government. **Sponsoring agency under COFEPOSA:** Under the Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA), this Directorate is empowered to sponsor cases of preventive detention with regard to contraventions of FEMA. **Hence, all statements are correct.**

64. Which of the following departments administers the working of the Patents Act, 1970, the Designs Act, 2000 and the Trade Marks Act, 1999?

- (a) Department of Commerce
- (b) Department of Patents and Designs
- (c) Department for Promotion of Industry & Internal Trade
- (d) Department of Scientific and Industrial research

Answer: (C)

Explanation: The Office of the Controller General of Patents, Designs & Trade Marks (CGPDTM) is under the Department for Promotion of Industry & Internal Trade, Ministry of Commerce. The Controller General supervises the working of the Patents Act, 1970, as amended, the Designs Act, 2000 and the Trade Marks Act, 1999 and also renders advice to the Government on matters relating to these subjects. Hence, option (c) is correct.

65. Consider the following statements regarding Directorate General of GST Intelligence (DGGI):

1. The Directorate General of GST Intelligence (DGGI) is a law enforcement agency under the Ministry of Commerce and Industry responsible for fighting tax evasion in India.
2. Before the introduction of GST in 2017, the DGGI operated as Directorate General of Central Excise Intelligence (DGCEI).

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 Directorate General of GST Intelligence (DGGI) is a law enforcement agency under the Ministry of Finance responsible for fighting tax evasion in India. Before the introduction of GST in July 2017, the DGGI operated as Directorate General of Central Excise Intelligence (DGCEI). Hence, statement 2 is correct.

66. With reference to the food chains in ecosystems, which of the following kinds of organism is/are known as decomposer organism/organisms?

1. Virus
2. Fungi
3. Bacteria

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (B)

Explanation: Most viruses need a living host organism- they are more like a parasite. **Fungi are the major decomposers of nature; they break down organic matter which would otherwise not be recycled.** Bacteria play an important role in decomposition of organic materials, especially in the early stages of decomposition when moisture levels are high. In the later stages of decomposition, fungi tend to dominate. **Bacillus subtilis and Pseudomonas fluorescens are examples of decomposer bacteria. Hence, option (b) is correct.**

67. Fruits stored in a cold chamber exhibit longer storage life because:

- (a) exposure to sunlight is prevented
- (b) concentration of carbon dioxide in the environment is increased
- (c) rate of respiration is decreased
- (d) there is an increase in humidity

Answer: (C)

Explanation: Metabolic activity is manifested by respiration. Reduction of temperature is an effective means of reducing the rate of respiration. Fruits and vegetables continue their metabolic activity even after harvest. Hence, option (c) is correct.

68. With reference to neutrinos, consider the following statements:

1. There are two types of neutrinos, electron neutrino and proton neutrino.
2. Natural neutrinos are harmful as they generate radiation and can cause diseases.
3. Neutrinos come from the sun (solar neutrinos) and other stars, cosmic rays that come from beyond the solar system, and from the Big Bang.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Three types or "flavours" of neutrino exist: **the electron neutrino, the muon neutrino and the tau neutrino.** Neutrino has a very tiny mass. It interacts very weakly with other matter particles and so weak that every second trillions of neutrinos fall on us and pass through our bodies unnoticed. **Neutrinos come from the sun (solar neutrinos) and other stars, cosmic rays that come from beyond the solar system, and from the Big Bang. Hence, statement 3 is correct.**

69. Consider the following statements, with reference to India's solar mission Aditya-L1:

1. Aditya L1 is the first satellite to study the magnetic field of the sun's corona.
2. Aditya L1 will help to study that why the photosphere, the deeper layer of the sun is at much lower temperature than the corona.

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: Aditya L1 is the first satellite to study the magnetic field of the sun's corona. Aditya L1 will help to study that why the photosphere, the deeper layer of the sun is at much lower temperature than the corona. **Hence, both statements are correct.**

70. Consider the following statements regarding Cord blood banking:

1. Cord blood banking involves taking the umbilical cord blood, which is a rich source of stem cells, and preserving it for future use.
2. Stem cells in cord blood can be used to strengthen the immune system during cancer treatments.
3. Stem cells from cord blood can be given to more people and is less likely to cause rejection than those in bone marrow.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Cord blood banking involves taking the umbilical cord blood, which is a rich source of stem cells, and preserving it for future use. Using the stem cells in cord blood to treat a disease has the following benefits compared with using those in bone marrow: **Stem cells from cord blood can be given to more people than those from bone marrow.** More matches are possible when a cord blood transplant is used than when a bone marrow transplant is used. In addition, the stem cells in cord blood are less likely to cause rejection than those in bone marrow. It is harder to collect bone marrow than it is to collect cord blood. Collecting bone marrow poses some risks and can be painful for the donor. **Cord blood can be frozen and stored. It is ready for anyone who needs it. Bone marrow must be used soon after it is collected.** Stem cells in cord blood can be used to strengthen the immune system during cancer treatments. Bone marrow stem cells do not have this capability.

71. Consider the following statements:

1. Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide.
2. Forests and other land vegetation absorbing carbon dioxide during photosynthesis is one of the ways of Carbon sequestration.
3. An area which absorbs more carbon than releases it, is considered as carbon sink.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Carbon sequestration is a crucial part of the global carbon cycle, as it is the process of capturing and storing atmospheric carbon dioxide. One of the ways this happens is when forests and other land vegetation absorb carbon dioxide during photosynthesis. **According to a 2014 NASA-led study, tropical forests remove up to 30 per cent of human carbon dioxide emissions from the atmosphere and make for an important carbon sink — an area which absorbs more carbon than releases it. Therefore, they have a significant role in keeping global temperatures low. Hence, all statements are correct.**

72. Consider the following statements:

1. Carbon sinks are natural systems that suck up and store carbon dioxide from the atmosphere.
2. The Earth's land and oceans absorb about half of all carbon dioxide emissions from human activities.
3. Continental forests store at least ten times more carbon than Mangroves, seagrass beds and salt marshes.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Carbon sinks are natural systems that suck up and store carbon dioxide from the atmosphere. The Earth's land and oceans absorb about half of all carbon dioxide emissions from human activities. **Mangroves, seagrass beds and salt marshes store at least ten times more carbon than continental forests.** Sedimentary rocks in the Earth's crust contain loads of carbon compounds, including the hydrocarbons we use as fossil fuels that leads to excess carbon dioxide in our atmosphere. **A forest is considered a carbon sink if it absorbs more carbon than it releases. Worryingly, the Amazon rainforest is now releasing instead of**

absorbing carbon dioxide. Hence, statement 3 is not correct.

73. Consider the following statements:

1. A “carbon credit” is an electronic and serialized unit that represents one ton of CO equivalent that is reduced, avoided, or sequestered from projects applying an approved carbon credit methodology.
2. Decarbonization refers to the conversion of the economic system or individual carbon emitting entity reducing the carbon intensity of its emissions over 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: A “carbon credit” (also known as a “carbon offset”) is an electronic and serialized unit that represents one ton of CO₂ equivalent that is reduced, avoided, or sequestered from projects applying an approved carbon credit methodology. Decarbonization means the reduction of carbon. More specifically, the term refers to the conversion of the economic system or individual carbon emitting entity converting to reduce the carbon intensity of its (direct or value chain) emissions over time. Hence, statement 1 is not correct.

74. Consider the following statements regarding the characteristics of Tropical rainforest biome:

1. Very high annual rainfall
2. High average temperatures
3. Nutrient-poor soil
4. High levels of species richness

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) Only Three
- (d) Only Four

Answer: (D)

Explanation: The tropical rainforest biome has four main characteristics: very high annual rainfall, high average temperatures, nutrient-poor soil, and high levels of biodiversity (species richness). The soil is nutrient poor because of the heavy rain that leaches the top layer of the soil frequently. Temperature is high because they are largely found in equatorial regions and species richness is high due to abundance of the range of biotic and abiotic factors expressed in the ecosystem. Hence, all are correct.

75. Which one of the following is the correct sequence of ecosystems in the order of decreasing productivity?

- (a) Oceans, mangroves, lakes, grasslands
- (b) Mangroves, oceans, grasslands, lakes
- (c) Mangroves, grasslands, lakes, oceans
- (d) Oceans, lakes, grasslands, mangroves

Answer: (C)

Explanation: Production/unit area depends on the number and diversity of producers. Mangroves are one of the high productive regions in the world whereas ocean has least productivity. Hence, option (c) is correct.

76. Consider the following statements regarding Thanjavur painting:

1. It largely depicts the social and economic life of common man.
2. The paintings are notable for their adornment in the form of semi-precious stones and glass.

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: Thanjavur painting is a classical South Indian painting style, which was inaugurated from the town of Thanjavur (anglicized as Tanjore) and spread across the adjoining and geographically contiguous Tamil country. The art form draws its immediate resources and inspiration from way back about 1600 AD, a period when the **Nayakas of Thanjavur under the suzerainty of the Vijayanagara Rayas encouraged art**—chiefly, classical dance and music—as well as literature, both in Telugu and Tamil and painting of chiefly Hindu religious subjects in temples. **It is distinguished by its famous gold coating.** The paintings are mostly of Gods and Goddesses because this art of painting flourished at a time when fine-looking and striking temples were being constructed by rulers of several dynasties. Hence, statement 2 is correct.

77. “Maseetkhani” style is associated with the family of:

- (a) Dara Sikoh
- (b) Jahangir
- (c) Ibrahim Lodi
- (d) Tansen

Answer: (D)

Explanation: The “Senia” style of Sitar playing started with the legendary great master of Sitar, **Ustad Maseet**

Sen from the family of Tansen, the originator of “Maseetkhani” style. The word “Senia” is related to Tansen, the father of Indian Classical Music. The word “Gharana” implies a style of music. The followers of Tansen’s school of music are widely known as the followers of “Senia gharana” (i.e. “Seniya” style/school of music). Hence, option (d) is correct.

78. In the early decades after the Permanent Settlement, zamindars regularly failed to pay the revenue to the East India Company. What are the reasons for their failure?

1. The initial revenue demands were very high.
2. The prices of agricultural produce were depressed, which made it difficult for the ryots to pay their dues to the zamindar.
3. The revenue was invariable, regardless of the harvest.

How many of the above statements is/ are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: In the early decades after the Permanent Settlement, however, zamindars regularly failed to pay the revenue demand and unpaid balances accumulated. **The reasons for this failure were various.**

First: the initial demands were very high. The Company pegged the revenue demand high, arguing that the burden on zamindars would gradually decline as agricultural production expanded and prices rose.

Second: this high demand was imposed in the 1790s, a time when the prices of agricultural produce were depressed, making it difficult for the ryots to pay their dues to the zamindar.

Third: the revenue was invariable, regardless of the harvest, and had to be paid punctually.

Hence, all statements are correct.

79. Consider the following statements regarding Pallavas:

1. The early Pallava rulers from 250 A.D. to 350 A.D. issued their charters in Prakrit.
2. Mahendravarman I was also known as Mamalla.
3. The Shore temple at Mamallapuram and the Kailasanatha temple at Kanchipuram were built during the reign of Narasimhavarman I.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Pallavas: The early Pallava rulers from 250 D. to 350 A.D. issued their charters in Prakrit. The second line of Pallava rulers who ruled between 350 A.D. and 550 A.D. issued their charters in Sanskrit.

Mahendravarman I (600 – 630 A.D.): He was a great builder of cave The Mandagappattu inscription hails him as Vichitrachitta.

Narasimhavarman I (630-668

A.D.): Narasimhavarman I was also known as Mamalla, which means ‘great wrestler’.

Narasimhavarman II or Rajasimha (695 -722

A.D.): The Shore temple at Mamallapuram and the Kailasanatha temple at Kanchipuram were built in his reign.

Hence, statement 1 is correct.

80. Consider the following pairs regarding category of lands during Chola Empire:

1. Vellanvagai: land gifted to Brahmanas
2. Shalabhoga: land of peasant proprietors
3. Tirunamattukkani: land gifted to temples
4. Pallichchandam: land donated to Jaina institutions

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (B)

Explanation: Chola inscriptions mention several categories of land:

1. **Vellanvagai** land of non-Brahmana peasant proprietors
2. **Brahmadeya** land gifted to Brahmanas
3. **Shalabhoga** land for the maintenance of a school
4. Devadana, tirunamattukkani land gifted to temples
5. Pallichchandam land donated to Jaina institutions

Hence, pair 3 and 4 are correctly matched.

81. A resolution of disapproval of 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 the houses, whereas approval of proclamation can be done only by the Lok Sabha.
2. Disapproval requires special majority, whereas approval requires a simple majority.

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: A resolution of disapproval is different from a resolution approving the continuation of a proclamation in the following two respects:

First one (disapproval) is required to be passed by the Lok Sabha only, while the second one needs to be passed by the 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 emergency in an extraordinary measure and must be resorted to only in exceptional circumstances. **Hence, both statements are not correct.**

82. Which of the following bodies have the leader of the opposition in Rajya Sabha, in their appointment committees?

- (a) The National Human Rights Commission
- (b) The Central Vigilance Commission
- (c) The Central Information Commission
- (d) CEO of NITI Aayog

Answer: (A)

Explanation: The National Human Rights Commission is a statutory (and not a constitutional) body. **It was established in 1993 under a legislation enacted by the Parliament, namely, the Protection of Human Rights Act, 1993.** The chairman and members are appointed by the president on the recommendations of a six-member committee consisting of the prime minister as its head, the Speaker of the Lok Sabha, the Deputy Chairman of the Rajya Sabha, leaders of the Opposition in both the Houses of Parliament and the Central home minister. **Hence, option (a) is correct.**

83. Consider the following statements:

- 1. A Bill to alter the boundaries of any state can be introduced in the Parliament only with the prior recommendation of the President.
- 2. President has to refer the bill which alters the boundaries of the state to the state legislature concerned for expressing its views within a specified period.
- 3. President is bound by the views of the state legislature.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Article 3 authorises the Parliament to:

- (a) form a new state by separation of territory from

- any state or by uniting two or more states or parts of states or by uniting any territory to a part of any state,
- (b) increase the area of any state,
- (c) diminish the area of any state,
- (d) alter the boundaries of any state, and
- (e) alter the name of any state.

However, Article 3 lays down two conditions in this regard: one, a bill contemplating the above changes can be introduced in the Parliament only with the prior recommendation of the President; Two, before recommending the bill, the President has to refer the same to the state legislature concerned for expressing its views within a specified period.

The President is not bound by the views of the state legislature and may either accept or reject them, even if the views are received in time. Further, it is not necessary to make a fresh reference to the state legislature every time an amendment to the bill is moved and accepted in Parliament. **Hence, statement 3 is not correct.**

84. Consider the following statements regarding 73rd amendment act of 1992:

- 1. The act has given a practical shape to Article 40 of the Constitution.
- 2. The act gives a constitutional status to the Panchayati raj institutions.
- 3. It has brought the Panchayati raj institutions under the purview of the justiciable part of the Constitution.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: This act has added a new Part-IX to the Constitution of India. The act has given a practical shape to Article 40 of the Constitution which says that, "The State shall take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government." **The act gives a constitutional status to the Panchayati raj institutions.** It has brought them under the purview of the justiciable part of the Constitution. **Hence, all statements are correct.**

85. Consider the following statements regarding Inter-State Council:

- 1. The Inter-State Council is a permanent constitutional body set up by a presidential order.
- 2. It was formed based on the recommendation of Sarkaria Commission.
- 3. It is headed by Union Home Minister.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The Inter-State Council is a non-permanent constitutional body set up by a presidential order on the basis of provisions in Article 263 of the Constitution of India. The body was formed by a presidential order dated 28 May 1990 on recommendation of Sarkaria Commission. The Council is formed to discuss or investigate policies, subjects of common interest, and disputes among states. Prime Minister of India is the Chairman of Inter-State Council. Hence, only statement 2 is correct.

86. Consider the following statements

1. The pressure gradient is strong where the isobars are close to each other.
2. The Coriolis force acts parallel to the pressure gradient force.
3. Coriolis force deflects the wind to the left direction in the northern hemisphere.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Pressure Gradient Force is caused due difference in the pressure between two regions. The rate of change of pressure with respect to distance is the pressure gradient. The pressure gradient is strong where the isobars are close to each other and is weak where the isobars are apart. The rotation of the earth about its axis affects the direction of the wind. This force is called the Coriolis force. It deflects the wind to the right direction in the northern hemisphere and to the left in the southern hemisphere. The Coriolis force acts perpendicular to the pressure gradient force. Hence, statement 1 is correct.

87. Consider the following statements regarding Air Masses:

1. It is defined as a large body of air having larger horizontal variation in temperature and moisture.
2. Warm tropical and subtropical oceans are source regions for formation of air masses.

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: When the air remains over a homogenous area for a sufficiently longer time, it acquires the characteristics of the area. The homogenous regions can be the vast ocean surface or vast plains. The air with distinctive characteristics in terms of temperature and humidity is called an air mass. It is defined as a large body of air having little horizontal variation in temperature and moisture. The homogenous surfaces, over which air masses form, are called the source regions. The air masses are classified according to the source regions. There are five major source regions. These are:

- (i) Warm tropical and subtropical oceans;
- (ii) The subtropical hot deserts;
- (iii) The relatively cold high latitude oceans;
- (iv) The very cold snow-covered continents in high latitudes;
- (v) Permanently ice covered continents in the Arctic and Antarctica. Hence, statement 1 is not correct.

88. With reference to Aurora or Northern lights, consider the following statements:

1. Auroras are the glowing lights at high latitude.
2. Auroras can be normally observed in stratosphere.
3. Change in the atmospheric temperature cause Auroras.

How many of the above statement is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: An aurora, sometimes referred to as polar lights, northern lights (aurora borealis) or southern lights (aurora australis), is a natural light display in the Earth's sky, predominantly seen in the high latitude regions (around the Arctic and Antarctic). Auroras are produced when the magnetosphere is sufficiently disturbed by the solar wind. It usually occurs in upper atmosphere (thermosphere/exosphere) due to Earth's magnetic field. Hence, only statement 1 is correct.

89. Hot Spots within the earth help produce Geothermal Energy. What are these 'Hot Spots'?

- (a) Areas of intense magnetic activity within the upper mantle
- (b) Areas of intense pressure inside the mantle
- (c) Regions of high volcanism on earth's surface
- (d) Region in crust where hot molten rocks are trapped

Answer: (D)

Explanation: Due to geological changes, molten rocks formed in the deeper hot regions of earth's crust are pushed upward and trapped in certain regions called 'hot spots'. When underground water comes in contact with the hot spot, steam is generated. Sometimes hot water from that region finds outlets at the surface. **Such outlets are known as hot springs. Hence, option (d) is correct.**

90. Consider the following statements regarding Hurricanes:

1. Storms that form over the Atlantic Ocean or central and eastern North Pacific with their wind speed around 100 miles per hour are called hurricanes.
2. Warm ocean water and moist, humid air is not conducive for the formation of Hurricanes.
3. Hurricane activity is common for North America from June through November with peaking in September.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The typical "season" for hurricanes is shifting, as climate warming creates conditions conducive to storms in more months of the year. And hurricanes are also making landfall in regions far outside the historic norm. As for timing, **hurricane activity is common for North America from June through November**, peaking in September – after a summertime buildup of warm water conditions. **Hurricanes need two main ingredients — warm ocean water and moist, humid air.** When warm seawater evaporates, its heat energy is transferred to the atmosphere. This fuels the storm's winds to strengthen. Without it, hurricanes can't intensify and will fizzle out. Storms that form over the Atlantic Ocean or central and eastern North Pacific are called "hurricanes" when their wind speeds reach at least 74 miles per hour (119 kilometers per hour). Up to that point, they're known as "tropical storms." **Hence, statement 2 is not correct.**

91. Consider the following statements regarding difference between Consumer Price Index (CPI) and GDP deflator:

1. GDP deflator includes prices of imported goods but they are not included in CPI.
2. The weights are constant in CPI, but they differ according to production level of each good in GDP deflator.

3. While CPI is released by Central Statistics Office (CSO), the data on GDP deflator is released by Labour Bureau.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: CPI may differ from GDP deflator because: 1. The goods purchased by consumers do not represent all the goods which are produced in a country. **GDP deflator takes into account all such goods and services.** 2. CPI includes prices of goods consumed by the representative consumer; hence it includes prices of imported goods. GDP deflator does not include prices of imported goods. 3. The weights are constant in CPI – but they differ according to production level of each good in GDP deflator.

Ministry of Statistics and Programme Implementation (MOSPI) comes out with GDP deflator in National Accounts Statistics as price indices. Hence, only statement 2 is correct.

92. Consider the following statements:

1. Real GDP is the GDP derived after adding the effect of inflation.
2. The difference between the real and nominal GDP shows the levels of inflation in the year.

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: Real GDP, which is the GDP after taking away the effect of inflation, is a derived metric. All Budget calculations start with the nominal GDP. **Real GDP = Nominal GDP — Inflation Rate** However, from the perspective of the common people, real GDP is what matters. **The difference between the real and nominal GDP shows the levels of inflation in the year. Hence, statement 1 is not correct.**

93. Consider the following statements:

1. Under Market Stabilisation Scheme (MSS), scheduled commercial banks can borrow additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest.

2. Open Market Operations (OMOs) include both purchase and sale of government securities, for absorption and injection of liquidity 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: (D)

Explanation: Market Stabilisation Scheme (MSS): This instrument for monetary management was introduced in 2004. Surplus liquidity of a more enduring nature arising from large capital inflows is absorbed through sale of short-dated government securities and treasury bills. The cash so mobilised is held in a separate government account with the Reserve Bank.

Open Market Operations (OMOs): These include both, outright purchase and sale of government securities, for injection and absorption of durable liquidity, respectively.

Marginal Standing Facility (MSF): A facility under which scheduled commercial banks can borrow additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest. This provides a safety valve against unanticipated liquidity shocks to the banking system. **Hence, both statements are not correct.**

94. Which of the following tools are used by the RBI to control Inflation?

- 1. Variable Reserve Requirement
- 2. Moral Suasion
- 3. Liquidity Adjustment Facility
- 4. Bank rate

Select the correct answer using the code given below:

- (a) 1, 2 and 3
- (b) 1, 3 and 4
- (c) 1 and 2
- (d) 1, 2, 3 and 4

Answer: (D)

Explanation: Tools for inflation targeting:

Liquidity Adjustment Facility: With this RBI controls the money supply in the economy. These interest rates and inflation rates tend to move in opposite directions.

Open Market Operations: RBI buys or sells short-term securities in the open market, thus impacting money available with the public.

Variable Reserve Requirement: Cash Reserve Ratio (CLR) and the Statutory Liquidity Ratio (SLR) are

increased or decreased in accordance with inflation or deflation respectively.

Bank rate: It is the rate at which RBI lends money to commercial banks without any security. When bank rate is increased interest rate also increases leading to inflation.

Moral Suasion: If there is a need RBI can urge the banks to exercise credit control at times to maintain the balance of funds in the market.

95. Consider the following statements regarding Special Drawing Right (SDR):

- 1. The Special Drawing Right (SDR) is an interest-bearing international reserve asset created by the IMF.
- 2. The value of the SDR is directly determined by supply and demand in the market.
- 3. It can be held and used by member countries, private entities or individuals.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The **Special Drawing Right (SDR) is an interest-bearing international reserve asset created by the IMF in 1969 to supplement other reserve assets of member countries.** The SDR is based on a basket of international currencies comprising the U.S. dollar, Japanese yen, euro, pound sterling and Chinese Renminbi. It is not a currency, nor a claim on the IMF, but is potentially a claim on freely usable currencies of IMF members. **The value of the SDR is not directly determined by supply and demand in the market, but is set daily by the IMF on the basis of market exchange rates between the currencies included in the SDR basket.** It can be held and used by member countries, the IMF, and certain designated official entities called "prescribed holders"—but it cannot be held, for example, by private entities or individuals. Its status as a reserve asset derives from the commitments of members to hold, accept, and honor obligations denominated in SDR. **The SDR also serves as the unit of account of the IMF and some other international organizations. Hence, only statement 1 is correct.**

96. Consider the following statements regarding 3D bioprinting technology:

- 1. 3D bioprinting utilizes the 3D printing techniques to combine cells, growth factors, and biomaterials to fabricate biomedical parts.
- 2. 3D bioprinting involves a layer-by-layer method to create tissue-like structures that are later used in various medical and tissue engineering fields.

3. 3D bioprinting can be used to reconstruct tissue from various regions of the body.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Three dimensional (3D) bioprinting is the utilization of 3D printing-like techniques to combine cells, growth factors, and/or biomaterials to fabricate biomedical parts, often with the aim of imitating natural tissue characteristics. **Generally, 3D bioprinting can utilize a layer-by-layer method to deposit materials known as bio-inks to create tissue-like structures that are later used in various medical and tissue engineering fields.** There are many applications for 3D bioprinting in the medical field. An infant patient with a rare respiratory disease known as tracheobronchomalacia (TBM) was given a tracheal splint that was created with 3D printing. **3D bioprinting can be used to reconstruct tissue from various regions of the body. Hence, all statements are correct.**

97. Consider the following statements regarding Scramjet Engine:

- 1. It works based on the technology of Air Breathing Propulsion System.
- 2. The Scramjet engine designed by ISRO uses Hydrogen as fuel and the Oxygen from the atmospheric air as the oxidizer.

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 first experimental mission of ISRO's Scramjet Engine towards the realization of an Air Breathing Propulsion System was successfully conducted on August 28, 2016 from Satish Dhawan Space Centre SHAR, Sriharikota. The Scramjet engine designed by ISRO uses Hydrogen as fuel and the Oxygen from the atmospheric air as the oxidizer. **Hence, both statements are correct.**

98. Consider the following statements regarding Artemis program:

- 1. The Artemis program is a robotic Moon exploration program led by National Aeronautics and Space Administration (NASA).
- 2. The program's long-term goal is to establish a permanent base on the Moon, to facilitate human

missions to Mars became feasible.

3. The Artemis program attempts to study the possibility of running the International Space Station from the surface of the moon.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The Artemis program is a robotic and human Moon exploration program led by the United States' National Aeronautics and Space Administration (NASA) along with three partner agencies—the **European Space Agency (ESA), the Japan Aerospace Exploration Agency (JAXA), and the Canadian Space Agency (CSA).** The Artemis program is intended to re-establish a human presence on the Moon for the first time since the Apollo 17 mission in 1972. **The main parts of the program are the Space Launch System (SLS), the Orion spacecraft, the Lunar Gateway space station, and the commercial Human Landing Systems.** The program's long-term goal is to establish a permanent base on the Moon, to facilitate human missions to Mars became feasible. **Hence, statement 3 is not correct.**

99. Which among the following statements best describes the term 'Black Gold':

- (a) Coal and its derivatives
- (b) Gold extracted from Placer deposits
- (c) Petroleum and its derivatives
- (d) Residual that remain after Gold extraction

Answer: (C)

Explanation: Petroleum is found between the layers of rocks and is drilled from oil fields located in off-shore and coastal areas. This is then sent to refineries which process the crude oil and produce a variety of products like diesel, petrol, kerosene, wax, plastics and lubricants. **Petroleum and its derivatives are called Black Gold as they are very valuable. Hence, option (c) is correct.**

100. In the context of cybersecurity, what are Botnets?

- (a) A stand-alone malware computer programme that replicates itself in order to spread to other computers.
- (b) Network of private computers infected with malicious software and controlled as a group without the owners' knowledge.
- (c) A set of web pages that may intentionally be used to cause a web crawler to make an infinite number of requests.

(d) A computer programme designed to assist in the sending of spam.

Answer: (B)

Explanation: Botnet is a combination of the words robot and network. Botnets have been identified as growing security threat. A network of private computers infected with malicious software and controlled as a group without the owners' knowledge, e.g. to send spam. Hence, statement (b) is correct.

101. Which of the following pairs are correctly matched?

1. Gatka: Ancient martial art from Punjab
2. Kalaripayattu: Martial art form that originated in Kerala
3. Yakshagana: Traditional theatre form of Madhya Pradesh
4. Mallakhamba: Traditional state sport of Karnataka

Select the correct answer using the code given below:

- (a) 1, 2 and 3
- (b) 1 and 2
- (c) 1, 2 and 4
- (d) 2, 3 and 4

Answer: (B)

Explanation: Gatka is the name of an Indian martial art associated with the Sikhs of the Punjab and the Tanoli and Gujjar communities of the mountainous regions of northern Pakistan who practice an early variant of the martial art. The Punjabi name gatka properly refers to the wooden stick used.

Kalaripayattu also known simply as Kalari, is an Indian martial art and fighting style that originated in modern-day Kerala.

Yakshagana is a traditional Indian theatre form, developed in Dakshina Kannada, Udupi, Uttara Kannada, Shimoga and western parts of Chikmagalur districts, in the state of Karnataka and in Kasaragod district in Kerala that combines dance, music, dialogue, costume, make-up, and stage techniques with a unique style and form.

Mallakhamba is a traditional sport, originating from the Indian subcontinent, in which a gymnast performs aerial yoga postures and wrestling grips in concert with a vertical stationary or hanging wooden pole, cane, or rope. On April 9, 2013, Madhya Pradesh declared Mallakhamba the state sport.

102. Consider the following statements regarding:

1. Pattachitra style of painting is one of the oldest art forms of West Bengal.
2. It is a painting done on canvas, and is manifested by rich colourful application, creative motifs and designs.
3. Some of the popular themes represented through

this art form are Thia Badhia, Krishna Lila and Dasabatara Patti.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Pattachitra style of painting is one of the oldest and most popular art forms of Odisha. The name Pattachitra has evolved from the Sanskrit words patta, meaning canvas, and chitra, meaning picture. **Pattachitra is thus a painting done on canvas, and is manifested by rich colourful application, creative motifs and designs, and portrayal of simple themes, mostly mythological in depiction.** Some of the popular themes represented through this art form are **Thia Badhia – depiction of the temple of Jagannath; Krishna Lila – enactment of Jagannath as Lord Krishna displaying his powers as a child; Dasabatara Patti – the ten incarnations of Lord Vishnu; Panchamukhi – depiction of Lord Ganesh as a five-headed deity.** With the passage of time, the art of Pattachitra has gone through a commendable transition, and the chitrakars have painted on tussar silk and palm leaves, and even created wall hangings and showpieces. Hence, statement 1 is not correct.

103. Consider the following statements regarding the Gupta rule in India:

1. The Prayaga Prashasti (also known as the Allahabad Pillar Inscription) was composed by Harisena.
2. Banabhatta, was the court poet of Samudragupta.
3. The Prayaga Prashasti was composed in praise of Samudragupta.

How many of the above statements is/are not correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: The Prayaga Prashasti (also known as the Allahabad Pillar Inscription) was composed by Harisena. **Harisena was the court poet of Samudragupta while Banabhatta was the court poet of Harshavardhana.** The Prayaga Prashasti was composed in praise of SamudraGupta in Sanskrit. Hence, statement 2 is not correct.

104. Consider the following statements regarding Raja Rammohan Roy and Brahma Samaj:

1. Raja Rammohan Roy, the founder of Brahmo Samaj was called the father of Indian Renaissance.
2. Rammohan Roy translated into Bengali the Vedas and the five Upanishads.
3. Brahmo Samaj aimed to purify Hinduism, preach monotheism and establish a new religion.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: Raja Rammohan Roy (1772-1833), often called the father of Indian Renaissance and the maker of Modern India. Rammohan Roy believed in the modern scientific approach and principles of human dignity and social equality. He put his faith in monotheism. He wrote Gift to Monotheists (1809) and translated into Bengali the Vedas and the five Upanishads to prove his conviction that ancient Hindu texts support monotheism. Raja Rammohan Roy founded the Brahmo Sabha in August 1828; it was later renamed Brahmo Samaj. Rammohan Roy did not want to establish a new religion. He only wanted to purify Hinduism of the evil practices which had crept into it. Hence, statement 3 is not correct.

105. Rayagajakesari and Dayagajakesari are titles associated with which of the following dynasties?

- (a) Vijayanagara
- (b) Rashtrakuta
- (c) Kakatiya
- (d) Gajapati

Answer: (C)

Explanation: Rayagajakesari and Dayagajakesari are titles of the Kakatiya dynasty. The title Daya Gaja Kesari was given to the first Kakatiya king Prataparudra. In the Kakatiya dynasty coins were inscribed with this title. Raya-gaja-kesari title belongs to Rudrama Devi, she inherited this title from her father. This title was also inscribed on the coins. Hence, option (c) is correct.

106. Consider the following statements regarding the status of Fundamental Rights vs Directive Principles of State policy:

1. The Supreme Court in Golaknath Case, 1967 held that the Indian Constitution is founded on the bedrock of the balance between the Fundamental Rights and the Directive Principles.
2. The Parliament can completely amend Directive Principles of State policy in order to improve the administration of any of the Fundamental Rights.

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: In the Minerva Mills case (1980), the Supreme Court also held that 'the Indian Constitution is founded on the bedrock of the balance between the Fundamental Rights and the Directive Principles. This harmony and balance between the two is an essential feature of the basic structure of the Constitution. The Parliament can amend the Fundamental Rights for implementing the Directive Principles, so long as the amendment does not damage or destroy the basic structure of the Constitution. However, the Parliament cannot amend the Directive principles on its whims and fancies and affect the 'welfare state' credential of Indian constitution since it forms a part of the basic structure. Hence, both statements are not correct.

107. Consider the following statements regarding Governor's legislative powers:

1. If a bill passed by the state legislature endangers the position of the state high court, the Governor shall reserve the bill for consideration of the President.
2. If a bill sent by Governor for the reconsideration of the State legislature is passed again without amendments, the Governor is under no constitutional obligation to give his assent to the 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: (A)

Explanation: Article 200 provides that when a Bill passed by the State Legislature, is presented to the Governor, the Governor shall declare—

- (a) that he assents to the Bill; or
 - (b) that he withholds assent therefrom; or
 - (c) that he reserves the Bill for the President's consideration; or
 - (d) the Governor may, as soon as possible, return the Bill (other than a Money Bill) with a message for reconsideration by the State Legislature.
- But, if the Bill is again passed by the Legislature with or without amendment, the Governor shall not withhold assent therefrom; or (e) if in the opinion of the Governor, the Bill, if it became law, would so derogate from the powers of the High Court as to endanger its constitutional position, he shall not assent to but shall reserve it for the consideration of

the President.

Hence, statement 2 is not correct.

108. The Constitution of India lays down a functional separation of the organs of the State in which of the following manner?

1. The President or the Governor shall not be answerable to any court for the exercise and performance of the powers and duties of his office.
2. The validity of proceedings in Parliament and the Legislatures cannot be called into question in any Court.
3. Parliament cannot discuss the conduct of the judges except when the proceeding to remove a judge is being carried out.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (D)

Explanation: The Constitution of India lays down a functional separation of the organs of the State in the following manner:

Article 50: State shall take steps to separate the judiciary from the executive. This is for the purpose of ensuring the independence of judiciary.

Article 122 and 212: validity of proceedings in Parliament and the Legislatures cannot be called into question in any Court. This ensures the separation and immunity of the legislatures from judicial intervention on the allegation of procedural irregularity.

Judicial conduct of a judge of the Supreme Court and the High Courts' cannot be discussed in the Parliament and the State Legislature, according to Article 121 and 211 of the Constitution.

Articles 53 and 154 respectively, provide that the executive power of the Union and the State shall be vested with the President and the Governor and they enjoy immunity from civil and criminal liability.

Article 361: the President or the Governor shall not be answerable to any court for the exercise and performance of the powers and duties of his office.

Hence, all statements are correct.

109. If any question arises whether a matter falls within the Governor's discretion or not, whose decision shall be final and why?

- (a) Chief Minister because he heads the Council of Ministers
- (b) State Legislature since it is the highest law-making body within the State
- (c) Governor of the State because the Constitution confers him this authority

(d) President of India who advises Governor of the same

Answer: (C)

Explanation: If any question arises whether a matter falls within the Governor's discretion or not, decision of the Governor shall be final, and the validity of anything done by the Governor shall not be called in question on the ground that he ought or ought not to have acted in his discretion. Also, the constitution says that the advice tendered by Ministers to the Governor shall not be inquired into in any court. Hence, statement (c) is correct.

110. Consider the following statements regarding Article 32 of the Indian Constitution:

1. Article 32 affirms the right to move the Supreme Court for the enforcement of the rights conferred in Part III of the Indian Constitution.
2. The right guaranteed under Article 32 is not absolute and can be suspended.
3. An individual approaching the High Court under Article 226 for the violation of fundamental rights is itself is a fundamental right.

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 one of the fundamental rights listed in the Constitution that each citizen is entitled. **Article 32 deals with the 'Right to Constitutional Remedies'**, or affirms the right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred in Part III of the Constitution. **During the 1975 Emergency, a five-judge bench of the Supreme Court, in the ADM Jabalpur vs Shivkant Shukla case, had ruled that the right to constitutional remedies under Article 32 would remain suspended during a national emergency. The 44th Amendment also stated that according to Article 359, the president could issue orders suspending the right to move any court for the enforcement of fundamental rights, under Article 32, during a national emergency, with the exception of Article 20 (deals with protection of certain rights in case of conviction for offences) and Article 21 (protection of life and personal liberty).** In civil or criminal matters, the first remedy available to an aggrieved person is that of trial courts, followed by an appeal in the High Court and then the Supreme Court. When it comes to violation of fundamental rights, an individual can approach the High Court under Article 226 or the Supreme Court directly under Article

32. Article 226, however, is not a fundamental right like Article 32. **Hence, statement 3 is not correct.**

111. **Consider the following statements:**

1. The North Sea, in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift.
2. Baltic Sea, records low salinity due to influx of River waters in large quantity.
3. The Mediterranean Sea, records higher salinity due to high evaporation.
4. In Bay of Bengal, the low salinity trend is observed due to influx of River water by the River Ganga.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) All of the above

Answer: (D)

Explanation: The salinity for normal Open Ocean ranges between 33 o/oo and 37 o/oo. In the Land locked Red Sea, it is as high as 41 o/oo, while in the estuaries and the Arctic, the salinity **fluctuates from 0 – 35 o/oo**, seasonally. In hot and dry regions, where evaporation is high, the salinity sometimes reaches to 70 o/oo.

The North Sea – in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift.

Baltic Sea – records low salinity due to influx of River waters in large quantity.

The Mediterranean Sea - records higher salinity due to high evaporation.

Black Sea – Salinity is very low in Black Sea due to enormous fresh water influx by Rivers.

Indian Ocean – The average salinity of the Indian Ocean is 35 o/oo.

Bay of Bengal – The low salinity trend is observed in the Bay of Bengal due to influx of River water by the River Ganga.

Arabian Sea – On the contrary, the Arabian Sea shows higher salinity due to high evaporation and low influx of fresh water.

Hence all the statements are correct.

112. **Sikkim and Darjeeling Himalayas are best suitable for tea plantations due to:**

1. Moderate slope
2. Thick soil cover with high organic content
3. Well distributed rainfall throughout the year
4. Harsh winters

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 2 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Answer: (A)

Explanation: Sikkim and Darjeeling Himalayas physical conditions such as **moderate slope, thick soil cover with high organic content**, well distributed rainfall throughout the year and mild winters makes it very much **suitable for tea plantations.**

113. **Which of the following soils found in India are poor in nitrogen, phosphorous and humus?**

1. Red and Yellow Soil
2. Black Soil
3. Laterite Soil
4. Peaty Soil

Select the correct answer using the codes given below:

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) All the above

Answer: (A)

Explanation: The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility. **They are generally poor in nitrogen, phosphorous and humus.** Chemically, the black soils are rich in lime, iron, magnesia and alumina. They also contain potash. But they lack in phosphorous, nitrogen and organic matter. **The color of the soil ranges from deep black to grey.** Humus content of the laterite soil is removed fast by bacteria that thrives well in high temperature. **These soils are poor in organic matter, nitrogen, phosphate and calcium, while iron oxide and potash are in excess.**

Peaty soils are found in the areas of heavy rainfall and high humidity, where there is a good growth of vegetation. Thus, large quantity of dead organic matter accumulates in these areas, and this gives a rich humus and organic content to the soil.

114. **What is/are the reason for the tendency for the Sugar mills to shift and concentrate in the Southern and western states in India, especially in Maharashtra, in recent years?**

1. Peninsular India has tropical climate which suits Sugarcane crop, hence there is higher yield in South.
2. Sucrose Content is also high in Southern sugarcane.
3. Crushing Season is also much longer i.e. 7 or 8 months as compared to 3 or 4 months in North.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Peninsular India has tropical climate which suits Sugarcane crop, hence there is higher yield in South. Sucrose Content is also high in Southern sugarcane. **Crushing Season is also much longer – 7/8 months as compared to 3/4 months in North.** Cooperatives are also better managed in South than North. **Most of the mills in South are new so they have modern machinery. Hence, all statements are correct.**

115. The Tamil Nadu coast remains dry during the South-west Monsoon season. The reason:

1. The Tamil Nadu coast is situated parallel to the Bay of Bengal branch of Southwest monsoon.
2. It doesn't lie in the rain shadow region of the Arabian Sea branch of the South-west monsoon.
3. Monsoon winds strike the coast and reroute due to the very high summits of the Eastern Ghats.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (A)

Explanation: Tamil Nadu coast is situated parallel to the Bay of Bengal branch of Southwest monsoon. Because of this the monsoon winds do not strike it and instead pass over. **Tamil Nadu coast lies in the rain shadow region of the Arabian Sea branch of the south-west monsoon.** But the given statement says it doesn't lie in the rain shadow region of Arabian Sea branch. Since it is bereft of the moisture from both the branches it remains dry. It instead receives rainfall from the north-eastern monsoon that comes with a retreat. **The Eastern Ghats have less elevation compared to the Western Ghats and they do not have very high summits. Hence, only statement 1 is correct.**



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