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Message



An officer with a right mindset is an officer that a nation aspires for. A right mindset doesn't necessarily comprise unlimited jargon of knowledge rather a right amount of knowledge and its appropriate execution. Especially, when it comes to UPSC and State PSCs preparation, the crux is not to accumulate the knowledge but its effective implementation and utilization in tackling any situation. The situation here can be anything from UPSC CSE Prelims to the major issues that need to be addressed. The journey is hard but it is worth.

Perfect 7 has been part of many UPSC and State PSCs aspirants in their journey of becoming well reputed officers serving nationally and internationally. The magazine itself had gone through constant ebb and flows of change and improvements. Now, that the magazine is in its monthly era, I hope it becomes your perfect preparation partner and guides you through this ever learning endeavor of Civil Services Preparation.

With Best wishes.

Vinay Singh
Founder
Dhyeya IAS

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National

Central Reserve Police Force: The Anchor of Indian Security

CRPF Foundation Day was celebrated recently on 27 July. It was a celebration of the legacy of valor and service. Prime Minister Narendra Modi congratulated the security forces on the 86th Foundation Day of the Central Reserve Police Force. The Prime Minister described the role of CRPF in the security of the country as paramount. The CRPF has maintained the internal security of India with unwavering dedication since 1939. Initially established as the Crown Representative Police on July 27, 1939 to deal with the growing political turmoil and unrest within the princely states, the CRPF has evolved into one of the oldest and most prestigious central police force of the country. The creation of this police force was heavily influenced by the Madras Resolution of the All India Congress Committee in 1936, which emphasized the need for a strong internal security mechanism.

The Central Reserve Police Force (CRPF) is a key component of India's security infrastructure, serving as the most prominent Central Armed Police Force in the country. Its role is multi-dimensional, addressing terrorism, Naxalite-Maoist violence, communal riots, and other violent activities arising from law and order breakdowns. On India's Independence Day, 15 August of the previous year, CRPF jawans hoisted the tricolor at Lal Chowk in Kashmir, symbolizing the country's steadfast commitment to combating terrorism, separatism, and rebellion. Additionally, the CRPF has effectively managed recent riots across various parts of the country, including Delhi, showcasing its prompt and decisive response to civil disturbances.

❖ Recently, the CRPF, in collaboration with Jharkhand Police, conducted the anti-Naxal operation Octopus in the Budha Pahad area of Latehar, Jharkhand. During this operation, numerous explosives were recovered, including 106 landmines of various types, over 360 cartridges, codex wire, ammonium nitrate, and other explosive materials. The Jharkhand Police Headquarters noted that Budha Pahad is a highly

Naxal-affected area where Maoists have extensively laid landmines, causing frequent explosions and significant damage to both police and civilians. The security forces had cordoned off Budha Pahad from all sides and conducted a thorough search of the area. This operation highlighted the CRPF's ongoing commitment to enhancing national security and countering threats.

❖ Last month, the Central Reserve Police Force (CRPF) celebrated its foundation day. On 27 July 2022, Union Home and Cooperation Minister Shri Amit Shah extended his greetings to the CRPF personnel. The Home Minister acknowledged that the CRPF, through its valor, has made a unique contribution to maintaining national security and has established a distinguished history of bravery that every Indian takes pride in.

History of the formation of CRPF:

❖ The Central Reserve Police Force (CRPF) was established on 27 July 1939 and was officially renamed under the Central Reserve Police Force Act, which came into force on 28 December 1949.

The then Home Minister, Sardar Vallabhbhai Patel, envisioned a multi-faceted role for the force to address the evolving needs of the newly independent nation. Initially formed by the British in 1939 under the name Crown's Police Representative, the CRPF has now completed 83 years of its distinguished history.

- ❖ CRPF is a large organization with a diverse structure. It comprises 246 battalions, including 210 special battalions, 6 women battalions, 15 RAF battalions, 10 Cobra battalions, 5 signal battalions, 1 Special Duty Group, and 1 PDG. The CRPF also includes 43 Group Centres, 20 Training Establishments, 3 CWS, 7 AWS, 3 SWS, 4 Composite Hospitals with 100 beds each, and 17 Composite Hospitals with 50 beds each.

Security Activities of CRPF:

- ❖ Central Reserve Police Force is India's largest central armed police force, with a distinguished history and a strong present. Since its formation in 1939, the CRPF has played a crucial role in supporting the nation during the partition riots and the integration of small princely states, showcasing countless heroic and courageous deeds of its personnel. Even at present, the CRPF is engaged in large-scale guerrilla warfare in Maoist-affected areas with full vigor. The CRPF has also played a role in dealing with terrorist activities in the country. It has been fighting tough battles for many years and many times, it has also fought wars along with the Indian Army. During patrolling in Hot Spring in Ladakh, Chinese soldiers had intruded into the Indian border, after which the CRPF lost the lives of its soldiers in retaliatory action.
- ❖ Something similar happened in Sardar Post incident when Pakistani army attacked CRPF soldiers posted at Sardar Post in the desert of Kutch in Gujarat on 9 April 1965. At that time two CRPF companies were posted there. Sardar Post is considered to be the breath taking encounter till date among the most fierce battles of police and army.
- ❖ Similarly, Central Reserve Police Force had an encounter with the terrorists who entered the Indian Parliament on 13 December 2001 and one of the internal security personnel posted there, a woman personnel, was killed and all the terrorists were killed. After this, CRPF's role in dealing with the terrorist attack on Ayodhya on 27 July 2005 was also commendable.
- ❖ The Central Reserve Police Force has also played a key role in curbing terrorism in Punjab during the

1980s and faced a similar situation in Tripura during the 1990s. In 2001, based on the recommendation of a group of ministers, the CRPF was designated as the lead internal security force of the country. Currently, more than one-third of the force is deployed in right wing extremist affected areas to control left wing extremism. The CRPF has played an unprecedented role in eradicating Naxalism from West Bengal, Rohtas area of Bihar and Kaimur areas. It is due to the deployment and activism of the CRPF that Naxalites fled from Saranda forest area of Jharkhand, which was once a major base for these Naxalites. It was during patrolling that CRPF personnel killed top Maoist leader Kisnaji in 2011 and made the so-called Naxal areas like Saranda (in 2011), Maad (in 2012), Budha Pahad (in 2012), Silger and Pedia (in 2013) Naxal-free zones.



Other Roles of Central Reserve Police Force:

- ❖ The Central Reserve Police Force is deployed all over India, with its centres everywhere. Due to its high level of capability, CRPF is called in any urgent situation as it works in harmony with the state police, hence it is adaptable. Over the years, the Central Reserve Police Force has acquired the status of the most acceptable force by the people and the state administration.
- ❖ The CRPF's primary tasks include crowd control, managing riots, and conducting counter-terrorism operations. It also collaborates with state police to address left-wing extremism and ensures extensive security arrangements during elections in volatile areas. Additionally, the CRPF is responsible for protecting VIPs and key installations, preventing environmental destruction, and preserving local flora and fauna. During wartime, it fights aggressively and also undertakes rescue and relief operations during

natural calamities.

- ❖ **For the security of places established by the Central Government:** One of the most important roles of CRPF, which we usually do not notice, is to protect the places established by the Central Government such as airports, bridges, powerhouses, Doordarshan centres, all All India Radio stations, residences of governors and Chief Ministers. Apart from this, CRPF is also deployed for security at national banks and other government places. CRPF ensures the security of democratic institutions, and prevents any kind of extremist activities from taking place there. The role of Central Reserve Police Force is very important in extremely disturbed areas. This contribution of CRPF is very special in the interest of the country.
- ❖ **Responsible for security of VIPs:** 7.5 percent of CRPF has been deployed for the security of VIPs in the North-Eastern states, Jammu and Kashmir, Bihar and Andhra Pradesh which includes Governors, Chief Ministers, Ministers, MPs and other VIPs of Jammu and Kashmir, Arunachal Pradesh, Manipur and Nagaland, Tripura and Mizoram. Apart from this, CRPF is also deployed at the office and residence of the Prime Minister of India and the residences and offices of other central ministers and dignitaries so that there is no lapse in their security.
- ❖ **Responsible for security of important establishments of the Central and State Governments:** 17.5 percent of CRPF has been deputed to protect important establishments of the Central and State Governments like secretariats, Doordarshan centres, telephone centres, banks, hydroelectric projects, jails etc. and in terror affected areas. The deployment of CRPF personnel has been done at three sensitive places; the force has been deployed at Krishna Janmabhoomi- Shahi Idgah Mosque Complex (Mathura), Ram Janmabhoomi-Babri Masjid (Ayodhya) and Kashi Vishwanath Temple- Gyanvapi Mosque (Varanasi). The force personnel are also on alert for security at Mata Vaishno Devi Temple, Katra, Jammu and Kashmir.

CRPF's Contribution in UN Peacekeeping and Natural Disasters Relief Missions:

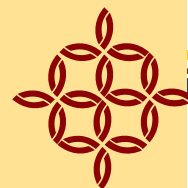
- ❖ The Central Reserve Police Force has carried out rescue and relief operations during various natural disasters in the country such as the Orissa Super Cyclone (1999), Gujarat Earthquake (2001), Tsunami (2004) and Jammu & Kashmir Earthquake
- (2005). The CRPF has also proved its mettle during various overseas UN deployments such as Sri Lanka (1987), Haiti (1995), Kosovo (2000) and Liberia (Mahila Contingent). So far, 1997 brave CRPF personnel have sacrificed their lives while serving the country.

Responsibility of conducting violence-free elections:

- ❖ In addition to maintaining law and order and combating extremism, the CRPF is entrusted with ensuring peaceful elections across India. Its role in Jammu and Kashmir, Bihar, and the North-Eastern states has been particularly commendable. During both parliamentary and state assembly elections, the CRPF remains highly vigilant in managing security arrangements. As a key agency responsible for conducting free and fair elections, the CRPF plays a crucial role in overseeing both Lok Sabha and Assembly elections throughout the country. During this time, CRPF has to implement the system smoothly with full commitment. It coordinates with Ministry of Home Affairs, Election Commission of India, Railway Board and other CAPFs, SAP, BWHG, IR battalions in this direction. It works towards maintaining coordination in elections in the states by forming 'State Level Coordination Group'. CRPF also plays the role of being active in the 24x7 control room at the force headquarters of the states where elections are being held and overseeing the movement and deployment of soldiers deputed for election duty. It also discharges the responsibility of preparing the security framework of the states where elections are being held.
- ❖ CRPF works to prepare the deployment of soldiers according to the sensitivity of the area/booth in consultation with the state authority. CRPF also works towards issuing a special identity card for all the forces so that the local officials of the states where elections are being held can easily coordinate with the soldiers deployed there and the commander of the soldiers can maintain command and control in a proper manner. CRPF is also responsible for organizing training for soldiers to be deployed during elections so that elections can be conducted peacefully.



Short Issues



Digital Bharat Nidhi

Why in News:

The Department of Telecommunications (DoT) has released draft rules to operationalize the Digital Bharat Nidhi. Through this, the central government seeks to increase telecom connectivity in rural areas.

About Digital Bharat Nidhi:

- Digital Bharat Nidhi (DBN) will replace the erstwhile Universal Service Obligation Fund (USOF), which is a pool of funds generated by a 5 percent Universal Service Levy charged on all telecom fund operators based on their Adjusted Gross Revenue (AGR).
- As per the Telecom Act, contributions made by telecom companies towards the DBN will first be credited to the Consolidated Fund of India (CFI), where all government revenues, including loans raised and repayments are credited and from which the government incurs its expenditures. The Centre will periodically deposit the collected funds into the DBN.

Purpose and Utilization of Funds

Funds collected under the DBN will support universal service by:

- Promoting access to and delivery of telecommunication services in underserved rural, remote, and urban areas.
- Funding research and development of telecommunication services, technologies, and products.
- Supporting pilot projects, consultancy assistance, and advisory support to improve connectivity.
- Facilitating the introduction of new telecommunication services, technologies, and products.

Operationalization and Administration

According to the draft rules issued by the Department of Telecommunications (DoT) on the operationalization of the DBN, the Centre will:

- Appoint an “administrator” who will select “DBN implementers” through bidding or invitation of applications from eligible persons.
- The administrator will determine the modalities of providing funding to DBN implementers on a case-by-case basis, including options such as full funding, partial funding, co-funding, market risk mitigation,

and risk capital.

Funding Criteria and Objectives:

The DBN will fund schemes and projects aimed at providing targeted access to telecommunication services for underserved groups, such as women, persons with disabilities, and economically and socially weaker sections.

The schemes and projects must meet criteria such as:

- Introducing next-generation telecommunication technologies in underserved areas.
- Improving the affordability of telecommunication services in these areas.
- Promoting innovation, research, and development.
- Supporting the commercialization of indigenous technology and associated intellectual property, creating regulatory sandboxes.
- Developing and establishing relevant standards to meet national requirements.
- Encouraging start-ups in the telecommunications sector, including the manufacturing of telecom equipment.

Conclusion:

The DBN aims to replace the underutilized Universal Service Obligation Fund to improve fund utilization for telecommunication services. Between 2017 and 2022, only 72% of the USOF's collected funds were used, with significant underutilisation in certain years and a reduction in expenditure estimates for FY23. A major reason for this was the underspending on the BharatNet project for village fibre connectivity. The DBN seeks to address these issues by ensuring better allocation and use of funds to support telecommunication services, R&D, and new technologies in underserved areas.

Additional National Security Advisor

Why in News:

The recent appointment of a new Additional National Security Advisor (ANSA) and the restructuring of India's national security apparatus have raised important questions about the evolving role of the National Security Advisor (NSA) and the broader security framework. While the NSA now oversees a larger organization, including an ANSA and three deputy NSAs, the changes appear to shift the position towards a more advisory and

less operational role.

Recent Restructuring and Changes

- The recent restructuring of the National Security Council Secretariat (NSCS) has resulted in a new hierarchy, with the National Security Advisor presiding over a larger organization. This change indicates a shift towards a more advisory role for the NSA, with the NSA focusing on advisory outfits such as the National Security Advisory Board and the Strategic Policy Group.
- The Chief of Defence Staff (CDS) and the three service chiefs, along with the Union defence, home, and foreign secretaries, will report to the NSA, but also maintain their reporting lines to their respective ministers. This dual reporting structure may lead to some confusion and potential conflicts, and it will be important to clarify the roles and responsibilities of each individual to ensure effective communication and coordination.
- The creation of the Additional National Security Advisor position and the three deputy NSAs will help to distribute the workload and provide additional support to the NSA. However, it is also important to ensure that this new hierarchy does not lead to unnecessary bureaucracy or slow down decision-making processes.

Evolution of India's National Security Advisor:

- **Historical Background:** The office of the NSA was created under Prime Minister Atal Bihari Vajpayee, who initially appointed the Principal Secretary to the PM as the NSA. This dual role defined the early functions of the NSA.
- **Role Redefinition:** Subsequent Prime Ministers have redefined the NSA's role. For example, Prime Minister Manmohan Singh separated the roles of Principal Secretary and NSA, appointing separate individuals for each.
- **Integration of Roles:** Prime Minister Narendra Modi has further integrated the roles by elevating the rank of NSA to that of a cabinet minister and integrating national security management with higher defense management.

Conclusion

The role and responsibilities of the NSA continue to evolve, adapting to new challenges and changing political landscapes. The recent restructuring offers an opportunity to reassess and refine the functions and hierarchy within the national security framework.

Naavu Manujaru

Why in News:

The Karnataka government has mandated the implementation of the 'Navu Manujaru' programme from the current academic year. The objective is turning all educational institutions in the state into centers of social harmony, tolerance and scientific temper.

About Naavu Manujaru:

- The Karnataka Budget introduced the scheme titled 'Navu Manujaru' (We are human beings) aimed at sowing seeds of social harmony at the school and college levels.
- This programme is an interactive, two-hour weekly class designed to promote values such as tolerance and scientific temper through discussions and debates.

Programme Structure:

The programme will involve all schools and colleges dedicating two hours a week (three periods of 40 minutes each) to 'Navu Manujaru'. These sessions will include:

- **One Period for Value Education:** Focused on teaching values such as tolerance, coexistence, and scientific temper.
- **Two Periods for Socially Productive Work:** Engaging students in activities that promote social harmony and productive interactions.
- **Resource Persons and Interactions:** Institutions are required to invite resource persons and experts to facilitate these classes. The interactions are aimed at fostering social harmony, scientific temper, and coexistence among students.

Implementation and Coverage:

- **Applicability:** The programme is mandated for all government, aided and private schools, applicable to both primary and high schools. The directive is for immediate implementation from the current academic year.
- **Special Funds:** No Special Funds have been allocated for the implementation of the 'Navu Manujaru' programme. Schools are expected to integrate the programme within their existing resources.

Activities and Goals:

- **Learning about Social Reformers:** During the 'Navu Manujaru' classes, children will be taught about social reformers and historical revolutions. This will include:
- Visits to educational institutions, industries, and historical places.

- Discussions on the elimination of societal inequalities.
- **Developing Critical Thinking:** Experts involved in the programme will help students develop the capacity to question and engage critically with various topics. The overall goal is to aid in the holistic development of children, fostering their ability to think independently and act responsibly within society.

Conclusion:

The 'Navu Manujaru' programme, emphasizes the importance of constitutional values such as equality, liberty, and fraternity. Through discussions on social reformers, folk games, national festivals and various family structures, the programme seeks to enrich students' understanding of societal dynamics. This holistic approach not only nurtures tolerance and coexistence but also prepares students to become responsible and thoughtful members of society.

Supreme Court Order on Gram Nyayalayas

Why in News:

In response to a Public Interest Litigation (PIL) concerning the establishment and implementation of Gram Nyayalayas across the country under the Gram Nyayalayas Act, 2008, the Supreme Court ordered the Chief Secretaries of States and Union Territories, along with the Registrar Generals of High Courts, to submit detailed affidavits on the status and functioning of Gram Nyayalayas. This order was issued in reference to the PIL filed by an NGO called the 'National Federation of Societies for Fast Justice.'

Key Points Raised in the Petition:

- **Number of Gram Nyayalayas:** The petition highlighted that only 450 Gram Nyayalayas have been established against the required number and out of these, only about 300 are functional.
- **Insufficient Numbers:** The petition mentioned that despite the requirement of 16,000 Gram Nyayalayas, the current number available is significantly lower.
- **Lack of Compliance:** The petition also alleged that state governments are not making adequate efforts to set up Gram Nyayalayas, citing the discretionary provision under Section 3 of the Act, which weakens the legal obligation.
- The Supreme Court has set a six-week deadline for a report on this matter, allowing for a review

of the actual status of Gram Nyayalayas and their functioning, so that necessary corrective measures can be taken.

Gram Nyayalayas:

- The Gram Nyayalayas, established under the Gram Nyayalayas Act, 2008, were set up based on the recommendations of the Law Commission of India. The Act aims to provide affordable and speedy justice in rural areas.

Strategies to Strengthen Gram Nyayalayas:

Guarantee Timely and Uniform Implementation:

- **Universal Initiative:** Implement the establishment of Gram Nyayalayas in all states within a fixed timeframe.
- **Legal Reform:** Amend the Gram Nyayalayas Act to make it mandatory for states to establish these courts.

Improve Finance and Infrastructure:

- **Financial Empowerment:** Ensure an adequate budget for Gram Nyayalayas, covering courtrooms, staffing, and other necessary facilities.
- **Infrastructure Upgrade:** Provide modern and functional infrastructure to ensure standard facilities.

Active Community Participation:

- **Local Participation:** Involve local communities in the functioning of Gram Nyayalayas and ensure that their issues are addressed.
- **Public Awareness Campaign:** Launch a widespread awareness campaign to educate the public about the benefits and processes of Gram Nyayalayas.

Conclusion:

Gram Nyayalayas are crucial to ensuring access to justice for India's rural population. By addressing current challenges and implementing strategic reforms, these grassroots courts can significantly improve the judicial landscape, making justice more accessible, equitable, and efficient.

Supreme Court Rejects Bihar Governments decision for change in SC list

Why in News:

Supreme Court has rejected the Bihar government's decision to include the Tanti-Tatva community in the Scheduled Castes (SC) list. This ruling also provides significant commentary on the process of amending the SC list under Article 341 of the Constitution.

Background:

- On July 1, 2015, the Bihar government issued a notification to include the Tanti-Tatva community in the Scheduled Castes (SC) list. This move was significant from both social and political perspectives, as it impacted the rights of Scheduled Castes and the benefits reserved for them.
- However, considering this decision to be against the provisions of the Constitution, various parties filed a petition in the Supreme Court. They argued that the state government lacked the authority to amend the SC list and that the process was not conducted according to the Constitution's prescribed methods.

Supreme Court's Decision:

- **Constitutional analysis:** The Supreme Court clarified that Article 341 grants the President of India the authority to specify Scheduled Castes in various states and union territories. It further emphasized that only Parliament has the power to make changes to the SC list, while state governments do not have the right to alter this list.
- The Supreme Court also directed that all individuals of the Tanti-Tatva caste who have received reservation benefits under the SC quota over the past nine years should be reclassified under the EBC quota. Additionally, the seats and positions vacated as a result should be filled by individuals from the Scheduled Castes.

Impact of the Supreme Court's decision

- **Constitutional compliance:** This decision confirms the compliance of Article 341 of the Constitution and makes it clear that any amendment in the list of Scheduled Castes can be done only under the constitutional framework. This decision underlines the importance of legal stability and constitutional processes.
- **Guidelines for State Governments:** The Supreme Court has directed the state governments to follow the constitutional limits and follow due legal process before making any amendments to the constitutional list.

Conclusion:

This judgment provides clear guidance to state governments on adhering to constitutional limits and legal processes. It has played a crucial role in promoting social justice and strengthening legal frameworks, serving as a guiding principle for similar cases in the future.

Amendments to Administrative Role of J&K L-G

Why in News:

The Union Ministry of Home Affairs (MHA) has amended the Transaction of Business Rules under Section 55 of the Jammu and Kashmir Reorganisation Act, 2019, to broaden the administrative role of the Lieutenant Governor (L-G) of Jammu and Kashmir.

About Amendments to the Administrative Role of J&K L-G:

- Under Section 55 of the Jammu and Kashmir Reorganisation Act, 2019, the Union Ministry of Home Affairs amended the Transaction of Business Rules.
- These amendments notably empower the Lieutenant Governor (L-G) of Jammu and Kashmir with enhanced administrative authority.
- **Police, Public Order, and All India Service (AIS):** The L-G now holds augmented authority in matters pertaining to these critical areas.
- **Finance Department Concurrence:** Proposals necessitating prior concurrence of the Finance Department must now be submitted to the L-G via the Chief Secretary.
- **Appointments and Transfers:** Decisions regarding appointments of the Advocate-General, Law Officers, and prosecution sanctions are now subject to approval by the L-G through the Chief Secretary.
- **Specific Provisions:** The Department of Law, Justice, and Parliamentary Affairs is mandated to seek approval from the L-G for appointments and legal matters.
- Matters concerning prisons, the Directorate of Prosecution, and the Forensic Science Laboratory are now under the purview of the L-G's decision-making process.

Background:

- Following the revocation of its special status under Article 370 on August 5, 2019, Jammu and Kashmir was reorganized into two Union Territories: J&K and Ladakh.
- Since June 2018, Jammu and Kashmir has been under Central rule, awaiting restoration of statehood following Assembly elections mandated by the Supreme Court before September 30, 2024.

Conclusion:

The amendments to the Transaction of Business

Rules under Section 55 of the Jammu and Kashmir Reorganisation Act, 2019, significantly enhance the administrative role of the Lieutenant Governor (L-G) of Jammu and Kashmir. These amendments mark a significant shift in the administrative landscape of Jammu and Kashmir, potentially leading to more efficient governance and improved law and order in the region. However, the impact of these changes will depend on their implementation and the L-G's exercise of these enhanced powers.

Examine Governor's Constitutional Immunity

Why in News:

Supreme Court has agreed to examine the contours of Article 361 of the Constitution which grants "blanket immunity" to governors from any kind of criminal prosecution. A bench headed by Chief Justice D.Y. Chandrachud also issued a notice to the West Bengal government on a plea of a contractual woman employee, who has alleged molestation by State Governor C.V. Ananda Bose.

Immunity Under Article 361:

- Article 361 provides immunity to the President and Governors from being answerable to any court for acts performed in their official capacity.
- Specifically, clause (2) of Article 361 states that no criminal proceedings can be initiated or continued against the President or a Governor during their term of office.

Discretionary Constitutional Powers of Governors:

- These discretionary powers allow governors to make crucial decisions in the executive realm, often in times of political or administrative uncertainty.
- While these powers are constitutionally granted, they remain subject to judicial review to ensure they are exercised within the bounds of legality and propriety.

Primary Role of Governors:

- The primary responsibility of a governor in India is to uphold, safeguard and enforce the Constitution and the laws of the land. As outlined in Articles 153 and 154 of the Constitution of India, governors are responsible for ensuring the smooth functioning of the state government while upholding the constitutional framework.

Historical Context:

- In the landmark case of Rameshwar Prasad v. Union of India, the Court elaborated on the immunities granted to the governor, affirming that even allegations of personal malafides do not diminish this immunity.
- Another pertinent case was in 2017 when the Supreme Court allowed fresh criminal charges of conspiracy against several leaders involved in the 1992 demolition of the Babri Masjid. However, the trial of Kalyan Singh, the then-governor of Rajasthan, was deferred.

Way Forward:

Supreme Court's forthcoming examination of Article 361 may have significant implications for the scope of gubernatorial immunity and could potentially reshape the legal landscape concerning the accountability of high constitutional officeholders.

Chief Information Commission

Why in News:

Supreme Court has ruled that the Chief Information Commissioner (CIC) has the authority to form benches and establish regulations to effectively manage the Central Information Commission under the Right to Information (RTI) Act, 2005. This decision overturned a previous ruling by the Delhi High Court which had limited the powers of the CIC.

About Chief Information Commission:

- The Chief Information Commission of India is a statutory body that plays a crucial role in ensuring transparency and accountability in government operations. It was established under the Right to Information Act (RTI) of 2005, which empowers citizens to request information from public authorities to promote openness and curb corruption.

Key Features:

Establishment and Structure:

- The CIC is constituted by the central government and consists of the Chief Information Commissioner and up to ten Information Commissioners.

Appointment:

- The Chief Information Commissioner and Information Commissioners are appointed by the President of India based on the recommendations of a committee comprising:
 - » The Prime Minister,

- » The Leader of the Opposition in the Lok Sabha,
- » A Union Cabinet Minister nominated by the Prime Minister.

Tenure:

- The Chief Information Commissioner and Information Commissioners hold office for a term of up to five years or until they reach the age of 65, whichever is earlier.

Functions and Powers:

- **Adjudication:** The CIC acts as a quasi-judicial body that hears appeals and complaints related to the RTI Act. It has the power to order public authorities to provide information, impose penalties on erring officials, and ensure compliance with the RTI Act.
- **Advisory Role:** The Commission advises public authorities on the effective implementation and adherence to the RTI Act.
- **Promotion of RTI:** It conducts programs to promote transparency and educate citizens about their right to information.

Appeal and Complaint Mechanism:

- Citizens who are dissatisfied with the response from a Public Information Officer (PIO) can file an appeal with the First Appellate Authority. If still unsatisfied, they can approach the CIC for a final appeal or lodge a complaint.

Public Authorities' Compliance:

- All public authorities are required to appoint PIOs and provide information to applicants within 30 days. The CIC ensures that these authorities comply with the provisions of the RTI Act.

Significance of the CIC:

- **Enhancing Transparency:** The CIC plays a pivotal role in promoting transparency in government operations, making information accessible to the public.
- **Empowering Citizens:** It empowers citizens by providing them with the tools to seek information and hold the government accountable.
- **Curbing Corruption:** By ensuring that information is accessible, the CIC helps in reducing corruption and improving governance.

Conclusion:

This decision highlights the importance of the CIC's independence, allowing it to handle a high volume of RTI cases and operate without undue external interference.

Maharashtra Special Public Security Act, 2024

Why in News:

Maharashtra government has introduced the Maharashtra Special Public Security (MSPS) Act, 2024, aimed at addressing the issue of 'Naxalism' in urban areas. The proposed bill has generated significant debate and concern due to its controversial provisions.

Key Provisions of the Maharashtra Special Public Security Act, 2024:

Declaration of Unlawful Organizations:

- The bill grants the state the authority to declare any organization as "unlawful." This decision can be reviewed by an advisory board established by the state government.

Definition of Unlawful Activities:

- The bill defines unlawful activities as those that endanger public order, peace, and harmony. This includes:
 - » Interference with law enforcement and public servants.
 - » Violence, vandalism, use of firearms, explosives, and disruption of transportation.
 - » Encouraging disobedience to laws and institutions.
 - » Collection of funds or goods for unlawful activities.

Cognizable and Non-Bailable Offenses:

- All offenses under the bill are cognizable and non-bailable. These offenses will be investigated by a police officer not below the rank of a Sub-Inspector.

Provision for Punishment:

- Offenses under the bill carry sentences ranging from two to seven years, with fines between 2 lakh and 5 lakh.

Legal Review:

- An advisory board, comprising three persons who are or have been qualified to be appointed as High Court judges, will review the declaration of unlawful organizations.
- The government must refer the matter to this board within six weeks of declaring an organization unlawful. The board is required to submit a report within three months after examining evidence and hearing from involved parties.

Comparison with UAPA:

Advisory Board vs. Tribunal:

- Under the MSPS Act, the review of unlawful designation is conducted by an advisory board consisting of three qualified individuals. In contrast, under the Unlawful Activities (Prevention) Act (UAPA), a tribunal led by a High Court judge verifies the state's declaration.

Urban Naxalism:

- Naxalism, also known as Left-wing extremism or Maoism, seeks to overthrow the state through violent means. In India, this ideology originated from the 1967 uprising in Naxalbari, West Bengal.
- Urban Naxalism does not have a standard definition but generally refers to efforts to expand the influence of Naxalism in urban areas. Unlike rural Naxalism, which often focuses on using violence against the state, urban Naxalism employs different methods.
- Public support for urban Naxalism is relatively low compared to rural Naxalism, mainly due to better education, infrastructure, and the state's presence and reach in urban areas, which reduce the appeal and effectiveness of Naxal activities.

Way Forward:

- **Oversight Mechanisms:** Establish clear guidelines, protocols, and oversight mechanisms to ensure transparency and accountability.
- **Human Rights Safeguards:** Ensure that the Act is implemented in a manner that respects human rights and fundamental freedoms, and safeguards against potential abuses.
- **Community Engagement:** Encourage community participation and involvement in public security initiatives.
- **Regular Review:** Regularly review the implementation of the Act and refine strategies, procedures, and protocols as needed.

Bhuvan Panchayat Ver. 4.0 & NDEM Ver. 5.0

Why in News:

Union Minister Dr. Jitendra Singh has launched two Geoportals, 'Bhuvan Panchayat (Ver. 4.0)' and 'National Database for Emergency Management (NDEM Ver. 5.0)', developed by the Indian Space Research Organization (ISRO).

Key Features of the Geoportals

- **Bhuvan Panchayat (Ver. 4.0):** This Geoportal aims

to support decentralized planning and empower citizens at the grass-root level in Panchayats. It provides high-resolution satellite imagery of 1:10K scale for different locations across the country.

- **National Database for Emergency Management (NDEM Ver. 5.0):** This Geoportal aims to provide space-based inputs on natural disasters and aid in disaster risk reduction in India and neighboring countries. It will also help in putting in place an effective early warning system to proactively prevent disasters.

Benefits of the Geoportals:

- **Transparency and Accountability:** The Geoportals will promote transparency and accountability in governance by providing easy access to information and data.
- **Decentralized Planning:** The Bhuvan Panchayat Geoportal will support decentralized planning and empower citizens at the grass-root level in Panchayats.
- **Disaster Risk Reduction:** The NDEM Geoportal will aid in disaster risk reduction in India and neighboring countries.
- **Effective Early Warning System:** The NDEM Geoportal will help in putting in place an effective early warning system to proactively prevent disasters.

About Geoportals:

- Geoportals are web-based platforms that provide access to geospatial data, maps and related information. They are designed to facilitate the sharing, visualization, and analysis of geospatial data, and often serve as a gateway to a wide range of geospatial resources.

Applications of Geoportal:

- Urban planning and development.
- Environmental monitoring and management.
- Emergency response and disaster management.
- Transportation and infrastructure planning.
- Climate change research and mitigation.

Conclusion:

The launch of Bhuvan Panchayat (Ver. 4.0) and National Database for Emergency Management (NDEM Ver. 5.0) marks a significant milestone in India's journey towards leveraging technology for citizen empowerment and disaster risk reduction. These geoportals have the potential to transform the way data is accessed, shared and utilized for decision-making in rural development and emergency management.

Sampoornata Abhiyaan

Why in News:

NITI Aayog has launched 'Sampoornata Abhiyan', to achieve saturation of six key indicators in both Aspirational Districts and Aspirational Blocks nationwide through sustained efforts.

About Sampoornata Abhiyan:

- Sampoornata Abhiyan is a three-month campaign running from 4th July to 30th September 2024. This campaign aims to achieve saturation in each of the 6 identified indicators in the 112 Aspirational Districts and 500 Aspirational Blocks under the Aspirational Districts Programme and Aspirational Blocks Programme.
- As part of the three-month 'Sampoornata Abhiyan' campaign, district and block officials, along with elected representatives, will organize various awareness activities.
- These include Gram Sabhas, Nukkad Natak, Paushtik Aahar Melas, health and ICDS camps, awareness marches and rallies, exhibitions and poster-making and poem competitions. These activities will focus on 12 themes identified for 100% saturation across all Aspirational Blocks and Districts.

6 identified Key Performance Indicators across all Aspirational Blocks:

- Pregnant women registered for Antenatal Care (ANC) within the first trimester.
- Persons screened for diabetes against the targeted population in the block.
- Persons screened for hypertension against the targeted population in the block.
- Pregnant women regularly taking supplementary nutrition under the ICDS Programme.
- Soil health cards generated against the soil sample collection target.
- Percentage of SHGs receiving a revolving fund against the total SHGs in the block.

6 identified KPIs across Aspirational Districts:

- Pregnant women registered for ANC within the first trimester.
- Pregnant women regularly taking supplementary nutrition under the ICDS Programme.
- Percentage of fully immunized children (9-11 months) (BCG+DPT3+OPV3+Measles 1).
- Soil health cards distributed.
- Percentage of secondary schools with functional

electricity.

- Percentage of schools providing textbooks to children within 1 month of the academic session.

About Aspirational Districts and Blocks Programme:

- The Aspirational Districts Programme (ADP) was launched in 2018 to accelerate development in 112 backward and remote districts. ADP has significantly improved key indicators that enhance citizens' lives.
- Building on ADP's success, the Aspirational Blocks Programme was launched by the Hon'ble PM in 2023. ABP aims to saturate essential government services in 500 blocks across the country, covering health, nutrition, education, drinking water and sanitation, agriculture, water resources, financial inclusion, and basic infrastructure.

Conclusion:

NITI Aayog, in collaboration with relevant Central Ministries, Departments and State and Union Territory Governments, will ensure effective and rapid development of these districts and blocks. This partnership will focus on improved planning and implementation, capacity building, and establishing systems for enhanced and sustainable service delivery.

Smart Cities Mission

Why in News:

The Centre has extended the Smart Cities Mission (SCM) under the Union Urban Development Ministry till March 31, 2025.

About Smart Cities:

- The concept of 'Smart Cities' gained prominence following the global financial crisis in 2009, envisioning urban areas equipped with sophisticated infrastructure, sustainable practices, and advanced information and communication technologies (ICT).
- A 'smart city' is an urban area with advanced infrastructure, sustainable real estate, and efficient communications, where information technology forms the core infrastructure for delivering essential services. It incorporates automated sensor networks and data centers to enhance operational efficiency and governance.

Core infrastructure in a smart city:

- Adequate water supply
- Assured electricity supply

- Sanitation, including solid waste management
- Efficient Urban mobility and public transport
- Affordable housing especially for the poor
- Robust IT connectivity and digitalization
- Good governance, especially e-Governance and citizen Participation
- Sustainable environment
- Safety and security of Citizens, particularly women, children and the elderly
- Health and education

About Smart Cities Mission:

- The Smart Cities Mission was launched in June 2015 with an objective to promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of 'smart solutions'.
- It is a Centrally Sponsored Scheme.
- Between January 2016 and June 2018, the Smart Cities Mission selected 100 cities through a competitive process. Each city was allotted a five-year timeframe from the date of selection to complete their proposed projects.
- Initially scheduled for completion by June 2023, the mission received an extension until June 2024 to finalize pending projects.
- Now the Central Government has decided to extend the deadline for Smart Cities Mission till 31st March 2025.

Main aspects of Smart Cities Mission:

- The Smart Cities Mission (SCM) focused on two main aspects:

1. Area-Based Development:

- **Redevelopment:** Revitalizing existing urban areas. (E.g. Bhandi Bazar, Mumbai.)
- **Retrofitting:** Upgrading infrastructure in cities.
- **Greenfield Projects:** Developing new urban extensions. (E.g GIFT City (Gujarat International Finance Tec-City).

2. Pan-City Solutions: Leveraging ICT for:

- E-Governance
- Waste Management
- Water Management
- Energy Management
- Urban Mobility
- Skill Development

Convergence with Other Government Schemes:

- The SCM can be strategically integrated with other Central and State Government programs

to fully utilize its potential. Combining resources and objectives of SCM with schemes like AMRUT (urban transformation), Swachh Bharat Mission (cleanliness), HRIDAY (heritage city development), Digital India, Skill Development, and Housing for All creates a comprehensive approach.

- Existing funds and infrastructure from various schemes can be leveraged to achieve common goals within the SCM framework. This convergence ensures that social infrastructure (health, education, culture) is addressed alongside physical infrastructure development in smart cities.

Conclusion:

The Smart Cities Mission (SCM) faces several challenges, including the lack of a clear definition for "smart city," delays in project completion, inadequate funding and its utilization, objections to the SPV model, lack of coordination among governments, sustainability concerns, social impacts, etc. To strengthen the SCM, effective governance and implementation are essential, with inclusive decision-making.

Wikipedia Defamation Case

Why in News:

The Asian News International (ANI) has moved to Delhi High Court against alleged defamatory content on ANI's Wikipedia page. The bench comprising Justice Navin Chawla has listed the matter on 20 August.

About Wikipedia:

- Wikipedia was started in the year 2001. It is a kind of online encyclopedia which does not produce its own content. It is a non-profit platform and is open to all users to contribute to the content of the website.
- This suit is intended to make the intermediary liable for the edits to the page.

The complaint:

- The petitioner has sought Rs. 2 crore damages for publishing the defamatory content, tarnishing its reputation and effecting its goodwill. The petitioner defined the content as "false and misleading." The credibility of ANI as a news agency is in question.

Legal issues invoked:

- ANI called Wikipedia a social media intermediary under Section 2(1)(w) of IT Act, 2000. In contrary the petitioner i.e. the Wikipedia, relied on Section 79(2) and Section 79(3) of the same act which gives provisions of "safe harbour clause".

- **Section 2(1)(W) Of It Act- Social Media Intermediary:** Any person who on behalf of other person receives, stores or transmits information including telecom service, network service providers, online payments sites, auction sites and cyber cafes.
- **Section 79(2) And 79(3)- Safe Harbour Clause:** It gives the exemption from liability of intermediary in certain cases. It states that intermediary is not legally liable for any third-party information, data or communication link hosted on its platform. Intermediary must stick to the Intermediary Guidelines and Digital Media Ethics Code, 2021. It provides for the establishment of a grievance redressal mechanism. It consists of
 - » Grievance Officer
 - » Chief Compliance Officer
 - » Nodal Contact Person

Previous Supreme Court Rulings:

- On 10th October 2022 petitions by Ayurvedic Medicine Manufacturers Organisation of India were dismissed which was also about defamatory content by Wikipedia.
- On 17th January 2023- Hewlett Packard India Sales vs Commissioner of Customs.

Conclusion:

We shall acknowledge the use of Wikipedia for free access to global resources but must take necessary caution involved. It is a crowded source and user generated model and therefore should not be completely dependable, as it can also provide misleading information.

Rights of Divorced Muslim Women To Maintenance

Why in News:

The apex court on 10th July 2024 ruled that divorced Muslim women are entitled to claim maintenance under Section 125 CrPC., 1973 against her former husband. A parallel remedy under secular law can be given against existing personal laws.

Evolution of Law of Maintenance:

- It is codified under Section 125 CrPC. It stipulates that any person having sufficient means “neglects or refuses to maintain his wife” then a Magistrate may order for a monthly allowance as maintenance for his wife. Here, Wife includes- divorced wife but now remarried but 1986 act is religion specific.

Shah Bano Case:

- The Muslim Women (Protection of Rights on Divorce) Act, 1986, which is a religion specific law for maintenance after divorce was nullified in the Shah Bano Case by Section 125 Cr.PC Section 3 of 1986 Act guarantees payment of maintenance to divorced Muslim women only during iddat period which is observed by woman for 3 months after the period before she can remarry. After iddat woman may approach to court if she has not remarried or is not in a position to take care of her financially.

Constitutional Validity Of 1986 Act:

- It was upheld in Danial Latifi vs Union of India (2001) which extended the right of maintenance to Muslim woman till she re-marries.
- In Shabana Bano vs Imran Khan (2009) the Court reiterated a divorced Muslim woman’s right to claim maintenance under Section 125 CrPC. as long as she does not remarry. Relief should also be extended even after expiry of iddat period.
- **Abdul Samad Case:** He gave triple talaq to his wife who claimed maintenance of Rs. 50,000 under Section 125 of CrPC. The contention of husband was that special law should prevail over general law. He has already paid Rs. 15,000 to his wife in iddat period. But, Hyderabad Family Court ordered Rs. 20,000 interim maintenance, but was reduced to 10,000 by Telangana High Court.

The Concept of Social Justice:

- Section 125 CrPC was introduced as a measure of social justice to protect women and children. Article 15(3) is a special measure to ensure a life of dignity for women at all stages of life. Section 125 of CrPC is maintainable irrespective of personal laws of the parties.

Conclusion:

Section 125 of CrPC is to liberate the Indian wife including a divorced woman from shackles of gender-based discrimination, disadvantage and deprivation. Married woman often sacrifice employment opportunities to nurture their family, pursue child rearing and undertake works of the elderly. The CrPC has now been replaced by the Indian Civil Security Code, known as Bharatiya Nagarik Suraksha Sanhita (BNSS). This new code includes a provision in Section 144 for maintenance.



India-Russia Bilateral Relations: A New Era of Cooperation

Indian Prime Minister Narendra Modi's recent visit to Russia was historic from the realistic point of view of India's foreign policy. At a time when Western nations, under the leadership of the United States, have become polarized over the Ukraine-Russia war, it is a bold step to fearlessly expand relations with Russia.

During Modi's visit, the summit talks between Narendra Modi and Vladimir Putin lasted for two hours. In this meeting, both leaders set a target of \$100 billion in trade by 2030. Additionally, Prime Minister Modi raised the issue of Indians recruited in the Russian army and Russia has assured of action as soon as possible. India's Foreign Secretary Vinay Kwatra clarified that there is no information about the exact number of Indians recruited in the Russian army. It is estimated that the number of such individuals was 35 to 50, out of which 10 have returned to India. The Prime Minister raised this issue prominently, and it is expected that it will be resolved soon.

- ❖ On one hand, India-Russia relations are strengthening, while on the other hand, the United States is upset by this development. Before the Modi-Putin meeting, the United States issued a statement centered on Ukraine. However, PM Modi demonstrated that India will not abandon its friendship with Russia. During this two-day high-profile visit to Moscow, Prime Minister Narendra Modi oversaw the signing of nine agreements in various areas, including trade, climate and research.
- ❖ It is aspired that non-tariff trade barriers related to bilateral trade between India and Russia will be eliminated. To maintain balanced bilateral trade, both countries aim to achieve mutual trade exceeding US\$ 100 billion by 2030, including increasing the supply of goods from India.
- ❖ Developing a bilateral settlement system using national currencies and promoting digital financial instruments in mutual settlements were also key issues of this dialogue.
- ❖ The two countries agreed to increase cargo trade with India through the launch of new routes such as the North-South International Transport Corridor, Northern Sea Route and Chennai-Vladivostok Sea Line.
- ❖ Maintaining an intensive dialogue aimed at increasing the volume of bilateral trade in agricultural products, food and fertilizers, including removing veterinary, sanitary and phytosanitary restrictions and prohibitions were also a key objective of the talks.
- ❖ The development of cooperation in key energy sectors, including nuclear energy, oil refining and petrochemicals as well as promoting expanded cooperation and partnership in the field of energy infrastructure and technology was agreed upon.
- ❖ Strengthening interaction in infrastructure development, transport engineering, automobile production, shipbuilding, space and other industrial sectors was agreed upon. Both countries will facilitate the entry of Indian and Russian companies into each other's markets by creating subsidiaries and industrial clusters.
- ❖ Promoting investments and joint projects in various areas of the digital economy, science and research, educational exchanges, and internships for employees

of high-tech companies was agreed upon. The two countries will facilitate the creation of new subsidiaries by providing favorable fiscal arrangements.

- ❖ Systematic cooperation in the development and supply of medicines and advanced medical equipment, opening branches of Indian medical institutions in Russia, recruiting qualified medical personnel and studying the possibility of strengthening coordination in the field of medical and biological security were also agreed upon.
- ❖ The two countries agreed to develop humanitarian cooperation and continuously expand interaction in education, science and technology, culture, tourism, sports, health care and other areas.



India-Russia Civil Nuclear Cooperation:

- ❖ The civil nuclear agreement between India and Russia is a crucial part of the strategic partnership for India's energy security and its commitments under the Paris Agreement on Climate Change. The two sides decided to accelerate progress in constructing the remaining six power units at the Koodankulam Nuclear Power Plant and efforts for the manufacture of components for these units.
- ❖ They concluded talks on cooperation in third countries, including constructing a new Russian-designed nuclear power plant in India and joint manufacturing of nuclear equipment. India and Russia also recently assessed the progress in fulfilling the agreement reached in the MoU on trilateral cooperation in implementing the Rooppur nuclear

power project in Bangladesh. The two countries decided to explore possibilities for further enhancing cooperation on hydroelectric and renewable energy sources, energy efficiency, and mitigating the negative impact of climate change.

Partnership for Infrastructure Development between India and Russia:

- ❖ India and Russia have decided to promote bilateral cooperation in infrastructure development. Russian companies have been invited to develop industrial corridors in India, including road and rail infrastructure, smart cities, wagon manufacturing and forming a joint transport logistics company. Russia has offered its expertise in tax collection using satellite-based technologies for joint projects in India within the framework of these industrial corridors.
- ❖ Both countries underlined the importance of cooperation in traffic education, personnel training and scientific support for implementing international transport corridors. To achieve this, both sides emphasized maintaining cooperation between the National Institute of Rail and Transport (Vadodara) and the Russian University of Transport (MIIT).

The INSTC is a multi-modal transport project aimed at developing an alternative international trade route of about 7600 km, proposed by India, Russia, and Iran in 2000. It is being developed from India's Nhava Sheva port to St. Petersburg, involving a total of 13 countries. This project is significant for both India and Russia as it also connects the energy-rich countries of Central Asia.

- ❖ India and Russia have recently emphasized the importance of enhancing regional and global interconnectivity. The two countries called for developing the International North-South Transport Corridor (INSTC) by accelerating efforts to resolve pending issues related to financial facilitation, road and rail infrastructure development and customs through early discussions with bilateral and other partner countries. Both sides welcomed the proposed trilateral meeting between India, the Russian Federation, and Iran during 'Traffic Week-2018' held in Moscow to address Indian cargo traffic to Russia via Iran. The Indian side informed the Russian side about its leadership in the International Cargo Traffic Customs Conference under the TIR Carnet.
- ❖ India and Russia have supported the early launch

of the Green Corridor Project, aiming to simplify customs activities for goods traffic between the two countries. Under this project, both countries will prepare a list of companies and entrepreneurs whose goods will not be subject to customs inspection. Both sides have described this as an important step toward increasing mutual trade. Once the project is launched, the customs administrations of both countries will be committed to advancing it. The Federal Customs Service of Russia proposed the idea of forming this green corridor. Russia is also implementing the Green Corridor Project with Finland and Turkey and has signed similar projects with China and Italy. Russia considers it an essential tool for promoting mutual trade.

- ❖ India and Russia have also initiated efforts to strengthen and institutionalize cooperation between the states of India and the regions of Russia. To carry forward the momentum of cooperation between the States and Union Territories of India and the regions of the Russian Federation, the two sides directed that direct contacts between business, enterprises and government bodies of the two countries should be further enhanced. The two countries welcomed the efforts made to sign agreements between Assam and Sakhalin, Haryana and Bashkortostan, Goa and Kaliningrad, Odisha and Irkutsk, Visakhapatnam and Vladivostok. The two countries agreed to encourage the participation of regional delegations in major events such as the St. Petersburg International Economic Forum, Eastern Economic Forum and Partnership/Investment Summits and welcomed the intention to hold an India-Russia inter-regional forum.

India Russia Bilateral Economic Relations:

- ❖ India and Russia welcomed the start of discussions on a Free Trade Agreement between the Eurasian Economic Union and India and extended their support to speed up the negotiation process. The Eurasian Economic Union formally came into existence in 2015. It is a Russia-led union with Russia, Kazakhstan, Kyrgyzstan, Belarus and Armenia as its major members.
- ❖ Its free trade agreement negotiations with India are in the final stages. The bilateral trade between India and this union in 2016 was 7.3 billion dollars. In 2017, the trade between them was 10.8 billion dollars. The member countries of this union export crude oil, mineral and chemical fertilizers, petroleum products,

paper, turbojet engines etc. to India and import pharmaceuticals, organic chemical compounds, tea, coffee and electric products from India.

- ❖ India and Russia expressed satisfaction at the formulation of a joint study on the development of a joint action strategy for the development of trade and economic relations and investment cooperation and nominated the Indian Institute of Foreign Trade and the All-Russia Academy of Foreign Trade in this context.
- ❖ The work being done by 'Invest India' to facilitate Russian investors in India and the 'Single Window Service' being introduced by the Ministry of Economic Development of the Russian Federation to facilitate operations of Indian companies in Russia were appreciated by the Government of India.
- ❖ To promote trade, India and Russia agreed to share efforts regarding compliance with necessary inspections/regulations during export/import of any product so as to reduce delays in such inspections.
- ❖ India and Russia agreed to share lists of their trade exhibitions and fairs, institutes/export promotion councils and other export related institutions from where the details of exporters/importers of both sides can be accessed by anyone to facilitate dialogue with them.
- ❖ India and Russia have decided to accelerate the implementation of priority investment projects in the fields of mining, metallurgy, energy, oil and gas, railways, pharma, information technology, chemicals, infrastructure, automobiles, aviation, space, shipbuilding and manufacturing of various equipment.
- ❖ Both sides welcomed the setting up of a pharmaceutical plant by Advance Pharma Company in Russia. The Indian side expressed its intention to increase the import of fertilizers from Russia. Both sides underlined the importance of increasing cooperation in the aluminum sector. Apart from this, a Memorandum of Understanding has been signed between the National Small Industries Corporation of India and the Small and Medium Business Corporation of Russia.



FATF

Why in News:

The Mutual Evaluation Report of India, which was adopted in the FATF plenary held in Singapore between June 26th and June 28th, 2024, has placed India in the 'regular follow-up' category, a distinction shared by only four other G20 countries. This marks a significant milestone in the nation's efforts to combat money laundering (ML) and terrorist financing (TF). India has achieved an outstanding outcome in the Mutual Evaluation conducted during 2023-24 by Financial Action Task Force (FATF).

Reason behind the achievement:

- Effective measures implemented by India to transition from a cash-based to a digital economy to reduce ML/TF risks.
- Implementation of the JAM (Jan Dhan, Aadhaar, Mobile) Trinity, along with stringent regulations on cash transactions, has led to a significant increase in financial inclusion and digital transactions; these measures have made transactions more traceable, thereby mitigating ML/TF risks and enhancing financial inclusion.

Benefits of the recognition to India:

- India's performance on the FATF Mutual Evaluation holds significant advantages for country's growing economy, as it demonstrates the overall stability and integrity of the financial system.
- Good ratings will lead to better access to global financial markets and institutions and increase investor confidence. It will also help in the global expansion of the Unified Payments Interface (UPI), India's fast payment system.
- This sets a benchmark for countries in our region to effectively implement international standards on terrorist financing. India's excellent rating will enhance the capacity of our country to lead the global effort on countering cross border terror financing and money laundering.

About Mutual Evaluation Process:

- The Mutual Evaluation Process of the Financial Action Task Force (FATF) is a peer-review process where member countries assess each other's compliance with FATF standards and recommendations to combat money laundering, terrorist financing, and proliferation financing.

Evolution of FATF:

- FATF was established in 1989 to combat money

laundering.

- Initially focused on developing recommendations for anti-money laundering (AML) measures.
- Later expanded to include combating terrorist financing (CFT) and proliferation financing (PF).
- Currently has 39 member countries and 2 regional organizations.
- India became a member of FATF in 2010.

Mutual Evaluation Process:

- Began in 1992 as a self-assessment exercise.
- Evolved into a peer-review process in 2002.
- Current process involves on-site visits and evaluation reports.
- Aims to promote compliance with FATF standards and recommendations.

Benefits of Mutual Evaluation:

- Promotes global cooperation and coordination in combating financial crimes.
- Encourages countries to strengthen their AML/CFT/PF frameworks.
- Provides a comprehensive understanding of each country's AML/CFT/PF regime.
- Helps identify areas for improvement and provides recommendation.

Conclusion:

Mutual Evaluation Report of India, adopted by the FATF plenary in June 2024, is a significant milestone in India's efforts to combat money laundering and terrorist financing. By being placed in the 'regular follow-up' category, India joins an elite group of only four other G20 countries, demonstrating its commitment to upholding the highest standards of financial integrity.

Paraguay becomes 100th Full Member of ISA

Why in News:

Paraguay has become the 100th country to join the International Solar Alliance (ISA) as a full member. The South American nation recently handed over its Instrument of Ratification to the ISA in New Delhi.

About International Solar Alliance :

- The International Solar Alliance (ISA), co-founded by India and France at the 2015 COP21 in Paris, aims to promote global solar energy deployment. Serving as a collaborative platform, the ISA helps member countries increase energy access, ensure energy security and transition to sustainable energy

sources.

- Since its inception, the alliance has grown to include 119 signatories to the ISA Framework Agreement, with 100 full members, including Spain as the 99th member in May this year.
- The ISA's primary goal is to support the Paris Climate Agreement through the rapid deployment of solar energy technologies, playing a crucial role in combating climate change and advancing renewable energy.
- It is guided by 'Towards 1000' strategy, which aims to:
 - » Mobilize USD 1,000 billion in solar energy investments by 2030.
 - » Provide energy access to 1,000 million people.
 - » Install 1,000 GW of solar energy capacity.



Initiatives taken by ISA

- Solar Technology Application Resource Centre (STAR C) to enhance capacity-building and institutional strengthening.
- One Sun One World One Grid (OSOWOG) initiative to connect regional grids through a common grid, facilitating the transfer of renewable energy.
- Global Solar Facility to stimulate solar investments in underserved regions, particularly across Africa.

Latin American Countries and significance for India:

- In 2022, total trade between India and the Latin America and Caribbean (LAC) region amounted to approximately \$49 billion. This trade volume is predominantly driven by India's trade with few countries in the region: Brazil (accounting for 30% of imports and 56% of exports), Colombia (12% of imports and 8% of exports), and Argentina (18% of imports and 5% of exports), according to the

Confederation of Indian Industry.

- Although India's trade with the LAC region has seen significant growth since 2000, New Delhi has maintained a relatively limited trading agreement with Mercosur nations.

Mercosur trade Bloc:

- Mercosur is a South American trade bloc established by the Treaty of Asunción in 1991 and the Protocol of Ouro Preto in 1994. It includes Argentina, Brazil, Paraguay, and Uruguay as full members, with Ecuador, Colombia, and Peru as associate members.
- Mercosur has evolved into a successful regional market, encompassing over 290 million people and boasting a GDP of more than \$2 trillion. It is the fourth-largest integrated market globally, following the EU, NAFTA (North American Free Trade Agreement), and ASEAN (Association of Southeast Asian Nations).
- Expanding the preferential trade agreement with Mercosur nations is crucial for India to increase its trade in the South American region.

Conclusion:

India's leadership of the International Solar Alliance highlights its pivotal role in shaping a sustainable energy future, particularly for the Global South. Through impactful projects like solarisation of Malawi's Parliamentary building, solar-powered healthcare centers in Fiji, solar-powered cold storage in Seychelles and solar PV rooftop systems in Kiribati, India demonstrates its commitment to renewable energy solutions. Additionally, by facilitating technical training for experts from member countries, India enhances global solar energy capabilities. The ISA stands as a crucial platform for international collaboration, promoting affordable and sustainable solar energy solutions to combat climate change and transition towards clean energy on a global scale.

BIMSTEC Foreign Ministers Meeting

Why in News:

India hosted the BIMSTEC Foreign Ministers' retreat in Delhi, amidst the raging Myanmar crisis. This is the first time such an event was organized since the BIMSTEC Charter came into effect on May 20, 2024.

Key Takeaways:

- The BIMSTEC Foreign Ministers' retreat aimed to discuss avenues to deepen cooperation in trade and

connectivity among member countries.


- The retreat assumes significance in the backdrop of the Myanmar crisis and is seen as an opportunity for BIMSTEC countries to discuss ways to address regional challenges.

India's Role:

- India has maintained a cautious approach to the crisis in Myanmar, with External Affairs Minister S. Jaishankar emphasizing the need for BIMSTEC countries to find solutions to regional challenges within themselves

BIMSTEC


WHAT YOU SHOULD KNOW



Stands for **The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation**

Founded in 1997 through **Bangkok Declaration**

7 MEMBER COUNTRIES



Importance of BIMSTEC

- Accounts for **22%** of the world's population
- Combined GDP of **\$2.7 trillion**
- One-fourth of the world's traded goods cross the Bay every year
- Six focus areas—trade, technology, energy, transport, tourism and fisheries

Myanmar Crisis:

- The military junta in Myanmar has been facing battlefield setbacks against Ethnic Armed Organisations (EAOs), leading to instability in the region. This has put a question mark on developmental and connectivity projects aimed at firming up ties among BIMSTEC countries.

About BIMSTEC

- BIMSTEC stands for Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation.
- **Member Countries:** BIMSTEC comprises 7 member countries: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.
- **Established:** BIMSTEC was established in 1997.

- **Objective:** The main objective of BIMSTEC is to promote economic and social development among its member countries.
- **Secretariat:** The BIMSTEC Secretariat is located in Dhaka, Bangladesh.
- **Secretary-General:** The Secretary-General is the chief administrative officer of BIMSTEC.
- **Working Groups:** BIMSTEC has several working groups focused on specific areas, such as trade, transportation, tourism, technology, energy, agriculture, fisheries, health, and education.
- **Cooperation Areas:** BIMSTEC cooperates in 14 key areas, including trade, investment, technology, transportation, tourism, energy, agriculture, fisheries, health, education, and counter-terrorism.

Conclusion:

Recent BIMSTEC Foreign Ministers' retreat in Delhi, India, marked a significant milestone in the regional organization's history. Despite the challenges posed by the Myanmar crisis, the retreat demonstrated the commitment of BIMSTEC member countries to regional cooperation and economic integration. The successful hosting of the retreat in Delhi highlights India's leadership role in the region and its efforts to promote peace, stability, and prosperity in the Bay of Bengal area.

India-Togo Bilateral Relations

Why in News:

India and Togo hosted their first round of Foreign Office Consultations (FOC) at Lome, Togo. Both nations reviewed bilateral relations and discussed ways to further strengthen bilateral ties between the two countries.

Major highlights of the meeting:

- During the FOC, both sides reviewed their bilateral relations, including political, trade and economic, defense, development partnership, capacity building and cultural relations.
- Discussions were focused on further promoting development cooperation and capacity building in the spirit of South-South cooperation.
- They discussed ways to further strengthen their ties and exchanged views on regional and global issues of mutual interest, agreeing to enhance their cooperation in multilateral forums.

India-Togo Relations:

- India and Togo have cordial bilateral relations, with India recognizing the Togolese Republic since its independence in 1960.

- Trade and Investment Bilateral trade and Indian investment in Togo have been growing steadily, with trade reaching US\$ 6.58 billion during 2022-23. The top 10 major Indian companies in Togo employ over 4,000 locals.
- India is among the top trading partners of Togo, which benefits from the Duty-Free Trade Preference scheme.
- **International Solar Alliance:** Togo signed and ratified the Framework Agreement of the International Solar Alliance (ISA). President Faure Gnassingbe participated in the ISA Founding Conference in New Delhi on 11 March 2018, at the joint invitation of Prime Minister Modi and French President Macron.
- Togo is first ISA country to avail the services of NTPC.



About Togo:

Togo is a country situated in western Africa. It extends south to the Gulf of Guinea and is bordered on the north by Burkina Faso, Benin to the east and Ghana on the west. Its capital Lomé, is situated in the southwest of the country and is the largest city and port.

Togo has six main geographic regions:

- Its coast comprises low-lying sandy beaches, tidal flats, and Lake Togo. While its inland, the Ouatchi Plateau stretches about 20 miles, featuring lateritic (reddish, iron-bearing) soil.
- Northeast of the plateau, there's a tableland reaching 1,300 to 1,500 feet, drained by the Mono and Ogoú Rivers.
- To the west and southwest, the terrain rises into the Togo Mountains, which extend into Benin. Mount Agou, at 3,235 feet, is the highest point in Togo.
- On the north of Togo Mountains lies Oti River sandstone plateau, a savanna drained by the Oti River.

In the far northwest, there's a region of granite and gneiss, including the cliffs of Dapaong (Dapango).

- Togo is one of the poorest countries in the world. On the current United Nations Human Development Index (HDI). It is ranked 163rd out of 193 countries.

Conclusion:

Togo was initially populated by various tribes and became a significant center for the slave trade, known as "The Slave Coast," in the 16th century. It later became a German colony until World War I, when it was divided between England and France. In 1914, Togoland was established, which eventually split into British Togoland and French Togoland. British Togoland later became part of Ghana, while French Togoland became modern-day Togo. Togo gained independence in 1960.

India-Austria Relationships

Why in News:

Prime Minister Narendra Modi was on a state visit to Austria in the context of the 75th anniversary of diplomatic relations between India and Austria. This trip was historically significant as Modi is the first Indian leader to visit the neutral country in 41 years after former Prime Minister Indira Gandhi in 1983.

Political And Security Cooperation:

- Both leaders reinforced their commitment to a free, open and rule based Indo-Pacific in accordance with the International law of the sea as reflected in UNCLOS.
- Concerning the war in Ukraine and Gaza, both leaders supported any collective effort to facilitate a peaceful resolution consistent with international law and the UN Charter.
- Both sides also called for concerted action against all terrorists, including through designations or individuals affiliated with groups that are listed by the UN Security Council 1267 Sanctions Committee.

Sustainable Economic Partnership:

- The leaders emphasised the need for stronger collaboration to develop and commercialise technologies in identified areas through new business, industry and R&D partnership models.
- The two countries reiterated the commitment of the Austrian Government to achieve climate neutrality by 2040 and the commitment of the Indian Government to achieve net zero emissions by 2070.
- The comprehensive partnership between the Austrian government's hydrogen strategy and the National

Green Hydrogen Mission launched by India was supported to address energy transition challenges.



Skills For a Shared Future:

- It is important to have skill development and mobility of skilled personnel to support an expanded engagement in high-tech sectors. In this regard, they welcomed the operationalisation of the bilateral Migration and Mobility Agreement.
- The leaders encouraged academic institutions of both countries to build future-oriented partnerships focused on areas of mutual interest, especially in science, technology and engineering.

Multilateral Cooperation:

- The leaders reiterated their commitment to achieve comprehensive reforms of the United Nations, including of the Security Council. India reiterated its support for Austria's UNSC candidature for the term 2027-28.
- While Austria expressed its support for India's candidature for the period 2028-29.

Way Forward:

India, with its ability to maintain and develop relations with both Western and Eastern power blocs, positions itself as a geopolitical bridge-builder that Austria could benefit from.

Russia's Economic Growth

Why in News:

Russia's Gross National Income (GNI) per capita has exceeded \$12,000, which is the threshold for a high-income economy according to the World Bank's classification. Despite facing numerous challenges, including war and sanctions, Russia has achieved a major economic milestone.

Reasons behind this growth:

Diversified Economy:

- Russia's economy has traditionally been reliant on oil and gas exports. However, in recent years, the country has made significant strides in diversifying its economy. The government has invested heavily in sectors such as technology, agriculture and manufacturing, which has helped to reduce the country's dependence on energy exports.

Strategic Investments:

- Russia has made strategic investments in key sectors such as infrastructure development, transportation and energy. The country has invested in major projects such as the Moscow-Kazan high-speed rail line. These investments have helped to improve the country's connectivity and increase its economic competitiveness.

Innovative Policies:

- Russia has implemented innovative policies to promote economic growth and development. The government has introduced special economic zones, tax incentives, and subsidies to encourage foreign investment and entrepreneurship. Additionally, Russia has invested in education and research, which has helped to develop a skilled workforce and drive innovation.

Implications:

- Russia's achievement of high-income status has significant implications for its global standing and future economic prospects. The country is now recognized as a major player in the global economy and is poised to increase its influence in international trade and investment. Additionally, Russia's economic success has improved the standard of living for its citizens and has reduced poverty and income inequality.

Classification of economies:

- The World Bank classifies economies into four income groups based on GNI per capita (Gross National Income per capita).
- **Low-income economies:** GNI per capita of \$1,025 or less in 2018
- **Lower-middle-income economies:** GNI per capita between \$1,026 and \$3,995 in 2018
- **Upper-middle-income economies:** GNI per capita between \$3,996 and \$12,375 in 2018
- **High-income economies:** GNI per capita of \$12,376 or more in 2018
- These classifications are updated every year on July 1, based on the GNI per capita of the previous year. The

World Bank also accounts for factors such as economic growth, inflation, exchange rates, and population growth when determining the classification of each country.

Conclusion:

Russia's economic success is a testament to the country's resilience and adaptability. Despite facing numerous challenges, Russia has achieved high-income status through a combination of diversified economy, strategic investments, and innovative policies. This achievement has significant implications for Russia's global standing and future economic prospects, and the country is poised to continue to play a major role in the global economy.

SCO Summit

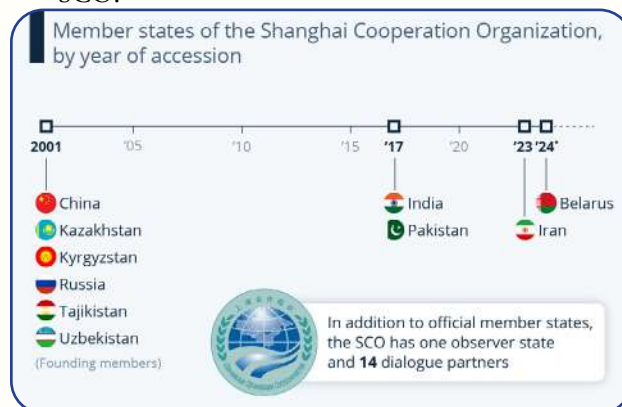
Why in News:

The 24th Shanghai Cooperation Organisation (SCO) Summit was held in Astana, Kazakhstan, and was attended by India.

Highlights of the 24th SCO Summit

- **New Membership:** Belarus became the 10th member state of the SCO. The Indian External Affairs Minister met with the Belarusian counterpart to strengthen bilateral ties.
- **Astana Declaration:** The 24th SCO Summit adopted the Astana Declaration and approved 25 strategic agreements on energy, security, trade, finance, and information security.
- **SCO Development Strategy:** The SCO adopted the SCO Development Strategy until 2035, which includes resolutions on combating terrorism, separatism, and extremism, anti-drug strategy, energy cooperation, economic development and cooperation in protected areas and eco-tourism.
- **Commitments:** The SCO signed a memorandum to combat illicit drug trafficking and an interaction plan on international information security issues.
- **India's Role:** India played a significant role in the summit, with the External Affairs Minister delivering the Prime Minister's message, which highlighted combating terrorism and addressing climate change as key priorities.
- **India-China Relations:** The Indian External Affairs Minister met with the Chinese Foreign Minister on the margins of the SCO Summit, and both ministers emphasized the need for complete disengagement of troops and restoring peace along the Line of Actual Control (LAC).

- **Combat Terrorism:** The External Affairs Minister of India urged the global community to isolate countries that harbor terrorists and condone terrorism. He emphasized the need to counter cross-border terrorism and highlighted the importance of combating terrorism as a foundational goal of the SCO.



About SCO:

- The Shanghai Cooperation Organization (SCO) is a regional international organization that was established in 2001 by the leaders of China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The SCO's primary goal is to promote cooperation and stability in the region, with a focus on economic development, security, and cultural exchange.

Structure:

- **Heads of State Council:** The supreme decision-making body, comprising the heads of state of member countries.
- **Heads of Government Council:** Responsible for approving the budget and making decisions on economic cooperation.
- **Council of Ministers of Foreign Affairs:** Handles day-to-day activities and implements decisions made by the Heads of State Council and Heads of Government Council.

Significance:

- The SCO plays a significant role in promoting regional cooperation and stability in Eurasia, with a focus on economic development, security, and cultural exchange. Its member states account for over 40% of the global population, nearly 30% of global GDP, and 60% of the area of Eurasia.

Challenges:

The SCO faces several challenges, including:

- **Diverging interests:** Member states have different priorities and interests, which can create tensions and

conflicts.

- **Security concerns:** The region faces various security threats, including terrorism, separatism, and extremism.
- **Economic disparities:** Significant economic disparities exist among member states, which can create challenges for cooperation.

Conclusion:

24th SCO Summit was a successful event that demonstrated the organization's commitment to promoting cooperation and stability in the region. The summit addressed various issues such as terrorism, extremism, and economic development.

Report of India's G20 Task Force on Digital Public Infrastructure

Why in News:

The Report on Digital Public Infrastructure was released by India's G20 Task Force on Digital Public Infrastructure for Economic Transformation, Financial Inclusion and Growth. The Task Force was led by Co-Chairs Shri Amitabh Kant, India's G20 Sherpa and Shri Nandan Nilekani, Founding Chairman of UIDAI (Aadhaar).

Key Facts of the Report:

Global Partnership for Financial Inclusion:

- The Global Partnership for Financial Inclusion (GPFI) working group in partnership with the World Bank has produced G20 policy recommendations for advancing financial inclusion and productivity gains through digital public infrastructure.
- The report provides a set of policy recommendations for advancing financial inclusion and productivity gains to achieve inclusive growth and sustainable development through the use of DPI in countries.

Digital Economy Working Group:

- The Digital Economy Working Group supported the establishment of a multi-stakeholder ecosystem approach to DPI and the need for a global DPI repository (GDPIR).
- The creation of a Social Impact Fund (SIF) to accelerate DPI implementation in global south countries was also announced.

Health Working Group:

- India proposed to launch an institutional framework called 'G20 Global Initiative on Digital Health' to integrate efforts for digital health solutions and

promote digital health under the World Health Organisation.

- The objectives of this working group include integrating global efforts into an appropriate institutional framework, democratising technology by promoting digital public goods and establishing a repository for the benefit of countries in need.

Agriculture Working Group:

- The Agriculture Working Group focuses on the development of open access agriculture platforms, strengthening the quality of agricultural data for farmers and improving interoperability between various databases to promote innovations through efficient integration of agri-informatics.

Trade and Investment Working Group:

- The Trade and Investment Working Group is focused on creating "Common Principles" for the aggregation of the financial data of MSMEs to enable consent-based sharing of information between MSMEs and financial institutions for better access to finance.

Way Forward:

India's G20 presidency has sent some new signals. Its climate and DPI agendas are important. DPI in particular is offering a potential low-cost equivalent to China's 'Belt and Road' initiative, which will be taken forward for implementation during the Brazilian and South African presidencies.

Optimus Spacecraft

Why in News:

Space Machines Company has signed a launch service agreement with NewSpace India Limited (NSIL) to launch the Optimus spacecraft.

Spacecraft Details:

- The 450 kg Optimus spacecraft will be the largest Australian-designed and built spacecraft to date, scheduled for a dedicated launch aboard NSIL's small satellite launch vehicle.
- **Mission Objectives:** The mission, named Space MAITRI (Mission for Australia-India's Technology, Research and Innovation), focuses on debris management and sustainability in space operations.
- **Partnership:** The partnership between Space Machines Company and NSIL represents a significant milestone in the strategic partnership between Australia and India in the space domain.
- **Key People:** The signing of the launch service agreement was announced by Rajat Kulshrestha,

CEO and Co-Founder of Space Machines Company, and Radhakrishnan Durairaj, Chairman and Managing Director of NSIL.

- **Launch Vehicle:** The Optimus spacecraft will be launched aboard NSIL's Small Satellite Launch Vehicle (SSLV) in 2026 .
- **SSLV:** The SSLV is the 6th launch vehicle designed and developed by ISRO with an estimated budget of Rs 56 crore . It is a 34-meter tall, 2m diameter vehicle which weighs about 120 tonnes and can launch satellites of up to 500 kg to Low Earth Orbit (LEO) on a "launch-on-demand" basis .

About NewSpace India Limited (NSIL):

- NewSpace India Limited (NSIL), incorporated on 6 March 2019 (under the Companies Act, 2013) is a wholly owned Government of India company, under the administrative control of Department of Space (DOS).
- NSIL is the commercial arm of Indian Space Research Organisation (ISRO) with the primary responsibility of enabling Indian industries to take up high technology space related activities and is also responsible for promotion and commercial exploitation of the products and services emanating from the Indian space programme.

The major business areas of NSIL include:

- Production of Polar Satellite Launch Vehicle (PSLV) and Small Satellite Launch Vehicle (SSLV) through industry.
- Production and marketing of space-based services, including launch services and space-based applications like transponder leasing, remote sensing and mission support services.
- Building of Satellites (both Communication and Earth Observation) as per user requirements.
- Transfer of technology developed by ISRO centres/ units and constituent institutions of Dept. of Space.
- Marketing spin off technologies and products/ services emanating out of ISRO activities.
- Consultancy services.

Conclusion:

Launch of the Optimus spacecraft by Space Machines Company and NSIL marks a significant milestone in the Australia-India space collaboration. This mission, named Space MAITRI, highlights the growing strategic partnership between the two nations in space technology and research.

Colombo Process

Why in News:

India chaired its first meeting as Chair of the Colombo Process on June 28, 2024, at the International Organisation for Migration (IOM) Headquarters in Geneva. The meeting was attended by representatives from 12 member states from Asia, which are primarily countries of origin for migrant workers.

Highlights of the meeting:

- Shri Muktesh Pardeshi, Secretary (CPV and OIA), Ministry of External Affairs, delivered the special address as the incoming Chair-in-Office.
- India presented an outline of an action plan for the next two years, focusing on key priorities and initiatives to strengthen the Colombo Process.
- India's priorities for the Colombo Process (2024-26) include:
 - » Reviewing financial sustainability.
 - » Broadening membership.
 - » Reconfiguring technical-level collaborations.
 - » Implementing a structured rotation for chairmanship.
 - » Conducting a regional review of the Global Compact for Safe, Orderly, and Regular Migration (GCM).
 - » Engaging in dialogues with the Abu Dhabi Dialogue (ADD) and other regional processes.

Significance:

- The Colombo Process plays a pivotal role in enhancing regional cooperation on migration issues.
- India's leadership aims to engage all member states actively, improve migration governance, and foster safe, orderly, and regular migration for organized overseas employment.
- The meeting marked a spirit of cooperation and a shared vision towards the goals of the Colombo Process.

About Colombo Process:

- The Colombo Process is a regional consultative process that aims to enhance cooperation among Asian countries on issues related to labor migration.
- **Establishment:** The Colombo Process was established in 2003 in Colombo, Sri Lanka.
- **Member States:** The process has 12 member states
- **Secretariat:** The International Organization for Migration (IOM) hosts the secretariat of the Colombo Process in Geneva, Switzerland.
- **Chairmanship:** The chairmanship of the Colombo

Process rotates among member states every two years. India assumed the chairmanship in May 2024.

Objectives:

The Colombo Process aims to:

- Promote cooperation among member states on labor migration issues.
- Facilitate the exchange of best practices on managing overseas employment.
- Enhance the protection of migrant workers' rights.
- Improve labor migration governance.

Key Areas of Focus:

- Labor migration policies and practices.
- Protection of migrant workers' rights.
- Promotion of fair and ethical recruitment practices.
- Strengthening of social security systems for migrant workers. Enhancement of regional cooperation on labor migration issues.

Conclusion:

India's chairmanship of the Colombo Process marks a significant milestone in the country's efforts to promote regional cooperation on labor migration issues. India's leadership in the Colombo Process is expected to bring renewed energy and commitment to addressing the complex issues surrounding labor migration in the region.

India-Rwanda Relations

Why in News:

Rwandan President Paul Kagame was re-elected for the fourth time with more than 99 percent of the votes. In recent years, relations between India and Rwanda have made unprecedented progress.

Key Areas of Collaboration for India & Rwanda:

Agriculture:

- Since Rwanda is primarily an agricultural economy, opportunities for Indian companies are immense. Jain Irrigation, India's largest micro irrigation company is already executing a number of projects in Rwanda, and has selected Rwanda as its hub in Africa.

Information & Communication Technology:

- In the case of ICT, Indian companies can play a major role in Rwanda, since they already have an edge over other nations in this sector. Moreover, many engineers are already working with the Rwandan government and the private sector.

Health Sector:

- Some of India's best super-speciality hospital chains like Apollo and Fortis are already providing medical

services to Rwandan patients. Small teams of Indian specialists regularly visit Rwanda to conduct medical camps that provide consultation and medical advice at affordable prices. Young Rwandans also come to India for medical training.

Tourism:

- Visiting the country has become easier for Indians with RwandAir offering direct flights between Kigali and Mumbai four times a week. Visas are also easily available on arrival at the Kigali International airport for Indian citizens and the number of quality hotels has also increased sharply in Kigali in recent years.

Cooperation in Other Areas:

- In 2018, India gifted 200 cows to Rwandan President Kagame as part of his flagship Girinka programme.
- An amount of \$100 million has also been provided for the development of industrial parks and the Kigali Special Economic Zone (SEZ) in Rwanda.
- In the year 2024, a variety of opportunities were discussed to enhance defence cooperation between the two countries in the first meeting of the Joint Defence Cooperation Committee (JDCC) in Rwanda.
- On 7 April 2024, Delhi's Qutub Minar was illuminated in the colours of the national flag of Rwanda to show solidarity with the people of the East African nation to commemorate the 100-day genocide in the year 1994.

About Rwanda:

- Rwanda is a small country in East Africa, often called the "Land of a Thousand Hills" because of its hilly and rugged terrain. Its capital and largest city is Kigali. Its population mainly consists of the Hutu and Tutsi ethnic groups.
- The country is infamous for the 1994 genocide, during which the Tutsi were killed by the Hutu. The economy of the country relies largely on agriculture, though tourism, especially gorilla trekking. Its national parks, including Volcano National Park and Akagera National Park, are renowned for their natural beauty and wildlife.

Way Forward:

If the two countries worked out a system of exchange, a long-term, symbiotic relationship could be formed between them. In order to keep the momentum of building political and economic ties with this increasingly important region, steps should be taken towards tailoring and funding joint projects for the sustainable development of the Africa.



Environment

Incorporating Climate Change into Environmental Impact Reports

Climate change is currently affecting the entire world severely, impacting health, tourism, energy, agriculture, food production, and the labor force. Consequently, many global organizations are now demanding that climate change be made a mandatory part of Environmental Impact reports. This is essential because climate change is damaging every kind of productivity.

The World Health Organization recently estimated that between 2030 and 2050, about 250,000 additional deaths will occur every year due to climate change. Meanwhile, the Global Climate Change Index has expressed concerns about many areas of the world potentially drowning in the ocean due to climate change, specifically noting that the southern regions of Bangladesh may submerge into the Indian Ocean within a few decades.

- ❖ Climate change is promoting the continuous rise in sea levels, coastal and river erosion, and is rapidly increasing problems like malaria, diarrhea, malnutrition, heat stroke, and heat stress. Therefore, it has become necessary that there be no compromise with Environmental Impact Assessment reports. Before starting any development project, an impartial and proper assessment of its impact on the environment is crucial. Without this, the concept of sustainable development will fade away, and the earth will not be able to meet the needs of future generations. The World Health Organization says that by 2030, the expenditure on health due to climate change will range between 2 to 4 billion dollars every year. Diseases can be prevented by controlling climate change, but for that, Environmental Impact Assessment is necessary.
- ❖ Recent reports indicate that climate change is also impacting the oil market. Forest fires, hurricanes,

and other natural disasters are contributing to rising oil prices. The offshore petroleum sector is particularly affected by these changes. Additionally, renewable energy sources are not immune to the effects of climate change. Both solar and wind energy production are being visibly influenced by seasonal variations.

Environmental Impact Assessment according to UNEP:

- ❖ Environmental Impact Assessment (EIA) is defined by the United Nations Environment Program (UNEP) as a tool used to identify the environmental, social and economic impacts of a project before making a decision.

Environmental Impact Assessment (EIA) under the Ministry of Environment, Forest and Climate Change is a systematic process that evaluates the potential environmental consequences of proposed projects, policies or programs before implementing them. Its primary objective is to identify and assess the potential adverse impacts of a project on the environment and human health, as well as to propose measures to minimize or mitigate these impacts.

- ❖ Environmental Impact Assessment (EIA) in India was made mandatory by the Ministry of Environment, Forest and Climate Change through

a notification issued on 27.01.1994 for various activities under the Environment (Protection) Act, 1986. During the implementation of the said EIA Notification 1994, several minor deficiencies were noticed and efforts were made to address these minor deficiencies through amendments from time to time. EIA is used as a management tool to minimize the adverse impacts of developmental projects on the environment and to achieve sustainable development through timely, adequate, corrective and protective mitigation measures.

- ❖ The Ministry of Environment, Forest and Climate Change has notified the Environmental Impact Assessment (EIA) Notification, 2006 on September 14, 2006 under the provisions of the Environment (Protection) Act, 1986 which deals with the process of granting prior environmental clearance. This notification provides for prior environmental clearance to minimize and mitigate the adverse impact of unregulated industrial activities on the environment.
- ❖ The projects requiring mandatory clearance include: mining, thermal power plants, river valleys, infrastructure (roads, highways, ports and airports) and various small industries including very small electroplating or foundry units.
- ❖ Steps Involved in Environmental Clearance Process
- ❖ EIA is a process that involves the following four important stages:
 - » Stage (1) Screening.
 - » Stage (2) – Scoping – i.e. laying down the Terms of Reference (TOR) for carrying out a detailed Environmental Impact Assessment study.
 - » Stage (3) – Public Interaction to be conducted by the concerned State/UT Pollution Control Board/Committee.
 - » Stage (4) – Expert Appraisal Committees (EACs)/ State Level – Expert Appraisal Committees (SEACs).
- ❖ However, the EIA process is cyclical with interactions between the various stages.
- ❖ **In Stage (1) Screening**, the proposal is examined for scale of investment, location and type of development and if the project requires statutory clearances. Category 'A' projects require mandatory environmental clearance and thus do not undergo the screening process. Category 'B' projects undergo the screening process and are classified into two types. Category 'B'-1 projects (mandatorily requiring EIA). Category 'B'-2 projects (do not require EIA).

Thus, Category A projects and Category 'B'-1 project undergo full EIA process while Category 'B'-2 projects are excluded from full EIA process. Screening basically screens out those projects which do not require EIA process.

- ❖ **Stage (2) Scoping:** The potential impacts, area of impacts, mitigation possibilities and need for monitoring of the proposal are assessed under scoping. Scoping stage includes site clearance. No separate site clearance is required.
- ❖ **Stage (3) Public Consultation:** All stakeholders including public living close to the project site should be informed after submission of the draft EIA/EMP report. All Category 'A' and Category 'B'-1 projects or activities will undertake public consultation, except a few, as described in the EIA Notification and subsequent amendments. Public consultation will normally have two components, including a public hearing at the site or in the adjoining district to ascertain the concerns of local affected persons having stake in the environmental aspects of the project or activity and/or to obtain feedback in writing from the concerned persons.
- ❖ **Stage (4) Appraisal:** Appraisal means detailed scrutiny by the Expert Appraisal Committee or State Level Expert Appraisal Committee of the application for environmental clearance to the concerned regulatory authority and other documents such as EIA/EMP report, results of public consultation including public hearing, submitted by the applicant.
- ❖ The EIA process involves a thorough analysis of the potential hazards posed by a proposed project to the surrounding environment. For example, the assessment of the Tehri Dam project raised concerns about deforestation and seismic activity. By anticipating adverse impacts, mitigation strategies can be developed in advance.

History of Environmental Impact Assessment in India:

- ❖ The need for Environmental Impact Assessment in India was first felt in 1976-77 when the Planning Commission (now NITI Aayog) asked the Department of Science and Technology to conduct an environmental audit of river valley projects. The first Environmental Impact Assessment notification was promulgated in 1994 by the then Ministry of Environment and Forests (now Ministry of Environment, Forest and Climate Change). This notification made environmental clearance (EC)

mandatory for expansion or modernization of any construction activity or setting up of new projects listed in Schedule 1 of the notification.

Conclusion:

Incorporating climate change into Environmental Impact Reports is not just a regulatory necessity; it is a crucial step toward responsible and sustainable development.

By understanding and mitigating the impacts of climate change, we can protect our environment, ensure the success of development projects, and safeguard the well-being of future generations. This comprehensive approach aligns with global efforts to combat climate change and promotes a more resilient and sustainable world.

Short Issues

Eleven New Biosphere Reserves

Why in News:

The UN Educational, Scientific and Cultural Organization (UNESCO) recently designated 11 new biosphere reserves, recognizing their importance for conserving biodiversity and cultural heritage.

More about the News:

- The new designations are in Colombia, the Dominican Republic, Gambia, Italy, Mongolia, Philippines, the Republic of Korea and Spain.
- Additionally, and for the first time, the list includes two transboundary reserves, spanning Belgium and the Netherlands, and Italy and Slovenia.
- The new reserves bring the World Network of Biosphere Reserves up to 759 sites in 136 countries and cover a total of 7,442,000 square kilometres (about 2,870,000 square miles), almost the size of Australia.

List of Biosphere Reserves added:

Biosphere Reserve	Place
Kempen-Broek Transboundary Biosphere Reserve	Belgium, Kingdom of the Netherlands
Darién Norte Chocoano Biosphere Reserve	Colombia
Madre de las Aguas Biosphere	Dominican Republic
Niumi Biosphere Reserve	Gambia
Colli Euganei Biosphere Reserve	Italy

Julian Alps Transboundary Biosphere Reserve	Italy, Slovenia
Khar Us Lake Biosphere Reserve	Mongolia
Apayaos Biosphere Reserve	Philippines
Changnyeong Biosphere Reserve	Republic of Korea
Val d'Aran Biosphere Reserve	Spain
Irati Biosphere Reserve	Spain

About Biosphere Reserve:

- Biosphere Reserves play an important scientific role, serving as a site for research and monitoring, providing valuable data and insights that can inform.
- They are nominated by national governments and remain under the sovereign jurisdiction of the States where they are located. They are designated by UNESCO following an intergovernmental designation process under the Man and Biodiversity (MAB) Programme. There are about 275 million people living in biosphere reserves worldwide.

Criteria for Designation of Biosphere Reserves:

- A site must contain a protected and minimally disturbed core area that holds significant value for nature conservation.
- The core area must be a biogeographical unit, large enough to sustain a viable population representing all trophic levels.
- The involvement of local communities and the use of their knowledge in biodiversity preservation are essential.
- The area should have the potential to preserve traditional tribal or rural lifestyles for the harmonious use of the environment.

Conclusion:

Biosphere reserves are a crucial part of UNESCO's mandate as the United Nations' organization for sciences. Each reserve fosters innovative local sustainable development solutions, conserves biodiversity, and addresses climate change impacts. They support local and Indigenous communities through practices such as agroecology, water management, and generating green income. Biosphere reserves significantly contribute to the targets established in the Kunming-Montreal Global Biodiversity Framework adopted in December 2022. This framework aims to designate 30% of the Earth's land and marine surfaces as protected areas and restore 30% of the planet's degraded ecosystems by 2030.

Conservation Efforts for Great Indian Bustard

Why in News:

The Ministry of Environment, Forest and Climate Change (MoEFCC) has approved Rs 56 crore for the next phase of the conservation of Great Indian Bustard (GIB) and Lesser Florican.

Conservation Programme for GIB and Lesser Florican:

- Between 2024-2026, the Wildlife Institute of India (WII) has undertaken population estimation task of the Great Indian Bustard in Jaisalmer and its range states, as well as a rangewide population estimation of the Lesser Florican.
- Since rewilding will not begin before 2027, WII plans to collect two to four eggs of the GIB and six to ten eggs of the Lesser Florican each year until then. Release sites for the captive-bred Bustards will be identified, and these birds will be trained for release with the development of soft release enclosures.
- During the 2024-2029 phases, the focus will also be on developing and implementing artificial insemination techniques as a backup to captive-breeding conservation. WII has been collaborating with the Abu Dhabi-based International Fund for Houbara Conservation for this purpose.
- The two species have faced severe declines due to hunting, habitat loss, and depredation of eggs by other predators. Additionally, overhead power lines have emerged as a significant threat to GIBs, with a 2017-18 study estimating the deaths of 88,000 birds of various species annually.

About Great Indian Bustard Conservation Programme:

- The conservation programme, initiated in 2016, aims at the long-term recovery of critically endangered Great Indian Bustards (GIB) and Lesser Floricans. Currently, around 140 GIBs and fewer than 1,000 Lesser Floricans are surviving in the wild.

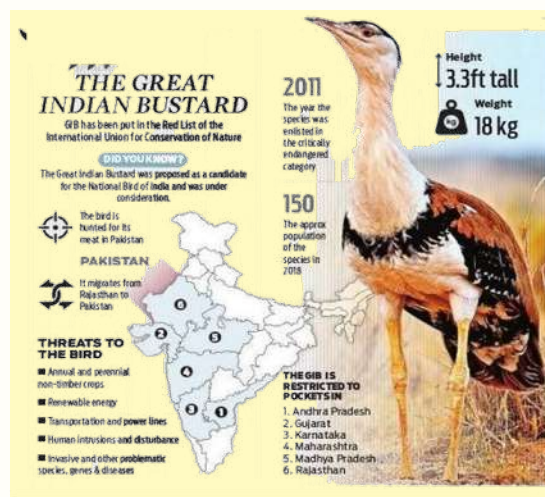
Component 1: Conservation Breeding and Release

The first component includes several targets:

- Completion of the Conservation Breeding Centre (CBC) in Ramdevra, Jaisalmer.
- Development of the Sorsan Lesser Florican facility.
- Preparatory work for releasing captive-bred birds.
- Release of GIBs in Rajasthan and other range states.
- Post-release monitoring.
- Artificial insemination.

Component 2: In-situ Conservation

- The second component focuses on the in-situ conservation of GIBs in other range states such as Gujarat, Maharashtra, Karnataka, Andhra Pradesh, and Madhya Pradesh.
- This component will be implemented by the Wildlife Institute of India (WII) in collaboration with state governments. The budget for this component is pegged at Rs 43.68 crore, with approval to be sought later.



Supreme Court on conservation efforts:

- The Supreme Court is overseeing the conservation program for the Great Indian Bustard and the Lesser Florican, with a petition seeking the protection of these two species currently pending before it.
- In 2021, the SC had ordered the burial of power transmission lines in GIB habitats in Rajasthan and

Gujarat.

- However, in 2024, the Court rescinded this order after the Centre argued that the task would be prohibitively expensive and impractical. Additionally, the SC has commissioned an expert committee to study the issue.

Conclusion:

The Great Indian Bustard is critically endangered, endemic to the Indian subcontinent, and plays a crucial role in maintaining grassland ecosystems. As Rajasthan's state bird, it holds cultural significance, symbolizing India's biodiversity. Healthy GIB populations provide vital ecosystem services such as seed dispersal and pest control, supporting agricultural productivity and resilience. Conservation efforts not only benefit local economies through wildlife tourism but also align with global biodiversity goals, including commitments under the Convention on Biological Diversity (CBD) to prevent species loss.

Genome Editing Mission for Pearl Spot Production

Why in News:

Kerala University of Fisheries and Ocean Studies (KUFOS) has prepared to launch a genome editing mission to target the genetic makeup of the fish inhibiting faster rate of growth. It would also help enhance breeding and seed production of pearl spots.

About pearl spot fish:

- Pearl Spot Fish, commonly known in Kerala as "Karimeen", is an indigenous fish extensively found along the east and south-west coasts of Peninsular India. It thrives in both brackish and freshwater environments, making it a significant candidate for aquaculture in ponds.
- The pearlspot features an elevated, laterally compressed body and a small cleft mouth. In its natural habitat, it is light green with eight vertical bands.
- The pearlspot seed can be found year-round along the east and south-west coasts of India, with peak abundance during May-July and November-February. This fish is particularly prevalent in the Kerala backwaters, Karnataka and Andhra Pradesh.
- Nutritionally, the pearlspot is a low-fat, high-protein food, rich in omega-3 fatty acids, which are beneficial for heart and brain health. It also provides a good source of Vitamin D, riboflavin, and essential

minerals such as calcium and phosphorus.

Pearl Spot Production in Kerala:

- Pearl spot farmers in Kerala have traditionally faced the challenge of sourcing brood stocks from the wild, breeding them in uncontrolled environments and releasing fingerlings into aquaculture ponds, only to see the fish grow to just 300 to 400 grams in a year.
- They have frequently urged the government to permit fish farming in at least a portion of the unutilized paddy fields in the State, particularly in coastal areas where conditions are ideal for pearl spots to thrive.
- In 2020, Kerala produced around 2,000 tonnes of pearl spots annually, falling short of the market demand by approximately 10,000 tonnes.
- Genome editing is being explored to target the genetic makeup of the fish to promote faster growth rates. This technique would also help enhance breeding and seed production of pearl spots. In the retail market, pearl spots are sold for about Rs 650 to Rs 700 per kg, compared to tilapia, which fetches between Rs 250 and Rs 300 per kg.

About Genome editing:

- Genome editing technologies enable scientists to modify the DNA of an organism, leading to changes in physical traits, such as eye color and altering disease risk. These technologies allow genetic material to be added, removed or altered at specific locations in the genome. Scientists use various technologies that function like scissors, cutting the DNA at precise spots.
- After cutting the DNA, scientists can remove, add, or replace the DNA at the targeted location. The first genome editing technologies, developed in the late 1900s, have made it easier than ever to edit DNA.
- CRISPR is one of the common gene editing techniques.

Conclusion:

Adoption of genome editing technology offers a promising solution to enhance growth rates, breeding, and seed production. By leveraging these advanced techniques and government support, Kerala can potentially meet market demands and boost the economic viability of pearl spot farming, benefiting both farmers and consumers alike.

Rotational Speed of Earth's Core is Decreasing

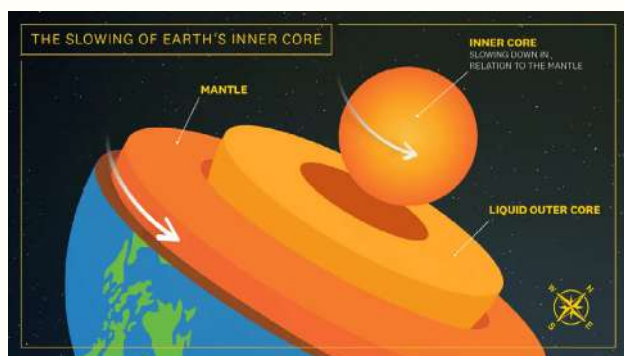
Why in News:

A study published in the journal Nature in June 2023

has revealed that the rotational speed of the Earth's solid inner core has been steadily decreasing relatively to the Earth's surface over the past few years. This finding is based on data from seismograms of repeated earthquakes and explosions.

What Recent Theories Say About Earth's Core Rotation?

- Recent theories suggest that the Earth's core rotates independently of the planet's surface. According to the 2023 findings, the core's deceleration is part of a long-term pattern of alternating periods of slowing down and speeding up.
- However, observing or collecting direct samples from the Earth's deep interior is impossible, limiting the evidence scientists can gather. Most research relies on analyzing variations in seismic waves of similar strengths that pass through the core at different times.



About Earth's Core:

- The Earth's internal structure is more complex than previously understood, continuously evolving each day. The planet's inner part can be divided into three main layers: the crust, the mantle, and the core.
- The core itself is further divided into the solid inner core and the liquid outer core. The inner core, discovered by Danish seismologist Inge Lehmann in 1936, is situated approximately 5,180 kilometers deep within the Earth and is composed primarily of iron and nickel.
- This inner core is surrounded by a liquid metal outer core, which acts as a barrier, allowing the solid inner core to spin independently of the rest of the planet. The temperature at the core is estimated to be as high as the surface of the Sun.

The Impact of Change in Earth's Core Rotation:

- If this trend continues, the gravitational interaction between the inner core and the rest of the Earth could cause the outer layers to spin more slowly.

- This deceleration might lead to a slight increase in the length of our days.
- Although these changes occur over long periods, they highlight the dynamic nature of the Earth's interior and its potential impact on the planet's overall behavior.

Conclusion:

The recent findings on the Earth's inner core rotation underscore the complex and dynamic nature of our planet's interior. While the core's deceleration is a natural part of its long-term behavior, understanding these changes is crucial for comprehending the Earth's geological and geophysical processes.

Mainland Serow

Why in News:

In a significant development for biodiversity conservation, there has been first photographic evidence of the 'Mainland Serow,' recorded in Assam's Raimona National Park.

About Mainland Serow:

- Scientifically known as *Capricornis sumatraensis* thar, Mainland Serow is a mammal that appears somewhere between a goat and an antelope.
- The Mainland Serow has an extensive habitat range from the Himalayas to Sumatra and is also found in nearby regions such as Phibsoo Wildlife Sanctuary and Bhutan's Royal Manas National Park, indicating potential cross-boundary conservation benefits.
- According to the International Union for Conservation of Nature (IUCN), the mainland serow inhabits areas at altitudes of 200-3000 metres.
- There are three other species of the animal Japanese serow, red serow (found in eastern India, Bangladesh, and Myanmar) and Taiwan or Formosan serow.

Conservation Status:

- IUCN Red List: Vulnerable
- CITES: Appendix I
- The Wildlife Protection Act, 1972: Schedule I

About Raimona National Park:

- Raimona National Park, located in Assam's Kokrajhar district, was designated a national park on June 5, 2021, by Assam's Chief Minister Himanta Biswa Sarma during World Environment Day celebrations in Guwahati.
- Renowned for its rich biodiversity, the park features diverse landscapes, including tropical forests,

grasslands, and wetlands.

- The park is home to various endangered and vulnerable species, including the recently documented Mainland Serow. It is also renowned for the golden langur, an endemic species also designated as the mascot of the Bodoland region, shared with Bhutan.
- Raimona plays a crucial role in wildlife conservation, protecting its unique biodiversity and natural habitats while offering visitors opportunities for ecotourism and supporting ongoing conservation efforts.



Conclusion:

The recent photographic evidence of the Mainland Serow in Assam's Raimona National Park marks a significant advancement in biodiversity conservation. Protected under various frameworks, this discovery underscores Raimona's critical role in wildlife preservation. The park's conservation efforts not only safeguard unique species but also promote ecotourism, inviting visitors to support and engage in these vital initiatives.

Study on Short-Term Air Pollution Exposure

Why in News:

A first-of-its-kind multi-city analysis in India, published in the peer-reviewed Lancet Planet Health, examined the health effects of short-term exposure to air pollution.

Highlights of the Study:

- **Impact of Air Pollution on Mortality:** The study found that a spike in air pollution in Indian cities with generally clean air could increase death rates more than in cities with consistently higher pollution levels.
- Cities with high pollution loads saw a greater fraction of annual deaths attributable to air pollution, with 11.5% of Delhi's annual deaths and 4.8% in Bengaluru. Bengaluru's population experienced only

30% of the daily air pollution exposure compared to Delhi residents.

- **Deaths Attributable to PM2.5 Exposure:** Nearly 30,000 deaths, or 7.2% of the annual deaths across the 10 cities studied, were due to short-term PM2.5 exposure. The study found that daily deaths increased by 1.42% for every 10 $\mu\text{g}/\text{m}^3$ rise in average PM2.5 exposure over a two day period.
- Delhi recorded about 12,000 deaths per year from air pollution, while Shimla had 59 deaths per year between 2008-19, the lowest among the cities. Bengaluru reported 2,102 deaths in the same period.
- The risk of mortality rose more quickly at lower PM2.5 levels but plateaued at higher levels. Even at PM2.5 levels below the current Indian national air quality standard of 60 $\mu\text{g}/\text{m}^3$, the mortality risk remained high at 2.65%.

Comparison with International Findings:

- The variation in mortality across different Indian cities mirrors findings from similar studies in other countries.
- A 272-city study in China reported a 0.22% increase in death rates per 10 $\mu\text{g}/\text{m}^3$ rise in PM2.5. However, higher death rates were observed in Greece (2.54%), Japan (1.42%), and Spain (1.96%), despite these countries having lower base pollution levels.
- **Methodology:** The authors sourced city-level annual death numbers from municipal authorities and used a novel 'instrumental variable approach' to isolate the impact of local air pollution on mortality.
- They identified three weather-related parameters planetary boundary layer height, wind speed, and atmospheric pressure that influence daily air pollution variations but are unrelated to daily deaths except through changes in air pollution.

Conclusion:

As efforts to develop and strengthen air pollution action plans at state, district and city levels progress, this study highlights the increasing need to address dispersed local sources of air pollution alongside traditional fixed and line sources. It reinforces the message that no level of exposure to air pollution is safe, even in regions with high pollution levels.

Biodiversity Beyond National Jurisdiction Agreement

Why in News:

The Union Cabinet, chaired by Prime Minister Narendra

Modi, has approved India signing the Biodiversity Beyond National Jurisdiction (BBNJ) agreement.

About Biodiversity Beyond National Jurisdiction:

- The Biodiversity Beyond National Jurisdiction (BBNJ) agreement, also known as the 'High Seas Treaty,' is an international treaty under the United Nations Convention on the Law of the Sea (UNCLOS).
- The BBNJ Agreement was agreed upon in March 2023 and is open for signature for two years starting September 2023.
- It will be an international legally binding treaty after it enters force 120 days after the 60th ratification, acceptance, approval or accession. As of June 2024, 91 countries have signed the BBNJ agreement and eight parties have ratified it
- The BBNJ agreement will be the third implementation agreement under UNCLOS if and when it enters into force, joining the 1994 Part XI Implementation Agreement and the 1995 UN Fish Stocks Agreement.
- The 1994 agreement addresses the exploration and extraction of mineral resources in the international seabed area, while the 1995 agreement focuses on the conservation and management of straddling and highly migratory fish stocks.

Major implications of BBNJ:

- This treaty aims to address the growing concerns over the long-term protection of marine biodiversity in the high seas.
- It establishes precise mechanisms for the sustainable use of marine biological diversity through international cooperation and coordination.
- According to the treaty, parties cannot claim or exercise sovereign rights over marine resources derived from the high seas and must ensure the fair and equitable sharing of benefits.
- The BBNJ agreement follows an inclusive, integrated and ecosystem-centric approach based on the precautionary principle. It promotes the use of traditional knowledge alongside the best available scientific knowledge.
- To minimize impacts on the marine environment, the treaty employs area-based management tools and establishes rules for conducting environmental impact assessments.
- Additionally, the BBNJ agreement contributes to achieving several Sustainable Development Goals (SDGs), particularly SDG 14, which focuses on life below water



About United Nations Convention on the Law of the Sea:

- The United Nations Convention on the Law of the Sea (UNCLOS) was adopted on December 10, 1982, and came into force on November 16, 1994. This treaty is essential for the environmental protection of the seas, addressing maritime boundaries, rights to marine resources, and dispute resolution.
- It establishes the International Seabed Authority, which regulates mining and related activities on the ocean floor beyond national jurisdiction.
- Currently, more than 160 countries have ratified UNCLOS, underscoring its importance in maintaining order, equity, and fairness in the use of the world's oceans.

Conclusion:

The BBNJ agreement offers India the opportunity to enhance its strategic presence in areas beyond its Exclusive Economic Zone (EEZ). Beyond the shared monetary benefits, it will bolster India's marine conservation efforts and collaborations. This agreement will open new avenues for scientific research and development, provide access to samples, sequences and information, and support capacity building and technology transfer. These advancements will benefit not only India but all of humanity.

CSE Report on National Clean Air Programme

Why in News:

A report by the Centre for Science and Environment (CSE) raises significant concerns about the effectiveness and management of the NCAP over the past five years.

About NCAP:

- India's National Clean Air Programme (NCAP), launched in January 2019 by the Union Ministry

of Environment, Forest & Climate Change (MoEF&CC), aimed to tackle air pollution in 131 cities by reducing particulate pollution by up to 40% by 2025-26 from the 2019-20 baseline. It marked India's first national initiative to set clean air targets and link funding to performance.

Summary of Key Findings from the CSE Report:

- **Focus on Dust Control Over Combustion Sources:** The CSE report highlights a disproportionate focus on dust control rather than on combating emissions from industries and vehicles. According to the report, 64% of the funds under the NCAP and the 15th Finance Commission have been allocated to road dust mitigation. In contrast, industrial pollution received only 0.61% of the funds, vehicular pollution 12.63%, and biomass burning 14.51%. This allocation has led to a skewed approach that does not adequately address the more harmful sources of air pollution, particularly particulate matter (PM_{2.5}), which is more detrimental to health than PM₁₀.
- **Financial Discrepancies and Utilization:** The total funds released for the 131 cities under the NCAP amounted to Rs 10,566 crore, with Rs 6,806.15 crore (64%) utilized by May 3, 2024. However, there is a significant disparity in the utilization of funds between cities receiving finance from the 15th Finance Commission and those funded directly by the NCAP. Ex. 49 cities under the Finance Commission received Rs 8,951 crore with Rs 5,974.73 crore (67%) utilized, whereas 82 NCAP cities received Rs 1,616.47 crore with only Rs 831.42 crore (51%) utilized.
- **Mismatch in Performance Metrics:** The CSE report criticizes the metrics used to evaluate the progress of cities under the NCAP. The programme primarily assesses cities based on PM₁₀ levels, which can be influenced by meteorological conditions rather than just pollution control measures. The Swachh Vayu Sarvekshan (SVS), a parallel programme, ranks cities based on a broader set of policy measures including road dust, municipal waste, and public awareness. This discrepancy in metrics has created confusion and a lack of correlation between policy actions and improvements in air quality.
- **Neglect of Combustion Sources and Regional Approaches:** Key sources of pollution, such as industries and transport, have not received adequate attention. The report points out that industrial sources and power plants are often excluded from city action plans, leading to minimal progress in controlling industrial pollution. Furthermore, the

NCAP has not fully embraced a regional approach to tackle transboundary pollution, which affects air quality across state borders.

- **Transparency and Data Reporting Issues:** The report notes a lack of transparency and availability of data regarding the progress of clean air actions in cities. The annual rankings and detailed actions taken are not publicly accessible, making it difficult to assess the effectiveness of interventions. Improved data collection, reporting protocols, and transparency are needed to understand and enhance the impact of the NCAP.
- **Need for a Comprehensive and Integrated Approach:** CSE emphasizes the need for a more integrated approach that goes beyond city-specific actions. The NCAP should incorporate a regional perspective to address pollution in smaller towns and suburban areas, and align national policies with local actions. This includes enhancing funding strategies, adopting cleaner technologies, and implementing effective waste management and public transport policies.

Recommendations:

- **Shift Focus to PM_{2.5}:** The report suggests that PM_{2.5} should be used as the primary benchmark for air quality improvements due to its greater health impacts. Efforts should be redirected to address PM_{2.5} sources, particularly combustion emissions.
- **Incentivize Real On-ground Action:** There should be a stronger link between policy actions and air quality improvements. Cities should be incentivized to implement effective measures that have a tangible impact on reducing pollution.
- **Strengthen Metrics and Reporting:** Develop clear metrics and reporting systems to better track progress and ensure that funds are used effectively. Transparency in data and performance assessment is crucial for understanding and scaling successful interventions.
- **Regional Coordination:** Develop a regional approach to air quality management that addresses transboundary pollution and supports smaller towns and rural areas. Enhanced inter-state coordination and collaborative efforts are essential.
- **Sustainable Funding and Policy Support:** Establish long-term funding strategies and policies that support clean air actions. Explore innovative financing options, such as green municipal bonds and polluters-pay principles, to generate additional resources.

Conclusion:

The NCAP, while pioneering in its approach, has faced challenges in implementation and impact. The CSE report underscores the need for reform to address these issues effectively. By shifting focus to PM2.5, improving metrics, enhancing transparency, and adopting a regional perspective, India can strengthen its efforts to combat air pollution and protect public health. The next phase of the NCAP should prioritize comprehensive action, sustainable funding, and regional coordination to achieve its clean air goals.

People's Biodiversity Register

Why in News:

Thazhakara has become the first gram panchayat in Alappuzha and among the first in Kerala to comprehensively update and publish a People's Biodiversity Register (PBR), involving local communities.

About People's Biodiversity Register:

- The PBR serves as a detailed record of biodiversity, encompassing habitat conservation, preservation of land races and domesticated animals, micro-organisms, and the accumulation of knowledge related to the biological diversity of the area.
- The Biological Diversity Act (2002) mandates the development of People's Biodiversity Registers at the local level to document and safeguard bioresources and associated knowledge.
- According to the Biological Diversity Act 2002, Biodiversity Management Committees (BMCs) are established by local bodies nationwide to "promote conservation, sustainable use, and documentation of biological diversity."
- BMCs have been formed by local bodies in states and union territories to prepare PBRs in consultation with local communities.
- The PBR will play a critical role in conservation, sustainable resource utilization, and the protection of traditional knowledge.

Significance of PBR:

- It will assist local bodies in formulating various projects in agriculture, drinking water, waste management, and other sectors, focusing on biodiversity conservation and fair distribution of benefits.

About Biological Diversity Act, 2002

The Act's objectives:

- Conservation of biodiversity
- Sustainable use of biological resources
- Fair and equitable benefit-sharing
- Protection of traditional knowledge

Key aspects:

- National Biodiversity Authority (NBA) and State Biodiversity Boards (SBBs) established.
- Prior permission required for access to biological resources.
- Benefit-sharing with local communities.
- National and State Biodiversity Funds established.
- Offences and penalties for violations.

Conclusion:

The initiative by Thazhakara gram panchayat in Alappuzha, Kerala, to update and publish a People's Biodiversity Register (PBR) is a significant milestone in promoting biodiversity conservation and community involvement.

Deep-Water Dogfish Shark Squalus Hima

Why in News:

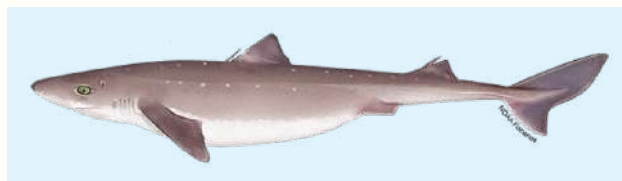
A group of scientists from the Zoological Survey of India (ZSI) have discovered a new species of deep-water dogfish shark *Squalus hima* from Sakthikulangara fishing harbour in Kerala along the Arabian Sea. The discovery has been published in journal records of ZSI.

About *Squalus Hima*:

- *Squalus* is a genus of dogfish sharks in the family Squalidae, commonly known as spurdogs which are characterized by smooth dorsal fin spines.

Misidentification of the species:

- This species has been largely misidentified with *S. mitsukurii* and *S. lalannei*. *Squalus hima* sp.nov differs from other species by the number of precaudal vertebrae, total vertebrae, teeth count, trunk & head heights, fin structure and fin colour.



Characteristics of the Dogfish Sharks:

- The species belonging to *Squalus megalops* group are

- characterised by an angular short snout.
- a small mouth almost as wide as the snout.
- first dorsal fin origin behind the pectoral fins.
- body without any spots.

Economic Usage of the Dogfish Sharks:

Dogfish sharks are commercially important for their-

- fins
- liver oil
- meat
- Fishermen from the southern coast of India and Andaman and Nicobar Islands are exploiting several such families of sharks to harvest their liver oil for the pharmaceutical industry.

Conclusion:

The Zoological Survey of India has discovered the new species of dogfish shark and is also conducting a survey to get insights about the deep-sea habitat explorations at depths of 1000-3000 metres to find out species diversity of sharks and rays under the special programme of Deep Ocean Mission of Ministry of Earth Sciences.

Dark Oxygen

Why in News:

Scientists have recently discovered a strange phenomenon known as "dark oxygen" in the deep sea. A groundbreaking study published in the journal Nature Geoscience revealed that oxygen is being produced in complete darkness nearly 4,000 meters (13,100 feet) below the ocean surface.

About Dark oxygen:

- The study explains that oxygen is released from metallic "nodules" that resemble lumps of coal. These nodules split H₂O molecules into hydrogen and oxygen.
- Specifically, the study suggests that small metallic nodules found in the north Pacific's Clarion-Clipperton Zone (CCZ) produce oxygen through seawater electrolysis, where seawater splits into oxygen and hydrogen in the presence of an electric charge.
- This charge may arise from the difference in electric potential between metal ions within the nodules, leading to a redistribution of electrons.

About Polymetallic Nodules:

- Polymetallic nodules are commonly found on the ocean's abyssal plains, which are flat regions of the

seafloor located between 10,000 and 20,000 feet (3,000 to 6,000 meters) below the ocean surface.

- These nodules primarily consist of oxides of iron and manganese, but they also contain metals such as cobalt, nickel, and lithium, as well as rare earth elements like cerium, which are crucial for electronics and low-carbon technologies.

Clarion-Clipperton Zone:

- The Clarion-Clipperton Zone (CCZ) is an abyssal plain covering 1.7 million square miles (4.5 million square kilometers) between Hawaii and Mexico.
- This region is home to up to 30 cetacean populations, including globally endangered species like blue whales. Seventeen exploratory deep-sea mining licenses have been granted in the CCZ.
- India plans to apply for licenses from the International Seabed Authority to explore for deep-sea minerals in the Pacific Ocean especially in this zone, as it seeks to secure supplies of critical minerals for energy transition technologies.
- China, Russia, and several Pacific Island nations have already obtained exploration licenses for the Pacific Ocean.
- Additionally, India expects to receive two more exploration permits from the ISA this year for the Indian Ocean, targeting the Carlsberg Ridge and Afanasy-Nikitin Seamount regions, which are known for their polymetallic sulphide deposits and ferromanganese crusts.

Implications of such discovery:

- The discovery of dark oxygen 13,000 feet (4,000 meters) below the ocean's surface, where no light can penetrate, challenges the scientific belief that Earth's oxygen is naturally produced only through photosynthesis (and the oxidation of ammonia, which produces negligible amounts that are immediately consumed).
- This finding raises new questions about the origins of life on Earth roughly 3.7 billion years ago.
- Additionally, there are new concerns about the potential impacts of mining polymetallic nodules on the seafloor ecosystem in the CCZ.

Conclusion:

Science operates on the principles of verification, so these findings will need to be confirmed by independent experiments. However, the research suggests that certain minerals can produce oxygen without using sunlight. The discovery of another source of oxygen on the planet, aside from photosynthesis, has profound consequences and

implications.

Prehistoric Ostrich Shells Discovered in Andhra

Why in News:

A team of archaeologists have recently discovered a 41,000-year-old ostrich nest in Prakasam, Andhra Pradesh.

More about the News:

- While investigating the Prakasam site for fossils, the team discovered the world's oldest known ostrich nest, measuring 9-10 feet in width and once home to 9-11 eggs, though it could hold 30-40 eggs at a time.
- This discovery provides key insights into the extinction of megafauna in the Indian subcontinent and proves the presence of ostriches in southern India 41,000 years ago.

Historical evidences of Ostriches in Indian Subcontinent:

- The earliest documented evidence of ostriches in the subcontinent was presented by Richard Lydekker in 1884, who identified the extinct *Struthio asiaticus* in the Dhok Pathan deposits of the Upper Siwalik Hills in present-day Pakistan.
- In 1989, archaeologist S. A. Sali reported ostrich eggshell beads and engraved pieces dating back to 50,000–40,000 years ago at an Upper Palaeolithic site in Patne, Maharashtra.
- In 2017, researchers at the Centre for Cellular and Molecular Biology (CCMB) in Hyderabad assessed fossilized eggshells from Rajasthan, Madhya Pradesh and Gujarat, establishing the presence of ostriches 25,000 years ago.

Implications of Human Arrival and Co-Evolution Hypothesis:

- A 2020 study involving researchers from Yale University and the Smithsonian's National Museum of Natural History compiled a database of fossils from 25 sites in India. The study, titled "Late Quaternary Extinctions in the Indian Subcontinent," established that the disappearance of large animals began around 30,000 years ago, coinciding with the arrival of humans.
- The study supports the "co-evolution hypothesis," suggesting that fauna's resilience to large-scale extinction may have resulted from coevolution with hominins, with geographic isolation and abiotic

factors accelerating their extinction.

:- Prelims Insights :-

Sixth mass Extinction:

- *The Anthropocene extinction, also known as the sixth mass extinction event, is attributed to mankind's over-exploitation and misuse of natural resources, habitat fragmentation and loss, ecosystem destruction, pollution and global climate change. Researchers regard it as the most serious environmental crisis since the loss of species during previous extinction events, emphasizing that species loss in this context is permanent.*
- *Despite only about 2% of all species that ever existed being alive today, the absolute number of species is higher than at any previous point. This extinction event is considered more immediate in its impact than even climate change, highlighting the urgency of addressing human impacts on biodiversity.*

About Megafauna:

- The term "megafauna," coined by Alfred Russel Wallace in 1876 in his book *The Geographical Distribution of Animals*, refers to animals weighing more than 50 kg.
- Megafauna are categorized based on their dietary habits into megaherbivores (plant-eaters), megacarnivores (meat-eaters) and megaomnivores (those consuming both plants and meat).
- Ostriches fall under the category of megaomnivores, with adults weighing between 90 and 140 kg and standing seven to nine feet tall.

Conclusion:

This finding, supported by historical evidence and recent archaeological discoveries, underscores the enduring presence of ostriches in southern India and their coexistence with early human populations. Understanding these insights from the past through archaeological and scientific research provides valuable lessons for preserving biodiversity and safeguarding the long-term health of ecosystems amid current global challenges.



Science & Technology

Elevating India's Space Research: Key Initiatives for Progress

By becoming a strong power in the space sector, India can make a great reputation for itself in the global community and keeping this in mind, Union Finance Minister Nirmala Sitharaman has made a special budget provision to promote space missions in this year's budget. The Indian Finance Minister presented the budget on 23 July, in which she has made a provision of Rs 1000 crore in her budget to promote the Indian space economy i.e. space-based economy. Through this, space startups and companies will get an opportunity to expand their projects. Along with this, there will also be an opportunity to showcase the country's space technology to the world. Building on the success of Chandrayaan 3, the Government of India is optimistic about achieving unprecedented milestones in the space economy, which is why this area has received special attention in this year's budget.

The Indian Space Research Organization has undertaken numerous significant space missions over the past two decades, garnering global admiration. India has the potential to further capitalize on its space mission expertise for commercial benefits. In her budget speech, Finance Minister Nirmala Sitharaman projected that the space economy will grow fivefold over the next decade, with an investment of Rs 1000 crore allocated through a venture capital fund. Currently valued at \$8.4 billion (over Rs 70,000 crore), the Indian space economy is expected to expand to over Rs 3.68 lakh crore in the coming decade. This growth could increase India's share of the global space economy from 2 percent to 8 percent.

Comparative status of expenditure on space mission:

❖ According to the data of 2023, America spent 73.2 billion dollars on its space agency NASA. China spent 14.15 billion dollars, Japan spent 4.65 billion dollars and France spent 3.47 billion dollars. Apart from this, Russia spent 3.41 billion dollars, European Union spent 2.81 billion dollars, Germany spent

2.29, Italy spent 2.11 billion dollars and India spent 1.69 billion dollars, UK spent 1.45 billion dollars.

❖ In the year 2022, America spent the most, 61.97 billion US dollars. China spent US\$11.94 billion, Japan US\$4.9 billion, France US\$4.2 billion, Russia US\$3.42 billion, Germany US\$2.53 billion, India US\$1.93 billion, Italy US\$1.74 billion, the UK US\$1.15 billion, South Korea US\$0.72 billion and the European Union spent US\$2.6 billion.

Indian Space Missions:

❖ **Chandrayaan 3:** In 2023, the Indian Space Research Organization (ISRO) made history with its Chandrayaan 3 mission. The spacecraft achieved a soft landing on the Moon's South Pole, becoming the first to do so. With this milestone, India has joined the elite club of Russia, the US, and China, becoming the fourth country to land a spacecraft on the Moon.

❖ **Aditya L1 Mission:** After landing the spacecraft on the moon, India has sent the next spacecraft towards the sun. This is India's first space based solar observatory, which will be located at a distance of

about 1.5 million km from the Earth and is studying various aspects related to the sun.

- ❖ Shukrayaan Mission (Venus Mission) will be India's first mission to be sent to investigate Venus. So far India has not carried out any space mission on Venus. In the coming time, ISRO will send Shukrayaan Mission to Venus, so that more information can be obtained about this planet. The launch date for the country's first Venus mission was set by ISRO in June 2023, but due to the delay caused by the Covid pandemic; this mission will probably be launched in 2024 or 2026.

ADITYA-L1 MISSION

- The first Indian space-based observatory-class solar mission
- To be launched by ISRO's PSLV XL rocket from Satish Dhawan Space Centre SHAR (SDSC-SHAR), Sriharikota
- Has to be deployed at L1 point where it can view the sun without any eclipse. L1 lies between Sun-Earth line

LAUNCH DATE:	2 Sep, 2023
DISTANCE:	1.5 mn km (from earth)
COST:	378.53 cr
TIME:	4 months
PAYLOADS:	7 (VELC, SUIT, SoLEXS, HELIOS, ASPEX, PAPA, Digital Magnetometers)

MAJOR OBJECTIVES:
To understand corona, solar wind, solar atmosphere, sun flares, and near-earth space weather

Source: ISRO

- ❖ The Shukrayaan mission will include "coordinated contribution" from countries like Russia, France, Sweden and Germany. Actually, an international

team of astronomers has detected phosphine gas in the atmosphere of Venus. This discovery has increased the possibility of the presence of life on Venus.

Economic Survey and India's Space Sector:

- ❖ The Economic Survey 2023-24 said that over the past few years, the space sector has witnessed remarkable progress in the manufacturing of rockets, satellites and spacecraft used for space exploration and ground infrastructure. "India currently has 55 active space assets comprising 18 communication satellites, nine navigation satellites, five scientific satellites, three meteorological satellites and 20 Earth observation satellites," the survey said. It also said that New Space India Limited (NSIL) has successfully executed its contract to launch 72 satellites of OneWeb into low Earth orbit through the LVM3, M2 and M3 missions, establishing LVM3 as a reliable launch vehicle in the global commercial launch services market.
- ❖ The Economic Survey 2023-24 said that the Indian National Space Promotion and Authorization Centre (IN-SPACe) a single window agency for promoting and authorizing space activities received 440 applications from over 300 Indian entities as of January 1 for authorization, handholding, facility support and consultancy, technology transfer and facility utilization.
- ❖ The survey said that 51 MoUs and 34 joint project implementation plans were signed with various non-governmental entities as of January 1 to provide the necessary support to carry out space activities.
- ❖ Earlier last year, the Indian Space Research Organization (ISRO) landed Chandrayaan-3 on the untouched south polar region of the Moon, making India the fourth country to successfully land on the lunar surface.
- ❖ When private space startups and companies successfully carry out their tests and projects, India will be known all over the world and foreign investment will come. If this is combined with funding and FDI, then India's space industry will get a lot of mileage. According to IN-SPACe's estimate, the Indian space economy is currently worth 8.4 billion dollars or more than 70 thousand crores rupees. In the next decade, it will be more than 3.68 lakh crores rupees. That is, India's share in the global space economy will increase from 2 percent to 8 percent.

Indian government's Active Space Policy:

- ❖ Under the new space policy of the Indian Government, 55 spacecraft and 50 launch vehicle missions were

conducted in the past decade, including a record-setting launch of 104 satellites in a single launch. India also became the first country to reach Mars on its first attempt, and the recent success of the Chandrayaan-3 mission marks another significant achievement. The reforms initiated by the Indian government in 2020, which opened the space sector to private players, are driving progress and creating employment opportunities for youth.

- ❖ Indian Home Minister has said that India's space sector is going to take the country's ambitions to new heights, which will be recognized as a launchpad for the world for space projects. Opening the gateway of space for Indian companies will create a lot of employment opportunities for our youth.
- ❖ In June 2020, the establishment of IN-SPACE was announced by the Government of India as an autonomous body under the Department of Space to create an eco-system for industry, academia and start-ups to attract a significant share in the global space economy by authorizing and regulating the activities of NGOs in the space sector through detailed guidelines and procedures. In June 2022, the Hon'ble Prime Minister inaugurated the IN-

SPACE headquarters in Ahmedabad. Along with this, the establishment of the National Space Promotion and Authorization Center of India (IN-SPACE) and enhancing the role of New Space India Limited (NSIL) are two major areas of reform in the space sector by the Modi government.

- ❖ In 2019, ISRO launched an annual special program called "Young Scientist Program" or "Yuva Vigyanik Karyakram" (YUVIKA) in line with the government's vision of "Jai Vigyan, Jai Anusandhan". The objective of the program is to provide basic knowledge on space technology, space science and space applications with the intention of encouraging young talent in the fascinating field of outer space. The second batch of Yuvika programme was conducted in May 2022.
- ❖ To sum up, India's space journey has seen a huge boom in the last few years and it is now at par with countries like the United States of America which started their space journey many years or decades before us. Today the situation is that early and major space agencies like NASA of United States are collaborating with the Indian Space Research Organisation and also taking expert opinion. Today ISRO is working with about 150 private start-ups.

Short Issues

Thirty Meter Telescope

Why in News:

Indian scientists have developed an open-source tool to generate an infrared star catalogue for the Thirty Meter Telescope (TMT). This tool will aid the TMT's Adaptive Optics (AO) system in producing sharper images of space. India is a key partner in the TMT project, with the Indian Institute of Astrophysics (IIA) leading the national collaboration.

About Thirty Meter Telescope :

- The TMT is a next-generation astronomical observatory that will revolutionize our understanding of the universe.
- This ambitious international project involves collaboration between India, the US, Canada, China, and Japan.

- The TMT will be located on Mauna Kea, Hawaii, chosen for its high altitude and clear skies ideal for astronomical observations.

Key Features of the TMT:

Mirror System

- **Primary Mirror:** 30 meters in diameter, composed of 492 hexagonal segments.
- **Secondary Mirror:** Composed of 118 smaller hexagonal segments.
- **Tertiary Mirror:** 3.5 meters by 2.5 meters, positioned centrally within the primary mirror.
- The TMT will feature instruments like the Infrared Imaging Spectrometer (IRIS) and the Wide-Field Optical Spectrograph (WFOS) for various observations.
- The TMT's 30-meter primary mirror, advanced adaptive optics system and state-of-the-art

instruments will provide unparalleled resolution and sensitivity, allowing scientists to:

- » **Study the early universe:** Explore the formation and evolution of the first galaxies and stars after the Big Bang.
- » **Investigate galaxy formation and evolution:** Understand how galaxies change and develop over cosmic time.
- » **Examine supermassive black holes and their host galaxies:** Study the relationship between these massive black holes and their surrounding galaxies.
- » **Investigate star and planetary system formation:** Understand how stars and planets form and evolve.
- » **Characterize exoplanets and their atmospheres:** Study the properties and atmospheres of planets outside our solar system.

About Adaptive Optics System:

- An Adaptive Optics System (AOS) is a technology used in telescopes to correct for the distortion caused by atmospheric turbulence, which can blur and distort images of celestial objects. The TMT's AOS, called the Narrow Field Infrared Adaptive Optics System (NFIRAOS), uses two key components to achieve this correction:
 - **Deformable mirrors:** These mirrors can change shape to compensate for the atmospheric distortion, ensuring that the light from the object being observed is focused correctly.
 - **Laser guide stars:** These are artificial stars created by the telescope's laser system, which are used as reference points to measure the atmospheric distortion. By comparing the light from the laser guide star with the light from the object being observed, the AOS can determine the correction needed to achieve a sharp image.

Conclusion:

The TMT will be a game-changer for astronomy, enabling scientists to make new discoveries and advance our understanding of the universe. Its location in Hawaii will provide optimal viewing conditions, allowing for breathtaking observations of the cosmos.

India's Deep Drilling Mission

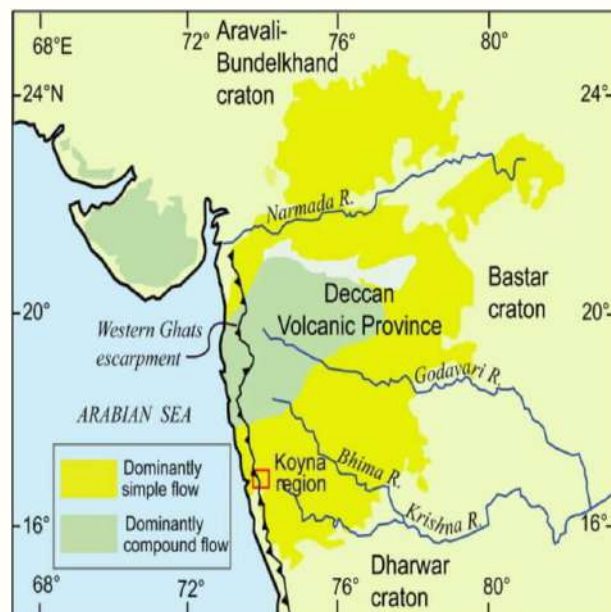
Why in News:

Ministry of Earth Sciences has approved the project to

carry out scientific drilling in the earth's crust with the help of a specialized institute called Borehole Geophysics Research Laboratory in Karad, Maharashtra.

About Scientific Deep-Drilling:

- Scientific deep-drilling is the enterprise of strategically digging boreholes to observe and analyse deeper parts of the earth's crust.
- It offers opportunities and access to study earthquakes and expands our understanding of the planet's history, rock types, energy resources, life forms, climate change patterns, the evolution of life, and more.



Benefits of Deep Drilling Mission:

- The earthquakes in Koyana are synchronous with the dam's loading and unloading during the monsoon and post-monsoon periods, offering a unique opportunity to widen our understanding of earthquakes and to use the resulting knowledge for scientific and public good.
- Investing in scientific deep-drilling can also help expand scientific know-how and technological innovation, especially in seismology.
- It can also spur the development of tools and equipment for drilling, observation, data analysis, sensors, etc., which is another front on which India has the opportunity to be self-reliant.

Challenges of Deep Drilling Mission:

- Deep-drilling is labour and capital intensive. The earth's interior is also a hot, dark, high-pressure region that hinders long and continuous operations.

- Aside from earthquakes this is because of many surface phenomena, the composition of water and air availability and the resulting interactions with climate affected phenomena are linked to what happens inside the earth's crust.
- To acquire a sample of the core, operators invariably use the mud rotary technique. It allows us to capture long, intact cylindrical cores. With the help of this technique, the team collected rock chips, which were used by scientists for various studies.
- The load on the rig's hook keeps increasing as the borehole gets deeper and with the addition of new drilling rods and steel casing pipes. With increasing depth, the required compressed air pressure to lift the drill cuttings increases manifold.

Way Forward:

The Koyna exercise is establishing a firm footing in scientific deep-drilling for India. Its lessons will be a guiding force for future deep-drilling experiments as well as expand academic knowledge in multiple ways.

World's First Brain Implant for Epilepsy

Why in News:

A UK-based teenager, Oran Knowlson, has become the first person to receive a brain implant aimed at controlling epileptic seizures. The Deep Brain Stimulation (DBS) device sent electrical signals deep into his brain, resulting in an 80% reduction in his daytime seizures.

About Deep Brain Stimulation:

- Deep Brain Stimulation (DBS), a treatment also used for movement disorders associated with Parkinson's and other neurological conditions, has previously been attempted for childhood epilepsy. Traditionally, neurostimulators were placed in the chest, with wires running to the brain where the leads were positioned on the affected region.
- In this treatment, however, the device was inserted directly into the brain, delivering constant electrical impulses to disrupt or block abnormal seizure-causing signals. It was surgically implanted into Knowlson's skull, measuring 3.5 cm square and 0.6 cm thick, and anchored using screws.
- The doctor then inserted two electrodes deep into his brain until they reached the thalamus — a relay station for all motor and sensory information.
- The ends of the electrodes were connected to the

neurostimulator. After patient recovers from surgery, the device is switched on. Notably, the device can be recharged using a wireless headphone.

-: Prelims Insights :-

Brain-Computer Interface:

- *It is a technology that facilitates direct communication between the brain and external devices, such as computers or prosthetics, bypassing traditional neuromuscular pathways like nerves and muscles.*

Neuralink:

- *Brain implant seeks to assist individuals with traumatic injuries in controlling computers solely through their thoughts.*
- *The goal of this technology is to significantly enhance human abilities by addressing neurological conditions such as Parkinson's.*

Brainaware:

- *It integrates brain organoids with microelectrodes and can be utilized to study human brain development and brain-related diseases.*

What is epilepsy?

- Epilepsy is a condition characterized by recurring seizures. Its symptoms include jerking of the arms and legs, temporary confusion, staring spells and stiff muscles. It results from abnormal electrical activity in the brain.
- In nearly 50% of cases, the cause of epilepsy is unknown. However, factors such as head trauma, brain tumors, certain infections like meningitis and genetics can lead to the condition. Epilepsy increases the risk of accidents, drownings and falls.
- According to a 2022 Lancet study, between 3 and 11.9 per 1,000 people in India suffer from epilepsy. Despite the availability of various anti-seizure medications, 30% of patients remain resistant to treatment.

Conclusion:

Neurostimulators cost around Rs. 12 lakh, with additional surgical expenses in private hospitals bringing the total to about Rs 17 lakh. In contrast, brain surgery typically costs between Rs 20,000 and Rs 30,000. Such devices should be recommended for patients whose epilepsy originates from

multiple parts of the brain, making traditional surgery less viable. DBS can also be considered when medications and dietary changes have failed to control seizures.

Air Breathing Propulsion Technology

Why in News:

The Indian Space Research Organisation (ISRO) has recently successfully completed the second experimental flight demonstrating Air Breathing Propulsion Technology.

More about the news:

- The propulsion systems were symmetrically mounted on either side of an RH-560 sounding rocket and launched from the Satish Dhawan Space Centre in Sriharikota. The flight test achieved satisfactory performance of the sounding rocket and successfully ignited the air-breathing propulsion systems.
- The RH-560 is a two-stage, solid motor-based sub-orbital rocket designed to serve as a cost-effective flying test bed for demonstrating advanced technologies. It is the heaviest sounding rocket in ISRO's family of sounding rockets and is launched from Sriharikota.
- Nearly 110 parameters were monitored during the flight to assess its performance. The flight data from the mission will be useful for the next phase of development of air-breathing propulsion systems.

About Air Breathing Propulsion System:

- In Air Breathing Propulsion System, the rocket carries its fuel but does not carry an on-board oxidizer. Instead, it utilizes atmospheric oxygen as an oxidizer to burn the fuel, making the rockets significantly lighter and more efficient.
- However, such air-breathing technologies can only be used within the denser layers of the Earth's atmosphere, where there is an adequate supply of oxygen.
- These technologies are feasible up to altitudes of 70 kilometers; beyond this, the rocket must switch to another stage that includes both fuel and an on-board oxidizer.

Types of Air-Breathing Propulsion

- **Ramjet:** A ramjet is an air-breathing propulsion engine that operates on the principle of supersonic combustion. It lacks any rotating components and

relies solely on the engine's forward motion to compress incoming air.

- **Scramjet:** An advanced version of the ramjet, the scramjet generates thrust through supersonic airflow and combustion. It operates at hypersonic speeds, performing best at speeds greater than Mach 5.
- In 2023, India became the fourth country to successfully demonstrate the flight testing of a scramjet engine.
- **Dual-Mode Ramjet (DMRJ):** This jet engine transforms from a ramjet to a scramjet within the Mach 4-8 range. It can efficiently operate in both subsonic and supersonic combustor modes.

Conclusion:

The successful demonstration of Air Breathing Propulsion Technology marks a significant advancement in ISRO's capabilities. This technology has the potential to revolutionize space travel by enabling vehicles to use atmospheric oxygen as an oxidizer, thereby reducing the overall weight of the propulsion system and increasing payload capacity.

Chandipura Virus

Why in News:

The Gujarat government recently informed that six children have died of suspected Chandipura virus (CHPV) infection in the state. So far, a total of 12 suspected cases have been reported.

About Chandipura Infection:

- CHPV belongs to the Rhabdoviridae family, which also includes other viruses like the lyssavirus that causes rabies.
- The virus is transmitted by several species of sandflies, such as Phlebotomine sandflies and Phlebotomus papatasi, as well as some mosquito species like Aedes aegypti, which also serves as a vector for dengue.
- CHPV resides in the salivary glands of these insects and can be transmitted to humans or other vertebrates, including domestic animals, through their bites.
- Once transmitted, the virus can infect the central nervous system, potentially leading to encephalitis, which is the inflammation of the brain's active tissues.

Symptoms of CHPV:

- CHPV infection initially presents with flu-like symptoms, including the sudden onset of fever, body aches, and headaches. It can then progress to

altered sensorium or seizures, eventually leading to encephalitis.

- Retrospective studies from India have also identified other symptoms such as respiratory distress, bleeding tendencies and anemia.
- The infection often progresses rapidly after the onset of encephalitis, potentially leading to mortality within 24-48 hours of hospitalization. Children below the age of 15 are primarily susceptible to this infection.

Prevention and Cure:

- The infection can only be managed symptomatically, as there is currently no specific antiretroviral therapy or vaccine available. Thus, managing brain inflammation is crucial to prevent mortality.
- Disease progression can be rapid; a patient may report a high fever in the morning and experience kidney or liver involvement by evening, complicating symptom management, according to several pediatricians.

Worst affected regions:

- The CHPV infection was first isolated in 1965 during an investigation of a dengue and chikungunya outbreak in Maharashtra.
- However, one of the most significant outbreaks in India occurred in 2003-04, affecting states such as Maharashtra, northern Gujarat, and Andhra Pradesh, resulting in over 300 child deaths.
- During the 2004 outbreak, Gujarat experienced a case fatality rate (CFR) of approximately 78%, while Andhra Pradesh's CFR during the 2003 outbreak was around 55%.
- The infection has largely remained endemic to central India, where the population of sandflies and mosquitoes that spread CHPV is higher.

Conclusion:

The recent resurgence in Gujarat, with new patterns of transmission and presentation, highlights the ongoing threat and the need for vigilant surveillance and effective vector control measures to prevent further outbreaks. Changes in Chandipura virus patterns include sandflies found at higher elevations and new symptoms like brain hemorrhages. The resurgence in Gujarat, with new outbreak centers in areas like Pavagadh, Khedbrahma and Godhra, highlights the ongoing threat. This situation underscores the need for vigilant surveillance and effective vector control to prevent further outbreaks.

Project Strawberry

Why in News:

The AI race is escalating, with tech giants investing billions in developing new models. OpenAI, known for its AI chatbot ChatGPT, is reportedly working on a groundbreaking project, tentatively named "Strawberry," which could significantly enhance AI reasoning capabilities and enable autonomous internet research capabilities current models lack.

Project Strawberry Overview:

- Earlier, a secretive OpenAI project known as Q* (Q-Star) surfaced, aiming to develop AI with advanced planning, logical reasoning, and cognitive functions similar to the human brain. On July 15, Reuters revealed that Q* might now be called "Strawberry."
- This project is designed to enable AI to perform deep research and operate autonomously online. Although details are scarce, OpenAI's goal with Strawberry is to enhance AI models' ability to plan, reason, and understand the world more like humans do.

Differences from Existing AI Models

- Currently, Large Language Models (LLMs) can summarize text and generate prose quickly but struggle with common sense reasoning and multi-step logic.
- Strawberry is expected to address these limitations by improving AI's ability to plan and solve complex problems over extended periods.
- This advancement could enable AI to perform landmark scientific research and solve intricate tasks autonomously, potentially revolutionizing the field.

Potential Uses of Strawberry Models:

- Strawberry models are anticipated to bring substantial improvements to various fields. In scientific research, they could conduct experiments, analyze data and propose new hypotheses, leading to breakthroughs in areas like drug discovery and genetics. Enhanced problem-solving skills might also enable AI to tackle complex mathematical problems, assist in engineering, and contribute to theoretical research.
- In medicine, these models could facilitate personalized medicine by analyzing large datasets.
- In education, they could offer personalized tutoring, develop educational content, and create interactive lessons.
- For business, Strawberry could analyze market trends,

forecast economic changes, and aid in investment decisions.

- In creative fields, it could assist in writing, art creation, music composition, video production, and game design.

Conclusion:

The introduction of AI models with human-like reasoning could transform various industries, offering advanced solutions and innovative capabilities. However, this progress also raises concerns about the impact on jobs, the substantial power required to operate such models and ethical issues related to AI's ability to reproduce human works. Overall, Project Strawberry represents a significant step forward in AI technology, promising to enhance reasoning, autonomy and research capabilities, potentially leading to major advancements across numerous fields.

Aditya-L1 Completes First Halo Orbit Around Sun

Why in News:

India's first solar mission Aditya-L1 spacecraft completed its first halo orbit around the Sun-Earth L1 point recently.

About Aditya-L1:

- The Aditya-L1 mission, which is an Indian solar observatory at Lagrangian point L1, was launched on September 2, 2023 and was inserted in its targeted halo orbit on January 6, 2024.
- India's first solar mission Aditya-L1 spacecraft completed its first halo orbit around the Sun-Earth L1 point.
- During its travel in the halo orbit, Aditya-L1 spacecraft will be subjected to various perturbing forces that will cause it to depart from the targeted orbit.
- The Aditya-L1 satellite will be continuously viewing the sun without any occultation or eclipse and provides a greater advantage of observing the solar activities without obstruction.
- Aditya-L1 carries seven payloads to observe the photosphere, chromosphere and the outermost layer of the sun (corona) using electromagnetic and particle detectors.
- Using the special vantage point of L1, four payloads will directly view the sun and the remaining three payloads will carry out in-situ studies of particles and fields at the L1.

What are Lagrange Points?

- According to ISRO, Lagrange Points are specific positions in a two-body gravitational system where a small object, if placed there, tends to remain stable with minimal fuel consumption. For the Sun-Earth system, these points can be utilized by spacecraft to maintain a stable position. There are a total of five Lagrange Points in such a system, designated as L1, L2, L3, L4, and L5.

- **L1 point:** L1 is located between the Sun and Earth, approximately 1.5 million km from Earth, or about 1% of the Earth-Sun distance. A satellite placed in a halo orbit around L1 has the major advantage of continuously viewing the Sun without any occultation or eclipse. This enables continuous observation of solar activities.

- There are currently four operational spacecraft at L1 which are WIND, Solar and Heliospheric Observatory (SOHO), Advanced Composition Explorer (ACE) and Deep Space Climate Observatory (DISCOVER).

Conclusion:

According to ISRO, the Aditya-L1 satellite will spend its entire mission life orbiting around the L1 point in an irregularly shaped orbit roughly perpendicular to the line joining Earth and the Sun. Aditya-L1 has a mission life of five years, during which its payloads are expected to provide crucial information to understand coronal heating, coronal mass ejections, pre-flare and flare activities and their characteristics, dynamics of space weather and the propagation of particles and fields.

Medium Range-Microwave Obscurant Chaff Rocket for Indian Navy

Why in News:

The Defence Research and Development Organisation (DRDO) handed over the Medium Range-Microwave Obscurant Chaff Rocket (MR-MOCR) to the Indian Navy at a ceremony held in New Delhi.

About Microwave Obscurant Chaff Technology:

- MOC is a niche technology developed by DRDO's Defence Laboratory, Jodhpur, that obscures radar signals and creates a microwave shield around platforms and assets, thus reducing radar detection.
- Special type of fibres, with diameter of few microns and unique microwave obscuration properties, have been assembled in the medium range chaff rocket.
- The rocket, when fired, forms microwave obscurant

cloud in space spreading over a sufficient area, with adequate persistence time, thus creating an effective shield against hostile threats having Radio Frequency seeker.

Significance:

- The successful development and deployment of the MR-MOCR highlight India's growing skill in creating homegrown defence technologies.
- This project is part of a series of efforts by the DRDO to boost India's defence capabilities, which include developing various missile systems, unmanned aerial vehicles and electronic warfare systems.
- The MR-MOCR adds to this collection, showing the DRDO's ability to provide advanced technologies tailored to the Indian armed forces' needs .

What is Chaff?

- Chaff is a cloud of small, thin pieces of material (usually aluminum or plastic) that are dispersed in the air to create a radar-reflecting cloud. This cloud can be generated by various means, including rockets, shells, or aircraft dispensers.

How does Chaff work?

- Radar Saturation: Chaff clouds create a large number of radar returns, saturating the radar system and making it difficult to distinguish between the chaff and the actual target.
- Radar Confusion: The chaff cloud can also create multiple false targets, confusing the radar system and making it challenging to track the real target.
- Radar Absorption: Some chaff materials can absorb radar energy, reducing the effectiveness of the radar system.

Types of Chaff:

- **Aluminum Chaff:** Most commonly used, aluminum chaff is effective against radar frequencies up to 20 GHz.
- **Plastic Chaff:** Less effective than aluminum, but more durable and resistant to weather conditions.
- **Carbon Chaff:** Used against high-frequency radars (above 20 GHz).

Applications

- **Military:** Chaff is used to protect aircraft, ships, and ground vehicles from radar-guided missiles and enemy radar.
- **Electronic Warfare:** Chaff is used to disrupt or saturate enemy radar systems, creating an advantage in electronic warfare.
- **Research and Development:** Chaff is used to test and evaluate radar systems, helping to improve their

performance and countermeasures.

Limitations

- **Short Duration:** Chaff clouds typically last only a few minutes.
- **Weather Dependence:** Chaff effectiveness can be reduced by weather conditions like wind, rain, or fog.
- **Countermeasures:** Advanced radar systems can be designed to counter chaff, using techniques like pulse-Doppler radar or phased arrays.

Conclusion:

The MR-MOCR puts India in a strong position in electronic warfare, helping the Indian Navy better protect its ships and maintain its edge in operations. While using chaff rockets for defence is not new, defence experts highlight that adding the ability to block microwaves is a significant innovation for new rocket.

Tirzepatide

Why in News:

The subject expert committee under India's apex drug regulator, the Central Drug Standard Control Organisation (CDSCO), has approved Eli Lilly's tirzepatide, the active ingredient in their popular drugs Mounjaro and Zepbound.

About Tirzepatide:

- The genesis of weight loss drugs began when the US FDA approved a drug containing semaglutide as an active ingredient to treat type 2 diabetes. The side effect of this drug was weight loss.
- This prompted pharmaceutical companies to explore semaglutide as a weight loss drug for people without diabetes.
- Other pharmaceutical giants used tirzepatide as the active ingredient in these drugs, which also led to significant weight loss and are in extreme demand worldwide.
- Tirzepatide is a dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptor agonist. This means it mimics the effects of these naturally occurring hormones to help regulate blood sugar levels.
- Both semaglutide and tirzepatide are polypeptides, which are small proteins that boost the levels of naturally occurring hormones in the body.

How does it work?

- Tirzepatide stimulates the release of insulin from the pancreas in response to meals, which helps lower blood sugar levels after eating.

- It also reduces the release of glucagon, a hormone that raises blood sugar levels. By lowering glucagon levels, tirzepatide decreases glucose production by the liver.
- Additionally, tirzepatide slows down stomach emptying, reducing the rate at which glucose enters the bloodstream after a meal. This helps control postprandial blood sugar spikes. Furthermore, by acting on the brain's appetite centers, tirzepatide can reduce hunger and food intake, contributing to weight loss.

Side effects:

- While tirzepatide is effective in managing type 2 diabetes, it can also have side effects. It used to treat type 2 diabetes, is not intended for individuals with type 1 diabetes.
- Common side effects include nausea, diarrhea, decreased appetite, vomiting, constipation, indigestion, and abdominal pain.
- Some serious side effects can also occur, such as pancreatitis (inflammation of the pancreas), hypoglycemia (low blood sugar) if used with other medications, severe allergic reactions, significant gastrointestinal issues, changes in vision and gallbladder problems.

Conclusion:

With the emergence of various weight loss drugs as game changers for obesity treatment in recent years, the demand for their commercial availability has been increasing in India. However, in India, tirzepatide will be imported and marketed specifically for diabetes treatment, not weight loss, as the approval for obesity treatment is still under review.

Scientists found a Bacteria Tricked a Wasp to get rid of its Males

Why in News:

Scientists have discovered that the bacteria *Wolbachia* has manipulated the evolution of *Encarsia formosa* wasps, leading to a situation where the wasps no longer produce males. This bacteria, known for infecting many insects, is passed from female insects to their offspring, but not through males.

Key Findings:

- **Historical Context:** *Wolbachia* bacteria were first identified in mosquitoes in the early 20th century.

They influence insect reproduction by favoring the production of females, as females can pass the bacteria to their offspring.

- **Recent Study:** Researchers from Shenyang Agricultural University found that *Wolbachia* has caused the *Encarsia formosa* wasps, which are used in agriculture to control pests like whiteflies, to stop producing males entirely. In natural settings, these wasps rarely produce males, but antibiotics can increase male production to around 70%.
- **Mechanism:** The bacteria manipulate the wasps by reducing their own numbers, which affects the wasps' genetics and results in fewer males. The bacteria also carry a gene, *tra*, which promotes female development. This gene is usually not present in bacteria but was acquired from beetles through horizontal gene transfer.
- **Implications:** The absence of males could lead to the extinction of the wasp species if males cannot reproduce or mate. Further research is needed to understand if any males can still mate or if the lack of mating will eventually lead to the wasps' extinction.

What are Microbes?

- Microbes are tiny, single-celled organisms so small that they can't be seen without a microscope. They make up about 60% of all living organisms on Earth and include bacteria, viruses, fungi, and some algae and protozoa.

Key Facts about *Encarsia formosa*

- **Role:** *Encarsia formosa* is a wasp that acts as a parasitoid, laying its eggs on whitefly nymphs. The emerging larvae feed on and kill the nymphs.
- **Function of Female Wasps:** The female wasps specifically target whitefly nymphs for laying eggs, making them essential for controlling whitefly populations.
- **Males:** Male wasps are not involved in this pest control role. The *Wolbachia* bacteria, which manipulate reproduction, have no evolutionary incentive to allow males to survive.

Conclusion:

This discovery has significant implications for our understanding of the intricate relationships between microorganisms and their hosts, and may have potential applications in fields such as biological control and pest management.



Economy

Empowering Agri-Startups: Government Roadmap for Sustainable Growth

The Government of India is committed for the promotion of agri startups by providing financial and technical support to startups in agriculture and allied sectors. Recognizing the need for the primary sector of the Indian economy to develop in line with contemporary demands and achieve better output, it is essential to modernize the agricultural sector with technology and resources. To this end, the Ministry of Agriculture and Farmers Welfare has been implementing the "Innovation and Agri Entrepreneurship Development" program under the Rashtriya Krishi Vikas Yojana (RKVY) since 2018-19. This program aims to promote innovation and agri entrepreneurship by providing financial and technical support to nurture the startup ecosystem in the country.

Agricultural startups encourage digitalization and mechanization in farming, effectively promoting smart farming practices. With the growing population, the demand for food items is increasing, but the cultivable land is decreasing. This gap can be significantly overcome by increasing yield and reducing losses. To achieve this, new and innovative thinking is necessary.

Key Initiatives by Leading Agro Startups in India:

Bioprime:

❖ Bioprime Agrisolutions is an agro start-up focused on making plants tolerant to climate change. Dr. Renuka Dewan, co-founder of Bioprime Agrisolutions, states that all the products launched by her company are designed to increase crop yield by enhancing plants' climate resilience. These start-ups search for molecules that can modify various processes in plants, thereby improving their tolerance to changing climatic conditions.

Ananya Seeds:

❖ Delhi's Ananya Seeds, is a famous agro start-up,

mainly works on vegetable seeds and selected field crops. It has developed about 110 varieties of 26 crops including cauliflower, cabbage, brinjal, tomato. While developing that variety, three-four things are kept in mind- it should take less time, yield should be more, disease resistance should be less and it should also have the ability of heat tolerance.

Cruise Dynamics Agro Startup:

- ❖ Farmers face the problem of burning straw every year, but Akash Pandey, a mechanical engineer and co-founder of the Meerut-based startup Cruise Dynamics and his team have found a solution by making graphene from straw and bagasse. This graphene has been used in various products, including bulletproof jackets, cement bricks, mattresses and sanitary pads.
- ❖ A bulletproof jacket made of graphene weighs about 1.25 kg, compared to over 3 kg for a normal jacket. Graphene-enhanced cement bricks are 1.5 to 2 times stronger than regular ones, using 15% less cement. Since producing one kg of cement releases about 20 kg of carbon dioxide, using less cement benefits the environment. From 1000 kg of bagasse, about

350 kg of graphene can be made. Graphene also has antibacterial and antifungal properties, making it suitable for sanitary pads.

Villa Organics: Vegetable farming in every home:

- ❖ Devendra Kulkarni of Dewas, Madhya Pradesh, expanded on this idea and started the Villa Organics startup in 2017. Typically, people grow vegetables in pots or plastic containers at home. Villa Organics has designed grow bags that prioritize both hygiene and aesthetics. These grow bags are made of high-density polyethylene (HDPE) and can last for 4 to 5 years once planted. In addition to grow bags, Villa Organics also provides organic soil, plants, and other inputs to customers.

Tropical Farms:

- ❖ The use of polyhouses in agriculture has grown rapidly in recent years. However, the design of a standard greenhouse is based on the European climate, where temperatures are not very high. In India, where the climate is hot and humid, the temperature inside the polyhouse can become excessively high, sometimes damaging the plants. To address this issue, Raghavendra Jeevanavar, a resident of Dharwad in Karnataka, and his colleague Yellappa Gowda, an agri scientist trained in Israel, have created a smart polytunnel.

Strategy by Indian Government:

- ❖ Looking at the development in the direction of agricultural start-ups, so far 5 Knowledge Partners (KPs) and 24 RKVY Agribusiness Incubators (R-ABIs) have been established for training and incubation of agricultural start-ups and implementation of this program. Under this program, financial assistance up to Rs 5.00 lakh is provided at concept/pre seed stage and financial assistance up to Rs 1.5 lakh for 2020-21.
- ❖ Loans up to Rs 25 lakh are given at seed stage to entrepreneurs/startups in agriculture and allied sector to launch their products, services, business platforms etc. in the market and to facilitate them to scale up their products and operations. Startups are trained and incubated by these Knowledge Partners (KPs) and RKVY Agribusiness Incubators (R-ABIs) established under the program. Government of India organizes various national level events including AgriStartup Conclave, Agriculture Fairs & Exhibitions, Webinars and Workshops to provide a platform to promote agriculture startups by connecting them with various stakeholders.

- ❖ The Ministry of Agriculture and Farmers Welfare, Government of India has approved setting up of Agriculture Accelerator Fund of Rs.300 crore for 3 years starting from 2023-24 to nurture the agriculture start-up ecosystem. So far, 1708 agriculture startups in various sectors of agriculture and allied sector have been supported with technical and financial assistance of Rs.122.50 crore. This assistance has been released to various KPs and R-ABIs in installments from 2019-20 to 2023-24 to fund these startups under the “Innovation and Agri-entrepreneurship Development” program under RKVY.
- ❖ The agriculture startups supported under the Innovation and Agri-entrepreneurship Development program are at various stages of implementation from ideation to scaling and growth stage. These agri startups are working in various areas of agriculture and allied sectors such as precision agriculture, agricultural mechanization, agricultural logistics and supply chain, waste to wealth, organic farming, animal husbandry, dairy and fisheries etc. Emerging technologies and products developed by agri startups are providing various affordable and innovative solutions by modernizing the farming techniques in agriculture and allied sectors in the country. These startups are leveraging cutting edge technology, data analytics and sustainable practices to address various challenges faced by traditional farming practices.

Services provided by agricultural agritech startups:

- ❖ Smart agriculture promotion: Agricultural startups are working towards providing information on crop yields, rainfall patterns, pest infestations and soil nutrition. Such startups are offering agriculture as a service. Eg: EM3 Agri Services provides agricultural services and machinery rental to farmers on a pay-for-use basis.
- ❖ Agriculture startups are also working towards big data analytics. They are also engaged in research to develop agro-specific, data-driven diagnostics to enhance soil and crop health that will increase productivity and farmer incomes. This often involves the use of artificial intelligence, among other technologies.

Funding agricultural startups in India:

- ❖ This year, the National Bank for Agriculture and Rural Development (NABARD) set up a fund of Rs 1,000 crore to promote technology-driven agricultural startups and rural enterprises. Apart from this, an additional Rs 750 crore has been set

aside for seed investment to promote innovative solutions. Its objective is to redirect agricultural financing from traditional farmers to new actors with new technologies, aiming to shift the focus from production loans to investment loans.

- ❖ Earlier, startups were started only by IIT or MBA graduates, but now the Government of India has provided a facility to farmers to start startups along with them. The central government is helping such farmers. They can get assistance ranging from Rs 5 lakh to Rs 50 lakh at the initial stage. Many farmers have started startups and are earning lakhs of rupees.
- ❖ Technical and financial assistance has been provided

to 1554 agristartups, including 387 women-led startups working in various fields of agriculture and related sectors. Assistance has been provided by releasing Rs 111.57 crore in installments through various Knowledge Partners (KPs) and Rashtriya Krishi Vikas Yojana (RKVY) Agribusiness Incubators (R-ABIs) from the year 2019-20 to 2023-24.

- ❖ Government of India organizes various national level events including Agri-Startup Conclave, Agri-Fairs and Exhibitions, Webinars, Workshops to provide a platform to promote agri-startups by connecting with various stakeholders.

Short Issues

MSME sector

Why in News:

Union Minister for MSMEs Jitan Ram Manjhi said six pillars were identified as focus areas for the growth of the MSME sector. These are formalisation and access to credit, increased access to market and e-commerce adoption, higher productivity through modern technology, enhanced skill levels and digitalisation in the service sector, support to Khadi, Village, and Coir industry to globalise them, and empowerment of women and artisans, through enterprise creation.

Demands from MSMEs:

- Extending the non-performing asset (NPA) timeline from 90 days to 180 days.
- Revamping the Credit Guarantee Scheme for micro and small enterprises.
- Extending the Interest Equalisation Scheme for five years.
- Restoring subvention rates for manufacturers in MSMEs.
- Extending the Remission of Duties and Taxes on Exported Products and Rebate of State and Central Taxes and Levies schemes for the textile and garment sector.
- Reintroducing the Emergency Credit Line Guarantee Scheme for MSME exporters.
- Extending the timeline for payments to MSME jobwork from 45 days to 120 days.

- Reducing the investment limit under the PLI scheme for the textile and garment sector.
- Providing soft funds for MSMEs to attempt a green transition and fuel growth with green resources.
- Incentivizing R&D by increasing the weighted tax deduction under Section 35(2AB) and extending benefits to LLP, partnership firms, and proprietary firms.

About MSMEs:

- MSME (Micro, Small, and Medium Enterprises) in India are the backbone of the economy, contributing significantly to the country's GDP, employment, and exports.
- Definition: MSMEs are defined as enterprises with investment in plant and machinery up to 50 crore and turnover up to 250 crore.

Classification:

- **Micro Enterprises:** Investment up to 1 crore and turnover up to 5 crore.
- **Small Enterprises:** Investment up to 10 crore and turnover up to 50 crore.
- **Medium Enterprises:** Investment up to 50 crore and turnover up to 250 crore.
- **Contribution to GDP:** MSMEs contribute around 30% to India's GDP.
- **Employment:** MSMEs employ over 120 million people, accounting for 40% of India's workforce.
- **Exports:** MSMEs account for 45% of India's total exports.

Sector-wise distribution:

- Manufacturing: 55%
- Services: 35%
- Trading: 10%

Conclusion:

The government has set an ambitious target to increase the export from current 778 billion in FY24 to 2 trillion by 2030. This target can be achieved when MSMEs exports are increased. MSMEs are key players in India's export growth. For this, MSMEs problems should be resolved by the government.

Draft Digital Competition Bill

Why in News:

Committee on digital competition law has said that there is need of new act which should be supplemented by ex-ante framework with existing ex- post framework. EU is the only jurisdiction where a comprehensive ex-ante competition framework, under the Digital Markets Act, is currently in force.

About Ex-post Framework:

- An ex-post framework is a regulatory approach that addresses anti-competitive practices after they have occurred. It is a reactive approach that relies on enforcement agencies to detect and punish violations.
- The Competition Act, 2002 is the primary legislation concerned for preventing practices that have an adverse effect on competition. It establishes the Competition Commission of India (CCI) as the national competition regulator.
- As with competition law in all other jurisdictions, the Competition Act, 2002 is based on an ex-post framework. This means that the CCI can use its powers of enforcement only after the anti-competitive conduct has occurred.
- About Ex-ante framework: An ex-ante framework is a regulatory approach that prevents anti-competitive practices from occurring in the first place.
- It is a proactive approach that sets rules and obligations for companies to follow before any issues arise.

Key Features of the Draft Digital Competition Bill:

- **Ex-ante framework:** The bill proposes a preventive approach to address anti-competitive practices, which is a departure from the existing ex-post framework that addresses issues after they occur.

- **Regulation of Systemically Significant Digital Enterprises (SSDEs):** The bill aims to regulate SSDEs, which are digital enterprises with significant presence and financial strength in India.
- **Prohibition of anti-competitive practices:** The bill prohibits SSDEs from engaging in anti-competitive practices such as self-preferencing, anti-steering, and restricting third-party applications.
- **Obligations of SSDEs:** SSDEs are required to operate in a fair, non-discriminatory, and transparent manner, and are subject to fines of up to 10% of their global turnover for non-compliance .
- **Associate Digital Enterprises (ADEs):** The bill also regulates ADEs, which are entities that benefit from data shared by major tech groups.

Need for the Bill:

- **Ineffectiveness of current framework:** The existing framework under the Competition Act, 2002, lacks the ability to promptly address anti-competitive behavior by digital enterprises.
- **Market dominance concerns:** The current framework may not adequately tackle the dominance of markets in favor of large digital enterprises, leading to their permanent dominance.
- **Anti-competitive practices:** Big tech giants have been observed engaging in practices such as data collection and self-preferencing, which can stifle competition and innovation.

Issues with the Bill:

- **Compliance burden:** Big tech firms argue that strict regulations may shift focus from innovation to compliance.
- **Broad definitions:** Concerns exist about overbroad criteria for designating significant platforms, with India's law leaving decisions to the CCI's discretion.
- **Impact on smaller businesses:** Changes and reduced data sharing could negatively affect smaller businesses reliant on tech giants' services

Conclusion:

Draft Digital Competition Bill is a crucial step towards promoting competition and innovation in India's digital economy. However, it is essential to carefully consider the concerns and suggestions of all stakeholders to ensure that the final legislation strikes a balance between regulating big tech and promoting innovation and growth in the digital sector.

Primary Agricultural Credit Societies

Why in News:

Union Home Minister has said that the government plans to establish 2 lakh primary agricultural credit societies in around 200,000 gram panchayats without a cooperative network within the next five years at the "Sahakar se Samridhi" program. He also inaugurated Amul's first organic store in Delhi and launched Bharat organic Atta made by the National Cooperative Organics Limited (NCOL).

Background:

Indian Government plans to set up Primary Agricultural Credit Societies (PACS) in around 2 lakh gram panchayats during the next five years. The Union Cabinet has approved this plan, which will be implemented with the support of the National Bank for Agriculture and Rural Development (NABARD), the National Dairy Development Board (NDDB) and the National Fisheries Development Board (NFDB). This initiative aims to strengthen the cooperative movement in India and deepen its reach to the grassroots level.

About Primary Agricultural Credit Societies

Primary Agricultural Credit Societies are grassroots-level cooperative credit institutions in India that provide financial services to farmers and rural communities.

Features:

- **Primary cooperative societies:** PACS are the smallest and most basic level of cooperative credit institutions in India.
- **Agricultural focus:** They primarily serve farmers and agricultural workers, providing them with access to credit, loans and other financial services.
- **Member owned and controlled:** PACS are owned and controlled by their members, who are usually farmers or rural residents.
- **Local governance:** PACS are governed by a board of directors elected by their members, ensuring local control and decision-making.
- **Financial services:** PACS provide various financial services, including:
 - » Short-term loans
 - » Credit facilities for agricultural inputs (seeds, fertilizers, etc.)
 - » Savings accounts

- » Remittance services
- **Rural development:** PACS play a crucial role in rural development by:
 - » Supporting agricultural growth and productivity
 - » Enhancing rural livelihoods
 - » Promoting financial inclusion
 - » Fostering community development
- **Linkage with higher-level cooperatives:** PACS are often linked to higher-level cooperative credit institutions, such as District Central Cooperative Banks (DCCBs) and State Cooperative Banks (SCBs), to access additional funding and support.
- **Government support:** PACS receive support and guidance from the government, including funding, training, and regulatory oversight.

Conclusion:

To realize the vision of "Sahkar se Samridhi" (Prosperity through Cooperation), Primary Agricultural Credit Societies need to be made more efficient, financially sustainable and accessible to farmers. Government has taken undertaken several initiatives to strengthen & deepen the cooperative movement from Primary to Apex level Cooperatives in the country. All these initiatives will aim to improve the overall state of agriculture, uplift rural communities and promote inclusive economic growth. There is need for continuous efforts to enhance the viability of PACS and contribute to sustainable rural and agricultural development.

SEBI Relaxes Trading Plan Norms for Insiders

Why in News:

Securities and Exchange Board of India (SEBI) has relaxed the trading plan norms for insiders and providing more flexibility in the "trading plan" that allows insiders to deal in their shares.

Key changes:

- **Cooling-off Period Reduced:** The minimum cooling-off period between disclosure and implementation of the trading plan has been reduced from six months to four months. Previously, insiders had to wait for 6 months after disclosing their intention to buy or sell company shares before they could actually execute the trade (this is called the "cool-off period").
- **Price Range Introduced:** A 20% price range for buying or selling shares in the trading plan has been introduced, allowing insiders to set price limits

within this range. Insiders can now specify a price range of up to 20% around the current market price of the shares in their trading plan.

- Example, if the current market price of the shares is 100, the insider can specify a price range of 80 to 120 (i.e., 20% below and above the current market price) in their trading plan. This allows insiders to execute trades within this specified price range, giving them some flexibility in case the market price fluctuates.
- **Flexibility to Not Execute Trades:** Insiders have been given the flexibility to not execute trades if the execution price is outside the limit set by them in the trading plan.
- **Non-Implementation Notification:** If the trades are not executed, insiders will have to inform the company's compliance officer within two trading days of the end of the trading plan, providing reasons and supporting documents.
- **Amendments Effective After Three Months:** The amended norms will come into effect after three months.

About insider trading:

- In India, insider trading refers to the buying or selling of securities (such as stocks, shares, or other financial instruments) by individuals who have access to confidential or unpublished price-sensitive information (UPSI) about a company.

Insiders include:

- Directors, officers, and employees of a company.
- Individuals with access to unpublished price-sensitive information.
- Related parties, such as family members or entities controlled by insiders.

Regulation related to insider trading:

- The SEBI (Prohibition of Insider Trading) Regulations, 2015, are a set of rules established by the Securities and Exchange Board of India (SEBI) to prevent and regulate insider trading in India's securities market.

Prohibited Activities for insider:

- Dealing in securities based on unpublished price-sensitive information.
- Communicating unpublished price-sensitive information to others.
- Counselling or procuring others to deal in securities based on unpublished price-sensitive information.

Disclosure Requirements for insider:

- Their holdings and transactions in securities.
- Any changes in their holdings or transactions.
- **Trading Plans:** Insiders can establish trading plans, which allow them to buy or sell securities in accordance with a predetermined plan, without violating insider trading regulations.

Penalties:

- Imprisonment up to 5 years
- Fine up to 25 crores
- Disgorgement of gains

Debarment from securities market

- Investigation and Enforcement: SEBI has the power to investigate and enforce these regulations, including conducting searches and seizures, and imposing penalties.

Project Nexus

Why in News:

Reserve Bank of India has joined Project Nexus, an international initiative led by the Bank for International Settlements (BIS) Innovation Hub. This initiative aims to facilitate instant cross-border retail payments by interconnecting domestic Fast Payments Systems (FPSs).

About Project Nexus:

- Conceptualised by the BIS Innovation Hub, Project Nexus seeks to enhance cross-border payments by linking multiple global domestic instant payment systems (IPS). It marks the first BIS Innovation Hub project in the payments domain moving towards live implementation.

Members and Agreement:

- Project Nexus intends to connect the FPSs of founding members including Malaysia, Philippines, Singapore, Thailand, and India, with Indonesia set to join in the future. An agreement to this effect was signed by the BIS and the central banks of these countries in Basel, Switzerland.

Benefits and Implementation:

- Project Nexus aims to streamline global IPS connections, centralising connections through a single platform and eliminating the need for custom connections with each new country. This unified approach enables fast payment systems to reach all other connected countries swiftly, with cross-border payments targeted to complete within 60 seconds in most cases.

Impact on India's Payment Systems:

- While India has been actively pursuing bilateral connectivity of its Fast Payments System (FPS) UPI with various countries for cross-border Person to Person (P2P) and Person to Merchant (P2M) payments, joining Project Nexus represents a multilateral leap forward. This move aligns with RBI's efforts to expand the international reach of Indian payment systems.

Bank for International Settlements:

- Established in 1930 and headquartered in Basel, Switzerland, BIS serves as a forum for dialogue and cooperation among 63 central banks worldwide. Its Innovation Hub initiative, part of the BIS Innovation BIS 2025 strategy, focuses on leveraging technology and collaboration to meet the evolving needs of the central banking community.

Conclusion:

The Reserve Bank of India's (RBI) participation in Project Nexus, led by the Bank for International Settlements (BIS) Innovation Hub, marks a significant step towards enhancing global payment systems. Overall, Project Nexus has the potential to transform the global payment landscape, and the RBI's participation underscores India's commitment to innovation and financial cooperation.

Budget 2024-25

Why in News:

Recently, the Union Minister of Finance and Corporate Affairs, Mrs. Nirmala Sitharaman, presented the Union Budget 2024-25 in Parliament.

Highlights of the budget:

Part-A

Budget Estimates 2024-25:

- **Total Receipts (excluding borrowings):** Rs. 32.07 lakh crore.
- **Total Expenditure:** Rs.48.21 lakh crore.
- **Net Tax Receipt:** Rs.25.83 lakh crore.
- **Fiscal Deficit:** 4.9 per cent of GDP.
- **Government's Goal:** To bring the deficit below 4.5% next year.
- **Inflation:** Low, stable and moving towards the 4% target; core inflation (excluding food and fuel) is at 3.1%.
- **Focus of the Budget:** Employment, skill development, MSMEs, and the middle class.

Package of PM's five schemes for Employment and Skilling:

- **Scheme A - First Timers:** One-month salary of up to 15,000 to be provided in 3 installments to first-time employees registered in the EPFO.
- **Scheme B - Job Creation in Manufacturing:** Incentives to be provided to employees and employers based on their EPFO contributions in the first 4 years of employment.
- **Scheme C - Support to Employers:** Government to reimburse up to 3,000 per month for 2 years towards EPFO contributions of employers for each additional employee.
- **New Centrally Sponsored Scheme for Skilling:** 20 lakh youth to be skilled over a 5-year period, with 1,000 Industrial Training Institutes to be upgraded in hub and spoke arrangements.
- **Internship Scheme:** Internships to be provided to 1 crore youth in 5 years in 500 top companies.

Nine Budget Priorities Towards 'Developed India':

Productivity and Resilience in Agriculture:

- 1.52 lakh crore allocated to promote agriculture and allied sectors.
- **New Crop Varieties:** 109 high-yield and climate-resilient varieties will be introduced for 32 field and horticultural crops.
- **Natural Farming:** 1 crore farmers will be involved in natural farming over the next two years. 10,000 bio-input resource centers will be established.
- **Digital Infrastructure:** Digital Public Infrastructure (DPI) for agriculture will be implemented, aiming to cover farmers and their fields within three years.

Employment and Skills:

- **Employment-Linked Incentives:** Schemes A, B, and C.
- **Women's Workforce Participation:** Development of hostels and crèches for working women. Creation of special skill programs for women. Enhanced market access for women-led Self-Help Group (SHG) enterprises.
- **Skill Development:** A new plan to train 20 lakh youth over five years. Revision of the Model Skill Loan Scheme.

Inclusive Human Resource Development and Social Justice:

- **Purvodaya:** Development of an industrial node in Gaya on the Amritsar-Kolkata Industrial Corridor

and a new 2400 MW power plant in Pirpainti with an investment of 21,400 crore.

- Andhra Pradesh Reorganization Act: Financial support of 15,000 crore.
- Women-Led Development: Allocation of over 3 lakh crore.
- Tribal Development: Support for 63,000 tribal-majority villages.

Manufacturing and Services:

- Credit Guarantee Scheme: Term loans without collateral for MSMEs to purchase machinery and equipment.
- Food Irradiation: Establishment of 50 multi-product food irradiation units.
- E-Commerce Export Hub: Public-private partnership to enhance international market access for MSMEs and artisans.

Urban Development:

- Transit-Oriented Development: Plans to improve urban transport in 14 cities.
- Urban Housing: Investment of 10 lakh crore under the PM Awas Yojana Urban 2.0.

Energy Security:

- Energy Transition: Policy document focusing on balancing employment, growth, and environmental sustainability.
- Pumped Storage Policy: Promotion of pumped storage projects for electricity storage.

Infrastructure:

- Public Infrastructure: 11.11 lakh crore for the central government.
- State Governments: Long-term interest-free loans of 1.5 lakh crore.

Innovation, Research and Development:

- Anusandhan Fund: For basic research and prototype development.
- Venture Capital: 1,000 crore to expand the space economy.

Next-Generation Reforms:

- Land Reforms: Introduction of Unique Land Parcel Identification Number (ULPIN) and establishment of land registry.
- Labor Services: Integration of the e-Shram portal and development of an open database.

Part B

Indirect Taxes:

- GST: The tax structure will be simplified and rationalized and GST coverage will be extended to

additional sectors.

- **Customs Duty Adjustment:** Changes in duties on certain drugs, mobile phone parts, precious metals and electronics.

Direct Taxes:

- **Tax Simplification and Revenue Growth:** Efforts will continue to simplify the tax system, improve taxpayer services and reduce disputes.
- **Charity and TDS Simplification:** Merging of tax exemption regimes for charities, reduction in TDS rates and simplification of reassessment procedures.

Conclusion:

The Budget 2024-25 has laid out plans for substantial investment in various sectors, prioritizing employment, skill development and social justice. This budget outlines several important measures aimed at promoting economic stability and inclusive growth.

India's Informal Sector

Why in News:

The Ministry of Statistics and Programme Implementation (MoSPI) has released the key results of the Annual Survey of Unincorporated Sector Enterprises (ASUSE) for the reference periods of April 2021 to March 2022 (ASUSE 2021-22) and October 2022 to September 2023 (ASUSE 2022-23).

Highlights of ASUSE Survey Results:

- The informal sector registered a decrease in employment, though the number of enterprises increased over the previous round both in 2022-23 and 2015-16.
- Own-account enterprises increased nearly 4% during the seven-year period, even as hired-worker enterprises contracted by 3.2%.
- As per PLFS 2022-23, the share of persons employed in agriculture went up to 45.8% from 42.5% in 2017-18.
- With the share of women in agriculture rising sharply to 64.3% in 2022-23 from 55.3% in 2018-19. Most of this increase has been for unpaid household work.
- As the economy moved to more capital-intensive manufacturing, the data indicate a dent in employment in labour-intensive manufacturing in the unorganised sector.

The Trend Across Sectors:

Manufacturing Sector:

- Manufacturing units were the worst hit, contracting 9.3% between 2022-23 and 2015-16 to 1.78 crore. The number of workers in manufacturing fell 15% to 3.06 crore during this period.

Trade Sector:

- Units in the trade sector contracted to a lesser extent to 2.26 core, a 2% decline in 2022-23 from 2015-16. The number of workers increased marginally by 0.8% to 3.90 crore in this period.

Services Sector:

- Services sector establishments recorded increase in numbers of both units and workers by 19.1% to 2.46 crore and by 9.5% to almost 4 crore respectively.

The pattern of Informal Employment across states:

- Maharashtra, Bihar, Gujarat, MP and Odisha recorded an increase in the informal employment between 2015-16 and 2022-23.
- UP, West Bengal, Tamil Nadu, Karnataka and Andhra Pradesh registered a decline in the number of informal sector workers during the same period.

Way Forward:

The government should provide targeted support and incentives to help informal enterprises adapt to the post-GST and post-pandemic environment. Policymakers should aim to facilitate a gradual transition of informal enterprises to the formal sector.

India's Garment Export Woes

Why in News:

India's garment exports for 2023-24 totaled \$14.5 billion, a decline from \$15 billion in 2013-14, as reported by the Global Trade Research Initiative (GTRI). This decrease reflects India's struggles in the global garment market, where it faces stiff competition from countries like Vietnam and Bangladesh. Between 2013 and 2023, Vietnam's garment exports surged by nearly 82% to reach \$33.4 billion, while Bangladesh's exports grew by about 70% to \$43.8 billion. In contrast, China's garment exports, though still substantial at \$114 billion, fell by nearly 25% compared to a decade earlier.

Highlights of the GTRI report:

- The GTRI report highlights that India's challenges stem less from foreign competition and more from domestic issues such as high import duties on raw materials and complex trade procedures.

- These barriers have hindered the growth of India's garment exports, even as countries like Bangladesh and Vietnam, which do not face similar obstacles, have advanced rapidly.
- The report criticizes the Production Linked Incentive (PLI) scheme for textiles, launched in 2021, as ineffective due to low investor interest and calls for significant improvements.
- It also notes a rise in India's garment and textiles imports, which reached approximately \$9.2 billion in 2023. This figure may increase if export issues persist, especially with firms like Reliance Retail planning to introduce Chinese brands like Shein in India.
- Key issues affecting the sector include the complexity of obtaining quality raw fabrics, particularly synthetics, due to stringent Quality Control Orders (QCOs).
- These regulations have inflated costs for exporters, who are forced to use more expensive domestic materials like Polyester Staple Fibre and Viscose Staple Fibre. This makes Indian garments less competitive internationally.

About India's garment industry:

- India's garment industry, which is highly fragmented with around 27,000 domestic manufacturers and 48,000 fabricators, is the second largest employer in the country after agriculture, providing direct jobs to 45 million people and indirect employment to 100 million. The sector benefits from a skilled workforce and consistent growth, positioning it as a significant potential driver of the economy.

Key Facts:

- India is a major producer of cotton, jute, and silk, and dominates in hand-woven fabrics.
- Tamil Nadu is a key center for cotton textiles, contributing over 25% to national exports of cotton yarn and fabrics.
- The textile export market is projected to reach USD 65 billion by FY26 and grow at a 10% CAGR to USD 190 billion by 2025-26.
- India's textile and apparel exports accounted for 8% of total exports in 2022-23 and 5% of global trade, with the USA being the largest importer.
- India has signed a Free Trade Agreement (FTA) with the UAE and is negotiating others to boost exports. The FDI policy allows up to 100% FDI in single-brand retail and 51% in multi-brand retail, attracting international interest.

Conclusion:

The report suggests that outdated procedures by the Directorate General of Foreign Trade and Customs exacerbate these issues, requiring meticulous tracking of imported materials. This bureaucratic burden adds to costs and inefficiencies. The GTRI report calls for a comprehensive overhaul to simplify procedures and remove barriers, which could enhance the competitiveness of India's garment industry on the global stage.

India's Mineral Production Growth and Strategy

Why in News:

According to SBI Research, From FY19 to FY24, mineral production has stagnated or declined, with major minerals showing single-digit growth or reduced output.

Possible Reasons:

- **Lack of Investment:** Insufficient investment in the mining sector, including exploration and extraction.
- **Regulatory Hurdles:** Bureaucratic and regulatory challenges that hinder mineral production.
- **Environmental Concerns:** Environmental and social concerns leading to reduced production or closure of mines.
- **Global Market Trends:** Global market trends, including fluctuations in demand and prices.

Implications:

- **Industry Impact:** Stagnation or decline in mineral production can impact various industries that rely on these minerals, such as construction, manufacturing, and electronics.
- **Supply Chain Disruptions:** Reduced output can lead to supply chain disruptions, increased imports, and higher costs.
- **Demand-Supply Gap:** Single-digit growth may not keep pace with demand, leading to potential shortages and impacting economic growth.
- **Economic Consequences:** The decline in mineral production can have far-reaching economic consequences, including reduced government revenues, job losses, and decreased economic activity.

Suggestions:

- **Need for Strategy:** India must develop a comprehensive mineral strategy covering the entire value chain to fully utilize its resources. This includes:
 - » Using advanced geoscience techniques like satellite imagery for new deposit discovery.
 - » Adopting efficient, eco-friendly extraction

methods and investing in modern technologies.

- » Building robust processing facilities to add domestic value to raw minerals.
- » Enhancing advanced manufacturing to produce high-value products and reduce import reliance.
- » Promoting recycling to recover valuable minerals and reduce environmental impact.
- **Global Competitiveness:** Improving the mineral value chain will boost India's global market position, foster innovation, and support mining and manufacturing startups.
- **Fiscal Reforms:** India should align personal income tax with corporate tax rates and reform GST to simplify the tax structure, broaden the tax base, and improve revenue collection.

About mining sector:

- **Mineral-rich country:** India is rich in mineral resources, with over 95 minerals, including fuel minerals, metallic minerals, non-metallic minerals, and atomic minerals.
- **Contribution to GDP:** The mining sector contributes around 2.5% to India's GDP.
- **Employment:** The mining sector employs over 600,000 people directly and indirectly.
- **Major minerals:** India is a significant producer of coal, iron ore, chromite, bauxite, manganese, and limestone.
- **Coal production:** India is the second-largest coal producer in the world, with an annual production of over 700 million tonnes.
- **Iron ore production:** India is the fourth-largest iron ore producer in the world, with an annual production of over 200 million tonnes.
- **Export-oriented:** India exports a significant portion of its mineral production, including iron ore, coal, and chromite.
- **Dependence on imports:** Despite being mineral-rich, India still imports certain minerals, such as gold, silver, and copper.
- **Regulatory framework:** The mining sector is regulated by the Ministry of Mines, with laws such as the Mines and Minerals (Development and Regulation) Act, 1957.

Conclusion:

India's mineral wealth remains underutilized despite its richness. A revised strategy from exploration to recycling, combined with fiscal reforms, is essential for sustainable growth, job creation and global competitiveness.

NSE Tightens Margin Funding Rules

Why in News:

The National Stock Exchange (NSE) has recently tightened its margin funding rules, resulting in the exclusion of 1,010 stocks from being used as collateral.

Key points about the changes:

- **Reduced List of Eligible Stocks:** The NSE has reduced the list of eligible stocks for margin funding from 1,730 to 720.
- **New Eligibility Criteria:** Only stocks that have been traded for at least 99% of the days in the last six months, with an impact cost of up to 0.1% for an order value of Rs 1 lakh, will be eligible for margin funding.
- **Excluded Stocks:** 1,010 stocks, including Adani Power, Yes Bank, Suzlon, Bharat Dynamics, and Paytm, will no longer be eligible for margin funding.
- **Effective Date:** The changes will take effect on August 1, 2024.

Impact on Traders and Investors:

- **Reduced Risk:** The new rules aim to reduce the risk associated with margin funding by only allowing highly liquid and stable stocks to be used as collateral.
- **Impact on Margin Trading Facility:** The changes will not have a significant impact on the margin trading facility book, as strong and liquid stocks remain on the list.
- **Collateral:** The NSE will only accept securities as collateral if they meet the new eligibility criteria.
- **Haircut:** The NSE will progressively raise the haircut on unapproved securities to phase out their use as collateral.

About Margin Trading Facility:

- Margin Trading Facility (MTF) is similar to the 'buy now, pay later' model. It allows investors to buy shares by paying only a fraction of the total cost upfront. Ex. to purchase 1,000 shares priced at Rs 100 each, totaling Rs 1 lakh, an investor using MTF would pay only 30% (Rs 30,000) upfront. The broker funds the remaining 70% (Rs 70,000) and charges interest on this borrowed amount.

Features:

- **Leverage:** MTF provides leverage, enabling investors to buy more securities than they could with their own capital.
- **Margin:** Investors need to pay a margin (a percentage

of the total amount) to avail of the facility.

- **Interest charges:** Interest is charged on the borrowed amount and investors need to pay it along with the principal amount.
- **Risk:** MTF increases the risk of losses, as investors are trading with borrowed money.
- **Eligibility:** Not all securities are eligible for MTF and the facility is usually available for select stocks or indices.
- **Brokerage:** Brokerages offer MTF and their terms and conditions, interest rates and margin requirements may vary.
- **Settlement:** Investors need to settle the account by paying the balance amount or squared off the position on or before the settlement day.
- **Default:** Failure to meet the margin requirements or settle the account can lead to default, resulting in the broker squaring off the position.

Conclusion:

By tightening margin funding rules, the NSE is taking a proactive approach to mitigate potential risks and vulnerabilities in the market, ensuring a safer and more stable environment for investors and traders.

Economic Survey 2023-24

Why in News:

Union Finance Minister presented the Economic Survey for the fiscal year 2023-24 in Parliament. This survey provides a comprehensive overview of India's economic performance and future prospects.

Chapter 1: State of the Economy

- **GDP Growth:** Estimated at 6.5–7% for FY24, with actual growth recorded at 8.2%.
- **Inflation:** Reduced from 6.7% to 5.4%, with retail inflation controlled through policy measures.
- **Current Account Deficit (CAD):** Improved to 0.7% of GDP from 2.0%.
- **Taxation:** 55% from direct taxes and 45% from indirect taxes.
- **Government Initiatives:** Free grain provided to 814 million people.

Chapter 2: Monetary Management and Financial Intermediation

- **Banking Sector:** Credit distribution increased by 20.2% to 164.3 trillion.
- **Inflation Control:** RBI maintained the policy rate at 6.5%.

- **Financial Inclusion:** Rapid expansion with a focus on digital financial inclusion.

Chapter 3: Prices and Inflation

- **Retail Inflation:** Managed at 5.4%, with reductions in LPG, petrol, and diesel prices.
- **Food Inflation:** Increased by 7.5% due to agricultural challenges.

Chapter 4: External Sector

- **Trade:** India's global export share increased; service exports reached USD 341.1 billion.
- **External Debt:** Stable at 18.7% of GDP.
- **Remittances:** Highest globally at USD 120 billion.

Chapter 5: Medium-Term Outlook

- **Growth Strategy:** Focus on private investment, MSME expansion, and green transition.
- **Job Creation:** Need for coordination between government and private sector.

Chapter 6: Climate Change and Energy Transition

- **Renewable Energy:** 45.4% of installed capacity; 33% reduction in emission intensity since 2005.
- **Green Bonds:** 36,000 crore issued in 2023.

Chapter 7: Social Sector

- **Welfare:** Increased effectiveness of spending through digitalization.
- **Health and Education:** Expansion of coverage and improvement in services, including mental health support.

Chapter 8: Employment and Skill Development

- **Unemployment:** Reduced to 3.2%; youth unemployment at 10%.
- **EPFO Membership:** Significant growth with notable increase in women's participation.

Chapter 9: Agriculture and Food Management

- **Growth:** Annual growth in agriculture sector at 4.18%.
- **Credit:** 22.84 trillion distributed for agriculture; 75 million Kisan Credit Cards issued.

Chapter 10: Industry

- **Growth:** 9.5% industrial growth; significant progress in pharmaceuticals and electronics.
- **PLI Scheme:** Attracted investments of over 1.28 trillion.

Chapter 11: Services

- **Contribution:** Services sector returned to pre-pandemic levels, with growth in IT and business services.

- **Tourism:** 43.5% increase in foreign tourist arrivals.

Chapter 12: Infrastructure

- **Investment:** Significant public sector investment in roads, railways, and clean energy.
- **Railways:** Increased capital expenditure and plans for new Vande Metro trainsets.

Chapter 13: Climate Change and India's Perspective

- **Global Strategies:** Criticized for not addressing excessive consumption.
- **India's Approach:** Emphasis on harmonious living with nature and sustainability through the "Mission Life" initiative.



What is the Economic Survey?

- **Introduction:** The Economic Survey is an annual document presented by the government before the Union Budget to review the state of the economy.
- **Preparation:** It is prepared by the Economic Division of the Economic Affairs Department in the Ministry of Finance under the supervision of the Chief Economic Advisor (currently V. Anantha Nageswaran).
- **Presentation:** Presented by the Union Finance Minister in both houses of Parliament.

Objective:

- To review developments in the Indian economy over the past 12 months.
- To summarize performance on major development programs.
- To highlight the government's policy initiatives.
- To analyze economic trends and provide an outlook for the upcoming year.

Historical Context:

- First presented in the 1950-51 session.
- Initially part of the budget documents.
- Became a separate section in 1964.



Miscellaneous

India at the Forefront of Global Heritage Conservation

The 46th session of the World Heritage Committee was inaugurated by Indian Prime Minister Narendra Modi in New Delhi, marking a historic first as the committee met in India. This special session, held at Bharat Mandapam in New Delhi from 21 July to 31 July, witnessed participation from over 2000 international and national representatives from more than 150 countries. For the first time since the G-20 Summit, the World Heritage Committee session has been organized at an international level in India.

Various exhibitions were held at Bharat Mandapam to showcase India's culture, including the "Return of Treasures" exhibition, which displayed artifacts recently brought back to the country. So far, more than 350 artifacts have been brought back to India. In addition, the "Incredible India" exhibition was organized to highlight India's rich cultural heritage, centuries-old civilization, geographical diversity, tourist destinations, and modern advancements in information technology and infrastructure. UNESCO Director General Audrey Azoulay attended the ceremony, along with External Affairs Minister S. Jaishankar, Culture and Tourism Minister Gajendra Singh Shekhawat, state culture ministers, India's Permanent Representative to UNESCO Vishal V. Sharma, and representatives from both India and abroad.

❖ The Indian Prime Minister stated during the meeting that heritage is not just history but the shared consciousness of humanity. He emphasized that when we see any heritage site anywhere in the world, our minds rise above current geopolitical factors. He urged using the potential of heritage for the betterment of the world, connecting hearts through our shared heritage. This session provided an opportunity for attendees from India and abroad to learn about India's heritage conservation strategy, vision, and approach. India is committed to conserving cultural

and natural heritage, both domestically and globally, rooted in its ideal of Vasudhaiva Kutumbakam. Prime Minister Modi announced a contribution of 1 million dollars by India to the UNESCO World Heritage Center. This contribution will be used for the conservation of World Heritage sites, capacity building, and technical assistance, with a particular focus on benefiting countries of the Global South.

- ❖ Vishal V. Sharma, Chairman of the World Heritage Committee, stated that India's recent past has aligned with the principle of 'Development as well as Heritage,' giving a new dimension to the preservation of its rich cultural heritage. Organizing a meeting of the World Heritage Committee requires significant effort, but it demonstrates India's organizational capabilities, infrastructure, global leadership, and international cooperation. The World Heritage Agreement has been signed by 195 countries.
- ❖ The World Heritage Committee meets once a year to manage all matters related to World Heritage and decides on the sites to be included in the World Heritage List. During this meeting, discussions included proposals for nominating new sites to the World Heritage List, state of conservation reports for 124 existing World Heritage properties, international assistance, and the use of World Heritage funds. The World Heritage Young Professionals Forum and the

World Heritage Site Managers Forum were also held alongside the World Heritage Committee meetings. The Committee has 21 members elected by the 195 signatory countries of the 1972 Convention on the Protection of the World Cultural and Natural Heritage.

India's Remarkable Arts Highlighted in the Meeting:

- ❖ Referring to India's capital, New Delhi, the Prime Minister said it is a hub of thousands of years of heritage, with history visible at every step. He cited the example of a 2000-year-old iron pillar that is rust-proof, showcasing India's past metallurgical capabilities. He remarked, "India's heritage is not only history but also science." He highlighted India's heritage as a testament to remarkable engineering, mentioning the 8th century Kedarnath Temple, located at an altitude of 3500 meters, which remains a challenging site for infrastructure development due to frequent winter snowfall. He also spoke about the Brihadeshwara Temple in South India, built by Raja Chola, known for its impressive architectural layout and sculpture.
- ❖ The Prime Minister further mentioned Dholavira and Lothal in Gujarat. Dholavira is renowned for its ancient urban planning and water management systems, dating from 3000 BC to 1500 BC. Similarly, Lothal was noted for its well-planned citadel and lower town, featuring an elaborate network of roads and drains.

Moidam: In UNESCO's World Heritage List

- ❖ On 26th July, the mounded cemetery of the Ahom dynasty in Assam, known as Moidam, was included in UNESCO's World Heritage List. The Government of India had been working to secure this inclusion for the past 10 years. Moidam has been recognized under the cultural category, marking the first time a place of cultural significance in Northeast India has been added to the UNESCO list. Prior to this, Kaziranga and Manas National Parks were declared World Heritage Sites. Moidam was previously included in UNESCO's temporary list in April 2014.
- ❖ Moidam serves as the tomb for Ahom kings, queens, and nobles. The term "Moidam" is derived from the Tai words "Frang-Mai-Dam" or "Mai-Tam," where "Phrang-mai" means to bury or put in a grave, and "dam" refers to the soul of the deceased. While Moidams are found throughout Upper Assam, Charaideo, the first capital of the Ahoms, is a significant historical and cultural site in Northeast

India. It was the primary burial ground for Ahom royals. Located 28 km east of Sivasagar, Charaideo is the resting place of the first Ahom king, Chau-lung Siu-ka-pha, who was buried there with full Tai-Ahom religious rites and ceremonies.

- ❖ During the 13th to 18th centuries, Ahom kings constructed these ancient burial mounds, known as Moidams, to inter their mortal remains along with their belongings. The Moidams, which appear as grassy mounds, are considered sacred by the Ahom community. Each Moidam is believed to be the resting place of an Ahom ruler or dignitary, and it preserves their remains along with valuable artifacts and treasures. Reflecting the rich tradition of Assamese identity and heritage, Charaideo Moidam is also referred to as the "Pyramid of Assam."

Tai-Ahom dynasty ruled Assam for 600 years:

- ❖ The Tai-Ahom dynasty ruled Assam for approximately 600 years, from 1228 to 1826, with Charaideo serving as their capital. Among the 386 Moidams discovered in Charaideo, 90 royal tombs are the best preserved and finest examples of this burial tradition. The Tai-Ahoms, who venerate their ancestors, used Moidams as the final resting place for their Swargadeos (kings considered divine) and other ancestors. Initially, the deceased were buried in Moidams along with their belongings. However, after the 18th century, the Ahom rulers adopted the Hindu practice of cremation. Following this change, the bones and ashes from cremations were buried in Moidams.

Key function of the World Heritage Committee:

- ❖ This committee is one of the two bodies responsible for implementing the 1972 Convention on the Protection of the World's Cultural and Natural Heritage. During its meetings, the committee examines proposals from countries for new heritage sites to be included in the World Heritage List. It also assesses the state of conservation of sites already on the list, based on analyses conducted by UNESCO's advisory bodies and secretariat.

How many World Heritage Sites are there in India?

- ❖ Heritage sites are recognized by UNESCO in three categories - cultural, natural and mixed. Currently 1199 heritage sites are included in the World Heritage List. Italy has the highest number of 59 sites in the UNESCO World Heritage List, while China has 57 sites.

- ❖ India is at sixth place with 42 sites. Hoysala Temple of Karnataka is the 42nd Indian site. The earlier sites included Ajanta Caves, Ellora Caves (both in

Maharashtra), Taj Mahal in Agra and Agra Fort in Uttar Pradesh. All these sites were included in 1983.

Short Issues

Defence Production in India

Why in News:

India's indigenous defense production has reached a record high of Rs 1.27 lakh crore in 2023-24, a growth of 16.7% over the FY 2022-23.

Key facts:

- **Value of Defence Production:** The defence production in India has hit a record high of nearly 1.27 lakh crore in 2023-24, reflecting a growth of 16.7% over the previous financial year.
- **Contributors to Defence Production:** Of the total value of production in 2023-24, about 79.2% has been contributed by Defence Public Sector Undertakings (DPSUs) and other PSUs, and 20.8% by the private sector.
- **Growth in Defence Production:** The value of defence production has grown over 60% in the past five years (since FY20).
- **Defence Exports:** Defence exports have touched a record-high of 21,083 crore in FY 2023-24, reflecting a growth of 32.5% over the last fiscal.
- **Government's Commitment:** The government is committed to creating a more conducive regime for developing India as a leading global defence manufacturing hub

Initiatives for Indigenisation of Defence Sector:

- **Make in India Policy:** Introduced in 2014, the "Make in India" policy aims to bolster domestic production, research and development (R&D) and technological advancement in the defence sector.
- **Atmanirbhar Bharat Abhiyan:** Launched in 2020, the Atmanirbhar Bharat Abhiyan emphasizes self-sufficiency across all sectors, including defence. It focuses on reducing dependency on foreign defence imports by promoting indigenisation, R&D and innovation.
- **IGMDP - Integrated Guided Missile Development Programme:** Initiated in 1983, IGMDP was pivotal

in achieving indigenisation milestones by developing five missile systems: Prithvi (surface-to-surface), Akash (air-to-air), Trishul (navy variant of Prithvi), Nag (anti-tank) and Agni (ballistic missiles with varying ranges).

- **Defence Procurement Policy:** The Defence Procurement Procedure 2016, updated from DPP 2013 based on the Dhirendra Singh committee's recommendations, introduced the category "Buy (Indian-IDDM)" as the preferred route for defence acquisitions. It also streamlined a "fast-track" acquisition process for efficient military procurement.
- **Outsourcing and Vendor Development Guidelines:** To enhance private sector participation, especially from SMEs, in defence production, DPSUs and OFB are mandated to develop short- and long-term vendor growth plans. These guidelines aim to increase outsourcing and promote import substitution.
- **FDI Policy:** The Foreign Direct Investment (FDI) policy allows up to 49% investment through the government route and requires individual clearance by the Cabinet Committee on Security for investments exceeding 49%. Restrictions such as the 51% Indian ownership requirement and bans on Foreign Institutional Investors (FII) have been eased to attract more investments.
- **SRIJAN - Indigenisation Portal:** Launched in 2020, SRIJAN aims to foster industrial indigenisation in the defence sector through a dedicated online portal. As of 2023, over 19,509 defence products previously imported have been listed on the portal for indigenisation, with the Indian defence industry targeting the indigenisation of 4,006 products.

Conclusion:

This accomplishment demonstrates the country's progress towards self-reliance in defense production and its commitment to becoming a global defense manufacturing hub. As India continues to advance its defense production capabilities, it is essential to sustain this momentum, address challenges, and capitalize on

opportunities to solidify its position as a leading defense manufacturing nation.

86th Session of Codex Alimentarius Commission

Why in News:

The Food Safety and Standards Authority represented India in 86th session of the Executive Committee of the Codex Alimentarius Commission (CCEXEC86). This session was held at the FAO Headquarters in Rome, Italy.

Highlights of the Sessions:

- Enhancement of Quality standards for Spices: India advocated for the enhancement of quality standards for spices such as small cardamom, vanilla, and turmeric.
- As a major producer and exporter of these spices, India's involvement is crucial in facilitating smoother international trade.
- India also supported the progression of standards for named vegetable oils, guidelines for controlling Shiga Toxin-Producing Escherichia coli and the safe use and reuse of water in food production and processing.
- Codex guidance on food safety considerations: Another significant proposal championed by India was the development of Codex guidance on food safety considerations related to the use of recycled materials in food packaging
- India presented the guidelines developed by FSSAI on recycling post-consumer PET for food contact applications, which were well-received by the committee members. This initiative aligns with addressing global challenges such as climate change, environmental protection, and sustainability.

About Codex Alimentarius Commission:

- The Codex Alimentarius Commission (CAC) was jointly established by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) in 1963 to protect consumer health and ensure fair practices in food trade.
- Codex develops food standards, known as Codex Alimentarius (CA), which are a collection of international standards, guidelines, and codes of practice in the food trade. These standards protect consumer health and ensure fair practices in food trade.
- The Sanitary and Phytosanitary Measures Agreements (SPS Agreements) of the World Trade Organization (WTO) encourage members to harmonize national

regulations with CA.

- Headquartered in Rome, CAC currently comprises 189 members.

Labeling initiatives by FSSAI:

- The Food Safety and Standards (Labeling and Display) Regulations, 2020 specify the requirements for mentioning serving and nutritional information on food product labels. These regulations aim to empower consumers to make healthier choices and help combat the rise of non-communicable diseases.
- The FSSAI has proposed that the nutritional information regarding total sugar, salt, and saturated fat should be displayed in bold letters with an increased font size on the labels of packaged food items.

Conclusion:

India's commitment to establishing robust food safety standards and promoting fair practices in global food trade was clearly demonstrated throughout the session. The country's active participation and contributions highlight its crucial role in the international food industry, showcasing its dedication to global food safety and sustainability.

Project PARI

Why in News:

Ministry of Culture has recently initiated Project PARI for the 46th World Heritage Committee Meeting.

About Project PARI:

- Project PARI is an initiative by the Ministry of Culture, Government of India, being executed by Lalit Kala Akademi and National Gallery of Modern Art seeks to bring forth public art that draws inspiration from millennia of artistic heritage (lok kala/lok sanskriti) while incorporating modern themes and techniques.
- It aims to stimulate dialogue, reflection, and inspiration, contributing to the dynamic cultural fabric of the nation. As part of this initiative, over 150 visual artists from across the country are working on various sites in the national capital, beautifying public spaces in preparation for the upcoming event.

Public Art and Cultural Heritage

- As part of this initiative, over 150 visual artists from across the country worked on various sites in the national capital, beautifying public spaces in preparation for the upcoming event. These artists created various wall paintings, murals, sculptures, and installations. The creative canvas included

artwork inspired by and drawn in styles such as:

- » Phad paintings (Rajasthan)
- » Thangka painting (Sikkim/Ladakh)
- » Miniature painting (Himachal Pradesh)
- » Gond art (Madhya Pradesh)
- » Tanjore paintings (Tamil Nadu)
- » Kalamkari (Andhra Pradesh)
- » Alpona art (West Bengal)
- » Cherial painting (Telangana)
- » Pichhwai Painting (Rajasthan)
- » Lanjia Saura (Odisha)
- » Pattachitra (West Bengal)
- » Bani Thani Painting (Rajasthan)
- » Warli (Maharashtra)
- » Pithora Art (Gujarat)
- » Aipan (Uttarakhand)
- » Kerala Murals (Kerala)
- » Alpana art (Tripura)

Sculptures and Themes:

- The proposed sculptures created for Project PARI encompassed a wide range of ideas, including tributes to nature, concepts inspired by the Natyashastra, Gandhi ji, toys of India, hospitality, ancient knowledge, Naad (Primeval Sound), Harmony of Life, Kalpataru (the divine tree), and more.

World Heritage Inspirations:

- In sync with the proposed 46th World Heritage Committee Meeting, some of the artworks and sculptures drew inspiration from World Heritage Sites. Sites such as Bimberka and the seven natural World Heritage Sites in India found a special place in the proposed artworks

Conclusion:

The representation of art in public spaces is particularly significant, reflecting the nation's rich and diverse cultural heritage. The democratization of art through public installations transforms urban landscapes into accessible galleries, where art transcends the confines of traditional venues such as museums and galleries. By integrating art into streets, parks, and transit hubs, these initiatives ensure that artistic experiences are available to one and all. This inclusive approach fosters a shared cultural identity and enhances social cohesion, inviting citizens to engage with art in their daily lives.

MoSPI's National Indicator Framework Progress Report 2024

Why in News:

On the occasion of Ministry of Statistics and Program Implementation's (MoSPI) 18th National Statistics Day, the National Indicator Framework (NIF) progress report 2024 was launched. The theme for the 18th Statistics Day was "Use of data for decision-making".

Highlights of the Report:

- The report presents the time series data on SDG national indicators based on data from the concerned line ministries, highlighting significant gains in maternal and child health, education, poverty, and climate change since 2015-16. It tracked 290 indicators across 17 SDG goals.
- **Maternal and Child Health:** The neonatal mortality ratio declined to 20 per 1000 live births in 2020 compared to 25 in 2015. The share of fully vaccinated children (aged 12-23 months) increased to 76.6% in 2019-21 from 62% in 2015-16.
- **Education:** The gross enrolment ratio for higher secondary education rose nearly ten percentage points to 57.6% in 2021-22 from 48.32% in 2015-16.

-: Prelims Insight :-

National Statistics Day:

- National Statistics Day is celebrated in the country in recognition of the notable contributions made by Professor Prasanta Chandra Mahalanobis in the fields of statistics and economic planning.
- The theme for Statistics Day 2024 is "Use of data for decision-making." The concept of data-driven decision-making is crucial for making informed decisions in any field.
- **Decent work and employment opportunities:** Regarding decent work and employment opportunities, the total outstanding credit to MSMEs grew to Rs 22.6 trillion in 2022-23 from Rs 12.16 trillion in 2015-16.
- **Gender wage gap:** The gender wage gap for casual labourers widened, with the average wage gap between male and female casual labourers increasing to Rs 178 in 2022-23 (July-September) from Rs 96 in 2017-18.
- **Hazardous waste:** The amount of hazardous waste generated per capita rose to 9.28 metric tonnes in

2022-23 from 7.19 metric tonnes in 2017-18.

eSankhyiki Data Portal:

- The eSankhyiki Data Portal was established with the objective of creating a comprehensive data management and sharing system for the easy dissemination of official statistics in the country. It aims to provide timely inputs for planners, policymakers, researchers, and the public at large.
- The eSankhyiki Portal has two sections facilitating easy access and reuse of data: the first section is a Data Catalogue, and the second covers Macro Indicators.

Conclusion:

The SDGs NIF is essential for monitoring SDGs at the national level, providing crucial guidance to policymakers and implementing agencies of various schemes and programs. The primary sources of data for these national indicators are administrative records, surveys and censuses. The indicators are mainly compiled using secondary data from relevant line ministries.

UNESCO Creative Cities Network

Why in News:

The 16th annual conference of the UNESCO Creative Cities Network (UCCN) held in Braga, Portugal. Kozhikode, India, has been awarded the title of 'City of Literature' at this conference. This is a significant recognition of Kozhikode's rich literary heritage and cultural contributions.

About Kozhikode:

- Kozhikode's designation as a City of Literature by UNESCO is a testament to its rich literary heritage and cultural significance.

Some key points about Kozhikode's literary scene:

- Long history of hosting literary events, including the Kerala Literature Festival, one of the largest in Asia-Home to over 500 libraries, demonstrating a strong culture of reading and learning.
- Renowned writers, including S. K. Pottekkatt, Thikkodiyam and P. Valsala Sanjayan have contributed to Malayalam literature and culture.
- Poets, scholars and publishers have also played a significant role in shaping the city's literary landscape.
- Kozhikode is considered a hub for intellectual exchange and literary discussions.
- The city's literary heritage is a significant part of its

identity and culture.

- This designation recognizes Kozhikode's efforts to promote literature and reading and will likely attract more literary events and tourism to the city.
- It's a matter of pride for the city and a recognition of its contributions to literature and culture.
- Kozhikode is the first city in India to receive this title, making it a pioneering effort in promoting literature and culture in the country.

About UNESCO Creative Cities Network (UCCN):

- The UNESCO Creative Cities Network (UCCN) is a program launched in 2004 to promote cooperation among cities that recognize the importance of creativity and cultural industries for sustainable urban development.
- The network aims to:
 - » Foster creativity and innovation.
 - » Promote cultural diversity and heritage.
 - » Support entrepreneurship and job creation.
 - » Encourage sustainable urban development.
- Members of the UCCN are designated as Creative Cities in one of seven categories:
 - » Literature
 - » Music
 - » Crafts and Folk Art
 - » Design
 - » Film
 - » Gastronomy
 - » Media Arts

Benefits of being a UCCN member include:

- International recognition and promotion.
- Access to a global network of creative cities.
- Opportunities for collaboration and knowledge sharing.
- Support for cultural and creative industries development.
- Enhanced credibility and prestige.

About UNESCO:

- UNESCO (United Nations Educational, Scientific and Cultural Organization) is a specialized agency of the United Nations (UN) that focuses on promoting peace and security through international cooperation in education, science, culture, and communication.
- UNESCO has 193 member states and is headquartered in Paris, France. It was established in 1945.

Conclusion:

Kozhikode's designation as a City of Literature is

a testament to its rich cultural heritage and literary contributions. This recognition will have a lasting impact on the city, promoting creativity, innovation, and sustainability for generations to come.

SEHER Program

Why in News:

The Women Entrepreneurship Platform (WEP) and TransUnion CIBIL have partnered to launch the SEHER program; a credit education initiative aimed at empowering women entrepreneurs in India.

Objectives:

- **Financial Literacy:** Enhance financial literacy and business skills among women entrepreneurs.
- **Credit Awareness:** Elevate financial and credit awareness among women entrepreneurs, equipping them with the knowledge to build strong credit histories and better manage their finances.
- **Access to Finance:** Accelerate access to finance for women entrepreneurs, enabling them to access the financial tools necessary for business growth and job creation.
- **Empowerment:** Empower women entrepreneurs across socio-economic categories, age-groups, and geographic locations.

Program Features:

- **Personalized Resources:** Offer personalized resources and tools, including financial literacy content, to women entrepreneurs.
- **Credit Education:** Provide credit education and awareness about the importance of building a good credit history and CIBIL score to avail easier and faster access to finance.
- **Business Skills:** Enhance business skills among women entrepreneurs, enabling them to manage their businesses successfully and achieve sustained growth.

Impact:

- **Economic Growth:** Contribute to India's economic growth by empowering women entrepreneurs to start and grow their businesses profitably. Accelerating women's entrepreneurship in India could create 30 million new women-owned enterprises.
- **Job Creation:** Enable women entrepreneurs to create jobs and contribute to employment generation in India. This could potentially generate 150-170 million more jobs.
- **Women's Empowerment:** Empower women

entrepreneurs to become financially independent and self-sufficient

About WEP:

- Women Entrepreneurship Platform (WEP), incubated in NITI Aayog in 2018 as an aggregator platform that transitioned as a public-private partnership in 2022 to build a comprehensive ecosystem supporting women entrepreneurs across India.
- WEP aims at empowering women entrepreneurs by overcoming information asymmetry and providing continuum of support across different pillars Entrepreneurship promotion, Access to Finance; Market Linkages; Training and Skilling; Mentoring and Networking and Business Development Services etc.

About TransUnion CIBIL:

- TransUnion CIBIL is India's pioneer information and insights company. They provide actionable pictures of individuals, enabling reliable representation in the marketplace.
- This facilitates trust and confidence in transactions, leading to economic opportunity, great experiences, and personal empowerment for millions of people in India.

Key facts:

- India has 63 million micro, small, and medium enterprises.
- 20.5% of these enterprises are women-owned.
- Women-owned enterprises employ 27 million people.
- Rural areas have a slightly higher share of women-owned enterprises (22.24%) compared to urban areas (18.42%).
- Women-owned businesses already contribute to 18.73% of employment generated by URP-registered units.

Rudram-1

Why in News:

India has successfully test-fired its first indigenous anti-radiation missile, the Rudram-1, developed by the Defence Research and Development Organisation (DRDO) for the Indian Air Force (IAF).

Key Features of Rudram-1

- Rudram-1 is integrated with the IAF's Sukhoi-30MKI fighter jets, serving as the launch platform. The missile features INS-GPS navigation and a

Passive Homing Head for final attack, allowing it to accurately hit radiation-emitting targets.

- This precision is crucial for Suppression of Enemy Air Defence (SEAD) operations, enabling the destruction of enemy radars and communication sites from long standoff ranges.

Capabilities:

- The Rudram-1 can accurately hit radiation-emitting targets, which is crucial for Suppression of Enemy Air Defence (SEAD) operations.
- It enables the destruction of enemy radars and communication sites from long standoff ranges.
- The missile can be launched from varying altitudes, ranging from 500 meters to 15 kilometers, and has a range of up to 250 kilometers depending on the launch conditions.

Significance:

- The successful test-firing of Rudram-1 marks a significant advancement in India's defense capabilities.
- It strengthens India's defense capabilities and places it among a select group of nations with advanced anti-radiation missile technology.

Strategic Implications for India:

- The successful test of Rudram-1 marks a significant advancement in India's defense capabilities. With China and Pakistan posing ongoing security challenges, India's development of indigenous anti-radiation missiles enhances its strategic deterrence. The missile's integration with Su-30MKIs allows the IAF to conduct SEAD operations deep within enemy territory, neutralizing critical air defense installations.
- **Comparison with Global Counterparts:** The Rudram-1 is comparable to other anti-radiation missiles like the US's AGM-88 HARM, Russia's Kh-58, the UK's ALARM, China's FT-2000, and Iran's Hormoz-2.

Conclusion:

The Rudram-1 anti-radiation missile is a significant advancement in India's defense capabilities, providing a technological edge and operational flexibility. Its successful test-firing marks a major milestone in India's indigenous missile development program, demonstrating the country's growing defense technology prowess.

Annual Survey of Unincorporated Enterprises

Why in News:

The Ministry of Statistics and Programme Implementation (MoSPI) has released the Annual Survey of Unincorporated Enterprises for 2021-22 and 2022-23.

Highlights of the survey:

- **Growth of Unincorporated Sector:** The total number of establishments in the sector increased from 5.97 crore in 2021-22 to 6.50 crore in 2022-23, representing a 5.88% annual growth.
- **Gross Value Added:** The GVA, which is a key indicator of economic performance, witnessed an annual growth of 9.83% during the same period. The major contributors to GVA growth may be attributed to manufacturing and other service sectors.
- **Employment:** The unincorporated non-agricultural sector employed about 11 crore workers from October 2022 to September 2023, up from 9.8 crore in 2021-22, showing a healthy labor market growth of 7.84% annually.
- **Productivity:** The Gross Value Added per worker, which is a measure of labor productivity of the sector, rose to Rs. 1,41,769 in 2022-23 from Rs. 1,38,207 in 2021-22. During the same period, the Gross Value of Output (GVO) per establishment also increased from Rs. 3,98,304 to Rs. 4,63,389.
- **Sector-wise Growth:** The number of establishments in the other services sector grew annually by 15.12%, indicating a robust sectoral expansion, while the number of manufacturing establishments increased by 2.22% reflecting a gradual opening up of the sector after the pandemic period.
- **Wage Conditions:** The average annual earnings for informal workers rose to Rs. 1,10,982 in 2022-23 from Rs. 1,06,381 in 2021-22, reflecting an improvement in wage conditions in the informal sector.

About Unincorporated enterprises:

- Unincorporated enterprises refer to businesses or entities that are not registered as separate legal entities, such as companies or corporations. These enterprises are typically owned and operated by individuals, partnerships or families. These are not distinct from their owners in terms of legal identity.

Conclusion:

The unincorporated sector in India has shown remarkable resilience and growth, with an increasing number of establishments and workers. The sector's contribution to the overall economy is significant, and it provides employment opportunities for a substantial portion of the workforce.

FAO SOFIA 2024

Why in News:

The 2024 edition of the FAO's State of World Fisheries and Aquaculture (SOFIA) report reveals that global fisheries and aquaculture production has reached a record high, with aquaculture production of aquatic animals now exceeding that of capture fisheries for the first time.

Highlights of the Report:

- **Increase in Total Production:** Global fisheries and aquaculture production in 2022 surged to 223.2 million tonnes, a 4.4% increase from 2020.
- **Increase in Aquaculture Production:** According to the FAO's SOFIA report, aquaculture production has, for the first time, exceeded fish produced from conventional fisheries. In 2022, aquaculture production reached an unprecedented 130.9 million tonnes, of which 94.4 million tonnes were aquatic animals.
- **90% of Fish Production in 10 Countries:** The report highlights that 90% of the world's fish production occurs in China, Indonesia, India, Vietnam, Bangladesh, the Philippines, South Korea, Norway, Egypt and Chile.
- **Katla Species Included in Top Ten:** In 2022, the Katla species ranked eighth among the top ten fish species in terms of production. Initially found in North India, the Indus plains and the adjacent hilly rivers of Pakistan, Bangladesh, Nepal, and Myanmar, Katla has since spread to rivers and reservoirs across India.

Major Concerns Highlighted in the Report:

- **Indiscriminate Fishing:** In 2021, 37.7% of fish stocks in the world's marine fisheries were fished unsustainably, a significant increase from 10% in 1974.
- **Increase in Consumption:** Global consumption of aquatic foods is projected to reach 165 million tonnes in 2022. This growth has been nearly double the rate of the world population since 1961, with per capita annual consumption rising from 9.1 kg in 1961 to 20.7 kg in 2022. However, 80% of the top 10 marine species consumed by humans are being exploited unsustainably.
- **Regional Inequality:** Currently, aquaculture is dominated by a few countries, with 90% of global aquaculture production occurring in Asia, while only 1.9% is produced in Africa.
- **Food Challenge of the Future:** The 2024 report projects that to maintain the 2022 levels of aquatic

food consumption by 2050, the total aquatic food supply will need to increase by 22%.

Conclusion:

The report highlights critical issues in global fisheries and aquaculture, such as unsustainable fishing practices, increasing consumption rates, and regional production disparities. With global consumption of aquatic foods rising faster than population growth, there is a pressing need for improved management practices and more equitable production distribution. Addressing these challenges through sustainable practices and balanced production efforts is essential for preserving ocean health and securing global food resources for the future.

International Day against Drug Abuse and Illicit Trafficking

Why in News:

The International Day against Drug Abuse and Illicit Trafficking is observed annually on 26 June to strengthen cooperation and action towards achieving a world free of drug abuse. This year's theme for World Drug Day is "The evidence is clear: invest in prevention."

World Drug Report 2024: Key findings and patterns

- The World Drug Report 2024 by the UNODC highlights the surge in new synthetic opioids and unprecedented drug supply and demand, worsening the global drug crisis. In 2022, drug users rose to 292 million, a 20% increase over a decade.
- Despite 64 million people suffering from drug use disorders, only one in 11 received treatment. Women are particularly disadvantaged, with just one in 18 women receiving treatment compared to one in seven men.

Steps taken to curb drug trafficking:

- Since 2014, the quantity of narcotics seized by the Narcotics Control Bureau (NCB) increased by almost 100%, and the cases registered against those involved in drug trafficking rose by 152%.
- According to data released by the MHA, the number of cases registered between 2006 and 2013 was 1,257, which tripled to 3,755 during the period from 2014 to June 2023. Arrests increased fourfold, from 1,363 in 2006-2013 to 5,745 in 2014-2023.
- The quantity of seized drugs doubled to 3.95 lakh kgs in the current regime, compared to 1.52 lakh kgs during 2006-2013. The value of seized drugs

jumped 30 times, from Rs.768 crore in 2006-2013 to Rs.22,000 crore in 2014-2023.

- Additionally, anti-narcotics agencies destroyed 12 lakh kgs of drugs worth Rs.12,000 crores since 2014. By June 2023, the NCB conducted financial investigations in 23 cases, freezing property worth Rs 74,75,00,531.

Institutional Framework:

- **Narco Coordination Centre (NCORD):** In the year 2019, the four (04) tier NCORD mechanism was strengthened for better cohesion and synergy between the Central and State drug law enforcement agencies
- **Constitution of Joint Coordination Committee:** Constitution of Joint Coordination Committee (JCC) in 2019 to trace the various layers involved in drug trafficking and for detailed investigation of cases of major drug seizures. Till 2022, 07 State Level and 07 Central JCC meetings were held.
- **Restructuring of NCB cadre:** Cadre restructuring of Narcotics Control Bureau was proposed, in the first phase it was proposed to create 682 posts, out of which approval has been given for the creation of 425 posts.
- **SIMS e-portal:** SIMS (Seizure Information Management System) e-portal has been developed for trend analysis and database management of Drug Trafficking. SIMS portal is also hosted on cloud server of NIC.
- **Disposal of Seized Drugs:** Disposal of Seized Drugs campaign is being run from June 1, 2022. On the occasion of 75th anniversary of independence, a target was set to destroy 75 thousand kg of drugs in 75 days.

Conclusion:

The harmful effects of drug use on individuals and society, including health deterioration, increased crime rates and economic burdens, emphasize the need for stringent measures to mitigate drug abuse. Ongoing financial investigations and the substantial destruction of illegal substances highlight the current efforts; however, these efforts need to be further enhanced. A comprehensive strategy aimed at dismantling drug networks, reducing the impact of drug trafficking and fostering a safer and healthier society is essential.

Indian Public Health Standards

Why in News:

The government has recently carried on a self-assessment

exercise for public health facilities across states and Union Territories covered under the National Health Mission (NHM). These facilities were required to provide details on various aspects such as the number of doctors, nurses, and the availability of basic medical equipment.

Highlights of the assessment:

- Out of the total facilities that participated, only 8,089 (approximately 20%) scored 80% or higher, which is the benchmark for qualifying as IPHS (Indian Public Health Standards) compliant. These facilities had the required infrastructure, human resources, drugs, diagnostics and equipment necessary to provide essential services as desired.
- A considerable number of facilities fell short of these standards. A total of 17,190 facilities (42%) scored less than 50%, indicating substantial deficiencies in meeting the required criteria.
- The remaining 15,172 facilities scored between 50% and 80%, showing that while they had some of the necessary components, they still needed significant improvements to meet the IPHS standards fully.

Efforts to improve the performance and quality of services in district hospitals:

- **Infrastructure Enhancement Initiatives:** To strengthen the infrastructure of healthcare facilities, the government has launched several initiatives apart from the National Health Mission (NHM), including:
 - » Ayushman Bharat-Health and Wellness Centres (now renamed as Ayushman Arogya Mandir).
 - » Emergency COVID Response Package (ECRP) I & II.
 - » Prime Minister - Ayushman Bharat Health Infrastructure Mission (PM-ABHIM).
- **Capacity Development:** Efforts are ongoing to develop the capacities of district hospitals as training sites for:
 - » Training nurses, ANMs, and paramedics.
 - » Providing Diplomate National Board (DNB)/CPS courses for medical officers (MOs).
- **Patient Feedback and Quality Assurance:** The government has integrated "Mera Aspataal," a patient feedback system, in District Hospitals (DH).
 - » To ensure that services provided through public health facilities are safe, patient-centric, and of assured quality, the National Quality Assurance Standards (NQAS) certification is actively implemented across public health facilities.
- **Health Management and Information System:** Given that the evaluation of DH performance

depends on the integrity of the data recording and reporting system, efforts have been taken to strengthen the Health Management and Information System (HMIS).

- HMIS data is used in the assessment of district hospital performance. Accordingly, based on the data indicators captured in the HMIS, a set of 17 Key Performance Indicators have been finalized jointly by NITI Aayog and MoHFW, covering the domains of structure, process, output, and outcome.
- **Essential Drugs and Diagnostics:** To ensure the availability of essential drugs and diagnostic tests and to reduce the Out of Pocket Expenditure (OOPE) of patients visiting public health facilities, the government has rolled out the Free Drugs Service Initiative and Free Diagnostics Initiative under the National Health Mission.
- **Specialist Care Accessibility:** Accessibility to specialist care has been further enhanced through teleconsultation platforms like e-Sanjeevani.

Conclusion:

The government has initiated self-assessment and real-time monitoring to ensure that health facilities maintain the required standards of infrastructure, equipment, and human resources. This leads to better health outcomes and fosters a healthier and more equitable society.

SDG in India: Performance Report for 2023-24

Why in News:

NITI Aayog, has released its latest Sustainable Development Goal (SDG) Index on 12th July' 2024. The National score of India is 71 in 2023-24. It was 66 in 2020-21 and 60 in 2019-20. There has been a significant progress in areas like poverty eradication, decent work, economic growth, climate action, and life on land.

About SUSTAINABLE DEVELOPMENT

- It is the development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

About Sustainable Development Goals:

- The SDG India Index was first released in 2018. It consists of a List of 17 goals which need to be achieved to make the future of India and the World an excellent one.
- In 2023-24 there has been a significant progress in certain goals like No Poverty, Decent Work and Economic Growth, Climate Action and Life on Land.

- The largest increase in score was observed in Climate Action. India's overall score is below 50 only for Goal 5 i.e. Gender Equality, highlighting the need for targeted efforts to improve gender equality.
- The SDG India Index 2023-24 evaluated the progress of all states and union territories on 113 indicators provided by Ministry of Statistics and Programme Implementation's (MoSPI) National Indicator Framework (NIF).
- It calculates scores for the 16 SDGs for each state and UT. The SDG Index scores range from 0 to 100, with higher scores indicating greater progress toward the targets. States and UTs are categorized based on their SDG India Index scores as follows:
 - » Aspirant: 0–49,
 - » Performer: 50–64,
 - » Front-Runner: 65–99
 - » Achiever: 100

State Wise Performance:

- According to the index, states such as Uttarakhand, Kerala, Tamil Nadu, Goa, and Himachal Pradesh were the highest-scoring states, while Bihar, Jharkhand, Nagaland, Meghalaya and Arunachal Pradesh lagged.
- Among the union territories (UTs), Chandigarh, Jammu and Kashmir, Puducherry, Andaman & Nicobar Islands and Delhi performed best.

Goals And Their Top Scorers (State-Wise) In 2024:

- No Poverty- Tamil Nadu
- Zero Hunger- Kerala
- Gender Equality- Nagaland
- Clean Water And Sanitation- Goa
- Climate Action- Sikkim

Conclusion:

Key government interventions contributing to SDG improvements include:

- Construction of over 40 million houses under the PM Awas Yojana (PMAY).
- Installation of 110 toilets and 223,000 community sanitary complexes in rural areas.
- Provision of 100 million LPG connections through the PM Ujjwala Yojana.
- Over 149 million households received tap water connections under the Jal Jeevan Mission.
- The Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana benefited over 300 million people
- 800 million people were benefited from the National Food Security Act (NFSA).
- Direct transfer through PM-Jan Dhan accounts.

BRAIN BOOSTERS

International Year of Quantum Science & Technology

Why in Broadcast

United Nations has designated 2025 as the International Year of Quantum Science and Technology (IYQ), aiming to raise public awareness of the significance and applications of quantum science. Mexico led the resolution at the UNESCO General Conference in May 2023, which was supported by almost 60 countries.

7. Cons

- ❖ **High Costs:** The development and maintenance of quantum technologies require significant financial investment, which may limit their accessibility and adoption.
- ❖ **Technical Difficulties:** Achieving and maintaining quantum coherence, error correction, and scalable quantum systems are major technical hurdles that need to be overcome.
- ❖ **Limited Practical Applications:** While quantum technologies hold great promise, many are still in experimental stages and may take years to reach practical, widespread use.

6. About Quantum Science

- ❖ Quantum science, also known as quantum mechanics, is a branch of physics that studies the behavior of matter and energy at an atomic and subatomic level.
- ❖ At these scales, the classical laws of physics do not apply, and strange, seemingly random phenomena govern the behavior of particles.

1. Significance

- ❖ The year 2025 marks a significant milestone, as it is the centenary of Werner Heisenberg's paper that laid the foundation of modern quantum mechanics.
- ❖ Heisenberg was awarded the Nobel Prize in Physics in 1932 for his contributions to quantum mechanics.

2. Global Initiative

This is a worldwide initiative that will be observed through activities at all levels to increase public awareness of quantum science and technology.

3. Events and Activities

Throughout 2025, the IYQ consortium will organize regional, national, and international outreach events, activities, and programming to celebrate and develop learning resources for quantum science.

4. Partnerships

The initiative has received the endorsements from the following:

- ❖ International Union of Pure and Applied Physics.
- ❖ International Union of Pure and Applied Chemistry.
- ❖ International Union of Crystallography.
- ❖ International Union of History and Philosophy of Science and Technology.

5. Pros

- ❖ **Enhanced Computational Power:** Quantum computing has the potential to solve complex problems that are currently intractable for classical computers, offering breakthroughs in numerous fields.
- ❖ **Unprecedented Precision:** Quantum sensors and measurement techniques provide highly accurate data, which is crucial for scientific research, medical diagnostics, and various technological applications.
- ❖ **Security Advancements:** Quantum cryptography offers theoretically secure communication methods, providing a high level of protection against eavesdropping and cyber threats.
- ❖ **Innovative Technologies:** Research in quantum materials and other quantum technologies could lead to the development of new devices and systems with unique properties and capabilities.

8. Applications of Quantum Science

1. Quantum Computing

- ❖ **Complex Problem Solving:** Quantum computers have the potential to solve certain complex problems much faster than classical computers. This includes problems in optimization, cryptography, and complex simulations.
- ❖ **Drug Discovery:** Quantum computers can simulate molecular and chemical processes at the quantum level, potentially revolutionizing drug discovery and material science by predicting molecular interactions more accurately.
- ❖ **Financial Modeling:** Quantum algorithms could enhance the ability to model financial systems and optimize portfolios, potentially offering more precise risk assessments and investment strategies.

2. Quantum Cryptography

- ❖ **Quantum Key Distribution (QKD):** QKD allows for the secure distribution of encryption keys based on quantum mechanics principles. It ensures that any eavesdropping attempts are detectable, thus providing theoretically unbreakable encryption.
- ❖ **Secure Communication Networks:** Quantum cryptography is used to develop communication networks that are resistant to eavesdropping and hacking, enhancing data security for sensitive information.

3. Quantum Materials

- ❖ **Superconductors:** Quantum materials like high-temperature superconductors have zero electrical resistance, which can be used in power grids to improve efficiency and in advanced electronics.

4. Quantum Communication

- ❖ **Quantum Repeaters:** Quantum repeaters are devices that extend the range of quantum communication networks, enabling long-distance secure communication by overcoming the limitations of signal degradation.
- ❖ **Quantum Internet:** The concept of a quantum internet involves a network of quantum computers and communication devices that could enable ultra-secure data exchange and quantum-enhanced computing power.

5. Quantum Metrology

- ❖ **Atomic Clocks:** Quantum principles are used in atomic clocks, which are incredibly precise timekeeping devices. These clocks are essential for GPS systems, telecommunications, and fundamental scientific research.

9. India's Initiative

India has also launched the National Quantum Mission (NQM) in April 2023, which will be implemented from 2023 to 2031 by the Department of Science & Technology (DST).

The NQM focuses on four key verticals:

- ❖ **Quantum Computing:** Developing scalable and fault-tolerant quantum computers
- ❖ **Quantum Communication:** Secure communication using quantum cryptography and entanglement
- ❖ **Quantum Sensing and Metrology:** Enhancing sensing and measurement capabilities using quantum properties
- ❖ **Quantum Materials and Devices:** Researching and developing materials with unique quantum properties

The NQM aims to:

- ❖ Create a robust quantum ecosystem in India
- ❖ Develop quantum technology applications for societal benefit
- ❖ Enhance India's global standing in quantum research and innovation
- ❖ Foster collaboration with international research institutions and industry partners.

6. Quantum Imaging

- ❖ **Quantum-enhanced Imaging:** Quantum techniques can improve the resolution and sensitivity of imaging systems. This includes applications in microscopy and other imaging technologies where quantum properties like entanglement can enhance image quality.

7. Quantum Machine Learning

- ❖ **Enhanced Algorithms:** Quantum computing can be applied to machine learning, offering potential speed-ups for training algorithms and processing large datasets.

8. Quantum-enhanced Manufacturing

- ❖ **Material Synthesis:** Quantum simulations and models can aid in the design and synthesis of new materials with specific properties, impacting industries such as electronics, aerospace, and energy.

9. Quantum-enhanced Security Systems

- ❖ **Quantum Random Number Generators:** These devices generate truly random numbers using quantum processes, improving the security of encryption systems and random number-based applications.

BRAIN BOOSTERS

Project Zorawar

Why in Broadcast

Defence officials have stated that the prototype of the country's indigenous light tank Zorawar is ready and will soon be subjected to extensive trials, which are expected to be completed by 2027. The trials include testing the tank's capabilities in high-altitude areas, deserts and riverine regions.

5. Benefits of Project Zorawar

- ❖ **Enhanced Firepower:** Zorawar will provide the Indian Army with a highly advanced and capable light tank, featuring a 105mm gun and active protection systems.
- ❖ **High-Altitude Performance:** Designed to operate in high-altitude areas, Zorawar will enable the Indian Army to deploy a reliable and effective tank in challenging terrain.
- ❖ **Indigenous Development:** As an indigenous project, Zorawar showcases India's growing capabilities in defense research, development, and manufacturing.
- ❖ **Strategic Advantage:** With its advanced features and capabilities, Zorawar will provide India with a strategic advantage in regional conflicts and enhance its overall defense preparedness.
- ❖ **Technology Advancement:** The project will drive innovation and advancements in defense technologies, benefiting other sectors and contributing to India's overall technological progress.
- ❖ **Self-Reliance:** Project Zorawar aligns with India's goal of achieving self-reliance in defense production, reducing reliance on imports and enhancing national security.

1. About Project Zorawar

- ❖ The project was in response to the Indian Army's requirement for a light tank that can operate in high-altitude areas, particularly in the Ladakh sector.
- ❖ Project Zorawar aims to address various strategic, operational, and technological needs of the Indian Army.

2. Development

- ❖ The project is collaboration between the Defence Research and Development Organisation (DRDO) and Larsen & Toubro (L&T).
- ❖ The project has been named after General Zorawar Singh Kahluria, who served under Raja Gulab Singh of Jammu's Dogra dynasty and played a pivotal role in expanding the Dogra territory by conquering Ladakh.

3. Features of the Tank

- ❖ **Light Tank:** Project Zorawar aims to develop a light tank for the Indian Army, named Zorawar.
- ❖ **Amphibious:** The tank is designed to be amphibious, allowing it to operate in water bodies.
- ❖ **High-Altitude:** The tank is optimized for high-altitude operations, making it suitable for deployment in regions like Ladakh.
- ❖ **105mm Main Gun:** The Zorawar tank will be equipped with a 105mm main gun and a coaxial 7.62mm machine gun.
- ❖ **Active Protection System:** The tank will feature an active protection system to defend against anti-tank missiles.
- ❖ **Power-to-Weight Ratio:** The tank is designed to have a high power-to-weight ratio, ensuring mobility and agility.

4. About Tank

- ❖ Tanks are heavily armored and armed combat vehicles that play a crucial role in modern ground warfare.
- ❖ They are designed to provide mobile protection and firepower on the battlefield, and have been a key component of military forces for decades.

Pumped Storage Projects

Why in Broadcast

Budget 2024-25 promised that a policy for promoting pumped storage projects will be brought out for electricity storage and facilitating smooth integration of the growing share of renewable energy with its variable and intermittent nature.

3. How Pumped Storage Projects Work

Two Reservoirs:

- ❖ A pumped storage facility typically has two reservoirs located at different elevations.
- ❖ The upper reservoir is at a higher elevation than the lower one.

Pumping Phase:

- ❖ During periods of low electricity demand or when there is excess power available, electricity is used to pump water from the lower reservoir to the upper reservoir.

Generation Phase:

- ❖ When electricity demand is high or there is a need for additional power on the grid, the water from the upper reservoir is released back down to the lower reservoir which passes through turbines to generate electricity.

Storage and Release:

- ❖ This cycle of pumping water up and generating electricity as it flows back down allows the facility to store energy during low-demand periods and release it during high-demand periods.

1. About Pumped Storage Projects

- ❖ Pumped storage projects are a type of hydroelectric power generation that store energy by using gravitational potential.
- ❖ They play a key role in balancing electricity supply and demand, especially when integrating intermittent renewable energy sources like wind and solar power.

2. Need of Pumped Storage Projects in India

Balancing Intermittent Renewable Energy

- ❖ India is significantly investing in renewable energy sources like solar and wind power.
- ❖ These sources are intermittent and variable.
- ❖ Pumped storage projects can help balance these fluctuations by storing excess energy during periods of high generation and releasing it when renewable output is low or demand is high.

Managing Peak Demand

- ❖ India faces peak demand issues, especially during summer and winter.
- ❖ Pumped storage plants can store energy when demand is low (often at night) and generate electricity during peak periods.
- ❖ This helps in managing peak load demands and reducing the pressure on traditional thermal power plants.

Enhancing Grid Stability

- ❖ With the increase in renewable energy, maintaining grid stability becomes more challenging.
- ❖ Pumped storage projects provide grid stability by offering quick response capabilities.

Supporting Energy Security

- ❖ Pumped storage can enhance energy security by providing a reliable source of backup power.

Reducing Dependence on Fossil Fuels

- ❖ By providing a method to store and manage energy more effectively, pumped storage can help reduce the reliance on fossil fuel-based power plants.

Facilitating Grid Integration

- ❖ By smoothing out the variability of renewable generation, they help in accommodating more renewable energy sources without compromising grid reliability.

BRAIN BOOSTERS

Surrogate Advertisement for Tobacco and Alcohol

Why in Broadcast

The Health Ministry has asked both the Sports Authority of India (SAI) and the Board of Control for Cricket in India (BCCI) to bring in measures to prevent surrogate advertisement of tobacco and or alcohol related products by sportspersons.

6. Impact and Controversy

- ❖ **Youth Exposure:** Surrogate advertising can lead to increased exposure among young people, who might be drawn to the brand through non-restricted products and later be influenced to try the restricted products.
- ❖ **Public Health:** The primary concern with surrogate advertising is its potential to undermine public health efforts aimed at reducing tobacco and alcohol consumption.
- ❖ **Industry Response:** Tobacco and alcohol companies often argue that surrogate advertising helps them to maintain their market presence and brand identity, particularly in competitive markets.

5. Regulations

- ❖ Many countries have regulations specifically aimed at curbing surrogate advertising.
- ❖ India's Cigarettes and Other Tobacco Products Act (COTPA) includes provisions to prevent surrogate advertising.
- ❖ Similarly, many countries have specific rules governing alcohol advertising.

1. About Surrogate Advertisement

- ❖ Surrogate advertisement refers to the practice of promoting restricted or banned products like tobacco and alcohol through indirect means or by associating them with other products or services.
- ❖ This is often done to circumvent advertising restrictions imposed by governments or regulatory bodies.

2. Purpose

- ❖ The primary aim is to maintain brand visibility and market presence for products that are restricted from direct advertising.
- ❖ This can help companies to continue building brand recognition and consumer loyalty despite advertising bans.

3. Common Methods of Surrogate Advertising

- ❖ **Branded Merchandise:** Companies may advertise non-tobacco or non-alcohol products with the same brand name. Example: a tobacco brand might promote its logo on clothing, accessories or other consumer goods.
- ❖ **Events and Sponsorships:** Brands may sponsor events such as sports, music festivals or cultural events where they can promote their brand name and indirectly advertise their products.
- ❖ **Media and Entertainment:** Surrogate advertisements might appear in movies, TV shows or online content. For instance, alcohol brands might be featured prominently in scenes involving celebrations or social gatherings.
- ❖ **Lifestyle Products:** Tobacco or alcohol companies might introduce lifestyle products (e.g., perfumes, cosmetics) under their brand name, using these products to advertise the main restricted products indirectly.
- ❖ **Promotional Campaigns:** Ads might focus on health and wellness initiatives or charitable causes funded by the brand, subtly promoting the brand's image.

4. Enforcement

- ❖ Despite regulations, enforcement can be challenging due to the creativity involved in surrogate advertising.
- ❖ Authorities often need to continuously update and adapt regulations to address new forms of indirect advertising.

BRAIN BOOSTERS

National Apprenticeship and Training Scheme 2.0 Portal

Why in Broadcast

Union Education Minister Dharmendra Pradhan launched the National Apprenticeship Training Scheme (NATS) 2.0 Portal and disbursed Rs 100 crore stipends to apprentices through the Direct Benefit Transfer (DBT) mode, aligning with government's efforts on skilling and employability of youth.

4. Benefits of the NATS 2.0 Portal

- ❖ **Increased Efficiency:** By digitizing and automating various processes, the portal reduces administrative burden and speeds up the apprenticeship management process.
- ❖ **Improved Transparency:** It enhances transparency by providing a clear view of apprenticeship programs, training progress and compliance with regulations.
- ❖ **Enhanced Accessibility:** The portal makes it easier for apprentices and employers across the country to participate in the apprenticeship program, regardless of location.
- ❖ **Better Monitoring:** With real-time data and reporting capabilities, the portal enables better monitoring of apprenticeship programs and ensures adherence to quality standards.

1. About NATS 2.0 Portal

- ❖ The National Apprenticeship and Training Scheme (NATS) 2.0 Portal is a significant upgrade to the National Apprenticeship Training Scheme in India.
- ❖ It is designed to facilitate and manage the apprenticeship training program for various trades and industries.

2. Purpose of NATS 2.0

- ❖ **Enhance Apprenticeship Training:** NATS 2.0 aims to improve and streamline the apprenticeship training process, making it more efficient and accessible for both apprentices and employers.
- ❖ **Bridge Skills Gap:** The scheme helps in bridging the skills gap by providing practical training to young individuals in various trades and industries, making them more employable.
- ❖ **Promote Industry Collaboration:** It fosters better collaboration between educational institutions and industries, ensuring that the training provided aligns with industry needs.

3. Key Features of the NATS 2.0 Portal

- ❖ **Online Registration:** The portal allows both employers and apprentices to register online, making the process more accessible and reducing the need for physical paperwork.
- ❖ **Centralized Database:** It maintains a centralized database of apprentices, employers and training programs, which helps in tracking and managing apprenticeship details effectively.
- ❖ **Application Management:** The portal facilitates the submission and management of apprenticeship applications, including the onboarding process for new apprentices.
- ❖ **Training Records:** It provides a platform to maintain and access records of training programs, including progress reports, assessments, and certifications.
- ❖ **Employer and Apprentice Dashboard:** Both employers and apprentices have access to personalized dashboards where they can manage their profiles, view training details and track progress.
- ❖ **Monitoring and Evaluation:** The portal includes features for monitoring and evaluating the effectiveness of apprenticeship programs, ensuring quality and compliance with the scheme's standards.

BRAIN BOOSTERS

Exercise Tarang Shakti 2024

Why in Broadcast

India hosted its first multinational air exercise, 'Tarang Shakti 2024', in two phases starting from August 6th in Sular, Tamil Nadu. Around 30 countries participated, with ten countries bringing their fighter aircraft. The exercise showcased India's defence capabilities and enhanced cooperation among the participating militaries.

4. Benefits of the exercise

- ❖ **Strengthened Alliances:** Enhances strategic partnerships and military alliances between India and the participating nations, contributing to regional and global security.
- ❖ **Enhanced Interoperability:** Improves the ability of different air forces to operate together effectively, which is crucial for joint missions and multinational operations.
- ❖ **Operational Experience:** Provides valuable operational experience and insights into how different air forces handle complex scenarios and challenges.
- ❖ **Shared Knowledge:** Facilitates the exchange of knowledge, tactics and technology among participating nations, leading to improved overall capability.
- ❖ **Regional Stability:** Contributes to regional stability by demonstrating a commitment to cooperative security and readiness among allied air forces.

1. Objectives of Exercise Tarang Shakti 2024

- ❖ **Enhancing Multinational Cooperation:** To foster stronger relationships and operational cooperation between the Indian Air Force and the air forces of other participating nations.
- ❖ **Improving Interoperability:** To improve the ability of various air forces to work together effectively in a multinational environment, coordinating their tactics, techniques and procedures.
- ❖ **Testing Combined Operational Capabilities:** To assess the ability to conduct complex air operations, including combat, reconnaissance and logistics, in a joint and multinational context.
- ❖ **Sharing Best Practices:** To share operational experiences and best practices among participating air forces, enhancing mutual understanding and capability.

2. Key Features of the Exercise

- ❖ **Participating Nations:** The exercise involved air forces from about 30 countries.
- ❖ **Varied Scenarios:** It included a range of air combat scenarios, joint operations and tactical exercises designed to test and enhance the capabilities of the participating forces.
- ❖ **Advanced Aircraft and Equipment:** The exercise featured a variety of advanced aircraft and equipment from the participating countries, including fighters, transport aircraft and surveillance systems.
- ❖ **Complex Operations:** The scenarios involved complex operations such as air superiority missions, close air support, strategic airlift and aerial refueling.
- ❖ **Training and Simulation:** The exercise used advanced simulation tools and real-time operational training to provide a comprehensive and realistic training experience.

3. Logistics and Coordination

- ❖ **Location:** The exercise was conducted in two phases starting on August 6th in Sular, Tamil Nadu.
- ❖ **Coordination:** The exercise required extensive coordination between the Indian Air Force and the participating air forces to ensure smooth and effective operations.

BRAIN BOOSTERS

Supply Chain Council

Why in Broadcast

In a significant development for international trade and supply chain management, the Indo-Pacific Economic Framework for Prosperity (IPEF) has elected India as the Vice-Chair of the Supply Chain Council. This role marks a notable achievement for India and underscores its growing influence in regional economic matters.

4. Key Areas of Focus for India

- ❖ **Supply Chain Resilience:** Developing strategies to mitigate supply chain disruptions caused by geopolitical tensions, natural disasters or other factors.
- ❖ **Transparency and Efficiency:** Promoting practices that increase transparency and efficiency within regional supply chains, which can lead to better trade outcomes and reduced costs.
- ❖ **Technological Integration:** Leveraging technology to improve supply chain management, including digital tools for tracking, data analysis and logistical optimization.
- ❖ **Policy Impact:** India's involvement will contribute to the development of policies that enhance supply chain resilience, address disruptions and improve trade practices within the Indo-Pacific region.
- ❖ **Economic Growth:** By actively participating in shaping supply chain strategies, India can help promote a more stable and efficient trading environment, which supports its economic growth and development.

1. About IPEF

- ❖ IPEF was launched on 23 May 2022 at Tokyo, Japan, comprising of 14 countries – Australia, Brunei, Fiji, India, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam and USA.
- ❖ The IPEF seeks to strengthen economic engagement and cooperation among partner countries with the goal of advancing growth, economic stability and prosperity in the region.
- ❖ The framework is structured around four pillars relating to:
 - » Trade (Pillar I)
 - » Supply Chain Resilience (Pillar II)
 - » Clean Economy (Pillar III)
 - » Fair Economy (Pillar IV).
- ❖ India had joined Pillars II to IV of IPEF while it has maintained an observer status in Pillar-I.

2. Supply Chain Council

- ❖ **Objective:** The Supply Chain Council within IPEF is tasked with overseeing and improving supply chain resilience and efficiency across the Indo-Pacific region. This includes addressing disruptions, enhancing transparency and promoting best practices in supply chain management.
- ❖ **Responsibilities:** As Vice-Chair, India will be responsible for contributing to policy discussions, providing insights on regional supply chain issues and working with other member nations to develop strategies for improving supply chain resilience and efficiency.

3. Significance of India's Election as Vice-Chair

- ❖ **Recognition of Leadership:** India's election as Vice-Chair reflects its growing role as a key player in regional economic and supply chain matters.
- ❖ **Enhanced Influence:** Holding this position allows India to have a greater voice in shaping the policies and strategies of the Supply Chain Council, which can benefit its own economic and trade interests.
- ❖ **Regional Cooperation:** As Vice-Chair, India will have the opportunity to strengthen its partnerships with other IPEF member countries, fostering closer economic ties and collaborative efforts in managing regional supply chains.

BRAIN BOOSTERS

Tourism in India

Why in Broadcast

According to the Travel and Tourism Development Index (TTDI) 2024 report published by the World Economic Forum (WEF), India is ranked 39th among 119 countries. In the previous index published in 2021, India was ranked 54th. As per the TTDI report, out of the TTDI pillars mentioned, India's scores have improved in three areas: Prioritization of Travel & Tourism, Safety & Security, and Health & Hygiene.

6. Religious Tourism

- ❖ **Pilgrimage Sites:**
- ❖ India's major pilgrimage destinations include Kashi, Rishikesh, Amritsar, Jammu, Haridwar, Nashik and various other cities.
- ❖ Religious tourism is a significant segment of the sector.

5. Medical and Wellness Tourism

Ayurveda and Yoga:

- ❖ India is known for its traditional wellness practices. Kerala and cities like Rishikesh are famous for yoga retreats and Ayurvedic treatments.

Medical Tourism:

- ❖ India's healthcare system attracts medical tourists seeking affordable and high-quality medical treatments.

1. About TTDI Report

- ❖ The Travel and Tourism Development Index (TTDI) 2024 report, evaluates the performance of countries in developing and managing their travel and tourism sectors.
- ❖ The TTDI is an important tool for understanding how well countries are leveraging their travel and tourism assets and infrastructure to support sustainable economic growth and development.

2. Historical and Cultural Tourism

Monuments and Heritage Sites:

- ❖ India is home to numerous UNESCO World Heritage Sites, including Taj Mahal, Qutub Minar and Red Fort.
- ❖ Historical monuments and ancient temples attract millions of tourists annually.

Cultural Festivals:

- ❖ India's diverse festivals, such as Deepawali, Holi and Durga Puja, offer unique cultural experiences.
- ❖ Various fairs and festivals draw both domestic and international tourists.

3. Ecotourism and Nature Tourism

National Parks and Wildlife Sanctuaries:

- ❖ India's rich biodiversity is showcased in national parks and wildlife sanctuaries like Ranthambore, Jim Corbett and Kaziranga.
- ❖ These areas offer opportunities for wildlife safaris and nature trails.

Hill Stations and Beaches:

- ❖ Popular hill stations like Shimla, Manali and Darjeeling, and beach destinations such as Odisha, Goa and Kerala, attract tourists looking for scenic beauty and relaxation.

4. Adventure Tourism

Trekking and Mountaineering:

- ❖ The Himalayas and other mountain ranges provide opportunities for trekking, mountaineering and skiing.

Water Sports:

- ❖ Coastal regions and rivers offer water sports such as scuba diving, snorkeling, rafting and surfing.

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7. Business and MICE Tourism

Meetings, Incentives, Conferences and Exhibitions (MICE):

- ❖ India hosts numerous business events, conferences and trade shows, particularly in cities like Delhi, Mumbai, Chennai, Kolkata and Bangalore.

8. Impact of the Tourism Sector

Economic Contribution:

- ❖ **Employment:** The tourism sector provides millions of jobs in areas such as hospitality, transportation and travel services.
- ❖ **Foreign Exchange Earnings:** Tourism is a significant source of foreign exchange for India, contributing to the country's balance of payments.

Cultural Exchange:

- ❖ **Global Recognition:** Tourism enhances India's global cultural presence and fosters international understanding and appreciation of Indian culture and heritage.
- ❖ **Local Economy Boost:** Tourism benefits local businesses, artisans and communities by increasing demand for local products and services.

Infrastructure Development:

- ❖ **Transport and Facilities:** Investments in infrastructure, including airports, roads and hotels are driven by tourism needs, contributing to overall development.

9. Challenges For the Tourism Sector

Infrastructure Issues:

- ❖ **Quality and Capacity:** Many tourist destinations face challenges related to inadequate infrastructure, including poor quality of roads, insufficient public amenities and inadequate accommodation facilities.

Environmental Impact:

- ❖ **Sustainability:** Over-tourism can lead to environmental degradation, pollution and strain on local resources. Sustainable tourism practices are necessary to mitigate these impacts.

Safety and Security:

- ❖ **Traveler Concerns:** Ensuring safety and security

10. Future Prospects & Opportunities

Digital Transformation:

- ❖ **Online Booking and Marketing:** Leveraging digital platforms for booking, marketing and customer engagement can enhance the tourism experience and reach a broader audience.

Sustainable Tourism:

- ❖ **Eco-Friendly Practices:** Promoting sustainable tourism practices, including eco-friendly accommodations and conservation efforts can help protect natural and cultural resources.

Experiential Tourism:

- ❖ **Unique Experiences:** Offering unique, personalized travel experiences, such as cultural immersions, adventure activities and wellness retreats can attract diverse tourist segments.

Emerging Markets:

- ❖ **New Tourist Segments:** Expanding efforts to attract tourists from emerging markets and focusing on niche segments such as medical and wellness tourism can drive growth.

Infrastructure Investment:

- ❖ **Development Projects:** Investing in infrastructure improvements, including transport and hospitality will enhance the overall tourist experience and destination appeal.

Government Initiatives:

- ❖ **Support and Promotion:** Continued support from the government, including promotional campaigns, policy support and investment in tourism development, will be key to the sector's growth.

for tourists is crucial.

- ❖ Issues such as crime, health concerns and political instability can impact tourism negatively.

Seasonality:

- ❖ **Tourism Peaks:** Many destinations experience seasonal fluctuations in tourist numbers, leading to challenges in managing resources and maintaining service quality throughout the year.

Regulatory and Policy Challenges:

- ❖ **Policy Implementation:** Effective implementation of tourism policies and regulations can be inconsistent, affecting the overall efficiency and effectiveness of tourism management.

BRAIN BOOSTERS

Li-Fi technology for Indian Navy

Why in Broadcast

The Defence Ministry has adopted Velmenni's Li-Fi technology to tackle communication challenges in the Indian Navy. Li-Fi, developed by Velmenni, uses light for secure wireless communication, supported by a grant under India's iDEX initiative.

1. About Li-Fi Technology

- ❖ Li-Fi, or Light Fidelity, is a wireless communication technology that uses light to transmit data.
- ❖ It is an alternative to traditional radio-frequency-based technologies like Wi-Fi.

2. Working of Li-Fi

Principle of Operation:

- ❖ **Light-Based Communication:** Li-Fi uses visible light, ultraviolet (UV), or infrared (IR) light to transmit data. Unlike radio waves used in Wi-Fi, Li-Fi relies on light emitted by LED (Light Emitting Diode) bulbs to carry data.
- ❖ **Modulation:** Data is transmitted by modulating the intensity of the light emitted by LEDs. The modulation is typically so rapid that it is imperceptible to the human eye. Receivers detect these light signals and decode them into data.

Components:

- ❖ **LED Light Source:** The data is transmitted through light emitted by high-speed LEDs.
- ❖ **Photodetector:** The receiver, often a photodiode or a similar sensor, detects the modulated light signals and converts them back into electrical signals.
- ❖ **Signal Processing:** The received signals are then processed to extract the transmitted data.

3. Advantages of Li-Fi

High-Speed Data Transmission:

- ❖ Li-Fi can achieve data transmission speeds significantly higher than traditional Wi-Fi.
- ❖ In laboratory settings, speeds of several gigabits per second have been demonstrated.

High Bandwidth:

- ❖ The visible light spectrum is much broader than the radio frequency spectrum, providing a larger bandwidth for data transmission.
- ❖ This can potentially lead to higher data rates and more capacity.

Reduced Interference:

- ❖ Li-Fi operates in the visible light spectrum, so it does not interfere with radio-frequency communications.
- ❖ This makes it ideal for environments where radio interference is a concern, such as hospitals and aircraft.

Enhanced Security:

- ❖ Light does not pass through walls, which means Li-Fi signals are confined to the space within a room or area.
- ❖ This makes it more secure against eavesdropping compared to radio-frequency-based communication systems.

Energy Efficiency:

- ❖ LED lighting, which is used in Li-Fi, is generally more energy-efficient than traditional lighting.
- ❖ Using existing LED infrastructure for data communication can reduce the need for additional hardware.

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4. Challenges of Li-Fi

Line-of-Sight Requirements:

- ❖ Li-Fi requires a direct line of sight between the transmitter and receiver.
- ❖ Obstacles or changes in light intensity can disrupt the communication, making it less versatile in some environments.

Limited Range:

- ❖ The range of Li-Fi is generally shorter than that of Wi-Fi because light cannot easily penetrate walls or other solid objects.
- ❖ This limitation means that Li-Fi is more suited to localized communication within a room or specific area.

Ambient Light Interference:

- ❖ Ambient light sources, such as sunlight or other artificial lights, can interfere with Li-Fi signals.
- ❖ Effective Li-Fi systems need to mitigate the impact of such interference.

Infrastructure Integration:

- ❖ Widespread adoption of Li-Fi requires significant changes to existing infrastructure, including the integration of compatible LEDs and photodetectors into lighting systems.

5. Applications of Li-Fi

Indoor Networking:

- ❖ Li-Fi is well-suited for indoor environments where high-speed, high-capacity, and secure wireless communication is needed.

Healthcare:

- ❖ In hospitals and medical facilities, Li-Fi can provide high-speed data transmission without radio-frequency interference, which is crucial for sensitive equipment and patient safety.

Transport:

- ❖ Li-Fi can be used in transportation settings, such as in vehicles or airplanes, where radio-frequency interference is a concern and where secure, high-speed communication is beneficial.

Smart Lighting:

- ❖ Li-Fi can be integrated into smart lighting systems, enabling lighting to serve dual purposes of illumination and data transmission, thus enhancing the functionality of smart buildings.

Secure Communication:

- ❖ Due to its secure nature, Li-Fi is suitable for applications requiring high levels of confidentiality, such as secure communications in military or

6. Future Prospects

- ❖ Li-Fi technology is still evolving and holds significant promise for the future of wireless communication.
- ❖ As research and development continue, advancements in Li-Fi could lead to improved performance, wider adoption, and integration with other technologies.
- ❖ With the growing need for faster, more secure, and more efficient wireless communication solutions, Li-Fi is poised to play a crucial role in the future of connectivity.

7. About iDEX Initiative

- ❖ The iDEX (Innovation for Defence Excellence and Security) initiative is an innovation-driven program by the Government of India aimed at fostering cutting-edge technology and innovation in the defense sector.
- ❖ Launched by the Ministry of Defence, the initiative is designed to support and promote innovative solutions and technological advancements to strengthen national security and defense capabilities.

8. Objectives of iDEX

Foster Innovation:

- ❖ Encourage and support innovation in defense technology by providing a platform for startups, entrepreneurs and research institutions to contribute to defense needs.

Enhance Self-Reliance:

- ❖ Promote the development of indigenous defense technologies to reduce dependency on foreign systems and increase self-reliance in defense manufacturing.

Support Startups and SMEs:

- ❖ Provide financial, technical and institutional support to startups and small and medium-sized enterprises (SMEs) working on innovative defense solutions.

government facilities.

High-Density Areas:

- ❖ Li-Fi can help manage network congestion in high-density areas, such as convention centers or stadiums, where traditional wireless networks may struggle to handle the load.

Places in News

Liberia

- ❖ A group of senators in Liberia, a country situated along the coast of western Africa, has proposed relocating the capital city, Monrovia, due to recurring flash floods.
- ❖ These floods have had a devastating impact, particularly in the West Point slum of Monrovia, where sea level rise and coastal erosion displaced more than 6,500 people and destroyed 800 houses between 2013 and 2018.
- ❖ Liberia shares land boundaries with Sierra Leone to the northwest, Guinea to the north, and Côte d'Ivoire to the east.
- ❖ The country is bordered by the Atlantic Ocean to the south and west, contributing to its vulnerability to coastal erosion and flooding.
- ❖ The senators' proposal to move the capital aims to mitigate the adverse effects of these environmental challenges on the population and infrastructure.



Estonia

- ❖ Estonia, renowned for its advanced digital infrastructure, is seeking to partner with India to enhance their cybersecurity capabilities.
- ❖ Officials from Estonia's government have highlighted this collaboration due to the ongoing cyberattacks they face from Russia, largely driven by their position on the Russia-Ukraine conflict. Similarly, India contends with cybersecurity threats from its neighbor China.
- ❖ Estonia, the northernmost of the three Baltic states (Estonia, Latvia, and Lithuania), is situated in northeastern Europe along the eastern shores of the Baltic Sea. Tallinn is the capital and largest city of Estonia.
- ❖ The Baltic region is not rich in natural resources. Though Estonia is an important producer of shale oil, a large share of mineral and energy resources are imported.



Ivory Coast

- ❖ Ivory Coast joined the United Nations Water Convention, becoming the 10th African nation to do so. This decision was driven by the need to enhance cooperative water management across borders in response to growing water stress and the effects of climate change on its shared water resources.
- ❖ By joining the convention, Ivory Coast aims to improve collaboration with its neighbors in managing these vital resources.
- ❖ Ivory Coast shares eight transboundary river basins—Black Volta, Bia, Tanoe, Comoe, Niger, Sassandra, Cavally, and Nuon—with six neighboring countries: Ghana, Burkina Faso, Mali, Guinea, Liberia, and Sierra Leone.
- ❖ Among these river basins, the Niger basin stands out as particularly significant.
- ❖ The Niger River, the continent's third-longest river at 4,200 kilometers, traverses nine countries: Benin, Burkina Faso, Cameroon, Chad, Ivory Coast, Guinea, Mali, Niger, and Nigeria. This basin is one of Africa's most vulnerable regions to climate change, highlighting the importance of collaborative efforts to manage and protect these critical water resources.



Chagos Islands

- ❖ India has recently reaffirmed its support for Mauritius in the sovereignty dispute with the United Kingdom over the Chagos archipelago in the Indian Ocean.
- ❖ The Chagos Islands or the Chagos Archipelago is a group of seven atolls comprising more than 60 islands in the Indian Ocean about 500 kilometres south of the Maldives.
- ❖ The Chagos Archipelago spreads out across 250,000 square miles.
- ❖ Its key islands include the Diego Garcia atoll, Danger Island, Egmont Islands, Eagle Islands, Nelsons Island, Peros Banhos atoll. (Diego Garcia island houses a strategic US military base).



State-Based Current Affairs

Current Affairs: Uttar Pradesh

UP leads in Compressed Biogas Capacity

According to a recent report by Centre for Science and Environment (CSE), Uttar Pradesh holds a prominent place in India's renewable energy landscape, with the potential to generate 24 percent of the Country's Compressed Biogas (CBG).

Highlights:

- ❖ Western Uttar Pradesh, especially Muzaffarnagar, Meerut, Saharanpur, Bijnor, Bulandshahr and Aligarh has abundant feedstock and hosts most of the state's CBG plants.
- ❖ Experts believe Uttar Pradesh can establish 1,000 of the 5,000 CBG projects planned nationwide under the Sustainable Alternatives to Affordable Transportation scheme, using just 20 percent of its surplus feedstock.
- ❖ Despite its potential, the CBG sector in Uttar Pradesh faces challenges like limited bioslurry procurement, gas procurement issues, a shortage of skilled personnel, and financing difficulties, which require strategic planning and collaboration.
- ❖ Reflecting its commitment to renewable energy, the state's bioenergy policy allocates Rs 750 crore for CBG development from 2022 to 2027.
- ❖ CBG is expected to bring the following benefits:
 - » Reduction in natural gas and crude oil imports.
 - » Helpful in achieving sustainable development and promoting local clean energy solutions.

Bioplastic Park to be built in Lakhimpur

In a major initiative to tackle environmental pollution,

the UP government will set up a bioplastic park in Uttar Pradesh with an investment of Rs 2,000 crore.

More about the News:

- ❖ This park will be developed on 1,000 hectares in Kumbhi village of Gola Gokarnath tehsil in Lakhimpur Kheri district.
- ❖ The bioplastic park will be constructed by Balrampur Sugar Mill firm, with the Uttar Pradesh Expressway Industrial Development Authority (UPEIDA) serving as the nodal agency for its development.
- ❖ Bioplastic, also known as natural plastic, is a type of plastic made from natural materials like corn, sunflower, or beetroot. It decomposes quickly, reducing environmental pollution.
- ❖ The use of bioplastics not only promotes environmental sustainability but also has applications in various industries such as packaging, ready-made garments, electronics, and other industrial products.
- ❖ The development and use of bioplastics will help reduce the threat of plastic pollution and significantly improve environmental conditions. Additionally, the park will promote research and development in plastic technologies.

Ghar Ghar Solar Initiative

Tata Power Solar Systems Limited, a pioneer in sustainable energy solutions, has introduced a transformational rooftop solar initiative to provide clean energy to every household in Uttar Pradesh.

Key Points:

- ❖ The ambitious initiative 'Ghar Ghar Solar, Tata Power Ke Sang' launched from Varanasi promises substantial financial savings and environmental benefits for residents through state-of-the-art rooftop solar solutions (RTS).
- ❖ Consumers in the state can avail a maximum subsidy of Rs 1,08,000 on installing solar power on the roof. This will include a subsidy of Rs 78000 from the Central Government for up to 3 kW and a maximum

subsidy of Rs 30,000 (Rs 15,000 per kW) from the State Government for up to 3 kW, which will be in addition to the Central Government subsidy.

World's first Asian King Vulture Conservation and Breeding Center built in Maharajganj

Uttar Pradesh has started the work of building the world's first center for the conservation and rearing of Asian King Vulture in Maharajganj. This species has been in the Red List of the International Union for Conservation of Nature since 2007, as it is in serious danger.

Important points:

- ❖ The name of the center is Jatayu Conservation and Breeding Center and it has high-tech equipment to monitor and care for these vultures at all times. Its staff includes a scientific officer and a biologist.
- ❖ Vultures lay only one egg a year and live with the same partner throughout their lives. The breeding plan of the center is based on mating them. The objective of the center is to ensure the good health of the growing vultures and provide them with a pair.
- ❖ Currently Asian King Vulture is included in the IUCN Red List as critically endangered and in Schedule 1 of the Wildlife Protection Act, 1972.

IIT-BHU's Nano Chip will Identify Neurological Diseases

Scientists at IIT BHU have developed a special device capable of identifying and monitoring the neurotransmitters of the human body. They have named this innovation a lab-on-chip device.

Important points:

- ❖ Dr. Shantanu Das, Professor, Department of Ceramic Engineering, stated that this technology can accurately detect neurological diseases like depression, Parkinson's, and schizophrenia. The use of this device could revolutionize the treatment of neuro-related diseases in the field of health.

- ❖ The device consists of a metallic nanoparticle, which is atomically thin, and a two-dimensional (2D) semiconductor that uses advanced surface-enhanced Raman scattering (SERS) technology.
- ❖ This lab-scale device provides real-time monitoring without causing any damage, allowing for the detection of neurological diseases.

Suhelwa Wildlife Sanctuary is the 5th tiger reserve of the state

Following evidence of a tiger population, Suhelwa Wildlife Sanctuary is set to be declared the fifth tiger reserve. This announcement was made on the 10th anniversary of the Pilibhit Tiger Reserve.

About Suhelwa Wildlife Sanctuary:

- ❖ Suhelwa Wildlife Sanctuary, located in the Shravasti, Balrampur, and Gonda districts of Uttar Pradesh, was established in 1988. It is situated on the India-Nepal international border.
- ❖ Covering an area of 452 square kilometers, it features a diverse array of trees including Sal, Sheesham, Khair, Teak, Asna, Jamun, Haldu, Faldu, Dhamina, Jhingan, and Baheda.
- ❖ The sanctuary is home to various fauna such as leopards, tigers, bears, wild cats, wild boars, and numerous bird species.

Krishi Sakhis get certificates in Varanasi

The Prime Minister presented certificates to more than 30,000 women of self-help groups, naming them Krishi Sakhi.

Important Points:

- ❖ These certificates have been given under the Krishi Sakhi Convergence Program.
- ❖ Recognizing the important role of women in agriculture, the Ministry of Agriculture and Farmers Welfare, in collaboration with the Ministry of Rural Development, launched the Krishi Sakhi Certification Program through a Memorandum of

Understanding signed in August 2023.

- ❖ This program aims to enhance the skills and empowerment of rural women in agricultural practices.

Krishi Sakhi:

- ❖ This initiative, led by the Ministry of Agriculture and Farmers Welfare, aims to empower rural women across the country.
- ❖ The Krishi Sakhi Convergence Program (KSCP) seeks to transform rural India by training and certifying rural women as Krishi Sakhis.
- ❖ These Krishi Sakhis will work as para-extension workers, contributing to agricultural development and soil health initiatives.

Population of State Bird Sarus Increased

According to the Forest Department of Uttar Pradesh, the Summer Census 2024 data reveals that the population of the state bird, the Sarus crane, has risen to 19,918. This represents an increase of 396 Sarus cranes compared to the previous year.

Key Points:

- ❖ The Forest Department of Uttar Pradesh, with the assistance of 10,000 citizens, conducted the Summer Census 2024, revealing that Uttar Pradesh hosts the largest population of Sarus cranes in India.
- ❖ The census recorded 19,918 Sarus cranes this year, up from 19,522 in 2023, 19,188 in 2022, and 17,329 in 2021. Notably, for the first time in a decade, six Sarus cranes were counted in the Mau Forest Division.
- ❖ The highest number of Sarus cranes, 3,289, was observed in the Etawah Forest Division, followed by 2,945 in the Mainpuri Forest Division.
- ❖ The census focuses on forest areas of Uttar Pradesh and does not include private lands where Sarus cranes are also frequently found.

About Sarus:

- ❖ The Sarus crane, declared the state bird of Uttar Pradesh in 2014, is the tallest flying bird in the world.

- ❖ These cranes nest in wetland areas and are listed in Schedule IV of the Wildlife (Protection) Act, 1972.

Current Affairs: Bihar

Nalanda University New Campus Inaugurated

Prime Minister Narendra Modi inaugurated the new campus of Nalanda University, near the ancient ruins site of Nalanda in Rajgir, Bihar.

Important Points:

- ❖ Nalanda University is established through the Nalanda University Act, 2010, based on decisions taken at the East Asia Summit in 2007 and 2009.
- ❖ The university began functioning from a temporary location in 2014 with 14 students and construction of the new campus began in 2017.
- ❖ With this, Nalanda University has the participation of 17 countries, including Australia, Bangladesh, Bhutan, China and others, who have signed MoUs in support of the university.
- ❖ The university offers postgraduate and doctoral research courses, as well as short-term certificate courses.

History:

- ❖ Founded by Kumaragupta in the 5th century, Nalanda was a famous monastic university for 600 years, flourishing under Harshavardhana and the Pala kings.
- ❖ It attracted students from across Asia, teaching subjects such as Buddhism, medicine and astronomy. After being destroyed by Bakhtiar Khilji in 1193, it was rediscovered in 1812 and is now a UNESCO World Heritage Site.

Kabartal Lake

NGT directs Bihar government to form committee to probe encroachment on Kabartal Lake.

Key Points:

- ❖ Kabartal Lake, Bihar's only Ramsar site, is located in East Begusarai. The site is spread over an area of 2,620 hectares, which includes 16-17 reservoirs, water surfaces and marshes. NGT has directed the Bihar government to form a fact-finding committee to probe encroachment on the lake.
- ❖ The committee will comprise senior scientists of the Bihar State Pollution Control Board, senior officials of the Bihar State Climate Authority, Divisional Forest Officer of Begusarai, and District Magistrate of Begusarai or his representative.
- ❖ The committee has been directed to submit a report within four weeks.

Action required:

- ❖ The committee has been asked to probe allegations of encroachment on the lake, including farming, commercial and industrial activities.
- ❖ NGT informed that no "integrated management plan" has been prepared for the lake in the last 35 years.

Current status:

- ❖ About 82% of the lake has turned into marsh, with 25% being cultivated.
- ❖ The role of Bihar State Pollution Control Board is limited to maintaining the water quality of the lake.

Current Affairs: Rajasthan

Demand for separate 'Bhil Pradesh'

- ❖ The Bhil community is demanding that 49 districts in Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra be separated to form Bhil Pradesh.

- ❖ This demand traces back to 1913 when Bhil social reformer and spiritual leader Govind Guru first called for a separate state for tribals following the Mangarh Massacre.
- ❖ Economic backwardness of sub-regions within these larger states has also emerged as a significant reason for the demand for smaller states.
- ❖ Various measures, such as protecting tribal interests through the Fifth Schedule under Article 244(1) of the Constitution, have largely been assurances by the ruling party.
- ❖ Additionally, the Panchayats (Extension to Scheduled Areas) Act, 1996, adopted by Rajasthan in 1999 and with rules issued in 2011, has proven ineffective due to information asymmetry.

Bhil Tribe:

- ❖ The term "Bhil" comes from "Veel," meaning "bow" in the Dravidian language. The Bhil tribe, one of India's oldest and the second largest in Rajasthan after the Meena tribe, is renowned as a warrior tribe.
- ❖ Predominantly found in Udaipur, Banswara, Dungarpur, and Pratapgarh districts, the Bhils also inhabit Gujarat, Maharashtra, and Madhya Pradesh
- ❖ Their rich culture includes the Bhilala subdivision's renowned Pithora paintings.

Rajasthan government aims to generate 30 GW of solar power by 2025

The Rajasthan government has set an ambitious target of generating 30 GW of solar power by the end of the financial year 2025. The initiative aims to make the state self-reliant in the energy sector and promote sustainable development.

Key Points:

- ❖ In March, an agreement with NLC India was signed to set up 1,000 MW of solar power plants and 125 MW of lignite-based power plants in Bikaner, with an investment of over Rs 7,000 crore.
- ❖ The government has approved land for four major solar projects, including three solar parks in Bikaner

with a total capacity of 2,450 MW and a 500 MW project in Phalodi.

- ❖ Rajasthan, a leading state in solar power generation with a capacity of 142 GW, plans to meet 43% of its power consumption from solar energy by 2030.
- ❖ Under the PM Kusum Solar Pump Yojana, solar pumps will be installed in over 50,000 farms, offering financial assistance and subsidies, particularly to Scheduled Castes and Tribes.
- ❖ These projects are expected to make the state self-reliant in energy, attract investments worth Rs 10,000 crore, and promote sustainable development while supporting the agricultural sector.

Current Affairs: Madhya Pradesh

Madhya Pradesh became the best performing state in Swanidhi scheme

- ❖ The Union Ministry of Housing and Urban Affairs announced that Madhya Pradesh has topped the category of "Best Performing State" under the Pradhan Mantri Swanidhi Yojana.
- ❖ The state's efforts to successfully adopt the micro-credit program and help urban street vendors have been recognized.

About PM Swanidhi:

- ❖ PM Swanidhi Yojana is a central sector scheme launched in June 2020. It is a special micro-credit facility scheme to provide initial affordable loan up to Rs 10,000 to more than 50 lakh street vendors.
- ❖ Small Industries Development Bank of India (SIDBI) is the technical partner for the implementation of this scheme.
- ❖ Objective of the scheme:
 - ❖ To provide financial assistance to street vendors in urban areas.
 - ❖ To help re-establish their business.

- ❖ To promote financial inclusion and realise the goal of self-reliant India.

Prime Minister Excellence Colleges launched in Madhya Pradesh

- ❖ Union Home Minister and Minister of Cooperation, Shri Amit Shah, inaugurated the Prime Minister Excellence Colleges (PM Colleges of Excellence) across all 55 districts of Madhya Pradesh.
- ❖ This initiative, part of the New Education Policy (NEP) 2020, aims to make education employment-oriented and prepare students for global competition.

Key Points:

- ❖ The inauguration of 55 PM Colleges of Excellence, upgraded at a cost of Rs 486 crore, took place from Indore, Madhya Pradesh.
- ❖ These colleges are designed to enhance higher education and offer students opportunities to study subjects of their interest, such as biotechnology, computer science, culture, and arts.
- ❖ The initiative aims to improve educational quality and increase employment opportunities.
- ❖ Additionally, the state is translating engineering and medical science courses into local languages to help underprivileged children access higher education.
- ❖ With PM Colleges of Excellence being established in every district, the initiative is expected to significantly advance the field of education.

GAIL India plans 1500 KTA Ethane Cracker Project in Madhya Pradesh

- ❖ Gas Authority of India Limited (GAIL) has planned to set up a 1500 KTA Ethane Cracker Project at Ashta in Sehore district of Madhya Pradesh.

Important Points:

- ❖ The project aims to produce various ethylene derivatives, boosting the company's growth and expanding its capacity in the petrochemical sector. GAIL has formally requested assistance from the

state government to facilitate the project.

- ❖ In response, the Madhya Pradesh state government has positively engaged and initiated the process of allocating approximately 800 hectares of land through MP Industrial Development Corporation Limited.
- ❖ The ethane cracker project, with a total estimated investment of around Rs 60,000 crore, is expected to bring significant economic benefits to the region, though the mode of financing is yet to be determined.

Current Affairs: Chhattisgarh

Chhattisgarh's first digital planetarium to be built in Dantewada

- ❖ With the help of the Government of India, Chhattisgarh's first digital planetarium is going to be built in Dantewada district. This will promote tourism in this area. Along with this, awareness will increase among the people here, especially among children.

Key Points:

- ❖ Chhattisgarh's first digital planetarium will be established in Dantewada district with an expenditure of Rs 7 crore 95 lakh. The project will be built by the Ministry of Culture (NCSM) with the initiative of the Dantewada District Administration and PPIA Fellows.
- ❖ The primary aim of the digital planetarium is to boost public interest and awareness, particularly among children and youth, in science and astronomy.
- ❖ It will focus on educational development, scientific awareness, cultural and social growth, and engaging audio-visual experiments.
- ❖ Serving both educational and recreational purposes for all ages, the planetarium will enhance knowledge and enjoyment.

- ❖ The NCSM (National Council of Science Museums) is a scientific society registered under the West Bengal Societies Registration Act 26 of 1961 and operates under the Ministry of Culture, Government of India.

Youth group in Raipur built mini-forest using Miyawaki method

- ❖ A youth group in Raipur built a mini-forest with the aim of protecting the environment and increasing greenery. Miyawaki method was used in the construction of this mini-forest.

Miyawaki method:

- ❖ Miyawaki method is a tree planting technique developed by Japanese botanist Akira Miyawaki.
- ❖ This method is known to rapidly develop dense and biodiversity-rich forests.
- ❖ In this method, plants of local species are planted close to each other, due to which they grow rapidly and a permanent forest is formed.

Current Affairs: Uttarakhand

Sawan begins with Harela festival in Uttarakhand

Sawan begins with Harela festival in Uttarakhand on July 16, 2024. This traditional festival is highly significant for the agriculture and culture of the state, symbolizing prosperity and overall well-being

Key points about Harela festival:

- ❖ The Harela festival, celebrated on the first day of the Shravan month, marks the onset of the monsoon and the sowing of new crops. The name "Harela" is derived from the Kumaoni word "Hariyala," meaning "day of greenery."
- ❖ Originating in the Kumaon region of Uttarakhand, the festival is significant for agriculture, symbolizing

the start of crop sowing and the arrival of the monsoon.

- ❖ The festival also represents the wedding of Lord Shiva and Goddess Parvati and is celebrated with wishes for natural prosperity, peace, and happiness.
- ❖ During the Harela festival, people clean their homes and surroundings, plant trees, and worship Lord Shiva and Goddess Parvati.
- ❖ Tree plantation drives during Harela contribute to environmental protection and promote greenery, embodying the festival's message of conserving and enhancing natural resources.

Uttarakhand Secures Top Spot in Sustainable Development Goals (SDGs) Report

- ❖ NITI Aayog has released the SDG 2023-24 report, where Uttarakhand has emerged as the top performer in Sustainable Development Goals (SDGs) across the country.

Key Points:

- ❖ Rising from 9th position in 2019, Uttarakhand made significant progress and jointly secured the top position with Kerala.
- ❖ While the national average score is 71, both Uttarakhand and Kerala scored 79 points.

SDG India Index:

- ❖ It measures the national progress of all States and Union Territories (UTs) on 113 indicators linked to the National Indicator Framework of the Ministry of Statistics and Programme Implementation.
- ❖ The overall score for each State/UT was calculated by aggregating their performance across the 16 Sustainable Development Goals.
- ❖ The score ranges from 0-100. A score of 100 means that the state/UT has achieved the targets set for 2030.
- ❖ States are divided into four categories: Successful (100), Leading (65-99), Performing (50-64) and Aspiring (0-49).

Current Affairs: Jharkhand

New Acting Chief Justice of Jharkhand

Justice Sujit Narayan Prasad has been appointed as the Acting Chief Justice of Jharkhand High Court after the departure of Chief Justice Vidyut Ranjan Sarangi.

Key Points:

- ❖ According to the Law Ministry, Justice Prasad had assumed charge on July 20, 2024. The appointment of the Acting Chief Justice is governed by Article 223 of the Indian Constitution.
- ❖ The appointment of the Acting Chief Justice is governed by Article 223 of the Indian Constitution.

169th anniversary of Santhal Rebellion

- ❖ Santhal Rebellion on 30 June marked its 169th anniversary. This rebellion was one of the earliest tribal rebellions by farmers against British rule and has great historical significance.

Santhal Revolt (1855):

- ❖ **Leaders:** Four brothers - Sidho, Kanho, Chand and Bhairav Murmu, and their sisters Phulo and Jhano.
- ❖ **Tactics:** Adopted guerrilla tactics and fought for about six months.
- ❖ The Santhal Revolt was driven by several key issues. The Santhals opposed the 1793 Permanent Land Settlement, and the British forcibly seized their lands, evicting them.
- ❖ Promises made in 1832 to settle the Santhals in areas designated as 'Santhal Pargana' or 'Damin-i-Koh' was not fulfilled.
- ❖ Additionally, the Santhals faced land grabbing, begari (bonded labor), and other injustices, including forced labor under oppressive practices like Kamioti and Harwahi.

About the Santhal community:

- ❖ The Santhals are the third largest Scheduled Tribe

in India, following the Gonds and Bhils, with a population of over six million. They primarily reside in Odisha, Bihar, Jharkhand, and West Bengal.

- ❖ The Santhals follow the Sarna religion, worshipping nature in Jaher (sacred groves).
- ❖ Their language is recognized as an official tribal language under Schedule VIII of the Constitution of India, a status incorporated through the 92nd Constitutional Amendment Act, 2003.

Current Affairs: Haryana

Haryana reserves 10% quota for Agniveers

The Haryana government announced plans to implement 10% reservation for Agniveers in various government recruitments. Chief Minister Nayab Singh Saini informed that Agniveers will get quota in constable, forest guard, jail warden, and other civil posts.

Key Points:

- ❖ The new policy includes a 10% horizontal reservation for Agniveers in the recruitment of constables, mining guards, forest guards, jail wardens, and special police officers.
- ❖ Additionally, Agniveers will receive a three-year relaxation in the upper age limit for Group B and Group C civil posts, with a five-year relaxation applicable to the first batch.
- ❖ A 5% reservation is provided for Agniveers in Group C direct recruitment, and a 1% reservation is available in Group B, including gazetted posts.
- ❖ Industrial units employing Agniveers with a salary exceeding Rs 30,000 per month will receive an annual subsidy of Rs 60,000 from the government.
- ❖ Agniveers will be eligible for interest-free loans up to Rs 5 lakh for business startups and will receive priority in the issuance of arms licenses.

Haryana launches IT Saksham Yuva Yojana 2024

The Haryana government launched the IT Saksham Yuva Yojana 2024 to empower youth and increase employment.

Key Points:

- ❖ The scheme aims to create 5,000 employment opportunities in its initial phase and is part of the broader Mission 60,000, announced by former Chief Minister Manohar Lal Khattar, which targets employing at least 60,000 youths from underprivileged backgrounds.
- ❖ It includes a short-term course called the Haryana IT Programme for undergraduate and postgraduate students with IT backgrounds, lasting at least three months.
- ❖ Upon completion, participants will be placed in various state departments, boards, corporations, or private entities.
- ❖ Participants will receive Rs 20,000 per month for the first six months, which will increase to Rs 25,000 per month from the seventh month.
- ❖ If a participant is not deployed, the government will provide an unemployment allowance of Rs 10,000 per month.
- ❖ Training will be conducted by agencies such as Haryana State Electronics Development (HARTRON), Haryana Knowledge (HKCL), and Shri Vishwakarma Skill University (SVSU), which will issue certificates according to the norms of the Haryana Skill Development Mission (HSDM).

Power Packed News

India's Ranking in the Global Passport Index

- ❖ India has been ranked 82nd spot on a global passport index, allowing Indians visa-free entry to 58 countries, including popular destinations like Indonesia, Malaysia and Thailand.
- ❖ The ranking is based on data from the International Air Transport Association (IATA).
- ❖ Singapore occupied the top spot in the Index with its citizens having visa-free entry to 195 countries.
- ❖ Singapore dethroned Japan from the first place, which is now at the second place along with Spain, France, Germany and Italy. The passports of all five countries allow visa-free access to 192 destinations.
- ❖ The Henley Passport Index is a global ranking of countries according to the travel freedom allowed by those countries' ordinary passports for their citizens.

Reconstitution of NITI Aayog

- ❖ The Centre has reconstituted the NITI Aayog, now including 15 union ministers and four full-time members. Prime Minister Narendra Modi remains Chairperson, and Suman K Bery continues as Vice Chairperson. Full-time members VK Saraswat, Ramesh Chand, VK Paul, and Arvind Virmani stay in their roles.
- ❖ The four ex-officio members are Defence Minister Rajnath Singh, Home Minister Amit Shah, Agriculture Minister Shivraj Singh Chouhan, and Finance Minister Nirmala Sitharaman.
- ❖ Special invitees now include Union Ministers Nitin Gadkari, Jagat Prakash Nadda, HD Kumaraswamy, Jitan Ram Manjhi, Rajiv Ranjan Singh, Virendra Kumar, Kinjarapu Rammohan Naidu, Jual Oram, Annpurna Devi, Chirag Paswan, and Rao Inderjit Singh.
- ❖ Piyush Goyal and Ashwini Vaishnaw are no longer special invitees, replaced by ministers from NDA allies.

Mukhyamantri Yuva Karya Prashikshan Yojana

- ❖ The Maharashtra government has announced the Mukhyamantri Yuva Karya Prashikshan Yojana, an internship scheme for unemployed youth, with a budget of Rs 5,500 crore.
- ❖ Eligibility Criteria: The scheme is open to candidates aged between 18 and 35 years and domiciled in Maharashtra.
- ❖ Stipend: The government will provide a stipend of Rs 6,000 for 12th pass candidates, Rs 8,000 for those with ITI and diploma qualifications, and Rs 10,000 for graduates and postgraduates.
- ❖ Internship Duration: The internship will last for six months.
- ❖ Industry and Establishment Eligibility: Industries and establishments operating in Maharashtra, registered with the Department of Skills, Employment, Entrepreneurship and Innovation, are eligible to participate.
- ❖ Objective: The scheme aims to enhance the employability and skill set of the youth and prepare them for a competitive job market.

Exercise Pitch Black 2024

- ❖ Indian Air Force participated in Exercise Pitch Black 2024 which was held in Australia.
- ❖ It is a biennial, multi-national exercise hosted by the RAAF.
- ❖ The name 'Pitch Black' was derived from the emphasis on night time flying over large un-populated areas.
- ❖ The exercise provides an excellent opportunity for strengthening the ability of the participating nations to deploy over large distances, support integrated operations in the Indo-Pacific region and building strong aviation associations in a highly challenging environment.

'One Scientist-One Product'

- ❖ The Indian Council of Agricultural Research (ICAR) launched its 'One Scientist-One Product' programme on July 16 to enhance research in agriculture and animal husbandry. As part of its 96th foundation day, ICAR I also released 323 varieties of 56 crops, including cereals, oilseeds, forage crops, and sugarcane, with 289 being climate-resilient and 27 bio-fortified.
- ❖ The initiative will involve 5,521 scientists developing a product, technology, model, concept, or publication each year. Progress will be monitored every three months at the institute level and every six months at headquarters. The scheme will run for five years, focusing initially on seed hubs for high-yielding oilseeds and pulses.
- ❖ Additionally, ICAR plans to develop 100 new seed varieties and 100 farm technologies in 100 days as part of the Centre's action plan, with a launch expected by mid-September. The ICAR has already placed bio-fortified varieties on 16 million hectares of land and released 2,593 high-yielding varieties from 2014-15 to 2023-24, including 2,177 climate-resilient and 150 bio-fortified varieties.

Dr. Soumya Swaminathan Appointed Chief Advisor for NTEP at MoHFW

- ❖ Professor Dr. Soumya Swaminathan has been appointed as the Chief Advisor for the National Tuberculosis Elimination Program (NTEP) at the Ministry of Health and Family Welfare (MoHFW).
- ❖ She will provide technical advice on the comprehensive strategy to achieve the program's objectives.
- ❖ Dr. Swaminathan has previously served as the Chief Scientist at the World Health Organization (WHO) and has also worked as the Director-General of the Indian Council of Medical Research (ICMR).
- ❖ She is the daughter of the renowned agricultural scientist M.S. Swaminathan, known as the father of the Green Revolution in India.

PM Modi Awarded Russia's Highest Civilian Honor

- ❖ Russia honored Prime Minister Narendra Modi with its highest Civilian award, the 'Order of St. Andrew the Apostle,' in Moscow. This distinction is given to individuals who have made exceptional contributions either in civilian or military fields.
- ❖ The 'Order of St. Andrew the Apostle' was first established around 1699 by Russia's first emperor, Peter the Great. It was discontinued after the Russian Revolution in 1918 but was reintroduced in 1998 by an executive order from the Russian President.

16th Finance Commission Forms Advisory Council

- ❖ 16th Finance Commission established a five-member Advisory Council. Dr. Poonam Gupta has been appointed as the convenor of the council, with DK Srivastava, Neelkanth Mishra, Pranjul Bhandari, and Rahul Bajoria serving as members.
- ❖ The 16th Finance Commission was constituted on December 31, 2023.
- ❖ Dr. Poonam Gupta is currently the Director-General of the National Council of Applied Economic Research (NCAER).
- ❖ The role of this advisory council is to seek the best national and international practices related to fiscal transfers. It will aid in broadening the scope and understanding of the commission and improving the quality, reach, and enforcement of its recommendations.
- ❖ Additionally, the council will assist in preparing documents or research studies and will oversee and evaluate the studies conducted by the Finance Commission.
- ❖ The 16th Finance Commission is chaired by former NITI Aayog Vice-Chairman Arvind Panagariya.

Laos Commemorates Cultural Ties with India through Special Stamp Set

- ❖ Laos unveiled a commemorative stamp set featuring Lord Rama and Lord Buddha, celebrating the deep cultural connections between Laos and India. The launch event was graced by India's External Affairs Minister, S. Jaishankar, and his Lao counterpart, Saleumxay Kommasith.
- ❖ This stamp set is notable for including the world's first depiction of 'Ram Lalla of Ayodhya,' highlighting the profound historical and cultural ties between the two nations.

Cultural Heritage:

- ❖ The cultural connection between India and Laos is longstanding, with Buddhism serving as a key link for thousands of years. The Ramayana, known in Laos as the Ramakien, is a significant cultural narrative often performed during major events, illustrating the shared cultural traditions.

MoUs and Development Projects:

- ❖ During the visit, several Memoranda of Understanding (MoUs) were signed, focusing on 10 Quick Impact Projects (QIPs) under the Mekong Ganga Cooperation framework. Jaishankar's visit also aligned with crucial ASEAN meetings hosted by Laos, which served as the ASEAN Chair for 2024, highlighting Laos's active role in regional diplomacy.

Dr. Jitendra Singh Receives Lifetime Achievement Award for Contributions to Diabetology

- ❖ Union Minister Dr. Jitendra Singh was honored with the "Lifetime Achievement Award" for his profound contributions to diabetology, diabetes care, and research.
- ❖ Award Ceremony: The award was presented during an international meet of medical professionals in Chennai on July 27, 2024.
- ❖ Contributions to Diabetology: Dr. Singh's work on diabetes care, research and diabetology has earned him recognition across the country and overseas.
- ❖ Notable Achievements: Dr. Singh is a renowned teacher, professor, researcher and practitioner of diabetology, and has authored eight books and three monographs on various aspects of diabetes.
- ❖ His book "Diabetes Made Easy" was featured in the Best-seller section of the World Book Fair at Pragati Maidan, New Delhi

India to Lead Asian Disaster Preparedness Center for 2024-2025

India become the chairman of the the Asian Disaster Preparedness Center (ADPC) from July 25, 2024, taking over from China at a ceremony in Bangkok, Thailand. This marks a significant step forward for India in the realm of disaster risk reduction (DRR) and climate resilience.

Significance of India's Leadership:

- ❖ India's appointment to lead the ADPC underscores its growing prominence in global and regional disaster management efforts. Under Prime Minister Narendra Modi, India's commitment to DRR has intensified, positioning the country as a major player in enhancing disaster preparedness and response.

About Coalition for Disaster Resilient Infrastructure:

- ❖ The Coalition for Disaster Resilient Infrastructure (CDRI), initiated by Prime Minister Modi, plays a crucial role in developing infrastructure capable of withstanding disasters. This initiative exemplifies India's leadership in strengthening community resilience and infrastructure against disaster impacts.

State of the World's Forests 2024 Report Released

- ❖ Food and Agriculture Organization (FAO) of the United Nations unveiled its latest report, "The State of the World's Forests." The report highlights current global forest conditions, revealing both progress and ongoing challenges.

Global Forest Coverage:

- ❖ The world's forests span approximately 4.1 billion hectares, covering 31% of the planet's land area. The top five countries with the largest forest areas are USA, Canada, Russia, China (Together, these countries account for 54% of the world's forest area.)
- ❖ Other significant contributors include Australia, the Democratic Republic of the Congo, Indonesia, Peru, and India, which together represent about two-thirds of the world's forested land.

Deforestation Trends:

- ❖ Between 1990 and 2020, around 420 million hectares of forest were converted to other land uses. However, recent trends show a reduction in deforestation rates:
 - » 1990-2002: 15.8 million hectares per year
 - » 2015-2020: 10.2 million hectares per year
- ❖ Africa reported the highest deforestation rates, followed by South America and Asia.

Mangrove Ecosystems:

- ❖ The world has 14.8 million hectares of mangroves. Despite a net loss from 2000 to 2020, the natural growth of mangroves has exceeded natural loss, indicating resilience to climate change impacts. However, extreme weather events remain a persistent threat.

Araku Coffee

In his recent 'Mann Ki Baat' address, the Prime Minister of India praised 'Araku' coffee for its unique taste.

About Araku Coffee:

- ❖ Araku coffee is grown in the Araku Valley, located in the Eastern Ghats of the states of Andhra Pradesh and Odisha. It is cultivated by tribal farmers using organic and sustainable agricultural practices.
- ❖ Known for its rich aroma and distinctive flavor profile, often described as smooth with chocolate and fruit notes, Araku coffee was recognized with the Geographical Indication (GI) tag in 2019.
- ❖ The valley's climate, characterized by warm days and cool nights, combined with iron-rich soil, enables the coffee to ripen slowly, resulting in aromatic richness and superior taste.
- ❖ This coffee is produced using green manure, organic compost, and organic pesticides.

Layang Karumpuang Cave

Scientists have discovered the world's oldest reliably dated cave painting in the Layang Karumpuang Cave, located in the Maros-Pangkep area of the South Sulawesi province on the island of Sulawesi, Indonesia.

About Layang Karumpuang Cave:

- ❖ Layang Karumpuang Cave, located in the Maros-Pangkep area of the South Sulawesi province in Indonesia, is where the world's oldest reliably dated cave painting was discovered.
- ❖ This painting, depicting three human-like figures interacting with a wild pig, is at least 51,200 years old, making it the oldest known dated example of cave art. Scientists determined its minimum age using a new scientific approach involving laser dating of calcium carbonate crystals that naturally formed on the painting.
- ❖ Made in a single shade of dark red, the painting measures 92 cm by 38 cm.

Squalus hima

Scientists from the Zoological Survey of India have discovered a new species of deep-water dogfish shark, *Squalus hima*, off the Shakthikulangara fishing harbour in Kerala along the Arabian Sea.

About *Squalus hima*:

- ❖ *Squalus hima* belongs to the *Squalus* genus within the Squalidae family, commonly known as spurdogs, characterized by smooth dorsal fin spines.
- ❖ It lives in the depths of the Indian Ocean, especially around the Seychelles and Mauritius.
- ❖ It is characterized by its small size, usually around 50 cm long and distinctive features such as large eyes and a light-colored body.
- ❖ Species of the *Squalus* and *Centrophorus* genera, including *Squalus hima*, are hunted for liver oil, which is of immense importance in the pharmaceutical industry.

Windemere Palm

Botanical Survey of India (BSI) published a study on the Silk Route in Sikkim and Kalimpong, documenting the diverse flora and landscapes, with a special focus on the Windemere palm.

About the Windemere Palm:

- ❖ The Windemere palm (*Trachycarpus latisectus*) belongs to the kingdom Plantae, order Arecales, family Arecaceae, genus *Arenga*, and species *Arenga westerhoutii*. It is a wild palm species threatened with extinction, with only a few trees remaining in the Kalimpong area.
- ❖ The Windemere palm is a medium-sized palm that can reach a height of 10-12 m, with a single trunk and large, pinnate leaves. Its sap is used to make sugar and wine, its leaves are used for thatches and mats, and fibers from its stem are used for ropes and brushes.
- ❖ Native to Southeast Asia, it is found in countries such as India, Myanmar, Thailand, Malaysia, and Indonesia. The Windemere palm is listed as a critically endangered species on the IUCN Red List.

Manas Portal

Recently, the Union Home Minister launched the Manas Portal.

About Manas Portal:

- ❖ Manas Portal (Narcotics Control Information Centre) is a digital platform launched during the 7th NCORD top-level meeting. The portal includes a toll-free number (1933), a web portal, a mobile app, and is available on the Umang app.
- ❖ It aims to provide advice on de-addiction and rehabilitation and to share information on drug trafficking.
- ❖ "Centre of Excellence for Narcotics Control" has been established to enhance capacity building.
- ❖ "Mission Spandan" initiative has been launched to raise public awareness about drug-related issues.

Abhinav Bindra to Receive Olympic Order at 142nd IOC Session in Paris

On August 10, 2024, during the 142nd International Olympic Committee (IOC) Session in Paris, Abhinav Bindra, India's iconic shooter and the country's first individual Olympic gold medalist, was honored with the Olympic Order.

Abhinav Bindra's Achievements:

- ❖ Abhinav Bindra achieved historic success at the 2008 Beijing Olympics by winning the gold medal in the men's 10m air rifle event, marking India's first individual Olympic gold. Beyond his athletic accomplishments, Bindra has significantly contributed to the Olympic Movement through his involvement in esteemed bodies such as the IOC Athlete Commission and the International Shooting Sport Federation Athlete Committee.

World Population Prospects 2024

The United Nations report titled 'World Population Prospects 2024,' released on World Population Day, states that the world population may start declining after 2080 and fall to around 10.2 billion by the end of the century.

Key Highlights:

- ❖ In more than half of all countries and territories, the average number of births per woman is below 2.1, the level needed to maintain population size without migration.
- ❖ About 20 percent of the world's countries, including China, Italy, South Korea, and Spain, have extremely low fertility rates, with women giving birth to less than 1.4 children per woman.
- ❖ The earlier and lower peak in fertility rates is promising, suggesting less pressure on the environment due to lower overall consumption.
- ❖ Already peaked (2024) in 63 countries and regions: China, Germany, Japan, Russia; expected to decline by 14% over the next 30 years.
- ❖ Expected to peak between 2025 and 2054 in 48 countries and territories: Brazil, Iran, Turkey, and Vietnam.
- ❖ Expected to keep growing until 2054 in 126 countries and territories: US, India, Indonesia, Nigeria, and Pakistan.

SEBI Proposed a New Asset Class

SEBI has proposed a new asset class to fill the investment gap between Mutual Funds (MFs) and Portfolio Management Services (PMS), offering flexibility in portfolio construction.

About the new asset class:

- ❖ Introduced under the mutual fund structure, with a minimum investment of Rs 10 lakh.
- ❖ Aimed at investors with greater risk-taking capabilities and higher investment amounts than MFs but lower than PMS.
- ❖ Designed to provide a regulated product with greater flexibility and a higher risk-return profile to meet the needs of emerging investors.

About PMS:

- ❖ Professional financial services where a skilled portfolio manager offers customized investment solutions to High Net-worth Individuals (HNIs) in equity, debt, gold, etc.
- ❖ Minimum investment limit in PMS is Rs 50 lakh.

Prime Minister of Nepal: K P Sharma Oli

- ❖ K P Sharma Oli was recently appointed Nepal's Prime Minister for the third time to lead the new coalition government, which faces the daunting challenge of providing political stability.
- ❖ Oli, 72, succeeds Pushpa Kamal Dahal Prachanda, who lost the vote of confidence in the House of Representatives, prompting the formation of a new government as per Article 76 (2) of the Nepal Constitution.
- ❖ President Ram Chandra Paudel appointed Oli as the new Prime Minister of the Communist Party of Nepal- Unified Marxist Leninist (CPN-UML)-Nepali Congress (NC) coalition.

Regional Analysis of the Indian Ocean (RAIN) System

- ❖ Indian National Centre for Ocean Information Services (INCOIS) upgraded its Regional Analysis of the Indian Ocean (RAIN) System to enhance information collection on the health of the Indian Ocean. Unlike the previous version, which used only salinity and sea surface temperature, the upgraded system also factors in sea surface height.
- ❖ The Indian Ocean Dipole (IOD), the Indian counterpart of the El Niño Southern Oscillation (ENSO) in the

Pacific Ocean, significantly affects India's weather systems.

- ❖ Currently, the IOD is in its neutral phase, but it is expected to turn positive later in the monsoon season. This shift, combined with other favorable factors, is expected to increase rainfall in the country from August onwards.
- ❖ In the new system, ocean models use observations taken at the ocean's surface and at depths ranging from 3 meters to 2,000 meters, depending on the requirement

Japan Launches New Banknotes

- ❖ Bank of Japan Governor Kazuo Ueda recently unveiled new banknotes, the first issuance of new currency in two decades. These notes incorporate 3D hologram technology to combat counterfeiting.
- ❖ The 10,000 yen note (equivalent to 62 US dollars) features Eiichi Shibusawa (1840-1931), the founder of Japan's first Mizuho Bank and Stock Exchange, and known as the 'Father of Japanese Capitalism'.
- ❖ The 5,000 yen note showcases a portrait of Umeko Tsuda (1864-1929), who established Japan's first women's university. Lastly, the 1,000 yen note highlights Shibasaburo Kitasato (1853-1931), a prominent medical scientist.

Shah Rukh Khan to Receive Career Achievement Award at Locarno Film Festival

- ❖ Shah Rukh Khan is set to receive the prestigious lifetime achievement award, the Pardo alla Carriera (Career Leopard), at the 2024 Locarno Film Festival.
- ❖ He will be the first Indian personality to be honored with the 'Pardo alla Carriera Ascona-Locarno Tourism' award.
- ❖ Previous recipients of this award include Italian filmmaker Francesco Rosi, American singer-actor Harry Belafonte, and Malaysian director Tsai Ming-liang.
- ❖ The Pardo alla Carriera Ascona-Locarno Tourism award pays tribute to individuals whose artistic contributions have redefined cinema and the collective imagination. The tribute will include an awards ceremony on the Piazza Grande, a conversation with the audience, and a small retrospective.

Exercise Nomadic Elephant

- ❖ The 16th edition of the India-Mongolia Joint Military Exercise, Nomadic Elephant 2024, was recently concluded in Meghalaya. This annual exercise, which alternates between Mongolia and India, aims to enhance interoperability between the two armies in semi-conventional operations within semi-urban and mountainous terrains.
- ❖ This year's exercise involved a 45-member Indian contingent from the Sikkim Scouts Battalion and personnel from other services, alongside the Mongolian 150 Quick Reaction Force Battalion.
- ❖ The training focused on tactical drills such as response to terrorist actions and cordon and search operations, with an emphasis on sharing best practices in joint operations.
- ❖ The 15th edition of Nomadic Elephant was conducted in Ulaanbaatar, Mongolia.

Exercise MAITREE

- ❖ The 13th edition of the India-Thailand joint military exercise, MAITREE recently took place at Fort Vachirapukan in Tak Province, Thailand. The previous edition was held in Umroi, Meghalaya, in September 2019.
- ❖ The aim of MAITREE is to foster military cooperation between India and Thailand and enhance joint capabilities in counter-insurgency and counter-terrorism operations in jungle and urban environments, in line with Chapter VII of the United Nations Charter.
- ❖ This year's exercise featured an Indian Army contingent of 76 personnel, primarily from a Battalion of the Ladakh Scouts, along with members from other arms and services.
- ❖ The exercise emphasized physical fitness, joint planning, and tactical drills, including the creation of a Joint

Operation Centre, establishment of an Intelligence & Surveillance Centre, use of drones and counter-drone systems, securing landing sites, small team insertion and extraction, etc.

Bangladesh: 5th Full Member Country of Colombo Security Conclave

- ❖ The 8th Deputy National Security Advisor (DNSA) level meeting of the Colombo Security Conference (CSC) was hosted virtually by Mauritius on July 10, 2024.
- ❖ During this meeting, India, Mauritius, Maldives, and Sri Lanka welcomed Bangladesh as the 5th member of the CSC.
- ❖ The Colombo Security Conference is a regional security group formed in 2011 as a trilateral Indian Ocean maritime security initiative with India, Sri Lanka and the Maldives as its original members.
- ❖ In 2021, the CSC expanded both its membership and its scope, including Mauritius as the fourth member. Currently, the Colombo Security Conference consists of five members and one observer country.

President Murmu Honoured Brave Soldiers with Gallantry Awards

- ❖ The Defence Investiture Ceremony was held at Rashtrapati Bhavan, where President Draupadi Murmu awarded Gallantry Awards to personnel from the Armed Forces, Central Armed Police Forces, and State-Union Territory Police.
- ❖ The awards included 10 Kirti Chakras and 26 Shaurya Chakras.

Ideas4LiFE initiative

- ❖ Union Minister Bhupender Yadav launched the Ideas4LiFE initiative at IIT Delhi on July 31, 2024.
- ❖ The program seeks innovative ideas to promote environmentally friendly behaviors for resource efficiency.
- ❖ Ideas4LiFE is part of the global Mission LiFE movement, aiming to advance environmental sustainability. Ideas can be submitted online at Ideas4Life.nic.in.

Manu Bhaker

- ❖ Recently, Manu Bhaker made history by winning two Olympic medals at the Paris Olympics 2024.
- ❖ She became the first Indian woman to win two medals in a single edition of the Olympic Games.
- ❖ She won her first bronze medal in the women's 10-meter air pistol event, followed by a second bronze medal in the mixed team event with Sarabjot Singh.

Manu Bhaker's Total Medals:

Event	Medals
Olympics	2 Bronze (2024 Paris)
World Championships	1 Gold (2023 Baku) and 1 Silver (2022 Cairo)
Asian Shooting Championships	2 Gold (2019 Doha)
ISSF World Cup	9 Gold, 2 Silver (2018-2024)
Youth Olympic Games	1 Gold, 1 Silver (2018 Buenos Aires)
ISSF Junior World Championship	4 Gold, 1 Bronze (2021 Lima)
Commonwealth Games	1 Gold (2018 Gold Coast)
Total	17 Gold, 2 Silver, 3 Bronze

One Liners

1.	India was elected as the vice-chair of the Supply Chain Council of the Indo-Pacific Economic Framework for Prosperity (IPEF) on July 31, 2024.
2.	The Ministry of Ayush, Government of India, and the World Health Organization (WHO) signed a Donor Agreement at WHO Headquarters in Geneva on July 31, 2024.
3.	Preeti Sudan has been chosen as the new chairman of Union Public Service Commission.
4.	The Indian Army has recently launched an e-health teleconsultancy facility for ex-servicemen.
5.	India will host the Asia Cup in 2025, which will feature a T20 format with six teams: India, Pakistan, Sri Lanka, Bangladesh, Afghanistan, and a sixth team emerging from a qualifying event.
6.	Tennis star Rohan Bopanna has announced his retirement from the national team following a first-round exit in the men's doubles event at the Paris 2024 Olympics.
7.	Jiya Rai, a 16-year-old from Mumbai, has become the world's youngest and fastest para swimmer to cross the English Channel.
8.	Laxman Prasad Acharya took oath as the new Governor of Assam.
9.	Sado gold mine was recently declared a UNESCO World Heritage Site, it is in Japan.
10.	A bilateral agreement was signed between India and the U.S. for the return and preservation of cultural assets.
11.	The 9th Governing Council meeting of NITI Aayog was chaired by Narendra Modi.
12.	Sundar Pichai was honored with the title of 'Doctor of Science' by IIT Kharagpur.
13.	The statue of Kargil hero Captain Hanifuddin was unveiled in Rajasthan.
14.	The 'Mandela Heritage Sites' in South Africa received UNESCO heritage status.
15.	Hindustan Zinc unveiled EcoZen, Asia's first low-carbon green zinc, which is produced using renewable energy and has a carbon footprint 75% lower than the global average.
16.	Prime Minister Narendra Modi virtually carried out the first blast of the Shinkun La Tunnel project, which consists of a 4.1-kilometer-long twin-tube tunnel to be constructed at an altitude of around 15,800 feet on the Nimu-Padum-Darcha road.
17.	India's first integrated agri-export facility was approved at Jawaharlal Nehru Port in Mumbai, which will be a public-private partnership project worth Rs. 284 crore aiming to streamline agricultural exports, reduce wastage and improve farmers' income by providing state-of-the-art processing and storage facilities.
18.	The historical 'Moidams' has been included in the UNESCO World Heritage List, located in Assam.
19.	The RBI has approved the proposal of AU Small Finance Bank to convert into a universal bank.
20.	Union Information and Broadcasting Minister Ashwini Vaishnav inaugurated the country's 500th community radio station in Aizawl, Mizoram.
21.	The Department of Posts has released the beta version of the Digital Postal Index Number (DIGIPIN), a standardized, geo-coded addressing system. It simplifies addressing solutions for citizen-centric delivery of public and private services.
22.	National Flag Day in India is celebrated on July 22 every year, commemorating the adoption of the national flag and encouraging respect for its significance. In 2024, the theme is "Unity and Diversity."
23.	13th edition of India Chem was launched with the theme "Advantage Bharat: Indian Chemicals and Petrochemicals Paving the Future."
24.	Madhya Pradesh has been recognized as the best-performing state under the Prime Minister Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) scheme..
25.	Shahrukh Khan became the first Indian to win the Locarno Award in 2024.

26.	Sujata Saunik became the first female chief secretary of Maharashtra.
27.	Arundhati Roy was awarded the Pen Pinter Prize in 2024.
28.	Asia's first health research-related "pre-clinical network facility" was inaugurated in Faridabad.
29.	The Asian Development Bank has maintained India's growth forecast for FY25 at 7%.
30.	International Criminal Justice Day is celebrated every year on July 17.
31.	Thomas Muller recently retired from international football; he is a player from Germany.
32.	The Ministry of Education started the Asmita Project in cooperation with UGC.
33.	Roberta Metsola has been re-elected as the President of the European Parliament.
34.	PM Modi laid the foundation of India's longest urban tunnel project in Maharashtra.
35.	The Indian government announced \$5 million to help Palestinian refugees.
36.	Ajay Kumar Sood launched the report on e-mobility R&D roadmap for India.
37.	The global conference on space research was organized in Busan, South Korea.
38.	The second Asia Pacific ministerial conference will be held in India.
39.	ICAR's 'One Scientist-One Product' program has been launched to improve research in agriculture and animal husbandry.
40.	The World Heritage Young Professionals Forum 2024 is being organized by KISSK and the Archaeological Survey of India.
41.	India will host the first World Audio Visual Entertainment Summit (WAVES) in Goa from November 20 to 24, 2024. The event aims to shape the future of India's media and entertainment industry.
42.	The team from the Institute of Technology, Nirma University, won the Robot Competition DD-Robocon India 2024. The winning team will represent India at the international Asia-Pacific Broadcasting Union Robocon 2024 in QuangNinh, Vietnam.
43.	NITI Aayog has announced the launch of the 'NITI GearShift Challenge' as part of the e-FAST India initiative. This hackathon aims to foster innovative business models for the adoption of zero-emission trucks in India.
44.	The government has decided to observe June 25 as 'Samvidhaan Hatya Diwas' to commemorate the day when former Prime Minister Indira Gandhi imposed an Emergency in 1975.
45.	NITI Aayog released the SDG India Index 2023-24, which measures and tracks national progress on the Sustainable Development Goals. The index shows that India is progressing towards the Sustainable Development Goals despite global headwinds.
46.	Carlos Alcaraz of Spain won the men's singles title, and Barbora Krejčíková of the Czech Republic won her maiden Wimbledon women's singles title.
47.	India's Sabeera Haris bagged the bronze medal in the women's trap event at the International Shooting Sport Federation, ISSF Junior World Cup in Porpetto, Italy.
48.	The Andhra Pradesh Community Managed Natural Farming Program won the prestigious Gulbenkian Prize For Humanity 2024 for its contributions to global food security, climate resilience, and ecosystem protection.
49.	NITI Aayog launched the NITI GearShift Challenge, a hackathon aiming to foster innovative business models for the adoption of zero-emission trucks in India.
50.	The 7th India-Japan Medical Product Regulatory Symposium was held at the FICCI Convention Hall in New Delhi on July 10, 2024.
51.	The India-Taiwan Mutual Recognition Agreement (MRA) for organically produced goods came into force on July 8, 2024.

52.	Bangladesh officially joined the Colombo Security Conclave (CSC) as its fifth member state. The Colombo Security Conclave (CSC) was established in 2011 as a trilateral maritime security grouping consisting of India, Sri Lanka, and the Maldives.
53.	Moody's has revised its GDP growth forecast for India to 6.8% for 2024, up from its previous estimate of 6.1%.
54.	Türkiye successfully launched its first domestically produced communication satellite, TURKSAT-6A, on July 8, 2024.
55.	India ranked 40th in the Global Innovation Index 2024, improving its position.
56.	India nominated the iconic Howrah Bridge in Kolkata for UNESCO World Heritage Site status.
57.	Skyroot Aerospace successfully launched India's first privately built rocket, Vikram-S, from Sriharikota.
58.	The Indian Olympic Association (IOA) has partnered with Bharat Petroleum Corporation Limited (BPCL) for the Olympic Games. BPCL will support Indian athletes and teams participating in the Olympics, providing financial assistance, training facilities, and promotional support. This partnership aims to boost India's Olympic performance and promote sports development in the country.
59.	The Life Insurance Corporation has launched the 'Jeevan Samarth' initiative, a comprehensive support program for policyholders with disabilities.
60.	Sheel Nagu, a senior judge, has taken oath as the new Chief Justice of the Punjab and Haryana High Court.
61.	Sabeera Haris, an Indian shooter, won the bronze medal in the women's trap category at the ISSF Junior World Cup in Porpetto, Italy.
62.	Kush Maini, an Indian racing driver, achieved a historic victory by winning his first Formula 2 Sprint Race at the Hungarian Grand Prix. This marks a significant milestone in his career, making him the first Indian driver to win a Formula 2 race.
63.	'Girls Will Be Girls' has received the Grand Jury Award at the Indian Film Festival in Los Angeles. This film has been made by Richa Chadha and Ali Fazal. Kani Kusruti and Preeti Panigrahi played the lead roles in this film. 'Girls Will Be Girls' is a 2024 Indo-French coming-of-age drama film. The writer and director of this film is Shuchi Talati.
64.	The central government appointed TV Ravichandran as the new Deputy National Security Advisor (NSA). Ravichandran was appointed in place of Vikram Mistry, who has been made the Foreign Secretary.
65.	In Iran, Masoud Pazashkian became the 9th President of the country. He defeated Saeed Jalili by more than 3 million votes. Pazashkian became the Health Minister in 1997 during the tenure of President Mohammad Khatami. He is a former heart surgeon.
66.	Roshni Nadar Malhotra, Chairman of Technologies, has been awarded the country's highest civilian award 'Chevalier de la Legion d'Honneur' (Knight of the Legion of Honor) by France. This award was given for her contribution to the business world.
67.	The country's first Rhododendron Garden was established in Uttarakhand. Located in Munsiyari village, this garden has 35 species of flowers, out of which 5 are found only in Uttarakhand. Rhododendron is the most preferred variety of Arboreum flower. It is the state tree of Uttarakhand, the national tree of Nepal and the state flower of Nagaland. Rhododendron flower has anti-oxidant, anti-inflammatory and anti-bacterial properties.
68.	Vikram Misri took over as Foreign Secretary. Vikram has been appointed in place of former Foreign Secretary Mohan kwatra. Vikram Misri is a 1989 batch IFS officer.
69.	Spain won the Euro Cup football title for a record fourth time. It defeated England 2-1 in the final played at Berlin's Olympia Stadium.

Mains Special: (Geography, Indian Society and Social Justice)

Q.1. The impact of climate change on the Himalayas poses far-reaching threats to the biodiversity, food security, availability of water resources, and energy security of India. Discuss.

Introduction:

The Himalayas, known for their rich biodiversity, role in river systems, and influence on weather patterns, are facing significant threats from climate change. The increasing global temperatures pose risks to various ecosystem services derived from the delicate Himalayan ecosystem, including biodiversity, food security, water resources, and energy security.

Threats to Biodiversity:

- **Himalayan Fauna:** The receding glaciers, shifting tree lines, and hotter climate jeopardize the habitat and food resources of species such as the snow leopard and Asiatic black bear, which make up 30% of India's identified faunal species.
- **Plant Species:** Changes in pollination patterns disrupt the seasonal characteristics of plants, including the early flowering of rhododendron. Undocumented medicinal plants also face habitat loss.
- **Evergreen Forests:** Higher temperatures may lead to the expansion of grassland areas and desertification effects, reducing the regions of evergreen vegetation. Altitude shifts in species zones and changing margins of agricultural and pastoral areas contribute to this threat.

Threats to Food and Water Security:

- **Floods and Soil Erosion:** Rising temperatures over Tibet increase rainfall intensity and flood conditions in India. Altered rainfall patterns and drier soil result in increased runoff and soil erosion, impacting food production.
- **Decreased Snowfall:** Global warming shortens the winter season and alters the balance between winter precipitation and snow and rain. This reduces water flow in glacial rivers, affecting downstream water availability and agriculture.
- **Rapid Snowmelt:** Higher temperatures cause a shorter peak water flow duration in rivers, leading to rapid glacier melting during summer. This disrupts the agricultural cycle and decreases water availability in urban areas.
- **Regional Agriculture:** Himalayan states in India and neighboring countries like Nepal and Bhutan face increased pest attacks due to habitat changes,

soil erosion from erratic rains, and reduced fodder availability.

Threats to Energy Security:

- **Reduced Head for Hydro-Power:** Decreased snowfall and lower flow in glacial rivers reduce the water supply to hydro-power plant reservoirs, diminishing electricity generation capacity.
- **Untapped Hydro-Power Potential:** Only 29% of the Himalayan rivers' hydro-power potential has been harnessed. Reduced river flow limits the expansion of non-thermal power generation, hindering efforts to mitigate climate change.
- **Impact on Thermal Power:** Insufficient water availability affects the peak power capacity of thermal power plants, which depend on Himalayan rivers for cooling. This significantly impacts the country's energy security.
- **Nuclear Power:** With 24% of nuclear power generation relying on water from Himalayan rivers, reduced water availability disrupts nuclear power production.

Conclusion:

The Himalayas play a critical role in sustaining natural and man-made systems, including biodiversity, food security, water resources, and energy security. However, climate change poses severe threats to these systems. Mitigating these impacts requires global cooperation and regional efforts to minimize disruptions for both humanity and the environment. Addressing climate change in the Himalayas is crucial for the long-term well-being and sustainability of the region and its surrounding areas.

Q. 2 The high seas are of immense importance to the world's ecosystem, economy, and society, and it is crucial that they are protected and managed effectively to ensure their continued health and sustainability. Discuss.

Introduction

The International Laws define high seas as all parts of the ocean that aren't included in the exclusive economic zone, the territorial sea, the internal waters of a country, or the archipelagic waters of an archipelagic country. It infers that the high seas and associated resources are not directly owned or regulated by any country.

Recent treaty on High Seas

Recently, Members of the United Nations adopted the first-ever treaty to protect marine life in the high seas, with the U.N. 's chief hailing the historic agreement as

giving the ocean “a fighting chance.” The treaty places 30% of the world’s oceans into protected areas, puts more money into marine conservation, and means new rules for mining at sea. The treaty also establishes principles to share “marine genetic resources” discovered by scientists in international waters.

According to ‘Conservation International’ "Roughly two thirds of the Earth's oceans lie beyond national boundaries in an area known as the 'high seas' — yet only about 1% of that largely unexplored expanse has been protected. This year, nearly 200 nations finally agreed on the first treaty to protect the high seas,"

Importance of High Seas

- The high seas – the vast open ocean and deep seabed areas found beyond any country’s national jurisdiction – cover about half of the Earth’s surface and 64% of global ocean area.
- They hold great biodiversity but also remain the least-protected areas on our blue planet.
- The high seas are home to an array of unique and little-known species, including deep dwelling fishes and invertebrates that live long, slow-motion lives in eternal darkness.
- The high seas also provide important habitat for many migratory species, such as whales, seabirds, sea turtles, tunas and sharks, that traverse ocean basins in search of food and mates.
- Several marine species — including dolphins, whales, sea turtles and many fish — make long annual migrations, crossing national borders and the high seas.
- Comprehensive protection of endangered species and habitats is not possible without the High Seas.
- Around 90% of global warming occurs in the ocean, deeply affecting Marine life.
- High seas are the crucial component in global efforts to bring 30% of the world’s land and sea under protection by the end of the decade, a target known as “30 by 30”.
- The treaty can have benefits for society (pharmaceuticals and food) and will help reverse biodiversity losses and ensure sustainable development.
- The high seas treaty has also been an important matter pertaining to the North-South divide between poor and rich. Those who had resources have always been at an advantage from the activities in the high seas.

Conclusion

The newly established treaty will permit the establishment of marine protected areas within international waters.

This will build resilience from climate change, protect marine life, and will also oblige countries to conduct environmental impact assessments of proposed activities on the high seas.

Q. 3 Rare earth elements (REEs) are non-renewable resources. The demand for REEs increases daily as demand increases for technology. Discuss their importance.

Introduction

Rare earth minerals (REM) consist of seventeen metallic elements, including fifteen lanthanides, along with scandium and yttrium. These elements possess special properties related to catalysts, metallurgy, nuclear science, electricity, magnetism, and luminescence. Despite their name suggesting rarity, these minerals are actually quite common and abundant in the Earth’s crust.

Body

Importance of REMs:

- **Distinctive properties:** REMs possess unique electrical, metallurgical, catalytic, nuclear, magnetic, and luminescent properties.
- **Strategic significance:** REMs play a crucial role in emerging and diverse technologies that meet the current societal needs.
- **Wide range of applications:** REMs are used in various applications, ranging from everyday items like lighter flints and glass polishing mediums to high-end technologies such as lasers, magnets, batteries, and fibre-optic telecommunication cables.
- **Futuristic technologies:** REMs are essential for futuristic technologies like high-temperature superconductivity, safe hydrogen storage for a post-hydrocarbon economy, and addressing global warming and energy efficiency concerns.
- **Increasing global demand:** The demand for REMs has significantly increased in high-end technology, environmental, and economic sectors.
- **Importance in modern technologies:** REMs are critical components in modern technologies, including consumer electronics, computers, networks, communication systems, clean energy solutions, advanced transportation, healthcare, environmental mitigation, and national defence.
- **Enhanced performance and efficiency:** REMs contribute to technologies by providing reduced weight, emissions, and energy consumption. This leads to improved efficiency, performance, miniaturisation, speed, durability, and thermal stability.

Importance of REMs in various fields:

- **Electronics:** REMs are vital components in a wide

range of electronic devices, including television screens, computers, cell phones, silicon chips, monitor displays, long-life rechargeable batteries, camera lenses, light-emitting diodes (LEDs), compact fluorescent lamps (CFLs), baggage scanners, and marine propulsion systems.

- **Defence Sector:** Rare earth elements are critical for national defence purposes. They are used in night-vision goggles, precision-guided weapons, communications equipment, GPS devices, batteries, and other defence electronics, providing a significant advantage to military forces. Rare earth metals are also essential for manufacturing tough alloys used in armoured vehicles and projectiles designed to shatter upon impact.
- **Renewable Energy:** REMs play a crucial role in renewable energy technologies such as solar panels, hybrid automobiles, wind turbines, next-generation rechargeable batteries, and bio-fuel catalysts.
- **Manufacturing:** REMs are utilised in manufacturing processes for various applications. They contribute to the production of high-strength magnets, metal alloys, stress gauges, ceramic pigments, colourants in glassware, chemical oxidising agents, polishing powders, plastics, and additives that enhance the strength of other metals. REMs are also integral components of automotive catalytic converters.
- **Medical Science:** In the field of medical science, REMs are utilised in portable X-ray machines, X-ray tubes, contrast agents for magnetic resonance imaging (MRI), nuclear medicine imaging, cancer treatment applications, genetic screening tests, and medical and dental lasers.
- **Technology:** REMs are essential in a wide range of technologies. They are used in lasers, optical glass, fibre optics, masers, radar detection devices, nuclear fuel rods, mercury-vapour lamps, highly reflective glass, computer memory, nuclear batteries, and high-temperature superconductors.

However, the extraction of REMs is one of the most environmentally negative and toxic generating of all mining practices. Disproportionate rare earth mining has resulted in landslides, clogged rivers, environmental pollution emergencies and even major accidents and disasters, causing great damage to people's safety and health and the ecological environment.

Conclusion

The 'Make in India' program whose goal is to make India a manufacturing economy will need REMs in huge amounts. Although India is among the top five nations

with reserves of rare-earth minerals, there is no required technology to extract in an environmentally sustainable way. Thus, India will need to firm up diplomatic trade channels and long-term supply contracts. There is also a need to develop suitable technologies, promote Research and Development to tap the REM.

Q.4 What is the concept of seafloor spreading, and how does it relate to its impact on global warming?

Introduction

Seafloor spreading refers to the geological process that takes place at mid-ocean ridges, where new oceanic crust is generated through plate tectonic and volcanic activity and subsequently moves away from the ridge. This concept, initially proposed by Harry Hess, suggests that the seafloor itself moves and carries the continents along as it expands from a central axis. In this context, it is important to explore the potential impact of seafloor spreading on global warming.

Body

Mechanism of sea-floor spreading:

- **Heat generation:** Intense heat generated by radioactive substances in the mantle creates a need for heat escape. This leads to the formation of convection currents in the mantle.
- **Oceanic ridges and trenches:** Wherever the rising limbs of the convection currents meet, oceanic ridges are formed on the seafloor. Conversely, where the failing limbs meet, trenches are formed.
- **Formation of new oceanic crust:** Seafloor spreading occurs at mid-ocean ridges, where new oceanic crust is formed through plate tectonic and volcanic activity. Basaltic magma rises up fractures in the lithosphere and cools on the ocean floor, contributing to the formation of new seafloor.
- **Continental drift and plate tectonics:** Seafloor spreading helps explain continental drift in the theory of plate tectonics. When oceanic plates diverge, tensional stress causes fractures in the lithosphere, and seafloor spreading plays a role in the movement of the plates.
- **Age distribution:** Older rocks are found farther away from the spreading zone, while younger rocks are found nearer to the spreading zone. This age distribution provides evidence of the process of seafloor spreading.

Seafloor spreading impact on global warming:

- **Historical episodes of global warming:** Seafloor spreading, driven by magma upwelling, has led to

episodes of global warming in the geologic past. While the spread rate has slowed down over the last 19 million years, it could potentially gain momentum again.

- **Carbon dioxide (CO₂) levels:** Seafloor spreading rates impact CO₂ levels. Faster spreading plates have more volcanic activity, releasing more CO₂ into the water. Some of this CO₂ eventually enters the atmosphere.
- **Subduction zones:** At subduction zones, where heavier tectonic plates sink below lighter ones, CO₂ is removed from the surface when organisms such as corals and plankton die and sink to the seafloor. The carbon is trapped in their shells and combines with sediments to form limestone, which carries the carbon into the mantle.
- **CO₂ release:** However, even at subduction zones, some of the carbon escapes into the atmosphere when rocks melt. The CO₂ in the Earth's interiors then returns to the atmosphere at mid-ocean ridges, continuing the cycle.

Conclusion

Hence, seafloor spreading, a geological process occurring at mid-ocean ridges, has significant implications for global warming. It has played a role in historical episodes of global warming and continues to influence carbon dioxide (CO₂) levels. The faster spreading plates with increased volcanic activity release more CO₂ into the water, which eventually enters the atmosphere. Subduction zones help remove CO₂ from the surface, but some carbon still escapes into the atmosphere during rock melting. Understanding the impact of seafloor spreading on global warming is crucial for comprehending the Earth's carbon cycle and long-term climate changes.

Q.5 Analyse the distribution and changing trends in distribution of Iron and steel industry in India. To what extent government policies determine their location?

Introduction

The iron and steel industry plays a crucial role in driving the physical infrastructure development of a nation. It relies on essential inputs like iron ore, coal, limestone, labour, capital, site selection, and infrastructure. While geographical factors have relative importance in determining industrial locations, other factors such as historical, human, political, and economic aspects have gained prominence, surpassing the influence of geographical advantages.

Body

Distribution of the Iron and steel industry in India:

- The iron and steel industry in India has flourished by leveraging the availability of raw materials, inexpensive labour, efficient transportation, and a strong market.
- The industry's location is primarily influenced by the abundance of raw materials, as it requires a significant quantity of heavy and weight-losing inputs.
- Key steel production centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, and Bokaro are concentrated in the states of West Bengal, Jharkhand, Odisha, and Chhattisgarh.
- These states possess abundant reserves of coal and iron ore, making them important producers of these essential materials.
- Additionally, Bhadravati and Vijay Nagar in Karnataka, Visakhapatnam in Andhra Pradesh, and Salem in Tamil Nadu are notable steel centres that capitalise on local resources.

Changing patterns & Impact of Government policies

- Before 1800 A.D. The iron and steel industry was located where raw materials, power supply and running water were easily.
- Later the ideal location for the industry was near coal fields and close to canals and After 1950 The iron and steel industry began to be located on large areas of flat land near the sea. This is because by this time steel works had become very large and iron ore had to be imported from overseas.
- Optimum transportation cost of carrying raw material from source and finished products to market play an important role in the location of the Iron and Steel Industry.
- Following the theory of minimum transportation cost many centres of iron and steel production tend to be attracted by the market.
- Recent technological developments in transport, the use of scrap as raw material and the agglomeration economics have made market-oriented location more advantageous than ever before.
- Port location provides easy and cheap means of transportation. These are highly helpful in the import of raw materials and export of the finished products. When some of the basic raw materials need to be imported or the finished Steel is to be exported, seaport locations are preferred.
- The ultimate responsibility of balanced regional development rests with the government and in view of this Government has invested heavily in backward

areas for developing these industries for example in Jharkhand, Orissa, Chhattisgarh, etc. This approach was in accordance with the principle of the Trickle-down theory of Growth.

- The government has implemented policies aimed at utilising advanced technologies such as 3D printing, artificial intelligence (AI), and the Internet of Things (IoT) in order to enhance the production of steel and strengthen the steel sector. However, despite our aspirations to achieve this, we have yet to fully realise these goals. Additionally, there is a need for significant progress in the production of high tensile steel.

Conclusion

The potential for growth of this sector is enormous. This can be gauged from the fact that the per capita consumption of steel is around 29 kg whereas the world average is 150 kg. The *National Steel Policy, 2017 envisages 300 million tonnes of production capacity by 2030-31*. Huge scope for growth is offered by India's comparatively low per capita steel consumption and the expected rise in consumption due to increased infrastructure construction and the thriving automobile and railways sectors.

Q. 6 Leadership role is critical for girls' personal development, as well as for creating an inclusive and equitable society. A multi-pronged approach across enhancing employability, skill for leadership, and ensuring human rights are the key to strengthening leadership abilities among adolescent girls. Elaborate.

Introduction:

Today the world is home to a transformative generation of 900 million adolescent girls and young women poised to shape the future of work and growth. If this cohort of young women could be equipped with the right resources and opportunities to nurture 21st-century skills, they would become the largest segment of women leaders, change-makers, entrepreneurs, and innovators in history.

Body:

Need to Nurturing the Girl

High gender divide: The gender divide in India has significantly widened, with only 62.5% of it being closed. This disparity is particularly evident in political empowerment and economic participation and opportunities.

Wage Gap: Research indicates that women in India are paid considerably less than men, with the gender pay gap reaching up to 34% in some cases. This pay discrepancy exists even among women and men holding equivalent

qualifications and working in the same job positions.

Labor Force Participation: Among South Asian nations, India has the lowest female labor force participation rate. Shockingly, four out of five women need to be working or seeking employment. This low participation rate poses significant challenges to achieving gender equality in economic opportunities.

High Job Loss: During the COVID-19 pandemic, women in India faced a disproportionate impact, with 17 million losing their jobs in April 2020 alone. The unemployment rate among women rose significantly higher than that among men. Women were not only more likely to lose their jobs but also faced greater challenges in finding new employment compared to their male counterparts.

Limited Opportunities for Women: Women were found to be seven times more likely to experience job losses during various lockdown phases. Additionally, if they became unemployed, they were 11 times more likely to remain jobless compared to men. These disparities further hinder women's access to equal opportunities and economic empowerment.

Unequal Distribution of Domestic Responsibilities:

The increased burden of domestic responsibilities placed on Indian women further contributes to gender disparities. This includes not only household chores but also the additional time required for elderly care and children's education, particularly during school closures. Even before the pandemic, a Time Use Survey conducted by the National Sample Survey Office revealed that women spent nearly 4.5 hours on childcare and caregiving responsibilities. In comparison, men devoted only 0.88 hours to these tasks.

A multipronged approach to the empowerment of women and adolescent girls

Recognizing and Reducing Unpaid Work:

It is imperative to acknowledge, minimize, and redistribute unpaid care and domestic work to ensure women have equal economic opportunities. Policies should be implemented to provide services, social protection, and basic infrastructure. Promoting the sharing of domestic and care work between men and women and creating more paid jobs in the care economy are crucial steps to advance women's economic empowerment.

Decision-Making and Bodily Autonomy:

Empowering women to make decisions regarding their bodies, such as choices about sexual relations, contraceptive use, and seeking healthcare, is fundamental. Women should be free from all forms of violence and harassment. These conditions are critical for women and young girls to have control over their personal and

professional lives.

Countering Stereotypes:

Gender norms that disproportionately assign domestic and care responsibilities to women, along with the perception of men as leaders in STEM, finance, and entrepreneurship fields, contribute to barriers hindering women's work participation. Institutional mechanisms like inadequate maternity leave, limited flexible work arrangements, and lack of workplace childcare facilities further exacerbate the issue. Overcoming these stereotypes is essential to translate increased women's representation in STEM education into increased work participation.

Opportunity to Explore:

Actively challenging these stereotypes necessitates integrating grade-appropriate STEM, financial education, and entrepreneurship syllabi into the educational curriculum for girls. Introducing elements such as Olympiads, innovation labs, boot camps, and competitions can expose girls to practical applications and inspire them to develop solutions for challenges in their communities.

Technological Solutions:

As digital technology becomes increasingly essential for education, particularly in areas where harmful norms restrict girls' access to schooling, EdTech provides tools to bridge the accessibility gap through hybrid learning models. Customized solutions tailored to individual communities' language, cultural nuances, and internet accessibility can ensure equal access to knowledge for girls through digital inclusion.

Conclusion:

To unlock the potential of girls and promote female leadership, it is crucial to ensure inclusion in ICT via GOAL(Going Online as Leaders) scheme, bodily autonomy, shared responsibilities within households, and equal participation in decision-making spaces. By adopting a comprehensive multi-pronged approach, we can empower adolescent girls, foster their personal growth and development, and build a more inclusive and equitable society.

Q.7 The Kashi-Tamil Sangamam serves as a symbol of our diverse languages, cultures, and traditions, highlighting that despite these differences, we are all Indians united by the spirit of 'Ek Bharat Shreshtha Bharat' (One India, Great India). Elaborate.

Introduction:

The Kashi Tamil Sangamam, organized as part of the 'Azadi ka Amrit Mahotsav,' aimed to uphold the spirit

of 'Ek Bharat Shreshtha Bharat' (One India, Great India). The month-long festival sought to revive the historical bond between Tamil Nadu and Kashi. The event welcomed over 2,500 delegates from Tamil Nadu to Varanasi, including cultural and folk artists, scholars, entrepreneurs, farmers, religious leaders, and athletes. Alongside various activities in education, art, culture, literature, and sports, exhibitions showcasing art, films, handlooms, and handicrafts were featured.

Body:

Upholding the spirit of unity among Indians:

- India's unity is rooted in its diverse cultures, making it a geo-cultural nation.
- The Kashi Tamil Sangamam represents a significant effort to revitalize India's cultural unity during the Azadi ka Amrit Mahotsav.
- By fostering trust and love between the two ancient cultures, the event aims to bridge the gaps and pave the way for a cultural renaissance in India.
- The Kashi-Tamil Sangamam serves as a platform for the exchange of spirituality, culture, architecture, literature, trade, education, art, dance, music, and languages.
- The program has helped raise awareness across North India and throughout the country about Tamil's status as one of the world's oldest languages.
- This initiative combines various aspects of both cultures, delivering a powerful message to Tamil Nadu.

Unity in diversity: Reasons:

- **Religious coexistence:** India's unique feature is religious tolerance, allowing for the coexistence of multiple religions. Freedom of religion and practice is guaranteed by the Constitution, without any state religion, promoting equal treatment of all religions.
- **Inter-state mobility:** The Constitution grants freedom to move across the country, fostering a sense of unity and brotherhood among citizens.
- **Uniformity in law and administration:** Common legal frameworks, penal codes, and administrative structures contribute to a sense of unity and facilitate policy implementation, such as the All India services.
- **Economic integration:** Constitutional provisions and initiatives like Goods and Services Tax (GST) support freedom of trade, commerce, and intercourse within the country, creating a unified national market.
- **Climatic Integration:** while India has diverse geographical features from the Thar desert to Mawsynram, Ganga plain to the Himalayas but monsoon cre-

ates an underlying thread to unite all diversities and it led to Indian continental culture.

- **Institution of pilgrimage and religious practices:** India's religious and spiritual significance, with pilgrimage sites and holy rivers spread throughout the country, fosters a sense of geo-cultural unity. For Example, Ajmer Sharif Dargah has been a pilgrimage site for Muslims, Hindus, and people of other faiths since medieval times.
- **Fairs and festivals:** Celebrated nationwide, festivals like Diwali, Id, and Christmas bring people from different regions together, promoting inter-religious harmony.
- **Art and Culture:** Art brings people together physically — at galleries, museums, and performance spaces — and culturally, through its capacity to tell a community's shared story, inspire reflection, and form connections that transcend differences.

Conclusion:

India's strength lies in its unity amidst diversity. The country's synthesis of cultures, religions, and languages, accommodating various castes and communities, sustains its unity and cohesiveness. Despite economic and social inequalities, national unity and integrity prevail. India's multicultural fabric remains intact, making it a unique melting pot of cultures.

Q.8 Despite the emphasis on Secularism, Constitutional values, and Scientific temperament the absence of a Uniform Civil Code (UCC) in certain contexts remains unexplained. Elaborate.

Introduction:

In a diverse country like India, the absence of a Uniform Civil Code (UCC) has long been a topic of debate and controversy. The UCC (Under DPSP and Article 44) calls for the formulation of a single law applicable to all religious communities in matters of civil affairs, such as marriage, divorce, succession, and adoption. However, despite the emphasis on secularism, science, and modernism, the lack of a UCC raises significant questions that remain unanswered.

The UCC's Absence Contradicts Modern Society's Scientific Promises:

- The High Court of Delhi finds conflicts in personal laws contradictory to modern society, adding to the struggles faced by youth from different communities in solemnizing their marriages.
- Complex personal laws contribute to legal hurdles in resolving civil disputes, leading to increased legal pendency.

- Most personal laws are antiquated and exhibit gender bias, granting women an inferior status compared to men in matters such as marriage, divorce, and inheritance, thereby perpetuating patriarchal dominance.
- Provisions in certain religious personal laws raise concerns about human dignity and human rights, such as maintenance for divorced Muslim women and practices like Nikah and Halala.
- Religious practices endorsed by personal laws, such as purdah, polygamy, and child marriages based on Sharia, lack a scientific basis and contradict the fundamental duty of promoting scientific temperament.

UCC Absence Hinders Creation of Envisaged Secular and Modern Society:

- The absence of a UCC denies equality to citizens, particularly those who are vulnerable, by depriving them of equal treatment under personal laws.
- The Supreme Court of India has noted that the absence of a UCC hinders national integration, as conflicting ideologies and loyalties to different laws prevail.
- The existence of diverse personal laws for different religious communities undermines the secular foundation of the Indian constitution.
- The presence of distinct personal laws facilitates polarization and can be exploited by vested political interests to foster communal tensions in the socio-religious sphere.

Challenges to Implement UCC

- The implementation of UCC may lead to social-religious tensions, as it could be perceived as interference in the personal practices of minority communities by the majority. **This issue gained momentum when Uttarakhand Government appointed a committee for adopting UCC in the State.**
- Constitutional hurdles may arise, considering that Article 25 grants citizens the right to freedom of conscience, practice, profess, and propagate their religion.
- The Law Commission, in its report "Reform of Family Law," has expressed the view that UCC is neither necessary nor desirable.
- The uniform application of civil laws in homogeneous societies has resulted in social issues such as riots and lone-wolf attacks in Western countries. Rushing the implementation of UCC could pose similar challenges in India, given its diverse society.

- Imposing UCC without accompanying internal reforms may have adverse consequences, leading to the alienation of minority communities. This could be exploited by hostile forces to create social unrest in India.

Conclusion

The SC in the **Shah Bano case and the Sarla Mudgal case** have urged the need to bring a UCC, on lines of uniform criminal code. The law commission also suggested implementing UCC on the basis of consensus and well-discussion. However, the UCC should be modeled on secular, scientific principles and not on any other criteria.

Q.9 Caste-based vote-bank politics has undeniably played a significant role in determining electoral choices in India, often overshadowing economic issues and social policy considerations. Elaborate.

Introduction

The social structure of India is characterised by the prominent presence of the caste system. This system represents a comprehensive and deeply ingrained framework of social hierarchy and status, impacting various aspects of individuals' lives. It encompasses and regulates social, economic, and political relationships within the society, exerting significant control over individuals' positions and roles.

Body

Background:

- Politics is a competitive pursuit that revolves around gaining power to achieve certain objectives. The process involves identifying and manipulating existing and emerging alliances to mobilise support and consolidate positions.
- Effective organisation and articulation of support are crucial in politics, particularly in mass-based politics, where the aim is to mobilise the masses through organised structures.
- In the context of India, the caste system serves as one of the primary organisational clusters, encompassing a significant portion of the population and influencing their attitudes towards social and political groups.
- Caste groups dominate social life in India and inevitably shape their members' perspectives on other social and political entities.
- The fact that individuals cannot easily leave their castes and join other groups gives caste groups a significant political power that cannot be overlooked by political parties reliant on voter goodwill.

Caste-based electoral politics in India:

- Caste serves as a significant basis for organising

democratic politics, as the need to mobilise and articulate support leads political actors to engage with caste groups and associations.

- Caste identity and solidarities have become primary channels for mobilising electoral and political support within the political system, resulting in the politicisation of caste.
- Caste is more extensively utilised for mobilising support in rural areas compared to urban areas.
- Political parties find it easier to directly appeal to and mobilise support from members of specific caste communities.
- The present political system either encourages or inhibits the use of caste as a means to gather followers, as exemplified by family-run regional parties in North India.
- The communication of ideas within a caste is strong, and members of a caste often share similar views regarding political parties, politics, and individuals.
- Voting patterns based on caste affiliations are observed, with one section of people unwavering supporting a party.
- The reservation system, which was intended to be a temporary affirmative action plan to uplift underprivileged groups, has not been thoroughly implemented. Instead, it is sometimes used to secure votes rather than truly helping the poor and needy, diluting the original aim of reservation.
- Even in village-level elections, such as Panchayat Raj, the influence of the caste system is prevalent. Parties often focus on caste-based issues like reservations for specific castes, and different castes may support candidates from their own communities in different directions during elections.

Conclusion

While it was hoped that caste would gradually lose its influence in Indian politics, it continues to play a significant role. Despite the aspirations for a casteless society in free India, caste still exerts a forceful and effective impact on politics and elections. The expectation of diminishing caste-based influence has not been fully realised, and instead, caste continues to shape the political landscape.

Q.10 Examine the concept of hyper-globalisation and its impact on Indian society, with a special focus on inclusivity and economic equality. Discuss the measures required to mitigate the risks associated with hyper-globalisation.

Introduction

Hyper-globalisation refers to an intensified form of globalisation, characterised by a rapid and extensive integration of economies and the emergence of a more uniform global culture. It signifies a period of significant economic transformation, particularly in developing countries. Unlike traditional globalisation, hyper-globalisation emphasises the speed at which the process occurs. During the Golden Age of globalisation from 1870 to 1914, global trade as a percentage of gross domestic product (GDP) increased from 9% to 16%. However, in the present era of hyper-globalisation, encompassing both goods and services, global trade as a percentage of GDP has surged to 33%.

Body

Impact of hyper globalisation on Indian society:

- **Economic inequality:** Hyper globalisation has contributed to widening global inequality, with companies like GAFA (Google, Apple, Facebook, and Amazon) accumulating immense wealth that benefits only a few individuals. The income disparity between those with new skills, such as Artificial Intelligence knowledge, and unskilled workers has led to a decrease in overall prosperity.
- **FDI and investment:** Some countries struggle to attract foreign direct investment (FDI), while developing nations that do attract FDI may not fully maximise its benefits for indigenous firms.
- **Challenges for farmers:** Hyper globalisation, as seen through agreements like the WTO Agreement on Agriculture, can limit government support for farmers, potentially reducing their prosperity.
- **Intellectual property concerns:** International agreements such as TRIPS limit the accessibility of innovation benefits to all, hindering the potential for increased prosperity.
- **Environmental and social impact:** Hyper globalisation contributes to increased extraction of raw materials and deforestation without adequate benefit for indigenous communities. These communities bear the burden of ecological damage and pollution, further diminishing their prosperity. The plight of climate refugees highlights these challenges.
- **Technological warfare:** The ease of buying and selling dangerous weapons in the era of hyper globalisation increases the potential for more devastating warfare. Redirecting defence funds toward welfare policies could have promoted prosperity among the poor and vulnerable.
- **Overdependence and disruption:** Reliance on specific suppliers and disruptions in supply chains,

as seen during events like the Ukraine war impacting crude oil and edible oil supplies, can result in price risks and inflation that directly affect the less privileged.

- **Reduced to exporter of raw materials:** Poor nations are often relegated to being exporters of raw materials, perpetuating a form of neo-imperialism where decision-making powers remain concentrated in Western nations, continuing a trend from World War II.
- **Economic nightmare:** The crypto currencies have transcended national boundaries, and challenging the fiat currency along with interplay in terror financing and drug trafficking.
- **Internet:** The dark web has opened up a Pandora box of challenges to the security to national and personal data in the form of data leak and selling of personal data like financing details of the customers of the banks.

Measures needed to counter the risks:

- **Reducing over-dependence:** Countries should reduce reliance on a few suppliers to minimise risks, particularly for products that entail heavy foreign exchange outflows. This should be done without degenerating into protectionism and by providing one-time capital subsidies and tariff support to domestic producers based on long-term import parity pricing.
- **Encouraging domestic investment:** During global economic slowdowns, domestic investment becomes crucial in driving demand. India's vibrant domestic demand, supported by its population, can provide a favourable market and employment opportunities if sufficient manufacturing capacity is achieved, as exemplified by initiatives like the PLI scheme for electronics.
- **Implementing appropriate monetary policies:** Monetary policies should be designed to stimulate investment while effectively managing inflation.
- **Investing in infrastructure:** Policies should be accompanied by investments in public infrastructure, particularly in the transportation sector. This would boost demand, reduce logistics costs, enhance competitiveness of Indian goods in the global market, and contribute to India's prosperity.

Conclusion

In conclusion, while hyper globalisation has its challenges, it is not entirely detrimental to India. It has facilitated technology transfer and increased investment flow, which can be advantageous. However, it is essential for India

to address the risks associated with hyper globalism. By upskilling the youth with new-age technology, India can harness the potential of its rich demographic dividends while reducing poverty. This approach will enable India to navigate the complexities of hyper globalisation and leverage its benefits for sustainable growth and prosperity.

Q. 11 Evaluate the possible risks associated with a "wet-bulb summer" in India and assess the country's readiness to confront such severe occurrences. What steps should be implemented to alleviate the impacts of heat Waves?

Introduction:

Wet bulb temperatures are determined by wrapping a wet cloth around a thermometer and observing the temperature at which evaporation occurs. This measurement is distinct from the commonly known dry temperature. When the wet bulb temperature exceeds 35°C, the human body becomes unable to cool itself through perspiration.

India recently experienced its warmest February since 1877, and there are concerns that wet-bulb temperatures in the country could surpass the survivability threshold of 35°C.

Body:

Wet bulb temperature:

- Wet bulb temperature is the lowest temperature at which air can be cooled by water evaporation at constant pressure.
- It indicates the limit beyond which high temperatures become intolerable for humans.
- Measuring wet bulb temperature involves using a moistened thermometer bulb exposed to the airflow.
- With every one-degree rise in the global mean temperatures, there is a 7 percent increase in humidity, the IPCC report said, indicating that higher temperatures and higher levels of humidity in the atmosphere have already set in.
- Since pre-industrial times, global temperatures have risen by 1.1 degrees Celsius. Regrettably, current commitments from global nations are insufficient to prevent a temperature rise of 1.5°C between 2020 and 2040 and 2°C between 2040 and 2060.
- Geographically, the heatwave zone lies diagonally across the Indo-Pak region

Potential hazards of a wet bulb summer:

- Exceeding the wet bulb threshold of 35°C could lead to increased deaths as the human body cannot cool itself through perspiration.
- Outdoor activities can become life-threatening. Vulnerable populations, such as workers in the

agricultural sector, face heightened risks.

- Heatwaves are associated with heat stress, heat stroke, and health complications, diseases like cholera and dengue fever can spread more easily in such conditions.
- Economic consequences include crop failures, widespread fire, and reduced economic activities, leading to increased poverty.

Status of India's Preparation

- India's existing heat action plans (HAPs) primarily focus on dry extreme heat and do not adequately address the threats posed by humid heat.
- Risk factors such as duration of continuous heat and hot nights may not be considered region-wise.
- India has 37 HAPs across 18 states at the city, district, and state levels. Only two of these, however, have explicitly targeted vulnerable groups.
- Most HAPs lack specific measures for vulnerable groups and suffer from insufficient funding, capacity building, and transparency.

Potential mitigation strategies:

Climate projections indicate a six-fold increase in heat waves by 2060, such plans are needed immediately to protect vulnerable communities.

Implementing the National Disaster Management Agency's Guidelines 2016

1. Forecasting heat waves and establishing early warning systems.
 2. Building the capacity of healthcare professionals to handle heat wave-related emergencies.
 3. Conducting community outreach through various media channels.
 4. Encouraging inter-agency cooperation and engagement with civil society organizations.
- **Employing a scientific approach** by correlating climate and health data to develop a city-specific heat stress index and identify vulnerable areas.
 - **Advancing the local Heat Action Plans** and enhancing inter-agency coordination.
 - Emphasizing the need for better planning, zoning, identification of "heat hot spots" and building regulations to prevent Urban Heat Islands.
 - Utilizing public messaging channels, mobile phone alerts, and traditional adaptation practices.
 - Promoting design features like shaded windows, underground water storage tanks, and insulating housing materials.

Conclusion

The India Meteorological Department (IMD) provides heatwave warnings on a regular basis, allowing local

governments to issue appropriate alerts based on severity. However, relying solely on forecasts is insufficient. Comprehensive heat action plans, based on long-term vision, must be implemented.

Q. 12 What are the conditions essential for the full development of Karst topography? Elaborate on the various types of landforms formed by the action of groundwater.

Answer

Introduction

Karst refers to landscapes shaped by chemical weathering processes influenced by groundwater activity. These unique formations can be found in various regions across the globe, including the Causses in France, the Kwangsi area in China, and the Yucatán Peninsula in the United States. Karst landscapes are characterised by their upland terrain and the prevalence of underground drainage systems, replacing traditional surface streams. The term "karst" originated from a Yugoslavian province located along the coast of the Adriatic Sea, where these distinct formations are particularly prominent.

Body

Conditions necessary for the complete development of Karst topography:

Karst topography is formed through the drainage of water into the ground, resulting in distinct geological features on the Earth's surface. The full development of Karst topography requires specific conditions:

- **Predominant Limestone Composition:** Karst landscapes are primarily composed of limestone rock containing more than 70 percent calcium carbonate.
- **Presence of Thick Water-Soluble Rocks:** The region should have extensive areas of thick water-soluble rocks, such as limestone, which are susceptible to dissolution.
- **Permeable and Jointed Rocks:** The rocks should be permeable, allowing water to flow through them, and contain joints and cracks that facilitate the movement of water.
- **Adequate Water Source:** Sufficient rainfall or a reliable source of water is necessary to dissolve the carbonate rocks effectively.
- **Absence of Surface Drainage:** The absence of traditional surface drainage systems, coupled with the presence of a well-developed underground channel for groundwater flow, is crucial for the formation of karst topography and associated features.

Various Types of Landforms Formed by Groundwater

Action:

Erosional Landforms:

- **Lapies:** Ridge-like features formed by differential solution activity along parallel or sub-parallel joints in limestone rock.
- **Limestone Pavements:** Smoother formations resulting from the erosion and dissolution of limestone.

Sinkholes:

- Sinkholes are circular or funnel-shaped openings that form when the solution process causes the ground to collapse.
- Solution sinks are formed solely through the process of solution, while collapse sinks start as solution sinks but further collapse due to underlying caves or hollow spaces.

Caves:

- Caves are prominent in areas where limestone or dolomite alternate with non-soluble rocks, or where dense, massive limestone beds occur.
- They often have openings for cave streams and can be interconnected or form tunnel-like structures.

Caverns:

- Caverns are underground caves formed by various water action methods in limestone or chalk areas.

Karst Window:

- When multiple adjoining sinkholes collapse, they create an open, broad area known as a karst window.

Polje/Blind Valley:

- Several uvalas (valleys of sinks) may merge to form a flat-floored depression called a polje. If streams disappear within these valleys, they are referred to as blind valleys.

Arch/Natural Bridge:

- When parts of a cavern collapse, the remaining standing portion forms an arch or natural bridge.

Depositional Landforms:

- Inside caverns, groundwater and limestone create spectacular formations such as stalactites, stalagmites, and pillars through the deposition of dissolved calcium carbonate.
- Stalactites hang from the ceiling, stalagmites rise from the floor, and pillars form when stalactites and stalagmites merge.

Conclusion

In conclusion, Karst topography evolves over time through the dissolution, erosion, and deposition actions of groundwater on carbonate rocks, resulting in various landforms that are distinct and unique to Karst landscapes.

Q. 13 How does salinity vary as the ocean gets deeper and wider? Discuss the factors that determine the

concentration of salts in the ocean water.

Introduction

Salinity refers to the concentration of dissolved salts in seawater. It is determined by the amount of salt (measured in grams) dissolved in 1,000 grams (1 kilogram) of seawater. On average, the salinity of ocean water is around 35 parts per thousand at zero degrees Celsius, indicating that dissolved salts make up approximately 3.5 percent of the total weight of seawater. Among all the dissolved salts in the ocean, sodium chloride (common salt) is the most prevalent.

Body

Variation in salinity:

• Horizontal distribution :

- » On average, the salinity of the ocean tends to decrease as one moves from the equator towards the poles. However, it is important to note that the highest salinity is typically not found near the equator, despite the high temperature and evaporation in that region. The high rainfall in equatorial areas reduces the relative proportion of salt, resulting in an average salinity of only 35 parts per thousand (‰).
- » The highest salinity levels, around 36‰, are observed between 20° N and 40° N. This zone experiences high temperatures and significant evaporation, but relatively low rainfall, contributing to the concentration of salts.
- » In the southern hemisphere, the latitudes between 100 and 300 generally exhibit an average salinity of 35‰. In the zone between 40° and 60° latitudes in both hemispheres, the salinity is relatively lower, around 31‰ in the northern hemisphere and 33‰ in the southern hemisphere.
- » Salinity further decreases in the polar zones due to the influx of glacial meltwater. On average, the northern hemisphere records an average salinity of 35‰, while the southern hemisphere has an average salinity of 34‰.

• Vertical distribution of salinity:

- Salinity changes with depth, but the way it changes depends upon the location of the sea.
- Salinity at the surface increases by the loss of water to ice or evaporation, or decreased by the input of fresh waters, such as from the rivers.
- Salinity at depth is very much fixed, because there is no way that water is 'lost', or the salt is 'added.' There is a marked difference in the salinity between the surface zones and the deep

zones of the oceans.

- The lower salinity water rests above the higher salinity dense water.
- Salinity, generally, increases with depth and there is a distinct zone called the halocline (compare this with thermocline), where salinity increases sharply.
- Other factors being constant, increasing salinity of seawater causes its density to increase. High salinity seawater, generally, sinks below the lower salinity water. This leads to stratification by salinity.

Factors influencing salinity are: Factors affecting the amount of salt in different oceans and seas are called as controlling factors of oceanic salinity.

- **Evaporation:** The salinity of water in the surface layer of oceans depends mainly on evaporation. Where the evaporation is greater, the salinity is higher, for example, the Mediterranean sea.
- **Freshwater flow influx:** Surface salinity is greatly influenced in coastal regions by the freshwater flow from rivers, and in polar regions by the processes of freezing and thawing of ice.
- Where the freshwater flow into the oceans is greater, the salinity is lower.
- For instance, at the mouths of rivers such as the Amazon, Congo, Ganga etc. The ocean surface salinity is found to be lower than the average surface salinity.
- **Temperature and density:** Salinity, temperature and density of water are interrelated. Hence, any change in the temperature or density influences the salinity of an area. In general, regions with high temperatures are also regions with high salinity.
- **Ocean Currents:** They play an important role in the spatial distribution of dissolved salts in ocean waters.
- The warm currents near the equatorial region push away the salts from the eastern margins of the oceans and accumulate them near the western margins.
- Similarly, ocean currents in the temperate regions increase the salinity of ocean waters near the eastern margins. For instance, the Gulf Stream in the North Atlantic Ocean increases the salinity of ocean waters along the western margins of the Atlantic Ocean.
- **Precipitation:** Precipitation and salinity share an inverse relationship.
- In general, regions with higher levels of precipitation have lower levels of salinity. This is the reason why though the equatorial region is as hot as the sub-tropics; it records lower salinity than the sub-tropics

since the former receives heavy precipitation in a day.

- **Atmospheric pressure and Wind direction:** anti-cyclonic conditions with stable air and high temperature increase salinity of the surface water of oceans.
- winds help is redistribution of salinity, as they drive away saline waters to fewer saline areas resulting in decrease of salinity in the former and increase in the latter.

Conclusion

Nevertheless, the impact becomes more pronounced when cold water with higher salinity is involved, as temperature has a more significant influence on density compared to salinity. When seawater has a combination of low temperature and high salinity, its density increases, causing it to sink to the ocean floor and move as sluggish deep currents across the basins.

Q. 14 Discuss the importance of the Arctic region for the global climate and economy. Enumerate the key features of India's Arctic Policy.

Introduction

India's engagement with the Arctic began when it signed the Svalbard Treaty in February 1920 in Paris between Norway, the US, Denmark, France, Italy, Japan, the Netherlands, Great Britain, and Ireland, and the British overseas Dominions and Sweden concerning Spitsbergen. Ever since then, India has been closely monitoring all the developments in the Arctic region.

Body

Background

- India initiated its Arctic research program in 2007 with a focus on climate change in the region. The objectives included studying teleconnections between Arctic climate and Indian monsoon, to characterise sea ice in the Arctic using satellite data, to estimate the effect on global warming.
- India already has a research station in the Arctic, Himadri, for the research work.
- Though none of India's territory directly falls in the Arctic region, it is a crucial area as the Arctic influences atmospheric, oceanographic and biogeochemical cycles of the earth's ecosystem.
- Due to climate change, the region faces the loss of sea ice, ice caps, and warming of the ocean which in turn impacts the global climate.
- The frigid Arctic, which keeps losing ice due to global warming, is one of the batteries feeding the variations in Indian monsoons.

Importance of Arctic for global climate and economy :

- **Rising sea levels:** Warming at the top of the Earth raises sea levels worldwide, changes the way heat and water circulate in the oceans, and might even influence extreme weather events like heat waves and rainstorms, scientists say. But Arctic communities feel the impacts first.
- **Mineral Resources and Hydrocarbons:** Arctic region has rich deposits of coal, gypsum and diamonds and also substantial reserves of zinc, lead, placer gold and quartz. Greenland alone possesses about a quarter of world's rare earth reserves.
- **Climate change accelerated the melting speed of the ice sheet:** This is an alarming situation because the ice sheet reflects the sunlight, whereas water absorbs the sunlight. If ice will melt, then water will be heated and as a result the world will become warmer day by day.
- The permanently frozen layer of the soil is called permafrost in colder regions and will be exposed when the ice sheet melts. This permafrost acts as a reservoir of carbon dioxide and methane then thinks about if it will melt, and then what will be in the atmosphere, a potent greenhouse gas.
- Excavation and extraction of oil in the Arctic region: Fossil fuel is one of the factors that accelerated climate change. The 21st century world has become dependent on the usage of fossil fuel which has not even spared the Arctic region to exploit for corporate profits.
- The degree of the arctic warming has a subsequent impact on global activity. The increasing temperature is expected to increase the frequency and severity of extreme weather events which will primarily influence economic growth through damage to property and infrastructure, lost productivity, mass migration and security threats.

The Indian Arctic policy is built on six central pillars

- Science and research.
- Environmental protection.
- Economic and human development.
- Transportation and connectivity.
- Governance and international cooperation.
- National capacity building.

India holds one of the 13 positions as the Observer in the Arctic Council.

The Arctic Council is an intergovernmental body that promotes research and facilitates cooperation among Arctic countries on issues related to the environmental protection and sustainable development of the Arctic region.

India's Arctic policy : Features

- It aims to strengthen national capabilities and competencies in science and exploration, climate and environmental protection, maritime and economic cooperation with the Arctic region.
- It seeks to strengthen institutional and human resource capacities within the government and academic, research and business institutions through inter-ministerial coordination in pursuit of India's interests in the Arctic.
- It seeks to enhance understanding of the impact of climate change in the Arctic region on India's climate, economic and energy security.
- It aims to promote better analysis, prediction and coordinated policymaking on the implications of ice melting in the Arctic on India's economic, military and strategic interests related to global shipping routes, energy security and exploitation of mineral wealth.
- It seeks to study the linkages between polar regions and the Himalayas and deepen the cooperation between India and the countries of the Arctic region under various Arctic forums, drawing expertise from scientific and traditional knowledge.
- The policy also seeks to increase India's participation in the Arctic Council and improve understanding of the complex governance structures in the Arctic, relevant international laws and geopolitics of the region.

Conclusion

On the whole, India's Arctic Policy is timely and is likely to provide a direction to India's policymakers on contours of India's engagement with the region. It is the first step towards developing a whole-of-government approach on India's engagement with the region.

The Policy is likely to have a multiplier effect towards a more synergised and focused scientific research including an enhanced understanding of linkages between monsoons and climate change in the Arctic, and between polar studies and the Himalayas.

Thus, India's Arctic Policy is deftly dovetailed, enmeshed and in synergy with the broader policy framework of the Government of India.

Q. 15 Climate change is causing significant disruptions to the Indian monsoon, leading to unpredictable weather extremes and a range of undesirable consequences. This alteration in the monsoon pattern has multifaceted effects that span various aspects of the region's environment and society.

Discuss.

Introduction:

- The Indian monsoon, characterized by seasonal wind reversals and associated changes in precipitation, is experiencing significant alterations due to climate change. The long-term change in temperature and wind pattern (because of climate change) is making the Indian summer monsoon more erratic. Alteration of the Indian monsoon due to climate change is visible as:

Rainfall Variability of Indian Monsoon:

- The pattern of rainfall during the Indian monsoon has become more erratic as a result of climate change. Contrary to the perception of increased rainfall due to extreme events, there has been a 6% decrease in rainfall over the past 60 years, as confirmed by Indian Government and international climate change assessments. Spatially, the monsoon circulation has weakened since 1951, while localized heavy rainfall and prolonged dry spells have become more prevalent.

Impact on ENSO and IOD:

- Climate change has disrupted the El Niño-Southern Oscillations (ENSO) and the Indian Ocean Dipole (IOD) cycles, resulting in more frequent floods and droughts in the Indian subcontinent. These alterations contribute to the changing monsoon patterns and their associated impacts.

Factors Influencing Altered Monsoon Patterns:

Climate change affects the Indian monsoon through various mechanisms:

Global Warming:

- Rising temperatures associated with global warming play a significant role in the occurrence of more frequent extreme weather events during the Indian monsoon.
- The occurrence of pre-monsoon cyclones and typhoons has shifted closer to the monsoon onset, potentially due to the impact of a warmer Arctic Ocean on winds over the Arabian Sea.
- The delayed birth of Biparjoy and the delayed monsoon onset can be attributed to typhoon Mawar in

the northwestern Pacific Ocean. It has contributed to the southwesterly winds that hinder the progress of the monsoon trough.

Heat Pump Effect:

- Hot atmospheric dust particles from Middle Eastern deserts influence air pressure over the Arabian Sea, creating a heat pump effect. This effect drives moisture from the ocean to the Indian subcontinent, intensifying the monsoon season and leading to increased rainfall.

Solar Dimming Effect:

- Aerosol emissions from sources like vehicle exhaust and crop burning reduce the intensity of sunlight, counteracting rainfall in certain areas. This cooling effect contributes to altered monsoon patterns.

Multidimensional Impacts of Altered Monsoon Patterns:

The altered Indian monsoon patterns due to climate change have far-reaching impacts:

Impact on Agriculture:

- Erratic rainfall patterns adversely affect agriculture, leading to reduced crop yields, damaging standing crops, delayed maturity, and an increased risk of crop diseases and failures.

Increasing Disasters Risk

- The irregular monsoon patterns result in regional disparities, with some areas experiencing heavy rainfall, leading to floods and landslides, while others face prolonged droughts. Notable examples include the Chennai floods in November 2021.

Economic Consequences:

- Variations in rainfall have significant economic implications, affecting crop yields, disposable income, consumption patterns, food security, and the overall well-being of communities dependent on agriculture.

Challenges for Climate Models:

- The complexity introduced by climate change poses challenges for current climate models in accurately predicting monsoon patterns and their future changes.

Climate Refugees:

- Altered monsoon patterns contribute to frequent

crop failures and land desertification, increasing the risk of displacement and creating a potential influx of climate refugees.

Mitigation Strategies for Altered Monsoon Patterns:

Addressing the impact of climate change on the Indian monsoon requires a multidimensional approach:

1. Reduction of Greenhouse Gas Emissions:

- Transitioning from polluting fuels like coal to clean energy sources such as solar power and green hydrogen, along with adopting Carbon Capture and Sequestration (CCS) technology, can help reduce greenhouse gas emissions.

2. Disaster Management:

- Investing in disaster-resilient infrastructure, enhancing institutional capabilities, and improving disaster preparedness are essential for mitigating the impacts of climate-induced disasters.

3. Water Management:

- Implementing water management practices like micro-irrigation, water harvesting, and selecting climate-resistant crops based on agro-climatic conditions can help improve water efficiency and mitigate the effects of erratic rainfall.

Conclusion: The altered patterns of the Indian monsoon due to climate change have profound impacts on agriculture, disasters, the economy, climate models, and human displacement. It is imperative for policymakers to focus on both mitigation and adaptation strategies to ensure sustainable and inclusive development. By reducing greenhouse gas emissions, improving disaster management, and implementing effective water management practices, the negative consequences of climate change on the Indian monsoon can be mitigated, safeguarding the economy, food systems, and well-being of the population.

Q. 16 What is the impact of same-sex marriages on the Indian "social ethos"? Do you think denying same-sex couples the right to marry constitutes discrimination? Critically analyze the movement to legalize same-sex marriages in the country.

Introduction:

The discussion surrounding same-sex marriag-

es in India revolves around moral considerations rather than legal ones. It involves reconciling societal norms and individual liberties within a culture where religion holds significant prominence. While the Indian Supreme Court has indirectly recognized the right to marry a person of one's choice, the demand to legalize same-sex marriages in the country remains a critical subject for analysis.

Impact on the Indian social ethos

- Marriage, as an institution, encompasses love, companionship, procreation, sharing responsibilities, and happiness.
- Various legal aspects, such as property, inheritance, insurance, healthcare visitation rights, and custody, are intertwined with marriage.
- As LGBTQ+ rights gain ground globally, more countries are legalizing same-sex marriages.
- The battle for gay rights in India has been a long and challenging one, with the decriminalization of homosexuality in 2018 by the abolishment of Article 377, being just the beginning.

The Case Against Legalising same-sex Marriages in India:

- Marriage is traditionally understood as the union between a man and a woman, and altering this definition would defy natural law and undermine the institution of marriage.
- The Indian government argues that same-sex marriage is not aligned with Indian traditions, culture, or the societal understanding of marriage.
- Equal rights have limits, and allowing same-sex marriage would open the door to other forms of marriage, such as polygamy or marriages between relatives.
- Concerns are raised about the impact of same-sex parenting on children's development and the potential disruption of societal norms.

The Case for Legalising same-sex Marriages in India:

- The institution of marriage is not immune to reform and review.

- Article 21 of the Indian Constitution, which includes the right to marry as part of the right to life.
- The reform of the Hindu Marriage Act, of 1955, to include self-respect marriages, is viewed as a step towards breaking caste-based practices within marriage.
- Self-respect marriages in Tamil Nadu and Puducherry have eliminated religious rituals, emphasizing a simple exchange of rings or garlands.
- The Indian legal system has intervened in cases of inter-religion and inter-caste marriages to safeguard personal choices, and this protection should extend to other groups as well.
- Denying same-sex couples the full rights of marriage is inherently discriminatory and goes against the principles of equality and individual choice.
- Similarly, recognizing the needs of the LGBTQIA+ community, the law should expand the institution of marriage to include all gender and sexual identities.

Global Perspectives on same-sex marriage

- Internationally, recognition of discriminatory laws against the LGBTQIA+ community has prompted legal reforms for inclusivity and equality.
- Countries like South Africa, Australia, England, Wales, and the United States have enacted laws allowing same-sex marriages and providing equal entitlements for same-sex couples.

Conclusion:

With over 29 countries having legalized same-sex marriage, it is imperative for India to consider a broader perspective and review its existing legal framework to embrace marriages irrespective of gender identity and sexual orientation. As society evolves, the nature of marriage inevitably changes, and the law must adapt accordingly.

MCQs Based on Current Affairs

1. Which of the following statements regarding the Rudram-1 missile is/are correct?

1. Rudram-1 is an air-to-surface missile developed by the Defence Research and Development Organisation (DRDO) of India.
2. It is primarily designed for anti-radiation missions to target and destroy enemy radar systems.
3. The missile has a range of approximately 300 kilometers and is launched from aircraft.
4. Rudram-1 is named after the Vedic god Rudra and is part of India's efforts to enhance its air-to-air missile capabilities.

Select the correct answer using the codes given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 4 only
- D. 1, 2 and 4 only

2. Which of the following statements about the Election Commission of India is/are correct?

1. The Election Commission is a permanent body established under Article 324 of the Indian Constitution.
2. The Chief Election Commissioner (CEC) is appointed by the President of India and can be removed from office only by impeachment.
3. The Election Commission of India is responsible for the conduct of elections to the Lok Sabha, Rajya Sabha, and the President of India, but not for state legislative assemblies.
4. The Election Commission of India has the authority to supervise, direct, and control the entire process of elections in India.

Select the correct answer using the codes given below:

- A. 1 and 2 only
- B. 1 and 4 only
- C. 2 and 3 only
- D. 1, 2, and 4 only

3. Which of the following statements about the Digital Bharat Nidhi and its functioning is/are correct?

1. The Digital Bharat Nidhi will replace the Universal Service Obligation Fund (USOF) and will be used to expand telecom networks in rural and remote areas.
2. Contributions made by telecom companies towards

the DBN will be credited directly to a separate account, rather than to the Consolidated Fund of India (CFI).

3. Funds under the DBN will be used for various purposes, including promoting access to telecommunication services, funding R&D, supporting pilot projects, and providing targeted access to underserved groups.
4. An administrator appointed by the Central government will determine the modalities of providing funding to DBN implementers, including full funding, partial funding, and risk capital.

Select the correct answer using the codes given below:

- A. 1 and 3 only
- B. 1, 3, and 4 only
- C. 2 and 4 only
- D. 1, 2, 3, and 4

4. Which of the following statements regarding the National Security Advisor (NSA) of India is/are correct?

1. The NSA is appointed by the President of India and serves a fixed term of five years.
2. The NSA is primarily responsible for advising the Prime Minister of India on national security and strategic issues.
3. The NSA is a member of the National Security Council and coordinates between various intelligence and security agencies.
4. The NSA's position was formally established in 1998 following the Kargil conflict to enhance India's national security apparatus.

Select the correct answer using the codes given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 4 only
- D. 3 and 4 only

5. Which of the following statements about the 'Naavu Manujaru' programme, implemented by the Karnataka government, is/are correct?

1. The 'Naavu Manujaru' programme aims to improve students' capacity for independent thinking, rationality, and understanding the pros and cons of issues.
2. The programme is to be implemented only in government and aided primary and high schools,

excluding unaided institutions.

3. It involves weekly discussions and dialogues for a total of two hours, broken into three periods of 40 minutes each.
4. The Department of State Educational Research and Training (DSERT) is the implementing agency for the 'Naavu Manujaru' programme.

Select the correct answer using the codes given below:

- A. 1 and 2 only
- B. 1, 3, and 4 only
- C. 2 and 3 only
- D. 1 and 4 only

6. Consider the following statements:

1. India's Central Drugs Standard Control Organisation (CDSCO) has approved Tirzepatide, a weight loss drug developed by Eli Lilly.
2. Tirzepatide is currently imported and marketed in India for the treatment of diabetes, but awaits its potential approval for weight loss.
3. Global clinical trials for tirzepatide (Zepbound) have shown significant results, with the highest dose leading to an average weight loss of 20.9% over 72 weeks.
4. Tirzepatide works by stimulating insulin release, reducing glucagon release, slowing stomach emptying, and reducing appetite.
5. Tirzepatide is sold under the brand names Monjaro (for diabetes) and Zepbound (for weight loss).

How many of the above statements are correct?

- A. Only two
- B. Only three
- C. Only four
- D. All five

7. Consider the following statements:

1. The Madras High Court has ruled that advocates cannot represent complainants before the Reserve Bank of India (RBI) Ombudsman.
2. The court said that lawyers have only a statutory right, not a fundamental right, to appear before judicial and quasi-judicial forums
3. The court highlighted the importance of self-representation in banking disputes, reasoning that involving legal professionals can complicate the process
4. The court upheld the constitutional validity of RBI-IOs 2021, which prohibits complainants from

appointing advocates to represent their cases before the Ombudsman

How many of the above statements are correct?

- A. Only two
- B. Only three
- C. All four
- D. None

8. Which of the following statements regarding the Smart Cities Mission (SCM) and its recent extension are correct?

1. The Smart Cities Mission, initially launched in June 2015, was originally scheduled for completion by 2020 and has now been extended to March 2025.
2. The SCM includes area-based development components such as redevelopment, retrofitting, and greenfield projects, and pan-city solutions involving ICT applications.
3. The financing of the SCM is shared equally between the Central Government and the States/Urban Local Bodies (ULBs), with a total allocation of nearly Rs. 1 lakh crore.
4. The SCM's convergence with other government schemes such as AMRUT, Swachh Bharat Mission, and Digital India aims to address both physical and social infrastructure comprehensively.

Select the correct answer using the codes given below:

- A. 1 and 2 only
- B. 1, 2, and 3 only
- C. 2, 3, and 4 only
- D. 1, 2, 3, and 4

9. Which of the following statements about the 'Sampoornata Abhiyan' launched by NITI Aayog are correct?

1. The 'Sampoornata Abhiyan' aims to achieve holistic development in 112 Aspirational Districts and 500 Aspirational Blocks across India.
2. The campaign focuses on six key indicators at the block level, including antenatal care registration, diabetes and hypertension screening, supplementary nutrition, soil health cards, and self-help group funding.
3. At the district level, the campaign emphasizes child immunization, soil health card distribution, school electrification, and timely textbook distribution, in addition to antenatal care and supplementary nutrition.

4. The implementation strategy of the 'Sampoornata Abhiyan' includes developing 6-month action plans, monthly tracking, awareness campaigns, field visits, and collaboration with Central Ministries, Departments, and State/UT Governments.

Select the correct answer using the codes given below:

- A. 1 and 2 only
 B. 1, 2, and 3 only
 C. 2, 3, and 4 only
 D. 1, 2, and 4 only

10. Which of the following statements regarding the 'Bhuvan Panchayat (Ver. 4.0)' and 'National Database for Emergency Management (NDEM Ver. 5.0)' geoportals are correct?

1. The 'Bhuvan Panchayat (Ver. 4.0)' portal is designed to support decentralized planning at the Panchayat level by providing space-based information and high-resolution satellite imagery.
2. The 'National Database for Emergency Management (NDEM Ver. 5.0)' aims to aid in disaster risk reduction through space-based inputs and provide early warnings for natural disasters affecting India and neighboring countries.
3. The 'Bhuvan Panchayat (Ver. 4.0)' portal offers a high-resolution satellite imagery scale of 1:100K, while the 'NDEM Ver. 5.0' provides imagery at a scale of 1:10K.
4. The 'National Database for Emergency Management (NDEM Ver. 5.0)' includes features to track land use and land change (LULC) and enhance disaster preparedness.

Select the correct answer using the codes given below:

- A. 1 and 2 only
 B. 1, 2, and 4 only
 C. 2 and 3 only
 D. 1, 3, and 4 only

11. Which of the following statements are correct regarding the recent amendments to expand the administrative powers of the Lieutenant Governor of Jammu and Kashmir as per the Ministry of Home Affairs?

1. The recent amendments grant the Lieutenant Governor greater authority in administrative matters, including the appointment, transfer, and posting of senior officials.
2. The Lieutenant Governor will now have increased

control over key departments such as Public Works, Education, and Health.

3. Financial powers of the Lieutenant Governor have been expanded, allowing for the sanctioning of funds and approval of development projects.

4. The amendments aim to decentralize administrative power and enhance the role of the elected government in J&K.

Select the correct answer using the codes given below:

- A. 1, 2, and 3 only
 B. 1, 2, and 4 only
 C. 1 and 3 only
 D. 2 and 4 only

12. Which of the following statements about the International Solar Alliance (ISA) is NOT correct?

- A. ISA is an inter-governmental treaty-based organization aimed at promoting solar energy.
- B. ISA was launched by Prime Minister Narendra Modi and President Emmanuel Macron in Paris.
- C. Membership in ISA is restricted to countries lying completely within the Tropic of Cancer and the Tropic of Capricorn.
- D. The ISA Framework Agreement was opened for signature in Marrakech, Morocco.

13. Which of the following statements regarding the Shanghai Cooperation Organisation (SCO) is correct?

Statement 1: SCO was founded in 2001 by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan.

Statement 2: India and Pakistan were admitted as full members of SCO in 2017.

Statement 3: The SCO primarily focuses on security-related issues and counter-terrorism cooperation among member states.

Which of the statements above is/are correct?

- A. Statement 1 and Statement 2 only
 B. Statement 1 and Statement 3 only
 C. Statement 2 and Statement 3 only
 D. All of the above statements

14. Consider the following statements regarding NewSpace India Limited (NSIL):

Statement 1: NSIL is a central public sector enterprise under the administrative control of the

Department of Space (DOS), established to facilitate Indian industries in high technology space-related activities.

Statement 2: NSIL's mandate includes owning and operating satellites, providing space-based earth observation and communication services, and building launch vehicles through Indian industry.

Statement 3: NSIL conducted its first demand-driven satellite mission, GSAT-24, in collaboration with M/s TataPlay, which was fully funded by NSIL. Which of the statements above is/are correct?

- A. Statement 1 and Statement 2 only
- B. Statement 1 and Statement 3 only
- C. Statement 2 and Statement 3 only
- D. All of the above statements

15. Which of the following statements about Russia becoming a high-income economy despite war and sanctions is correct?

Statement 1: Russia achieved the status of a high-income economy as per the World Bank's classification based on its per capita Gross National Income (GNI).

Statement 2: Russia's economic growth was primarily driven by its natural resource exports despite facing geopolitical challenges and economic sanctions.

Statement 3: The classification of Russia as a high-income economy indicates its successful industrial diversification and reduction in income inequality. Which of the statements above is/are correct?

- A. Statement 1 and Statement 2 only
- B. Statement 1 and Statement 3 only
- C. Statement 2 and Statement 3 only
- D. All of the above statements

16. What is "dark oxygen"?

- A. Oxygen produced through photosynthesis in sunlight.
- B. Oxygen produced in complete darkness thousands of feet below the ocean surface.
- C. Oxygen produced by burning fossil fuels in deep-sea vents.
- D. Oxygen generated by chemical reactions on the ocean surface.

17. Which of the following statements are not true about the Zoological Survey of India (ZSI)?

- A. It was established in 1916 to study India's fauna.
- B. It has headquarters in Mumbai.
- C. The ZSI has expanded its functions to include environmental impact assessments and wildlife forensic studies.
- D. It houses over 5.5 million specimens representing around 103,920 species.

18. Consider the following statements:

- 1. The Securities and Exchange Board of India (SEBI) has introduced amendments to the Prohibition of Insider Trading (PIT) Regulations, providing flexibility and relaxation in 'trading plan' norms for insiders.
- 2. The minimum cool-off period between disclosure and implementation of a trading plan has been reduced from six months to four months.
- 3. Insiders can now set a 20% price range for buying or selling shares in a trading plan, providing flexibility in execution.

How many of the above statements are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

19. Which statements accurately describe the classification and characteristics of megafauna?

- 1. Megafauna are generally animals weighing more than 50 kg.
- 2. The term "megafauna" was first used by Charles Darwin.
- 3. Ostriches are classified as megaomnivores.

Select the correct answer using the codes given below:

- A. 1 and 2
- B. 2 and 3
- C. 1 and 3
- D. 1 only

20. Which of the following statements is correct?

- 1. The Union Cabinet approved India's signing of the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement.
- 2. The BBNJ Agreement is focused solely on expanding national territorial waters.
- 3. The Ministry of Earth Sciences will lead the implementation of the BBNJ Agreement in India. Select the correct answer using the codes given below:

- A. 1 and 2
- B. 1 and 3
- C. 2 and 3
- D. 1 only

21. With reference to the Great Indian Bustard, consider the following statements:

1. It is endemic to the Indian subcontinent.
2. They are herbivores.
3. It is listed as critically endangered in the IUCN Red List of Species.

Which of the statements 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

22. Consider the following statements related to the Annual Survey of Unincorporated Sector Enterprises (ASUSE) for 2021-22 and 2022-23:

1. The total number of establishments in the unincorporated sector increased from 5.97 crore in 2021-22 to 6.50 crore in 2022-23, marking a 5.88% growth.
2. The average fixed assets owned by an unincorporated non-agricultural establishment rose from Rs. 2,81,013 in 2021-22 to Rs. 3,18,144 in 2022-23.
3. The proportion of female workers in the unincorporated non-agricultural sector increased from 25.52% in 2021-22 to 27.02% in 2022-23.
4. The use of internet for entrepreneurial purposes increased from 7.7% in rural areas and 21.6% in urban areas in 2021-22 to 13.5% in rural and 30.2% in urban areas in 2022-23.
5. About 54% of proprietary establishments in the manufacturing sector were run by women entrepreneurs in both ASUSE 2021-22 and ASUSE 2022-23.

Which of the following statements is/are correct?

- A. 1 and 2 only
- B. 1, 2, and 4 only
- C. 2, 4, and 5 only
- D. 3 and 5 only

23. Consider the following statements related to Project PARI initiated by the Ministry of Culture:

1. Project PARI is being executed by Lalit Kala Akademi

and National Gallery of Modern Art.

2. The primary focus of Project PARI is to create artworks exclusively inspired by contemporary themes and modern techniques.
3. The first intervention of Project PARI is taking place in Delhi and coincides with the 46th session of the World Heritage Committee scheduled to be held in New Delhi between 21-31 July 2024.
4. More than 150 visual artists from across the country are involved in creating various wall paintings, murals, sculptures, and installations under Project PARI.
5. Some of the artworks and sculptures for Project PARI draw inspiration from World Heritage Sites in India, such as the Bimbetka Caves and the seven natural World Heritage Sites.

Which of the following statements is/are correct?

- A. 1, 3, and 4 only
- B. 1, 3, 4, and 5 only
- C. 2 and 3 only
- D. 1, 3, 4, and 5 only

24. Consider the following statements related to the SEHER program launched by the Women Entrepreneurship Platform (WEP) and TransUnion CIBIL:

1. SEHER is a credit education program designed to increase financial literacy among women entrepreneurs in India.
2. The Women Entrepreneurship Platform (WEP) is a public-private partnership incubated at the Ministry of Micro, Small and Medium Enterprises (MSME).
3. As per the Udyam Registration Portal (URP), women-owned micro, small, and medium enterprises (MSMEs) in India represent 20.5% of the total MSMEs and employ approximately 27 million people.
4. SEHER will offer personalized financial literacy resources and tools, including information on CIBIL Rank and credit reports.
5. TransUnion CIBIL data indicates that the demand for business loans by women has grown 3.9 times in the last five years.

Which of the following statements is/are correct?

- A. 1, 3, 4, and 5 only
- B. 1, 2, 3, and 5 only
- C. 1, 3, and 4 only

D. 2, 4, and 5 only

25. Consider the following statements related to India's participation in the Codex Alimentarius Commission (CAC) session:

1. India is participated in the 86th session of the Executive Committee (CCEXEC. of the Codex Alimentarius Commission (CAC. held in Rome.
2. G Kamala Vardhana Rao, CEO of the Food Safety and Standards Authority of India (FSSAI), represented India at the session.
3. The CAC, established by the FAO and WHO, focuses exclusively on setting standards for food safety in international trade.
4. During the session, India supported the advancement of standards for small cardamom, vanilla, and turmeric, among other spices.
5. India also advocated for Codex guidance on the use of recycled materials in food packaging and shared its guidelines on recycling post-consumer PET.

Which of the following statements is/are correct?

- A. 1, 2, 4, and 5 only
- B. 1, 2, 3, and 4 only
- C. 2, 4, and 5 only
- D. 1, 3, and 5 only

26. Consider the following statements related to progress in Sustainable Development Goals (SDGs):

1. The overall SDG score for India improved to 71 for the year 2023-24, up from 66 in 2020-21 and 57 in 2018.
2. Significant progress has been recorded in Goals 1 (No Poverty), 8 (Decent Work and Economic Growth), 13 (Climate Action), and 15 (Life on Land).
3. The scores for States in 2023-24 range from 57 to 79, showing an improvement from the range of 42 to 69 in 2018.
4. Goal 13 (Climate Action) saw the highest increase in score, rising from 54 in 2020-21 to 67 in 2023-24, followed by Goal 1 (No Poverty), which improved from 60 to 72.
5. Between 2018 and 2023-24, the fastest moving States in terms of score improvement include Uttar Pradesh, J&K, Uttarakhand, Sikkim, Haryana, Assam, Tripura, Punjab, Madhya Pradesh, and Odisha.

Which of the following statements is/are correct?

- A. 1, 2, 3, 4, and 5

B. 1, 2, 3, and 4 only

C. 1, 3, 4, and 5 only

D. 2, 3, and 5 only

27. The Union Budget 2024-25 includes the following estimates:

1. GDP for Budget FY 2024-25 is Rs. 3,26,36,912 crore.
2. Total expenditure for Budget Estimates 2024-25 is Rs. 48,20,512 crore.
3. Gross market borrowings are estimated at Rs. 11.63 lakh crore.

Which of the following combinations is correct?

- A. 1, 2
- B. 1, 3
- C. 2, 3
- D. 1

28. Regarding the capital expenditure in the Union Budget 2024-25:

1. Total capital expenditure is Rs. 11,11,111 crore.
2. Effective capital expenditure is Rs. 15,01,889 crore.
3. Capital expenditure reflects a decrease compared to RE 2023-24.

Which of the following combinations is correct?

- A. 1, 2
- B. 1, 3
- C. 2, 3
- D. 1

29. In terms of, the Budget Estimates for 2024-25 include:

1. Fiscal deficit at 4.9%
2. Revenue deficit at 1.4%
3. Primary deficit at 1.8%

Which of the following combinations is correct?

- A. 1, 2
- B. 1, 3
- C. 2, 3
- D. 1

30. Which of the following statements is correct regarding Prime Minister's package?

1. Indian government has announced a package of five schemes for employment and skilling, allocating 2 lakh crore to facilitate opportunities for 4.1 crore youth over five years
2. Scheme A provides a one-month wage subsidy of

up to 15,000 in three instalments to first-time employees, expected to benefit 210 lakh youth.

3. Scheme B focuses on incentivizing additional employment in the manufacturing sector with benefits linked to EPFO contributions over the first four years of employment, aimed at 30 lakh youth.
4. Scheme C provides a reimbursement of up to 3,000 per month for two years towards EPFO contributions for each additional employee hired, with an expected impact on 50 lakh persons.
5. The Centrally Sponsored Skilling Scheme aims to upgrade 500 ITIs and skill 20 lakh youth over five years.
6. The Internship Scheme in Top Companies is designed to provide work experience to 1 crore youth across 500 top companies, with each intern receiving an allowance of 5,000 per month.

Choose the correct combination of statements:

- A. 1, 2, and 3
- B. 1, 2, and 4
- C. 1, 2, 3, 4 and 6
- D. 2, 3, 4 and 6

31. Which of the following statements accurately describe the key initiatives and allocations announced in the Union Budget?

1. A credit guarantee scheme for MSMEs has been introduced, along with an increase in the MUDRA loan limit from 10 lakh to 20 lakh and a new digital footprint-based assessment model for MSMEs.
2. Significant investments have been made in urban housing, roads, irrigation, and rural development to boost infrastructure development.
3. An allocation of 1.52 lakh crore has been made for agriculture, focusing on high-yielding and climate-resilient crop varieties, natural farming, and digital public infrastructure.
4. An allocation of 1.48 lakh crore has been set aside for education, with a focus on skilling, employment, and educational infrastructure.
5. New programs for women empowerment have been introduced, emphasizing skill development and increasing workplace participation.

Choose the correct combination of statements:

- A. 1, 2, and 3
- B. 1, 3, and 4
- C. 2, 4, and 5

D. 1, 2, 3, 4, and 5

32. Which of the following statements about the CIC is/are correct?

1. The CIC is appointed for a term of five years from the date on which he assumes charge of his office or till he attains the age of sixty-five years, whichever is earlier.
2. The CIC is eligible for reappointment.

Which of the statements given above is/are correct?

- A. Only 1
- B. Only 2
- C. Both
- D. None

33. With reference to the 'Gram Nyayalaya Act', which of the following statements is/are correct?

1. As per the Act, Gram Nyayalayas can try only civil cases and not criminal cases.
2. The Act allows local social workers as mediators/conciliators.

Select the correct answer using the code given below.

- A. Only 1
- B. Only 2
- C. Both 1 and 2
- D. Neither 1 nor 2

ANSWER

- | | | | |
|---------|---------|---------|---------|
| 1. (D) | 11. (A) | 21. (C) | 31. (D) |
| 2. (D) | 12. (C) | 22. (B) | 32. (D) |
| 3. (D) | 13. (D) | 23. (B) | 33. (B) |
| 4. (B) | 14. (D) | 24. (A) | |
| 5. (B) | 15. (A) | 25. (A) | |
| 6. (D) | 16. (B) | 26. (A) | |
| 7. (D) | 17. (B) | 27. (A) | |
| 8. (D) | 18. (C) | 28. (A) | |
| 9. (C) | 19. (D) | 29. (D) | |
| 10. (B) | 20. (B) | 30. (C) | |

UPSC Prelims Mock Paper

1. Juice Jacking, recently seen in the news, a cautionary message issued advising mobile phone users against charging their devices using public ports by which of the following institutions?
- Indian Cybercrime Coordination Centre
 - National Cybercrime Training Centre
 - Reserve Bank of India
 - Ministry of Electronics and Information Technology
2. Consider the following statements about Dachigam National Park:
- It was declared a National Park in 1981.
 - The park is home to the critically endangered Kashmir Stag, also known as Hangul.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
3. With reference to the Grey Zone Warfare, consider the following statements:
- It refers to a state of open conflict between nations.
 - Grey zone tactics involve covert or indirect actions that fall below the threshold of conventional warfare.
 - China's military presence in the South China Sea is an example of grey zone warfare.
- How many of the statements given above are correct?
- Only one
 - Only two
 - All three
 - None
4. Consider the following statements:
- The Sangeet Natak Akademi Award is conferred annually since 1947.
 - The Sangeet Natak Akademi Fellowship is also known as Akademi Ratna.
 - The Akademi Fellowship is limited to 40 recipients at any given time.
- How many of the statements given above are **incorrect**?
- Only one
 - Only two
 - All three
 - None
5. Consider the following statements:
- MethaneSAT is a satellite designed to track methane emissions from various sources.
 - Methane is a greenhouse gas more potent than carbon dioxide.
 - The data collected by MethaneSAT will be confidential and not accessible to the public.
- How many of the statements given above are correct?
- Only one
 - Only two
 - All three
 - None
6. Which of the following statements best describes the term 'Orans'?
- Densely populated urban centers with historical significance.
 - Patches of forest protected by communities due to religious beliefs and serving community needs.
 - Large-scale government-managed wildlife reserves.
 - Areas designated for industrial development.
7. Consider the following statements regarding International Women's Day:
- The theme for 2024 is "Invest in Women: Accelerate Progress" to address economic disempowerment.
 - The first International Women's Day was celebrated in the United States in 1909.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
8. Consider the following statements about Liquid Funds:
- Liquid funds invest in short-term debt instruments with a maturity of up to 2 months.
 - Liquid funds offer high potential returns due to their low-risk nature.

Which of the statements given above is/are **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

9. Consider the following statements regarding Agni-5 ballistic missile:

1. It is India's longest-range ballistic missile with a range exceeding 8,000 kilometers.
2. It is equipped with MIRV technology, allowing it to carry multiple warheads for independent targeting.
3. It is crucial for India's strategic deterrence, providing a credible nuclear threat.

How many of the above statements are correct?

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

10. With reference to Indian Renewable Energy Development Agency (IREDA), consider the following statements:

1. It is a Mini Ratna (Category-I) non-banking financial institution.
2. Its core function is to promote new and renewable sources of energy.
3. It is not registered with the Reserve Bank of India (RBI).

How many of the statements given above are correct?

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

11. With reference to the Citizenship (Amendment) Act, 2019, consider the following statements:

1. Its aim is to provide citizenship to undocumented migrants from Iran, Ukraine and Pakistan.
2. It reduces the residence requirement for naturalization of all undocumented migrants from twelve years to just six years.

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

12. Consider the following statements with respect to Very Short-Range Air Defence System (VSHORADS) Missile:

1. It is a Man Portable Air Defence System (MANPAD) developed by India in collaboration with Israel.
2. It is designed to destroy hostile aircraft, drones and helicopters with a range up to 60 km.

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

13. Consider the following statements with respect to Hydrogen Fuel Cells:

1. It generates electricity by utilising the chemical energy contained in hydrogen and releases only pure water.
2. Proton exchange membrane (PEM) fuel cell is a type of Hydrogen Fuel Cells.
3. The hydrogen fuel cell-powered vessels generate zero emission and zero noise.

How many of the statements given above is/are

incorrect?

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

14. Consider the following passage:

It can be commonly spotted in the Himalayan region and east and central Asia. It is known as the "Rice Bird" in China due to its habit of wintering in rice fields. It has been categorised as a critically endangered species by the IUCN Red list.

The above passage best describes which of the following birds?

- (a) Chinese Grouse
- (b) Himalayan Quail
- (c) Yellow-Breasted Bunting
- (d) Asian Koel

15. Consider the following statements with respect to

National Bank for Financing Infrastructure and Development (NaBFID):

1. It is an All India Financial Institution (AIFI) established by an Act of Parliament.
2. In India, All India Financial Institutions are regulated and supervised by the Reserve Bank of India.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

16. Agalega Island, seen in the news recently, is latitudinally located between which of the following countries/islands?

- (a) Seychelles and Maldives
- (b) Maldives and Mauritius
- (c) Madagascar and South Africa
- (d) Maldives and Lakshadweep

17. Consider the following pairs:

Minerals **Major Applications**

1. Beryllium – Manufacture of computer, electronic and optical products.
2. Tellurium – Solar power, thermoelectric devices and Rubber vulcanising.
3. Zircon – High value chemical manufacturing and electronics sector.
4. Germanium – Optical fibres, satellites and solar cells.

How many of the pairs given above is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

18. Consider the following statements with respect to ADITI Scheme:

1. It aims to develop about 30 deep-tech critical and strategic defence technologies.
2. It falls under the iDEX (Innovations for Defence Excellence) framework of Department of Defence Production (DDP).
3. It is an initiative of the Ministry of Defence.

How many of the statements given above is/are correct?

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

19. Consider the following statements with respect to Parliamentary Privileges:

1. Legislators are immune from prosecution against bribery charges in connection with their speech and votes made in Parliament and Legislative Assemblies.
2. They are essential to ensure freedom of speech and expression in the House.
3. The Parliamentary Privileges does not apply to the elections of the Rajya Sabha.

How many of the statements given above is/are **incorrect**?

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

20. Most of the world's deserts are located in the western margins of continents in the subtropics. This is because?

1. The tropical easterly winds become dry by the time they reach the western margins of the continents.
2. Presence of warm ocean currents along the western shores of continents.

Which of the above statement is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

21. Consider the following statements:

1. In a floating exchange rate system, market forces determine the value of a currency.
2. The demand for rupees in the forex market depends on foreign demand for Indian exports.
3. Currency appreciation encourages a country's export activity as its products and services become cheaper to buy.

How many of the above statements is/are correct?

- (a) Only one
 (b) Only two
 (c) All three
 (d) None
- 22.** Which one of the following statements best describes the term 'Social Cost of Carbon'?
- (a) Efforts put in by a climate refugee to adapt to live in a new place.
 (b) Contribution of an individual person to the carbon footprint on the planet Earth.
 (c) Long-term damage done by a tonne of CO₂, emissions in a given year.
 (d) Burning of fossil fuels for a country to provide goods and services to its citizens.
- 23.** In the context of Macro Economics, which of the following statements is correct regarding the Inflation premium?
- (a) Profit earned by creditors due to inflation.
 (b) Increase in tax revenue due to inflation.
 (c) The bonus brought by inflation to the borrowers.
 (d) Appreciation of domestic currency.
- 24.** Consider the following statements regarding Rupee Appreciation.
- Rupee can appreciate because of strong foreign portfolio investments into the country.
 - Avoiding the appreciation of the rupee can strengthen the domestic manufacturing industry.
- Which of the above statements is/are correct?
- (a) 1 only
 (b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2
- 25.** 'Monetary Base', managed by the Reserve Bank of India, consists of:
- Deposits held by the Government of India with RBI.
 - Sum total of the capital of all financial institutions regulated by RBI.
 - Notes and coins in circulation with the public.
- How many of the above statements is/are correct?
- (a) Only one
 (b) Only two
 (c) All three
 (d) None
- 26.** Consider the following :
- Increased private investments
 - Inflation
 - Increase in money supply
 - Rise in employment rates
- Which of the above can occur in an economy due to deficit financing by the government?
- (a) 1 and 2
 (b) 1, 3 and 4
 (c) 2 and 4
 (d) 1, 2, 3 and 4
- 27.** Consider the following statements regarding indirect taxes.
- Indirect tax is a tax levied by the Government on goods and services and not on the profit or revenue of an individual.
 - Indirect taxes are termed regressive taxing mechanism because they are charged at higher rates than direct taxes.
 - Cascading effect of tax is a situation wherein the end-consumer of any goods or service has to bear the burden of the tax to be paid on the previously calculated tax and as a result would suffer an increased price.
- How many of the above statements is/are correct?
- (a) Only one
 (b) Only two
 (c) All three
 (d) None
- 28.** Consider the following statements:
- Garo and Khasi hills are extensions of Purvanchals in Meghalaya forming water divide between Brahmaputra and Barak River.
 - 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 **incorrect**?
- (a) 1 only
 (b) 2 only
 (c) Both 1 and 2

(d) Neither 1 nor 2

29. Consider the following statements:

1. The folds of the Great Himalayas are symmetrical in nature.
2. The longitudinal valley lying between lesser Himalaya and the Shiwaliks are known as Duns.
3. The part of the Himalayas lying between Sutlej and Kali rivers is known as Kumaon Himalayas.

Which of the above statements is/are correct?

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

30. Consider the following :

1. Nallamala hills
2. Palkonda hills
3. Javadi Hills
4. Nagari hills

Arrange the above hills of Eastern Ghats from South to North direction:

- (a) 1-2-3-4
- (b) 2-1-3-4
- (c) 4-3-2-1
- (d) 3-4-2-1

31. The ocean has several micronutrients, minerals and trace metals like cadmium or copper. Trace metals are supplied to oceans via:

1. Atmospheric deposition
2. Continental shelf interaction
3. Continental run-offs
4. Hydrothermal activities

Select the correct answer:

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

32. Sea level rise occurs mainly due to:

1. Melting of ice sheets in Greenland and Antarctica
2. Melting of glaciers on land
3. Expansion of warm ocean waters

Select the correct answer:

- (a) 1 and 2

(b) 2 and 3

(c) 1 only

(d) 1, 2 and 3

33. Consider the following statements:

1. Western disturbances are periodic influxes of moisture-laden clouds from the Mediterranean that are common during winter and cause rain in northern India.
2. The elevated temperatures and warmer waters in the Arctic Ocean reduces the intensity of Western disturbances over North-India.

Which of the above statements is/are **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

34. Consider the following statements regarding Sargasso Sea.?

1. The Sargasso Sea is located entirely within the Pacific Ocean.
2. It is bounded by four ocean currents forming an ocean gyre.
3. It is the only sea without a land boundary.

Which of the above statements is/are correct?

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

35. Consider the following statements about 'Fiat Money'.

1. It is a currency that a government has declared to be legal tender.
2. Its value increases during hyperinflation.
3. It is backed by a physical commodity.

Which of the above statements is/are **incorrect**?

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

36. The Cash Reserve Ratio refers to:

- (a) the share of Net Demand and Time Liabilities that banks have to hold as part of their cash reserves.

- (b) the ratio of cash holding to reserves of banks.
- (c) the share of Net Demand and Time Liabilities that banks have to hold as cash deposit with the RBI.
- (d) the share of Net Demand and Time Liabilities that banks have to hold as liquid assets.
- 37.** Consider the following statements:
1. Nominal GDP is calculated in a way such that the goods and services are evaluated at some constant set of prices.
 2. If the Real GDP changes, it implies that the volume of production is undergoing changes.
 3. The ratio of nominal GDP to real GDP gives us an idea of how the prices have moved from the base year to the current year.
- Which of the above statements is/are correct?
- (a) 1 and 2
(b) 1 and 3
(c) 2 and 3
(d) 1, 2 and 3
- 38.** Consider the following statements regarding Open Market Operations:
1. Open Market Operations refers to buying and selling of bonds issued by the Government in the open market.
 2. Selling of a bond by RBI leads to increases in the total amount of reserves in the economy and thus increases the money supply.
- Which of the above statements is/are **incorrect**?
- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2
- 39.** The term Stagflation is often seen in news. The conditions associated with Stagflation are:
1. Inflation
 2. Low economic growth
 3. High employment
- Select the correct answer :
- (a) 2 and 3
(b) 1 and 2
(c) 1 and 3
(d) 1, 2 and 3
- 40.** Which of the following statements best describes the term Mezzanine financing?
- (a) It is a financial instrument used by companies for short term loans.
- (b) It is a financing mechanism used by venture capitals to invest in high growth start-ups.
- (c) It is a financial instrument which is a hybrid of debt and equity financing.
- (d) None
- 41.** Which one of the following heritage site is known especially for its rathas (temples in the form of chariots), mandapas (cave sanctuaries), such as the famous 'Descent of the Ganges'?
- (a) Group of Monuments at Hampi
(b) Group of Monuments at Pattadakal
(c) Group of Monuments at Mahabalipuram
(d) Khajuraho Group of Monuments
- 42.** Consider the following statements:
1. Pichwai art originated in Nathdwara, near Udaipur, and is traditionally created on cloth, typically khadi.
 2. The main image portrayed in Pichhwai paintings is Lord Shiva.
- 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
- 43.** Consider the following statements:
- Statement 1:**
Recently UNESCO has added two Indian cities, Gwalior and Kozhikode, to its Creative Cities Network.
- Statement 2:**
Kozhikode was selected for the recognition for a year following its commitment to grow and maintain the urban forests.
- Which one of the following is correct in respect of the above statements?
- (a) Both Statement 1 and Statement 2 are correct and Statement 2 is the correct explanation for Statement 1
- (b) Both Statement 1 and Statement 2 are correct but Statement 2 is not the correct explanation

for Statement 1

- (c) Statement 1 is correct but Statement 2 is not correct
 (d) Statement 1 is not correct but Statement 2 is correct

44. Consider the following statements regarding Vijayanagara ruler Krishnadevaraya.

1. Krishnadevaraya belonged to the Saluva Dynasty.
2. He defeated the Sultans of Bijapur, Golconda and the Bahmani Sultanate.
3. The great south Indian mathematician Nilakantha Somayaji lived in the Empire of Krishnadevaraya.

How many of the above statements are correct?

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

45. With reference to Hampi the Capital City of Vijayanagara Empire, Consider the following statements:

1. It was a part of the Mauryan Empire back in the third century BC.
2. It is located near the Netravati River.
3. It is a pilgrimage centre of the Hindu religion.

How many of the above statements are correct?

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

46. Who of the following founded a new city on the south bank of a tributary to river Krishna and undertook to rule his new kingdom as the agent of a deity to whom all the land south of the river Krishna was supposed to belong?

- (a) Amoghavarsha I
 (b) Ballala II
 (c) Harihara I
 (d) Prataparudra II

47. Consider the following statements regarding Carnatic Wars.

1. The First Carnatic War (1744-48) was triggered

by the War of the Austrian Succession.

2. Under the treaty of Aix-la-Chapelle, Madras was restored to the French.
3. The battle of Wandiwash ended the French threat to the British in India.

How many of the above statements are correct?

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

48. With reference to “Hydrogen-enriched compressed natural gas” (HCNG), consider the following statements:

1. It reduces emissions of CO up to 70%.
2. Its cost is less than CNG.
3. It enables up to 5 % savings in fuel.

Which of the statements given above is/are correct?

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

49. Consider the following statements regarding Chola Kingdom.

1. The Chola kingdom was confined only to the present-day Tamil Nadu and parts of Karnataka.
2. The Chola dynasty was founded by the king Vijayalaya.
3. Rashtrakutas and Chalukyas were contemporaries to the Chola Kingdom.

Which of the above statements is/are correct?

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

50. 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

51. Consider the following statements:

1. They developed the Vesara style of architecture.
2. Their structural temples exist at Aihole, Badami

and Pattadakal.

3. Their administration was highly centralized.

The above statements most accurately refer to?

- (a) Cholas
- (b) Chalukyas
- (c) Cheras
- (d) Pandyas

52. For simultaneous elections to be implemented, changes need to be made in which of the following related articles of the Constitution?

- 1. Duration of Houses of Parliament
- 2. Dissolution of Lok Sabha by the President
- 3. President's Rule

How many of the above statements is/are correct?

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

53. 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 must 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 **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

54. Consider the following statements:

- 1. Both GDP and GVA measure national income.
- 2. The GDP calculates India's national income by adding up all the expenditures in the economy.
- 3. If the government earned more from taxes than what it spent on subsidies, GVA will be higher than GDP.

Which of the above statements is/are correct?

- (a) 1 and 3 only
- (b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

55. Consider the following :

- 1. Government Final Consumption Expenditure
- 2. Gross Fixed Capital Formation
- 3. Net Exports
- 4. Private Final Consumption Expenditure

Which of the above are the Sub-components of GDP?

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

56. 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 **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

57. 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. 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.

Which of the above statements is/are correct?

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

58. Consider the following statements regarding the instruments of Monetary Policy:

- 1. Repo rate is the interest rate at which the Reserve Bank provides liquidity to banks against the

collateral of government and other approved securities under the liquidity adjustment facility (LAF).

2. The Reserve Bank also conducts variable interest rate reverse repo rate as necessitated under the market conditions.
3. Liquidity Adjustment Facility (LAF) consists of only overnight auctions.

Which of the above statements is/are correct?

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

59. 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 **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

60. Consider the following statements regarding the ordinance-making power of the Governor:

1. He can issue ordinances only on those subjects on which the state legislature can make laws.
2. An ordinance issued by him has the same force and effect as an act of the state legislature
3. Although he has the power to promulgate ordinance, he cannot withdraw an ordinance.

How many of the above statements is/are correct?

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

61. Consider the following statements:

1. If the rupee's exchange rate falls, it implies that

buying American goods would become cheaper.

2. In a free-market economy, the exchange rate is decided by the supply and demand for rupees and dollars.
3. In India, the exchange rate is fully determined by the market.

Which of the above statements is/are correct?

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

62. Consider the following statements :

1. Widening trade deficit
2. Foreign investors pulling out funds from Indian stock market
3. Rapid increase of crude oil prices in the global market.

Which of the above can lead to weakening of Indian rupee?

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

63. Consider the following :

1. Debt
2. Equity
3. Derivatives
4. Hybrid securities

Participatory notes (P-notes) investments in the Indian market is allowed in which of the above instruments?

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

64. Consider the following statements regarding Wholesale Price Index (WPI) and Consumer Price Index (CPI) inflation:

1. CPI measures inflation at retail level paid by the consumer, whereas prices used for compilation of WPI are collected at ex-factory level for manufactured products.
2. A significant proportion of WPI item basket represents manufacturing inputs and

intermediate goods which are not part of the CPI item basket.

3. The WPI basket consists of services like housing, education, medical care, recreation etc. which are not part of CPI basket.

Which of the above statements is/are correct?

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

65. Consider the following statements:

- Phillips Curve is an economic concept stating that inflation and unemployment have a stable and inverse relationship.
- Stagflation is an economic scenario where an economy faces high inflation and low growth and high unemployment at the same 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

66. Consider the following :

- Recovery of loans
- Sale of shares in Public Sector Undertakings (PSUs)
- Fresh loans given by Government.

Which of the above forms the part of Capital Receipts?

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

67. In budget documents, the term 'fiscal prudence' is often mentioned. What does it imply?

- Harmonization of monetary and fiscal targets.
- Not taking any new government initiative to lower government costs.
- Reducing debt to GDP ratio of the country.

Select the correct answer:

- (a) 1 and 2
 (b) 2 and 3
 (c) 3 only
 (d) 1 and 3

68. Consider the following statements:

- At the Mahabodhi temple, the Buddha is sitting in the bhoomi-sparsha mudra, where his hand is pointing towards the ground.

- Bhoomi-sparsha mudra signifies preaching.

Which of the above statements is/are correct?

- (a) 1 only
 (b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

69. Consider the following:

- Lightning stroke
- Reaction of Ultraviolet radiation with ozone
- Bacteria living in soil

Which of the above sources add nitrogen oxide into the atmosphere?

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

70. Consider the following statements regarding Temperate Deciduous Biome:

- They are found in areas with warm moist summers and cool winters.
- Soils of temperate forests are podzolic and fairly deep.
- The trees shed their leaves in the summer season.

Which of the above statements is/are correct?

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

71. Consider the following statements:

- These are the most widespread forests in India.
- These forests are also found in the north-eastern states along the foothills of Himalayas.
- They spread over regions which receive rainfall between 70-200 cm.

The above statements are related to:

- (a) Montane forests
 (b) Tropical Thorn forests
 (c) Semi Evergreen forests

(d) Tropical Deciduous Forests

72. Consider the following statements regarding Photochemical smog:

1. Photochemical smog 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 **incorrect**?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

73. Consider the following statements regarding measurement of Biodiversity:

1. Alpha diversity: It refers to the diversity within a particular area or ecosystem.
2. Beta diversity: It is a comparison of diversity between ecosystems.
3. Gamma diversity: It is a measure of the overall diversity for the different ecosystems within a region.

Which of the above statements is/are correct?

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

74. 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.

Which of the above statements is/are correct?

- (a) 1 and 3
- (b) 2 and 3
- (c) 1 and 2
- (d) 2 only

75. Consider the following statements regarding Appropriation Bill:

1. Appropriation Bill allows the Central government to draw funds from the Public Accounts of India for its operational requirements.
2. Appropriation Bill is a money bill.
3. The defeat of an Appropriation Bill in the parliament would necessitate resignation of the government.

Which of the above statements is/are correct?

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

76. Consider the following statements regarding Contempt of Court.

1. Contempt of court acts as a reasonable restriction to the freedom of speech and expression under Article 19 of the Constitution.
2. It is mandatory for the Supreme Court to take Attorney General's consent in initiating a criminal contempt proceeding.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

77. Consider the following :

1. Votes on Account
2. Vote of Credit.
3. Exceptional grants

Which of the above is not mentioned in the Constitution of India?

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

78. Consider the following:

1. Representation of states in Parliament
2. Fundamental Rights and Directive Principles of State Policy
3. Goods and Services Tax Council

Which of the above provisions of the Constitution of India is/are amended by Special Majority of Parliament and Consent of States?

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

79. Consider the following ecosystems:

1. Tropical evergreen
2. Tropical deciduous
3. Taiga
4. Tundra

The correct sequence in decreasing order of the albedo values of these ecosystems is:

- (a) 4-3-1-2
- (b) 3-4-1-2
- (c) 4-3-2-1
- (d) 3-4-2-1

80. Consider the following statements regarding Ocean Currents:

1. Ocean currents are the slow surface movement of water in the ocean.
2. Ocean currents are affected by the configuration of the ocean.
3. Ocean currents assist in maintaining the Earth's heat balance.

Which of the above statements is/are correct?

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

81. Consider the following:

1. Rocks of Same Age Across the Oceans
2. Jig-Saw-Fit of shorelines of Africa and South America
3. Placer Deposits
4. Tillite deposits

Which of the above evidences supported the continental drift?

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

82. Consider the following statements regarding 'Savanna Climate':

1. It is characterized by an alternate hot, rainy

season and cool, dry season.

2. The Hausa tribes are found here.
3. Majority of the areas have lateritic soils which support good crops.

Which of the above statements is/are correct?

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

83. Consider the following statements regarding Karst topography:

1. Karst topography is commonly associated with carbonate rocks.
2. It occurs in temperate, tropical, alpine and polar environments.
3. Karst systems are rarely vulnerable to ground water pollution as it acts as natural water filtration system.

Which of the above statements is/are correct?

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

84. Consider the following statements regarding Earthquake Waves:

1. P-waves move faster than S-waves.
2. P-waves travel only through solid medium whereas S-waves travel through both solid and liquid medium.
3. The denser the material, the lower is the velocity of these waves.

Which of the above statements is/are correct?

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

85. Consider the following statements:

1. Wind patterns are clockwise in southern hemisphere and anticlockwise in northern hemisphere.
2. The directions of wind patterns in northern and southern hemisphere are governed by Coriolis effect.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

86. The eastern coasts of continents within the tropics have much heavier rainfall than the west coasts. This is because:

- (a) The trade winds cause greater precipitation on the eastern coasts.
- (b) All western coasts fall in the rain shadow zone.
- (c) Both a and b.
- (d) Neither a nor b.

87. Consider the following statements regarding cyclones and anticyclones:

1. Cyclones originate at the area of low pressure, while anticyclones originate at high pressure area.
2. Both cyclones and anticyclones are associated with clouds, rain and thunderstorms.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

88. Frontal cyclones are most likely to occur in:

- (a) Equatorial regions
- (b) Polar regions
- (c) Tropical regions
- (d) Mid-latitude regions

89. Consider the following statements regarding classification of money market:

1. **Call Money** - borrowing or lending in unsecured funds on overnight basis.
2. **Notice Money** - borrowing or lending in unsecured funds from 15 days to one year.
3. **Term Money** - borrowing or lending in unsecured funds for upto 14 days.

Which of the above statements is/are correct?

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

90. Consider the following statements regarding PARAKH initiative:

1. PARAKH has been set up as the organisation under Central Board of Secondary Education.
2. Its mandate is to work on bringing the school examination boards across the States and the Union Territories on a common platform.
3. PARAKH will act as a common platform for interaction of all concerned stakeholders in order to promote equity in performance and equivalence in assessment of students.

How many of the above statements is/are correct?

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

91. Consider the following statements:

1. The official language committee is a statutory committee, whose duty is to review the progress made in the use of Hindi for the official purposes of the Union and submit a report to the President.
2. The official languages Act, 1963 provides for the continuance of English indefinitely as official language along with Hindi for the official purposes of the Union and for transaction of business in Parliament.
3. The official language committee is mandated to recommend the medium of instruction in universities and professional institutions.

How many of the above statements is/are correct?

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

92. Consider the following statements regarding Quantum computing:

1. Quantum computer works on the principle of Superposition, which makes it possible for the qubit to exist in both 0 and 1 state simultaneously.
2. As more qubits are added, the processing capability of the quantum computer increases exponentially.
3. Building a quantum computer requires very

cold temperatures and extreme isolation.

How many of the above statements is/are correct?

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

93. Consider the following statements:

1. When compared to Earth, the moon is significantly depleted of volatile elements such as sodium.
2. Sodium is the only element that can be observed through telescope in the lunar atmosphere.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

94. Consider the following statements:

1. Aditya L-1 mission was carried into space by Launch Vehicle Mark-3.
2. One of the objectives of the Aditya L-1 mission is to examine coronal mass ejections (CMEs), which are large expulsions of plasma and magnetic fields from the Sun's corona.
3. While the corona is the Sun's outermost layer, the chromosphere is just below it.

How many of the above statements is/are correct?

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

95. Consider the following statements regarding Lagrange points:

1. There are more than ten Lagrange points between any two-celestial body system.
2. The points can be used as 'parking spots' for spacecraft in space to remain in a fixed position with minimal fuel consumption.
3. Between the Earth and the Sun, a satellite can occupy any of the Lagrangian points.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three

(d) None

96. Consider the following statements:

1. Western Himalayas is one of the most dangerous seismic zones in the world, because of the huge amount of energy stored along the fault lines due to the continuous interaction of different tectonic plates.
2. Seismic waves travel significantly faster than the speed of light.
3. With the present technological advancements, the predictions of future earthquakes can be easily made.

How many of the above statements is/are correct?

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

97. Consider the following statements:

1. Quantum Technology is based on the principles of quantum theory, which explains the nature of energy and matter on the atomic and subatomic level.
2. National Mission on Quantum Technologies & Applications (NM-QTA) is being implemented by the Department of Science & Technology (DST).
3. In India, the Centre has declared quantum technology as a "mission of national importance".

How many of the above statements is/are correct?

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

98. The most common chemicals used for cloud seeding are :

1. Silver iodide
2. Potassium iodide
3. Dry ice
4. Sodium Chloride

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three

(d) All four

99. The UNESCO Intangible Cultural Heritage can be manifested in which of the following domains?

1. Traditional craftsmanship
2. Social practices
3. Oral traditions and expressions
4. Knowledge and practices concerning nature

How many of the above options is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

100. Consider the following:

1. International Plant Protection Convention (IPPC)
2. Codex Alimentarius Commission
3. Pacific Plant Protection Organization
4. World Organization for Animal Health (OIE)

Which of the above are recognised as "Three Sisters" by the World Trade Organization's (WTO) Sanitary and Phytosanitary Measures (SPS) Agreement?

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

ANSWER

1	c	21	b	41	c	61	b	81	d
2	c	22	c	42	a	62	d	82	b
3	b	23	c	43	c	63	d	83	c
4	a	24	c	44	b	64	b	84	a
5	b	25	b	45	a	65	c	85	b
6	b	26	d	46	c	66	a	86	a
7	c	27	b	47	b	67	c	87	a
8	a	28	a	48	b	68	a	88	d
9	b	29	a	49	b	69	b	89	b
10	b	30	d	50	d	70	b	90	b
11	d	31	d	51	b	71	d	91	b
12	d	32	d	52	c	72	b	92	c
13	d	33	b	53	b	73	d	93	a
14	c	34	a	54	b	74	b	94	b
15	c	35	b	55	d	75	b	95	b
16	b	36	c	56	a	76	a	96	a
17	d	37	c	57	b	77	d	97	c
18	c	38	b	58	b	78	b	98	d
19	b	39	b	59	a	79	c	99	d
20	a	40	c	60	b	80	b	100	b

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