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Fortnightly Current Affairs Magazine

January, 2024
Issue : 02
Year : 06 | No. : 02
Price: ₹ 70

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- Non Alignment Movement
- Assisted Reproductive Technologies
- Lakshadweep : Coastal Tourism
- NTCA Assessment on Tigers
- Free Movement Regime
- Aromatic Plantations
- Sohrai Paintings
- Upskilling Rural Youth
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Best wishes.

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Complete Fortnightly for UPSC and PCS Exam



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Central Government's Drive Towards an Insurgency-Free India by 2024

With the dawn of the New Year, a significant milestone in country's internal and national security has been accomplished. The recent signing of a peace agreement between the Government of India, Assam, and the ULFA militants marks a momentous event, considering the prolonged stalemate in peace negotiations with the ULFA militant group. The ULFA militants were so deeply entrenched in extremist ideologies against the Indian Union, that they didn't shy away from engaging with revolutionary organizations from other states such as Uttar Pradesh, as well as insurgent groups operating in Myanmar, Bangladesh, and China, for any collaborative anti-India initiatives. However, with India embarking on a pivotal year, the Central Government has initiated crucial measures to foster a climate of peace and security, aiming to fulfil the vision of an insurgency-free nation.

- Despite the absence of ULFA (I), a staunch component of ULFA headed by Paresh Barua, from the meeting on December 29th, the redirection of other cadres away from violence also stands as a significant achievement. This shift is poised to exert immense pressure on the ULFA (I) faction, sowing seeds of uncertainty among its members. The financial aid extended under the Peace Accord by the Modi government becomes a pivotal factor motivating surrenders. The peace negotiations with ULFA ensure the preservation of Assam's cultural heritage while promising enhanced employment opportunities, fostering the integration of Assam's populace into the developmental mainstream. The government remains committed to facilitating the transition of those ULFA members abandoning armed movements into the realm of overall development.

Government's efforts for peace in Northeast:

- A peace accord is pivotal for maintaining peace and stability in Assam. It asserts that regardless of whether it is the demand for Bodoland or a divided Karbi Anglong state, Gorkhaland or Greater Nagalim, Garoland, compromising the provincial integrity and sovereignty of India is absolute. However, the central government and the states governments need to device a comprehensive strategy involving efficient dialogue, offering development, security, limited freedom, and shared sovereignty with certain conditions to address the issues of the Northeast.
- **Integration of Dimasa Tribal Areas:** In January 2023, an MoU was signed between the Government of India and the militant organization Dimasa National Liberation Army of Assam. The central government, in collaboration with the Government of Assam, allocated Rs 500 crore for the development of Dimasa tribal areas. This initiative led to the surrender of 179 militants who sought secession from Assam, expressing a collective commitment to the establishment of Dimasaland.
  - This move builds upon previous efforts to counter insurgency in Assam, marking a proactive approach towards fostering lasting peace and development in the region.
- **Bodo Accord of Assam Peace Accord, 2020:** Signed on January 27, 2020, this accord aimed to resolve the longstanding 50-year Bodo separatist movement. Under this, the Government of India pledged comprehensive development for the Bodo region, allocating a special fund of Rs 1500 crore to ensure the community's welfare. Additionally, the Accord proposed offering Rs 5 lakh compensation to families of those who lost their lives in the Bodo movement.
  - This commitment led to the surrender of 1615 Bodo militants (NDFB Cadres) and accord's provisions convinced militants from NDFB (P), NDFB (RD), and NDFB (S), alongside the All Bodo Students Union, to renounce violence.
- **Tackling Karbi separatism in Assam:** The demand for a separate Karbi state in Assam once posed a significant challenge. However, in 2021, the Government of India initiated a peace agreement with Karbi militant organizations, compelling their surrender along with weapons.
  - Alongside an inclusive development strategy, the Central Government allocated a special economic package of Rs 1000 crore for the development of Karbi areas, resulting in the surrender of 5 Karbi militant organizations.
  - To address some of the Karbi people's aspirations, the Karbi Anglong Autonomous Council was established on April 1, 1995, elevating the status of the Karbi Anglong

District Council under Schedule 6 of the Indian Constitution. This move aimed to partially fulfil the aspirations of the Karbi people within the constitutional framework.

History of insurgency in Assam:

- Militant violence in Assam traces its origins to the emergence of the United Liberation Front of Assam (ULFA) in 1979. Six radical youth, envisioning a sovereign, independent, and socialist Assam, formed ULFA in Assam's Sivasagar district on April 7, 1979. They deemed the Indian government as colonial, vowing to combat it, fueled by the belief that Assam's abundant tea, oil, forests, and minerals were exploited while neglecting the welfare of its local populace.
- This rebellious mindset perceived due to illegal Bangladeshi immigrants. They posed a threat to Assamese culture, language, resources, and economy, spurring subversive activities. ULFA, under its leadership, escalated these activities significantly throughout the 1980s. The era witnessed a surge in violent actions where ULFA targeted and abducted tea plantation owners and businessmen to fund weapon procurement and send their cadres for training in Myanmar.
- Establishing alliances with entities like Pakistani ISI, Afghan Mujahideen, LTTE, and Bangladeshi extremist organizations, ULFA targeted Indian military personnel. In response, the government launched operations like Operation Bajrang and Operation Rhino. Consequently, ULFA was banned under the Unlawful Activities Prevention Act, 1967, in 1990.
- The group later split into two factions in 2010. One, led by Arabinda Rajkhowa, advocated for dialogue with the government, while the other, known as ULFA Independent under Paresh Barua's leadership, opposed negotiations. The ULFA Independent faction received Chinese support for its anti-India activities, perpetuating tensions and challenges in the region.

Solution to separatist demands in North East:

- Rationalization of key laws such as Armed Forces Special Powers Act, Panchayati Raj (Extension to Tribal Areas) Act, 1996, and Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, as per the demand of the circumstances and time.
- **Strengthening local bodies:** Crucial for safeguarding the rights of ethnic communities in the region.
- **Public Perception Management strategy:** To discourage extremism and insurgency, focusing on reshaping the mind-set of the local populace.
- **Engagement with factions of extremist organizations:** Involving financial inclusion and basic infrastructure development to curb extremism.
- **Diligent implementation of accords:** To prevent potential militant unrest due to delayed facilities promised by the Central Government.
- **Legislation and faith:** Need to emphasize North Eastern tribes' legitimate demands, cultural aspects, and land ownership while advancing development projects.

Conclusion:

- The Trinity Peace Agreement, signed in Delhi between the Government of India and ULFA (United Liberation Front of Assam), signifies the astute approach of the Indian government towards this longstanding issue. Over the past few years, a distinctive strategy by the contemporary central government has been evident in handling extremist groups across the country. Notably, efforts are underway to engage in dialogue, instilling a sense of dignity among those inclined towards peace steering them towards compliance with government frameworks.
- Nevertheless, it is crucial for the Central Government to diligently implement the promises made comprehensively. Delays in fulfilling proposed facilities may incite militants to reconsider the agreed truce.
- Recently, the President of All Bodo Student Union highlighted the incomplete implementation of the Bodo Accord 2020. Any discontent among militants should alert the government about potential repercussions and necessary precautions.
- The intricacies of the Northeast Insurgency demand both the Central and State Governments' concerted efforts to prepare militants for peace accords. Simultaneously, vigilance is necessary as anti-Indian elements persist in instigating animosity among these groups.
- Furthermore, emphasizing legitimate demands and entitlements of North Eastern tribes, including aspects like culture, civilization, ethnic identity, religion, primitive dispute resolution methods, and land ownership, while advancing development projects, requires legislation infused with values and sensitivity. Fostering a culture of trust is crucial for the inclusive development in the North East and its harmonious and integrated future.



Lakshadweep & Development of Coastal Tourism in India

The discourse on fostering coastal tourism in Lakshadweep gained momentum after Indian Prime Minister Narendra Modi visited Lakshadweep on January 3. Lauding Lakshadweep as a remarkable tourist destination for Indians, the Prime Minister's endorsement sparked comparisons with the Maldives on social media. This drew displeasure from Maldivian citizens and some ministers, as discussions arose about choosing Lakshadweep over the Maldives. This partly is fuelled by India's displeasure with Maldives supporting China. The aftermath of PM Modi's visit has spurred conversations about promoting coastal tourism in India, with a specific focus on Lakshadweep. While certain Indian coastlines allure foreign tourists, developing island areas, like Lakshadweep, into prime tourist spots is deemed essential, reflecting a growing interest in exploring diverse and captivating destinations within India.

- The urban beaches of Visakhapatnam, Mumbai, Chennai, Goa, Kerala, and Odisha stand as perennial tourist magnets, drawing visitors from around the globe and significantly bolstering tourist numbers. Beyond serving as picturesque attractions, these coastal havens play a vital role in generating income for local coastal communities, contributing substantially to the regional economy. However, it is crucial to extend this focus to include the development of areas like Lakshadweep, Andaman and Nicobar, and Daman Diu. The imperative lies in enhancing coastal infrastructure to not only attract tourism but also improve the quality of life for residents in these island areas, fostering sustainable development and prosperity.

Lakshadweep as tourist destination:

- In Lakshadweep, Agati Island, situated 45.9 km from Kochi, west of Kavaratti Island, is renowned for its coral reefs and popular snorkeling activities. Recognized as one of the most beautiful lagoons, it captivates visitors with its charm. Bangaram Island, a tourist hotspot, gains international acclaim for its coastline illuminated by phosphorescent plankton, offering a mesmerizing blue glow. Kadmat, another significant destination, has become a premier scuba diving center, welcoming both Indian and non-Indian visitors. Known for its stunning sunrise and sunset views, Kadmat Island adds to Lakshadweep's allure. To boost tourism further, the Indian government plans to construct a new airfield on Minicoy Island, one of the largest in Lakshadweep. Besides its picturesque landscapes, Minicoy serves as a key hub for tuna fishing, featuring colorful racing boats known as Jadhoni, creating a unique and vibrant attraction in the region.

Emphasis on coastal tourism and other forms of tourism:

- During the second G-20 Tourism Working Group meeting in Siliguri, West Bengal, India's Union Minister of Tourism and Culture unveiled the ambitious vision of establishing a trillion-dollar tourism economy by 2047. This vision aligns with the celebration of 'Visit India Year 2023,' a dedicated initiative to showcase the unique facets of Indian tourism.
- Furthermore, the Ministry of Tourism has formulated a draft National Tourism Policy, designed as a comprehensive framework for sustainable and responsible tourism development. The policy aims to enhance the tourism framework, support the industry, and align with India's pursuit of the Sustainable Development Goals 2030.
- The commitment extends to strengthening tourism through niche products such as coastal, wildlife, adventure, cultural, rural, archaeological, spiritual tourism, and positioning India as a sought-after wedding destination. This collective effort underscores the government's dedication to fostering diverse tourism experiences and contributing to the country's economic growth.

Coastal pollution as a hindrance to coastal tourism:

- India has a coastline spanning 7,517 kilometres. It is spread across nine states and borders a 2.02 million square kilometre of Exclusive Economic Zone (EEZ). India's nine coastal states house a population of 420 million. Of this, about 330 million live on or within 150 km of a coast.
- Three of the four metro cities of India are located on the coast. Coastal districts are home to nearly 14.2 per cent of the country's total population. Around 95 per cent of India's trade by volume and 68 per cent by value is executed through waterways. Currently, India is reeling under the marine debris crisis, which poses serious threats to its particularly rich marine biodiversity. About 15,343 tonnes of waste dumped in the south

Asian seas daily are generated from 60 major Indian cities, according to UNEP.

- The presence of marine litter posses a significant threat to the marine and coastal ecosystem thus hampering tourism. Citizens and Urban Local Bodies are growing increasingly conscious of this threat. Joggers and runners across the country are embracing the practice of plogging on beaches, which entails picking up litter while jogging or running. This activity not only helps in keeping the beaches clean but also promotes a healthy lifestyle.

Initiatives to develop coastal tourism:

- As urbanization gains momentum, addressing the treatment of wastewater from coastal cities becomes increasingly vital. The urgency stems from the potential adverse effects of untreated wastewater on marine ecosystems and the livelihoods of those dependent on them. Under the Swachh Bharat Mission Urban, robust wastewater treatment systems are playing a pivotal role in mitigating these risks for coastal communities.
- These initiatives aim not only to safeguard marine health but also to ensure the well-being of people visiting these areas. The comprehensive approach includes investments in new infrastructure and the promotion of sustainable practices among local businesses and residents, collectively contributing to cleaner and healthier coastal waters.
- **Clean beaches:** For the development of tourism in coastal areas in India, it is important to keep many things in mind. As part of Puneet Sagar Abhiyaan, a Government of India initiative, the Indian Navy conducted coastal cleaning activities in various parts of Visakhapatnam on 1 August 2023 in which more than 750 service and defense civilians from the Eastern Naval Command participated. It is important to take care of coastal cleaning activities in all the coastal areas in India.
- Under Eco Vizag Campaign, various initiatives have been implemented to tackle pollution and maintain the cleanliness of its coastline. Six beach cleaning vehicles have been purchased in Vizag. These vehicles are manufactured using advanced German technology and is capable of effectively cleaning a 100 meter wide and two kilometer long stretch of beach within a period of eight hours. Additionally, these vehicles may be deposited in 10-inch deep layers of sand on the beach.
- Mumbai's 'Clean Coast Mumbai', the Clean Beach initiative in Chennai also focus on preserving the pristine condition of the Marina beach through mechanized cleaning methods. Goa's Clean Sea program has successfully used beach cleaning machines to protect its famous beaches. These initiatives highlight the commitment of these coastal areas regarding environmental protection and adoption of innovative technologies to ensure the sustainability of their coastal areas.
- **Waste treatment:** In Kollam district, both Kollam Beach and Thangassery Port exemplify effective coastal waste management systems. German technology-powered machines, including surf rake machines, play a pivotal role in cleaning Kollam Beach. Waste collected is deposited in a dedicated chamber, ensuring proper disposal. Thangassery showcases an innovative waste management approach, featuring a mechanized aerobic composting unit for organic waste treatment. This system transforms organic waste into high-quality fertilizer through aerobic composting. Furthermore, the 'Haritkarma Sena' services are employed for the treatment of inorganic waste, demonstrating a comprehensive strategy for waste management in these coastal areas.
- **Blue-Flag beaches:** Following the protocols for clean, safe and environment-friendly beaches, marinas and sustainable boating tourism operators, India has 12 Blue Flag Beaches namely, Odisha's Golden Beach, Gujarat's Shivrajpur Beach, Kappad Beach of Kerala, Diu's Ghoghla Beach, Radhanagar Beach in Andaman & Nicobar, Karnataka'a Kasadgod & Padubidri beaches, Rushikonda Beach of Andhra Pradesh, TN's Kovalam Beach, Eden Beach of Puducherry, Lakshwadeep's Minicoy Thundi & Kadmat beaches.
- In the inaugural session of the second G-20 Tourism Working Group meeting held in Siliguri, West Bengal, India's Union Minister of Tourism and Culture had said that India has a vision of making a trillion dollar tourism economy by 2047. India celebrated 'Visit India Year 2023' to promote the uniqueness of Indian tourism. The Ministry of Tourism has also prepared a draft National Tourism Policy. The new policy is a holistic framework for the sustainable and responsible development of the tourism sector in the country and aims to improve the state of the framework for tourism development in the country, support tourism industries and support India's efforts to achieve the Sustainable Development Goals 2030. The commitment is to strengthen tourism. The Government of India is working on various niche products like coastal tourism, wildlife tourism, adventure tourism, cultural tourism, rural tourism, archaeological tourism, spiritual tourism, wedding destination.

Rural Development & The Role of NABARD

The sixth NABARD Crafts Mela was recently organised in Vijayawada by the National Bank for Agriculture and Rural Development (NABARD), Andhra Pradesh Regional Office.

Rural India: Sneak-peak from History

'India lives in its village'

- Mahatma Gandhi's quote perhaps aptly defines the essence of India's demographic structure, while simultaneously showcasing the enduring focus eminent leaders like Rabindranath Tagore, Mahatma Gandhi, BR Ambedkar, Lal Bahadur Shastri, and others held on rural development throughout history.
- Rabindranath Tagore's forward-thinking philosophy, evident in works such as Palli Prakriti (Nature of the Village), Atma Shakti (Self Empowerment), Samabayneeti (Co-operative Policy), Rasiar Chithi (Letters from Russia), Ghare Baire (Home and the World) envisioned rural empowerment, cooperative policies, and self-empowerment, far ahead of his time. His speeches at some conferences like the Provincial Conference at Nator (1897), Provincial Conference of Pabna Congress (1908), and Pitrismriti (Memoirs of my Father) written by his son Rathindranath Tagore, popularly known as 'Rathithakur', also highlight his philosophies. Rooted in real-life experiences, Tagore highlighted the plight of peasants dependent on village moneylenders and landowners.
- Gandhi echoed Tagore's sentiments, advocating rural-centric development, notably elaborated in his works like 'Village Swaraj'. He wanted to bring about rural reconstruction with sound scientific and spiritual values. Through his 18-point constructive programme in 1935, he successfully implemented his rural reconstruction activities in the Sewagram Centre in Wardha.
- The post-independent India also saw a heavier tilt towards rural development, where Lal Bahadur Shastri underscored the pivotal role of farmers in the nation's economy through his iconic slogan 'Jai Jawan, Jai Kisan' and the fifth five-year planning revolved around attacking rural poverty, and strategies for agriculture with the government slogan of 'Gareebi Hatao, Desh Bachao'.
- Several other major efforts were made toward further enhancing and consolidating the rural economy ever since and among them one such step was the establishment of the National Bank for Agriculture and Rural Development or NABARD.

Establishment of NABARD:

- The Economic Survey 2022-23 notes that 65 per cent (2021 data) of the country's population lives in rural areas and 47 per cent of the population is dependent on agriculture for livelihood. The Government's emphasis has been on improving the quality of life in rural areas to ensure more equitable and inclusive development. The aim of engagement of the government in the rural economy has been "transforming lives and livelihoods through proactive socio-economic inclusion, integration, and empowerment of rural India."
- Government acknowledged the pivotal role of institutional credit in bolstering the rural economy, prompting the formation of the Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD). Chaired by Shri B. Sivaraman, a former Member of the Planning Commission, this committee was established on 30th March 1979.
- Upon the Committee's interim report recommendation, Parliament sanctioned the establishment of the National Bank for Agriculture and Rural Development (NABARD) via Act 61 of 1981. This distinct financial institution was formed specifically to address credit-related rural development issues.
- Subsequently, NABARD assumed the agricultural credit functions of RBI and the refinancing roles of the former Agricultural Refinance and Development Corporation (ARDC). Dedicated to serving the nation, it was inaugurated by the late Prime Minister Smt. Indira Gandhi on 5th November 1982.
- As the leading Development Financial Institution (DFI) in agriculture, NABARD boasts several achievements, including spearheading India's SHG-bank linkage program, implementing the service area approach, revitalizing short-term cooperatives based on Vaidyanathan Committee recommendations, and promoting Farmers' Producer Organisations (FPOs). NABARD's interventions have brought substantial transformations to agriculture and rural development in the country.

NABARD Assistance to Rural Development:

- **Credit extension:** NABARD offers refinance, loans, and advances up to 12 months to Cooperative Banks and Regional Rural Banks for production, marketing, and procurement. It also extends long-term and medium-term refinance to institutions to support investment activities of farmers and rural artisans etc.
- In 2022-23, NABARD disbursed Rs. 158,905 crore for short-term (ST) financing and Rs. 107,015 crore for long-term (LT) financing to support banks.
- NABARD introduced 4 special refinance schemes post-COVID for agriculture & rural sectors. They

include schemes for PACS as MSC, watershed/ Wadi project beneficiaries, WASH, and Micro Food Processing activities.

- Additionally, the Government of India established LTRCF with NABARD, disbursing Rs. 14,875 crores during 2022-23 for long-term refinance support exclusively for Cooperative Banks and Regional Rural Banks in agriculture activities.

Infrastructural Assistance:

- **Rural Infrastructure Development Fund:** RIDF was set up with NABARD in 1995-96 by the RBI out of the shortfall in lending to the priority sector by scheduled commercial banks for supporting rural infrastructure projects. NABARD disbursed Rs. 37317 crore during 2022-23 under RIDF.
- **NABARD Infrastructure Development Assistance (NIDA):** NIDA provides flexible long-term loans to well-managed public sector entities for rural infrastructure. It finances various projects like agriculture, rural connectivity, renewable energy, power transmission, water & sanitation, and social & commercial infrastructure.
- **Warehouse Infrastructure Fund and Geo Tagging of Warehouses:** The lack of storage infrastructure leads to post-harvest losses and price volatility, affecting farmers and consumers, especially with perishable crops like tomatoes, onions, and potatoes.
- In 2013-14, the Government of India initiated the Warehouse Infrastructure Fund (WIF) of Rs. 5,000 crore with NABARD. By March 31, 2023, Rs. 8,674 crore had been disbursed through this fund.
- NABARD further created a web-based Agri-Storage Information System, capturing infrastructure details and geo-spatial coordinates and thus geo-tagging the warehouses

Developmental Assistance:

- **Tribal Development Fund:** As of March 31, 2023, 968 projects were sanctioned under this fund, benefiting 6.09 lakh families. These projects facilitated beneficiaries to earn livelihood income by taking up cultivation of fruit trees, other horticultural crops and field crops in 5.71 lakh acre area.
- **Climate Change Adaptation Projects:** Grant assistance amount of Rs. 2.53 crore was disbursed under Climate Change Fund during 2022-23 for supporting activities aimed at addressing climate change impacts, adaptation and mitigation measures, awareness generation, knowledge sharing and for facilitating sustainable development
- **Financial Inclusion Fund:** FIF implements multiple schemes to create demand for banking services and develop payment infrastructure at the grassroots level. It adopts a differentiated strategy to address regional disparities, aiming for inclusive and equitable financial inclusion nationwide, bridging the gap between the demand and supply sides of financial inclusion.
- **Microfinance Sector and Self-Help Groups:** NABARD launched the Self Help Group-Bank Linkage Programme (SHG-BLP) in 1992 which has empowered 134.03 lakh Self-Help Groups (SHGs) and 16.19 crore rural households in India as of 31 March 2023.
- Further, it has launched two skill-building and capacity-building programmes for SHG members viz., Micro Enterprise Development Programme (MEDP) and Livelihood and Enterprise Development Programme (LEDP).
- **Promotion Of GI Products:** NABARD provides end-to-end support in facilitating pre-registration as well as post-registration activities for GI products.
- The prominent products supported by NABARD for GI registration are Nizamabad Black Pottery (Uttar Pradesh), Gulabi Meenakari (Uttar Pradesh), Ladakh Wood Carvings (Jammu & Kashmir), Udupi Saree (Karnataka), Kathputlis (Rajasthan), Ringal Craft (Uttarakhand) etc.
- So far, NABARD has provided support for 211 products out of which, 49 have been granted registration by the Department for Promotion of Industry and Internal Trade (DPIIT).

Conclusion:

Although NABARD has been instrumental in Rural India's development, some challenges persist. One of the significant challenge for NABARD is reaching out to the vast rural population and creating awareness about its refinancing programs. Many potential beneficiaries in remote areas are unaware of the financial support available to them. The scarcity of formal financial institutions like banks and cooperatives in rural regions further limits NABARD's outreach. A robust banking infrastructure is crucial for NABARD to effectively channel funds into the rural economy through its refinancing initiatives. Prevalent reliance on informal credit sources, such as moneylenders, further complicates matters. With restricted access to formal credit, rural communities often resort to these informal channels. Encouraging these communities to transition from informal sources to formal financial institutions becomes a key challenge for NABARD. This can be addressed by creating awareness about the superior terms and conditions offered by formal institutions, ultimately steering rural areas towards more sustainable financial practices.



National Tiger Conservation Authority: Assessment of the status of Tiger Conservation

The tiger holds the esteemed position in India for not only being India's national animal but as a flagship species crucial for maintaining environmental equilibrium. To safeguard these majestic creatures, it becomes imperative to formulate impactful policies and execute them with precision. Overcoming challenges on the path of tiger conservation is vital. Such conservation endeavours not only showcase the commitment of the country's environment ministry but also necessitate active involvement from wildlife organizations, environmental NGOs, and ordinary citizens.

- Critical aspects of tiger preservation include ensuring their food security within designated reserves, implementing policies to shield them from infectious diseases, and guaranteeing access to water bodies. Additionally, a stringent prohibition on human activities in the core sectors designated for tiger breeding is essential to create a conducive environment for their reproduction. Although, India's Project Tiger has made excellent progress in tiger conservation over the past five decades, but challenges such as poaching, habitat loss, etc. continue to threaten tiger conservation. Conserving tigers is crucial not only for the preservation of these large wild animals but also for the broader impact on biodiversity, sustainable development goals, and ecosystem adaptation. By ensuring that large animals like tigers, lions, and elephants remain in their natural habitats, we contribute to maintaining a balanced ecosystem. Adequate funding is essential to fulfil their needs within these habitats. Effective tiger conservation policies can also mitigate human-animal conflicts, particularly in residential and rural areas. This integrated approach addresses both the well-being of these majestic creatures and the harmony between humans and wildlife.

Role of National Tiger Conservation Authority:

- The National Tiger Conservation Authority (NTCA) has been entrusted with the task of taking necessary interventions to conserve tigers by providing them with the necessary powers and jurisdiction. It diligently monitors tiger reserves to prevent encroachments and illegal activities that could impact the tiger population. In this context, the Authority recently released an annual report, providing insights into the current status of tiger conservation and the associated challenges. This report serves as a comprehensive assessment of the nation's efforts towards safeguarding these magnificent creatures.
- The National Tiger Conservation Authority is continuously working with the forest departments of tiger range states to protect tiger habitats and corridors, securing the future of India's tigers and their ecosystem for future generations.



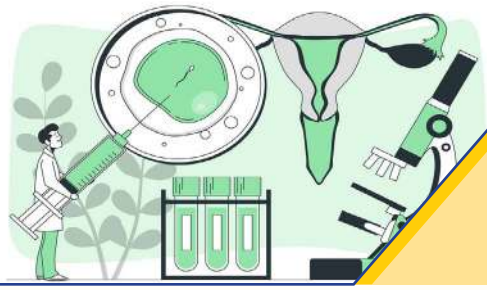
- **NTCA's assessment on the Death of Tigers:** The National Tiger Conservation Authority's recent report clarified that, contrary to a mistaken report, 177 tigers, not 202, had died in India by December 25, 2023. This phenomenon is more pronounced in states with high tiger populations and functioning habitats at their carrying capacity. Maharashtra recorded the highest deaths at 45, followed by Madhya Pradesh (40), Uttarakhand (20), Tamil Nadu (15), and Kerala (14). Notably, 54 percent of these fatalities occurred outside tiger reserves. Despite the average wild tiger's lifespan being 10-12 years, the report highlights that 40 percent of the 2023 tiger deaths involved cubs and sub-adults, groups naturally prone to higher mortality due to tiger land tenure dynamics. Importantly, more

than 77 percent of confirmed cases attribute the deaths to natural causes or causes unrelated to poaching.

- **Management Effectiveness Evaluation (MEE) of Tiger Reserves:** National Tiger Conservation Authority has been conducting "Management Effectiveness Evaluation" (MEE) at an interval of 4 years to assess the effectiveness of management of tiger reserves. Adopted from the framework of the World Commission on Protected Areas of IUCN, the global organization working for the conservation of nature and natural resources, Management Effectiveness Evaluation has emerged as a new methodology. It is the most important tool to assist and improve the management perspective of tiger reserves and their associated landscape connectivity. The 5th cycle of Management Effectiveness Evaluation was conducted for 51 tiger reserves during 2022. The report was released during the 'Global Tiger Day Event 2023' at Corbett Tiger Reserve in Uttarakhand. A total of 12 tiger reserves have achieved the 'Excellent' category, 21 tiger reserves are in 'very good' category, 13 tiger reserves are in 'good' category and 5 tiger reserves are in 'fair' category.
- **NTCA's view on Tiger Restoration:** Amidst the challenges of climate change and zoonotic diseases, active management is imperative to revive wild tiger populations in reserves where they've recently vanished. Tiger rehabilitation initiatives have been initiated as part of this strategy, with successful reintroductions in various reserves. Rajaji Tiger Reserve (Uttarakhand), Madhav National Park (Madhya Pradesh), Mukundara Hills Tiger Reserve, and the western part of Ramgarh Vishdhari (Rajasthan) have witnessed such efforts. The focus extends to Buxa Tiger Reserve, where tiger reintroduction is in progress. The translocation plan, involving bringing tigers from other reserves to those where they've become extinct, is a promising approach contributing to effective conservation outcomes. This strategic initiative ensures the restoration and sustained growth of tiger populations in their natural habitats.
- **Announcement of new tiger reserve:** National Tiger Conservation Authority is continuously hearing the proposals of new tiger reserves from the state governments and their forest departments for the conservation of tigers and where necessary, new tiger reserves are being created in the country. With the announcement of the new tiger reserve "Rani Durgavati" in Madhya Pradesh, the total number of tiger reserves in the country has increased to 54 with an area of more than 78,000 square kilometres and covering more than 2.30 percent of India's geographical area. In this process, there is a discussion on recognizing the Mhadei Tiger Reserve, Goa and making it the 55th tiger reserve in India.

Other initiatives for Tiger conservation:

- **Conservation Assured Tiger Standards (CA|TS) Recognition of Tiger Reserves in India:** Conservation Assured Tiger Standards (CA|TS) is a set of criteria that allows tiger sites to check whether their Management will lead to successful conservation of tigers. In the current year, six tiger reserves namely Kali, Melghat, Navegaon – Nagzira, Pilibhit and Periyar have been awarded CA|TS recognition. So far, a total of 23 tiger reserves in India have received CA/TS recognition.
- **Launch of International Big Cats Alliance:** India has launched the International Big Cats Alliance (IBCA) to conserve the seven big cats or members of the cat family – tiger, lion, leopard, snow leopard, cheetah, jaguar and puma that inhabit our planet. The alliance aims to reach countries that include the natural habitats of the tiger, lion, snow leopard, puma, jaguar and cheetah. The International Big Cat Alliance will further strengthen global cooperation and efforts to conserve wild species, especially big cats.
- **Bilateral Cooperation with Tiger Range Countries:** To promote the cross-border conservation of tigers in India and Bangladesh in the Sundarban landscape, a bilateral meeting was held in Kolkata, West Bengal on 14 February 2023. To promote tiger conservation in Cambodia, both India and Cambodia have signed a MoU on "Cooperation in Biodiversity Conservation and Sustainable Wildlife Management Restoration Strategy of the Tiger and its Habitat". As part of the bilateral initiative, the Indian delegation visited Cambodia to assess the field situation and capacity-building needs for the tiger restoration initiative in Cambodia.
- India has achieved a significant milestone in tiger conservation, now hosting over 70 percent of the world's wild tiger population. According to the 5th cycle of the All India Tiger Estimates 2022 Summary Report, the country boasts a minimum of 3167 tigers. Through advanced data analysis, including camera-trapped and non-camera-trapped areas, the upper limit is estimated to be 3925, with an average of 3682 tigers, showcasing an impressive annual growth rate of 6.1 percent. This conservation success is attributed to the pioneering initiatives led by the National Tiger Conservation Authority, in collaboration with State Governments.



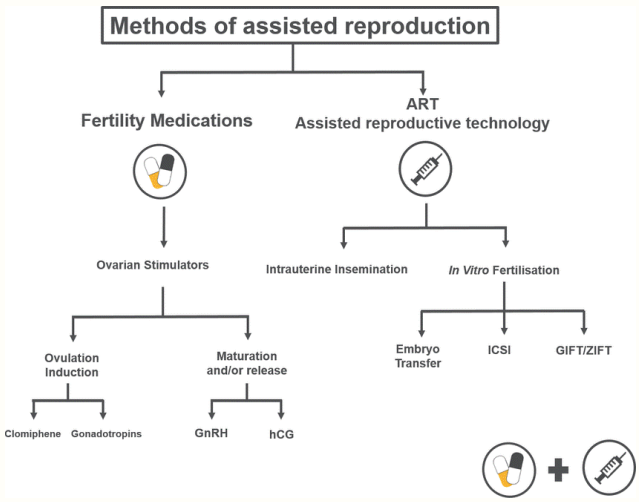
Assisted Reproductive Technology: Health Ministry Initiatives

The Ministry of Health and Family Welfare has emphasized the importance of collecting data on individuals utilizing assisted reproductive technology (ART). The ministry aims to gather information on various categories of couples and, notably, single women opting for ART. This initiative becomes particularly relevant following the implementation of the Surrogacy Act, 2021. The focus is on compiling data on single women engaging in surrogacy and utilizing ART to conceive, aiming to ensure the appropriate and lawful use of these reproductive technologies.

- The Ministry of Health and Family Welfare (MoHFW) has requested all states and union territories to provide data on single women, including those who are divorced or widowed, utilizing assisted reproductive technology (ART) to overcome infertility. This initiative is not only a matter of ethical concern but also aims to ensure transparency in the usage of ART. Recognizing the importance of informing unmarried women about the true purpose of engaging with this technology, the ministry underscores the need for accurate information sharing to empower patients in making informed decisions regarding their treatment.
- Moreover, the creation of a distinct category for surrogacy among single and unmarried women will enable a more precise assessment of ART clinic success rates. MoHFW has highlighted that single women are increasingly seeking information about procedures like egg freezing, representing a novel and evolving aspect of the fertility sector. The long-term impact of such emerging steps in fertility treatments is yet to be fully understood.

Highlights of the Assisted Reproductive Technology Act, 2021:

- The National Assisted Reproductive Technology and Surrogacy Board has been constituted under the Assisted Reproductive Technology Act, 2021 with the objective of regulating ART Clinics and Assisted Reproductive Technology Banks. To prevent misuse of ART, this Act enacts several provisions. It excludes unmarried, single and widowed men, unmarried heterosexual couples, trans persons and same-sex couples (whether married or cohabiting) from availing the services of Assisted Reproductive Technology. However, presently it is these categories of people who are also more likely to use this technology. This exclusion is relevant because the Surrogacy Act also prohibits the above mentioned persons from resorting to surrogacy as a method of reproduction.



Definition and process of ART under ART Act:

- The ART Act was passed in Parliament to protect women from exploitation and curb abuses in the assisted reproductive technology (ART) industry. This law has a provision to bring all parties involved in ART services within the ambit of the law and make registration of every ART clinic and 'egg-sperm bank' mandatory. For violation of rules, there is a provision of imprisonment of five to twelve years and a fine of Rs 5 lakh to 25 lakh.
- According to the ART or Surrogacy Act, 2021, Assisted Reproductive Technology (ART) encompasses procedures where gametes are transferred into a woman's reproductive system to facilitate pregnancy. This includes gestational surrogacy, in vitro fertilization, and gamete donation, involving sperm or egg donation. ART services are provided through two entities: ART clinics, offering related treatments and procedures, and ART banks, responsible for collecting, testing, and storing gametes.
- Eligibility conditions for donors are outlined in the Act. Men donating semen should be between 21 to 55 years, while women donating eggs should be within the age range of 23-35 years.

The Act stipulates that a woman can donate eggs only once in her lifetime, with a maximum limit of 7 eggs. Moreover, ART banks are prohibited from charging more than one commission to a couple for a single donor.

Surrogacy (Regulation) Rules, 2022 and Court's Observation:

- Kerala High Court had sought response from the Central and State governments on a plea filed by a married couple challenging the amendment to Surrogacy (Regulation) Rules, 2022 which prohibits the use of donor gametes (egg or sperm) for surrogacy. Justice Devan Ramachandran issued notice to the Kerala State Aided Reproductive Technology and Surrogacy Board as well as the Central and State governments. The petitioners, a married couple, faced fertility challenges as the wife was suffering from Systemic Lupus Erythematosus (SLE), a chronic inflammatory disease affecting various organs. After unsuccessful attempts at assisted reproductive technology, the wife's health deteriorated, leading to a heart attack in 2021. The petition said that since she was advised against pregnancy due to her cardiac condition, the couple sought surrogacy, but the wife's premature ovarian failure required the use of donor gametes.
- However, the recent amendment in paragraph 1(d)(I) of Form No. 2 under Rule 7 of the Surrogacy (Regulation) Rules, 2022, prohibits the use of donor oocytes (ovary cells), thereby preventing the petitioners from going ahead with surrogacy. The petitioners argued that the amendment contradicts Rule 14(A) of the Surrogacy Rules, which recognizes the absence of a uterus or associated conditions as a medical indication for the need for gestational surrogacy.
- Notably, the Delhi High Court on October 9 held that the changes made in the surrogacy law prohibiting the use of donor gametes in surrogacy processes violate the Surrogacy (Regulation) Act and the Assisted Reproductive Technology (Regulation) Act.
- **Supreme Court on the reproductive rights of single women:** Last year, the Supreme Court sought the Central Government's response to a petition advocating for the allowance of surrogacy for unmarried women. The petitioner, Supreme Court lawyer Neha Nagpal, argued for the right of single, unmarried women to choose surrogacy for having children. This request was made during the case of Neha Nagpal vs Union of India and others. The petition said, "the petitioner wishes to secure her right to avail of surrogacy and experience motherhood on her own terms without State interference in her personal life. The petitioner has the right to procreate and motherhood even without marriage".
- According to the petition, the existing ban on surrogacy for unmarried women is viewed as a violation of reproductive rights, the right to start a family, meaningful family life, and the right to privacy. Some experts argue that the prohibition on single women opting for surrogacy may infringe upon Article 14 (right to equality) and Article 21 (right to life) of the Constitution.

Way Forward:

- India's Ministry of Health and Family Welfare acknowledges the positive impact of integrating new technologies into assisted reproductive technology (ART), citing substantial benefits for patients and heightened awareness regarding infertility causes and treatments. Addressing the 27th annual Indian Society of Assisted Reproduction (ISAR) conference digitally in Bhopal last year, the Health Minister of India emphasized that the proposed Assisted Reproductive Technology and Surrogacy (Regulation) Bill aims to enhance medical care and ensure improved protection for patients.
- Fertility treatment has burgeoned into a significant industry in India, marked by numerous clinics employing assisted reproductive technology, including IVF. Recognizing the necessity for effective regulation in this domain, the Government of India enacted a law. The use of ART techniques, notably IVF, involves injections that can impact women's health, necessitating a comprehensive regulatory framework.
- Furthermore, the intricate processes of embryo transfer and embryo banking demands legal oversight. While ART has provided newfound hope for those grappling with infertility, it has concurrently spurred legal, ethical, and social complexities. Various ART services such as gonadal donation, intrauterine insemination (IUI), IVF, ICSI, PGD, and surrogacy are now offered in India, yet the absence of standardization is a notable gap.
- To address these issues, the Assisted Reproductive Technology Act, 2021, emerges as a pivotal step forward. This legislation signifies a concerted effort to establish a regulatory framework, ensuring uniformity, ethical practices, and legal adherence across the spectrum of ART services in the country.



Non-Alignment in India's Foreign Policy: Significance

India has steadfastly adhered to the principle of non-alignment in its foreign policy ever since it gained independence. Recently, the 19th Non-Aligned Movement Summit took place in Kampala, Uganda, where representatives from 120 countries engaged in discussions aimed at fostering mutual cooperation among nations in Asia, Africa, and Latin America—collectively referred to as the Global South. Notably, the summit addressed vital issues such as the imperative need for reforms in the United Nations, as well as in global financial institutions like the IMF, World Bank, and World Trade Organization. Against the backdrop of current geopolitical rivalries, the summit highlighted the importance of coordinating efforts among third-world countries to navigate these challenges effectively.

Beginning of the idea of Non-Alignment and India:

- **Cold war Politics:** Non-alignment was the result of Cold War politics. The Cold War, characterized by a clash of ideologies between the United States and the Soviet Union, fuelled a global struggle for influence. The United States advocated for the worldwide promotion of the capitalist liberal economy and ideology, urging countries to align with its principles. In contrast, the Soviet Union sought to spread the communist socialist ideology and establish a uniform economic system across nations. This ideological conflict escalated into an arms race, prompting the creation of military alliances such as NATO, SEATO, CENTO, and the Warsaw Pact. The emergence of these alliances divided the world into two opposing groups, intensifying the power dynamics that affected the entire globe. The pursuit of strategic interests and power politics during this period had profound implications, leading to a world deeply influenced by the rivalry between these two ideological and military blocs.
- **Priorities for India:** Amid the Cold War rivalry, both the United States and the Soviet Union anticipated India aligning with their respective camps. However, India was busy setting its priorities as an independent country in 1947 and the biggest challenge before India was national integration and nation building. The aftermath of the partition with Pakistan brought about dire communal consequences, and challenges like Naga separatism in North-East India posed additional hurdles for the Indian Union. Beyond geopolitical considerations, India grappled with a myriad of domestic issues, including poverty, unemployment, illiteracy, malnutrition, food insecurity, and the threat of natural disasters and famine. Developing industries and steering the Indian polity and federal structure in a new direction were paramount. In this context, India's leadership recognized that addressing these priorities took precedence over involvement in global power politics. Consequently, India made a strategic decision to refrain from aligning with either the capitalist or communist ideologies. Instead, the focus was directed inward, with India opting for an independent and impartial foreign policy.
- **Self determination in third word Countries:** During that era, the struggle for self-determination reverberated across Asia, Africa, and Latin America, with African nations in a decisive battle against colonialism, imperialism, apartheid, and racism. Recognizing the global significance of these movements, India strategically positioned itself as a leader of the Third World, aligning with countries fighting for freedom. India's decision to avoid aligning with either the American or Soviet block stemmed from a nuanced understanding of potential challenges. Joining the American bloc would have meant operating on United States' terms, while alignment with the Soviet Union could have subjected India to various other pressures. Given India's evolving diplomacy and strategic acumen, it sought a balanced approach that would safeguard its interests.
- At the time, India's diplomatic capabilities were not as robust as they are today. Consequently, India aimed to navigate the complexities of global politics by avoiding exclusive alliances and sought to amplify its voice in the international community through an independent and neutral foreign policy, maintaining flexibility to engage with both power blocks in alignment with its evolving interests.

Relevance of Non-Alignment in India's foreign policy:

- India has adopted non-alignment in two forms:
  - First, as a movement for a just global order for the Third World countries.
  - Second, as a principle of India's foreign policy.
- The relevance of non-alignment can be known only by proper analysis and understanding of these two forms.

- **NAM as a principle of foreign policy:** Examining Non-Aligned Movement (NAM) as a guiding principle of foreign policy reveals that principles may be adjusted for national interests. India, prioritizing the goal of securing the Indo-Pacific region, leans towards collaboration with the United States, Britain, and other European nations. Despite limitations with Russia in this context, aligning with the American group becomes natural and necessary. It's crucial to note that India's engagement in the Indo-Pacific doesn't signify abandonment of non-alignment. India's pragmatic approach adapts to evolving geopolitics while upholding its commitment to non-alignment in broader contexts. Accusations of forsaking non-alignment may be misleading, as India navigates to safeguard its national interests in a complex geopolitical landscape.
- In today's globalized era, nations seek strategic connections for national interests and security. Despite this trend, India remains committed to neutrality in factional politics. This neutrality is evident in India's approach to conflicts like Russia-Ukraine and Israel-Palestine. India recognizes the need for strong ties with the United States and Israel to counterbalance countries like China, Pakistan, Turkey, Malaysia, and Myanmar. Initiatives such as QUAD, I2U2, IPEF, and the Indian Ocean Trilateral Alliance showcase India's diplomatic pursuit in this regard.
- Maintaining neutrality from factions becomes difficult when aligning with a faction serves national interests. However, in a global system where factional engagement is unavoidable, India has pragmatically evaluated both options. Currently, India sees no hindrance in affiliating with groups aligned with positive goals to fulfil energy needs, bolster global standing, and safeguard interests in the Indian Ocean. This approach, labelled as non-alignment, should not be misconstrued as irrelevant; rather, it reflects India's strategic and logical consideration of its global partnerships.
- **Non-alignment as a movement:** When NAM is examined as movement it must be kept in mind that every movement has a goal, methodology, vision and approach. The movement of non-alignment to liberate the Third World countries from colonialism, imperialism, apartheid, racism and their new forms was carried out under the leadership of Nehru, Nasser, Joseph Tito, Sukarno and Nkrumah. This movement started with the fight for the rights of self-determination of Asia, Africa and Latin American countries and in this, countries like India also had to face a lot of trouble. During the Cold War era, India did not become a part of the US block, as a result United States grew closer to Pakistan. US also signed a military pact with Pakistan in 1954 and also worked towards getting support from the IMF. Pakistan became closer to US by associating itself with the US-led military alliance called CENTO and due to which, till the year 2005, India did not get anything from US on the issue of cooperation in Kashmir and nuclear energy program. Today when necessary amendments are made in the foreign policy principle of non-alignment, United States stands ready to provide all kinds of help to India and teach a lesson to Pakistan.



- In contemporary times, the Non-Aligned Movement (NAM) has gained increased relevance. Leveraging this platform is imperative to effectively address emerging global threats such as cybercrime, cyber terrorism, and narco-terrorism. Non-aligned countries must unite to safeguard the interests of developing nations against the economic and protectionist policies of developed countries. Looking ahead, NAM will maintain its significance by playing a crucial role in the conservation of marine biodiversity, combating challenges like piracy in the Indian Ocean, and acting as a collective voice on issues such as global warming and climate change. The proactive involvement required for these endeavours should be viewed not as an obstacle but as a necessary and integral part of sustaining the movement's pertinence in the future.



Government's Push for Research & Investment in Earth Sciences

"Earth science is the study of the Earth's structure, properties, processes, and four and a half billion years of biotic evolution. Understanding these phenomena is essential to maintenance of life on the planet. The expanding world population demands more resources; faces increasing losses from natural hazards; and releases more pollutants to the air, water, and land. Sustaining our existence requires scientific understanding of the natural materials and processes linking the geosphere, hydrosphere, atmosphere, and biosphere."

Context:

Recently, the Union Cabinet Chaired by the Prime Minister has approved the overarching scheme "PRITHvi VIgyan (PRITHVI)" of Ministry of Earth Sciences (MoES), for implementation during the period from 2021-26 at an overall cost of Rs. 4,797 crore to boost earth science research. Initiative promises to enhance India's resilience in the face of climatic and environmental challenges. This scheme enhances research, modeling, and services in weather, climate, oceans, and Polar Regions. MoES provides vital weather, climate, and hazard-related services, aiding disaster preparedness.

About PRITHVI Scheme:

- PRITHVI stands for "Promoting Research in Earth Systems Science, Technology, & Human Resource Development". This Scheme includes five existing sub-schemes.
  - **ACROSS (Atmosphere & Climate Research-Modelling Observing Systems & Services):** It focuses on long-term observations and advanced modelling systems for weather and climate predictions.
  - **O-SMART (Ocean Services, Modelling Application, Resources and Technology):** It targets sustainable exploration and utilization of marine resources, utilizing cutting-edge technology.
  - **PACER (Polar Science and Cryosphere Research):** It aims to explore the mysteries of the Earth's poles and glacial regions, contributing to a deeper understanding of global climate changes.
  - **SAGE (Seismology and Geosciences):** It aims to strengthen earthquake monitoring and research on the Earth's solid components
  - **REACHOUT (Research, Education, Training, and Outreach):** It fosters talent development and ensures effective translation of research into services directly benefiting society.
- The 'PRITHVI VIgyan' scheme marks a significant leap forward in India's commitment to understanding and managing the complex dynamics of the Earth. Its comprehensive approach, coupled with robust research and service delivery, promises to enhance India's resilience in the face of climatic and environmental challenges, securing a sustainable future for generations to come.

Objectives of the PRITHVI Scheme:

- Augmentation and sustainance of long-term observations of the atmosphere, ocean, geosphere, cryosphere and solid earth to record the vital signs of the Earth System and change.
- Development of modelling systems for understanding and predicting weather, ocean and climate hazards and understanding the science of climate change.
- Exploration polar and high seas regions of the Earth towards discovery of new phenomena and resources.
- Development of technology for exploration and sustainable harnessing of oceanic resources for societal applications.
- Translation of knowledge and insights from Earth systems science into services for societal, environmental and economic benefit.

Role of the Ministry of Earth Sciences:

- MoES plays a crucial role in providing services related to weather, climate, oceans, and natural hazards. This includes crucial forecasts and warnings for weather events, cyclones, floods, and earthquakes, significantly aiding disaster preparedness and risk mitigation.
- MoES is mandated to translate Science to Services for the Society in providing services for weather, climate, ocean and coastal state, hydrology, seismology, and natural hazards; to explore and harness marine living and non-living resources in a sustainable manner for the country and to explore the three poles of the Earth (Arctic, Antarctic and Himalayas). These services include weather forecasts (both on land and in the Oceans) and warnings for various natural disasters like tropical cyclones, storm surge, floods, heat waves, thunderstorm and lightning; alerts for Tsunamis and monitoring of earthquakes, etc. The services provided by the Ministry are being effectively used by different agencies and state governments for saving human lives and minimizing damages to the

properties due to natural disasters.

Achievements of Ministry of Earth Sciences:

- **Improved cyclone prediction:** Accurate and timely prediction of tropical cyclones, combined with fieldwork by disaster management agencies, helped save thousands of precious lives.
- A very high-resolution (400 m) operational air quality prediction system has been developed to forecast air pollution events in Delhi and issue timely warnings to take necessary steps as per the newly designed Graded Response Action Plan (GRAP) of the Government of India.
- Heat Action Plans developed in collaboration with NDMA and state governments to reduce heat-related mortality and morbidity in the country.
- The High-Performance Computing (HPC) facility augmented to about 10 PFlops to provide world class weather and climate services, by high resolution weather and coupled climate modeling.
- A network of lightning detection sensors has been established over India for monitoring and now-casting of lightning occurrences.
- A comprehensive web-based coastal change information system has been developed to facilitate coastal managers in the development and shoreline management.
- Marine Pollution is being monitored along Indian Coast and information has been utilised by Ministry of Statistics and Programme Implementation for implementation of SDG-14.
- Three environment friendly Desalination plants have been commissioned in Lakshadweep Islands to generate potable water. Three more desalination plants are being set up in the Lakshadweep islands.
- Innovative Coastal Engineering Techniques implemented to restore beaches lost due to erosion in Puducherry, Tamil Nadu, Kerala and Orissa.
- Two new coastal research vessels—Sagar Tara and Sagar Anveshika commissioned, in partnership with India's private sector, boosting the vision of 'Make in India', to monitor coastal Ocean and its related research.
- The Deep Ocean Mission, India's ambitious plan to explore and harness deep-oceanic resources was approved and started implementation.
- Established the International Training Centre for Oceanography (ITCOOcean) that is recognised as a Category 2 Centre of the UNESCO for providing training to countries in the Indo-pacific region.
- A high-altitude research station in Himalaya called HIMANSH was established, situated above 13,500 ft (> 4000 m) at a remote region in Spiti, Himachal Pradesh, to map the Benchmark Glaciers and its discharges.
- The Antarctic Bill was passed by the Parliament on August 01, 2022. The bill was enacted as the Indian Antarctic Act on August 06, 2022. It aims at having India's own national measures for protecting the Antarctic environment and dependent and associated ecosystem.
- On March 17, 2022, India released its Arctic Policy entitled 'India and the Arctic: Building a partnership for sustainable development'. It is aimed to prepare the country for a future where the biggest challenges facing humankind, such as climate change, can be successfully addressed only through collective will and effort.
- Seismological network was upgraded to 152 stations (from 86) to provide a more accurate estimate of preliminary earthquake parameters, which will enhance the scientific understanding of earthquakes.
- MoES launched several mobile applications such as Meghdoot (Weather+Agriculture), Mausam (weather), Damini (Lightning), SAFAR AIR (air quality), SARAT (oil sleek pollution), RISEQ (now Bhookamp), Thoondil (for fishermen), which have helped disseminate real-time information on weather, Ocean, and seismological services.
- Development of Gagan Enabled Mariner's Instrument for Navigation and Information (GEMINI) for effective and seamless dissemination of ocean and weather information to fishermen and other maritime users in the open ocean.
- With a view to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources, Cabinet Committee on Economic Affairs (CCEA) approved the proposal of MoES on "Deep Ocean Mission". Deep Ocean Mission will be a mission mode project to support the Blue Economy Initiatives of the Government of India. MoES will be the nodal Ministry implementing this multi-institutional ambitious mission.

Way Forward:

Earth System Sciences deal with all the five components of the earth system: Atmosphere, Hydrosphere, Geosphere, Cryosphere, and Biosphere and their complex interactions. MoES holistically addresses all the aspects relating to the Earth System Science. Various components of PRITHVI scheme are inter-dependent and are carried out in an integrated manner through combined efforts of the concerned Institutes under MoES. By investing in research, education, and training, PRITHVI will nurture a skilled workforce of Earth system scientists for the future. This ensures the continuity of vital research and service delivery, safeguarding India's preparedness for a changing planet.

1 Amendment in Central Civil Services (Pension) Rules, 2021

Why in News:

The Department of Pension & Pensioners' Welfare has amended the CCS (Pension) Rules, 2021, allowing female Government servants to prioritize their children for family pension over their husbands.

Background:

- As per CCS (Pension) Rules, 2021, a family pension was initially granted to the spouse of a deceased Government servant or pensioner.
- Eligibility for family pension for children and other family members arose only after the spouse became ineligible or passed away.

Concerns Raised:

- The Department of Pension & Pensioners' Welfare received numerous queries from Ministries/Departments about the eligibility of a female Government servant/pensioner to nominate her child/children for family pension in case of marital discord, divorce proceedings, or legal actions.

Decision and Processes:

Request during Legal Proceedings:

- If divorce proceedings or legal cases under specific acts are pending, a female Government servant/pensioner can make a written request to grant a family pension to her eligible child/children instead of her spouse in the event of her death.

Disbursement of Family Pension:

If the female Government servant/pensioner, who made the request, passes away during the legal proceedings, the family pension will be disbursed as follows:

- If survived by a widower with no eligible child, the family pension will go to the widower.
- If survived by a widower with minor or disabled children, the family pension will go to the widower as their guardian.
- If survived by a widower with children who have attained majority but are eligible, the family pension will go to the children.
- Once children become ineligible, the family pension will go to other eligible children, if any.
- When all children are ineligible, the family pension will go to the widower until his death or remarriage, whichever is earlier.

Way Forward:

This amendment is a progressive step towards empowering women employees/pensioners, addressing issues related to family pension eligibility during legal proceedings and marital disputes.

2 Inland Waterways Authority of India

Why in News:

The Inland Waterways Authority of India, under the Ministry of Ports, Shipping, and Waterways (MoPSW), recently hosted the inaugural 'Inland Waterways Development Council' meeting on January 8, 2023, in Kolkata.

Key initiatives under the meeting:

- The Minister of Ports, Shipping, and Waterways & AYUSH, Sarbananda Sonowal, unveiled initiatives including "Harit Nauka – Guidelines for Green Transition of Inland Vessels" and the "River Cruise Tourism Roadmap 2047," during the meeting.
- The sessions encompassed topics such as fairway development, private sector engagement and best practices, optimizing cargo transport efficiency in Inland Water Transport (IWT), fostering the promotion and development of eco-friendly vessels for passenger transportation, exploring the economic advantages of river cruise tourism, and emphasizing sustainable practices, among others.

Importance of the Meeting:

- The Ministry through the meeting has set the objective to elevate the modal share of Inland Water Transportation (IWT) from the current 2% to 5%, aligning with the goals outlined in the Maritime India Vision 2030.
- Furthermore, as part of the ambitious Maritime Amrit Kaal Vision 2047, the ministry aims to substantially increase the existing IWT cargo volume from approximately 120 MTPA to over 500 MTPA, signifying a significant development of inland waterways in the country.

About Inland Waterways Authority of India:

- IWAI is the statutory body in charge of the waterways in India, which was constituted in 1986 for the development and regulation of inland waterways for shipping and navigation.
- **Headquarter:** Noida, UP.
- Its main function includes building the necessary infrastructure in the inland waterways, surveying the economic feasibility of new projects and also carrying out administration and regulation.
- It undertakes projects for the development and maintenance of IWT infrastructure on national

waterways through a grant received from the Ministry of Shipping.

Conclusion:

The first meeting of the Inland Waterways Development Council by the Government of India underscores its commitment to the comprehensive development of inland waterways and the associated Inland Water Transport (IWT) ecosystem for improved cargo efficiency, passenger movement, and river cruise tourism, with active participation from States and Union Territories.

3 Rescuing Hijacked Cargo Ship in Arabian Sea

Why in News:

Indian Navy rescued the hijacked cargo ship MV Leela Norfolk in the Arabian Sea under a special operation. All 21 crew members including 15 Indians aboard this ship are absolutely safe. For the operation Indian Navy had sent warships, maritime patrol aircraft, helicopters and P-8I long range aircraft and Predator MQ9B drone. Indian Navy had also fielded its elite Marcos team for the rescue operation.

About Marcos:

- MARCOs, formed in 1987, is amongst the country's elite commando force, including the National Security Guard, Garud, Para commandos, Force One, and others.
- The MARCOs or Marine Commando Force of the Indian Navy comprises of the toughest soldiers who undergo rigorous training to conduct swift and stealthy responses. MARCOs are modelled on the US Navy SEALS.
- MARCOS can operate across diverse environments, encompassing sea, air, and land. They also engage in collaborative efforts with the Indian Army to conduct operations in areas such as Kashmir.
- **Moto:** The Few, The fearless.

Operations by MARCOs:

- The force has earned recognition for its remarkable performance in Cactus, Leech, Pawan, and Cyclone operations. Notably, their valour and courage came to prominence during their involvement in the 26/11 Mumbai attacks when they assisted in the initial stages of the Taj hotel attack in 2008.
- During the late 1980s, MARCOS executed a significant operation known as 'Operation Pawan' amidst the Sri Lankan Civil War. Their pivotal involvement in seizing key territories held by the LTTE played a crucial role in the restoration of peace in the region.

India's initiative to Protect Indian ship:

- In view of the increasing maritime piracy, the Indian Navy has ordered four warships of the Navy to remain at high alert mode to prevent attacks on merchant ships in the Arabian Sea. Not only this, the Indian Naval Headquarters is keeping a close watch on these activities in the sea. The re-activation of piracy has become a matter of concern for the entire world. It's high time for the navies of coastal countries to come together and completely destroy these pirates, only then free movement in the seas can be ensured.

Conclusion:

Due to this operation, the bravery of the Indian Navy is being praised all over the world because earlier such operations were carried out by the western countries. Over the past few years, Indian Navy has been successful to a great extent in building an impenetrable fort against piracy with its strong presence not only in the Arabian Sea but also in the Indian Ocean.

4 SMART 2.0

Why in News:

The Central Council for Research in Ayurvedic Sciences (CCRAS) in collaboration with the National Commission for Indian System of Medicine (NCISM) has launched the 'SMART 2.0' (Scope for Mainstreaming Ayurveda Research among Teaching professionals) to promote Ayurvedic research. This program aims to facilitate robust clinical studies in priority areas of Ayurveda through collaborative efforts with academic institutions and hospitals nationwide.

Salient Features:

- The objective of 'SMART 2.0' is to generate tangible evidence to demonstrate the efficacy and safety of Ayurveda interventions using interdisciplinary research methods and translating it into public health care. Earlier under the 'SMART 1.0', around 10 diseases were covered with the active participation of teaching professionals from 38 colleges.
- The CCRAS and NCISM invite 'Expressions of Interest' from Ayurveda colleges, hospitals and universities to jointly undertake robust studies demonstrating the efficacy and safety of Ayurveda formulations targeting key healthcare challenges.
- Academic institutions interested in participating in collaborative research activities can submit their 'Expression of Interest' using the prescribed

format available on the CCRAS website 'SMART 2.0'.

Areas of Focus:

- **Childhood Nutrition:** Wasting, lactation issues.
- **Menstrual issues:** Abnormal uterine bleeding.
- **Nutrition:** Malnutrition, calcium deficiencies.
- **Lifestyle Diseases:** Diabetes mellitus, osteoporosis
- CCRAS will provide scientific inputs and project monitoring during the multi-centre trials.

About Central Council for Research in Ayurvedic Sciences:

- The CCRAS is an Autonomous body under Ministry of AYUSH, Government of India.
- It is an apex body in India for undertaking, coordinating, formulating, developing and promoting research on scientific lines in Ayurvedic Sciences.

Conclusion:

Ayurveda has been found to be effective in reducing stress and anxiety, boosting the immune system, promoting digestion, improving skin health, enhancing brain function, supporting heart health, and improving sleep quality. The participation of private institutions and the scientific community can provide much more positive results in this direction.

5 Upskilling Rural Youth

Why in News:

An organization named Life Skilled Collaboration recently held a group discussion with the rural youth. Most of the rural youth when questioned about their aspirations for the future said they preferred staying in their village.

Issues faced by the Rural Youth:

- With the prevalent trend of urbanisation the UN projects that almost 50% of the Indian population will be living in urban areas by 2047 it is crucial not to overlook those who choose to stay behind in villages.
- Rural livelihoods rely heavily on farming, often involving children helping in family-owned farms. However, there's a significant shift as more farmers leave agriculture for non-farming jobs, signalling an agrarian crisis in the rural economy.
- The National Sample Survey Office data recorded 34 million farmers leaving their farms and transitioning to other sectors such as construction during 2004-05 and 2011-12.
- Rural education currently lacks focus on skill development, impacting the majority of youth who rely on schools for life skills. Effective rural education should provide technical and life skills, empowering these youth.
- According to the LSC Voices 2023 survey of 15,856 youth in 11 districts, two-thirds of 19 to 22-year-olds never received vocational training, with only 5% enrolled in such courses.
- Examples like Mexico's tele-schools and Bhutan's well-being curriculum illustrate integrating values into subjects, offering better access to secondary education in remote areas.
- To prevent youth migration to urban areas for employment and leverage the limited local options available it is crucial to offer vocational training imparting relevant rural skills.
- Initiatives like Delhi's 'Skills On Wheel' should be replicated, providing doorstep upskilling opportunities to students, aligning with their current living locations.

Way Forward:

By expanding e-learning platforms, focusing on fields like agricultural mechanization, pollution monitoring, nursing, and digital technologies, rural India can enhance employability in traditional and non-traditional trades. This approach will contribute to fostering a dynamic and vibrant rural economy.

6 Atal Setu

Why in News:

PM Narendra Modi has inaugurated the Atal Bihari Vajpayee Sewri-Nhava Sheva Atal Setu, often referred to as the Mumbai Trans Harbour Link. The sea bridge connects Mumbai and Navi Mumbai.

About Atal Setu:

- Atal Setu is the longest bridge in India and also the longest sea bridge in the country.
- The bridge starts from Sewri in Mumbai and ends at Nhava Sheva in Uran taluka in Raigad district.
- It has been constructed at a total cost of more than Rs 17,840 crore.
- It is about 21.8 km long six-lane bridge with about 16.5 km length over the sea and about 5.5 km of length on the land.
- The project was financed by the Japan International Cooperation Agency (JICA), covering 80% of the total project cost, while the remaining portion was shared between the state and central governments.

Technology involved in Atal Setu:

- **Earthquake-Resistant Design:** The bridge incorporates earthquake-resistant technology, enabling it to endure various types of

earthquakes, with magnitudes up to 6.5 Richter scale.

- **Orthotropic Steel Deck:** This feature, a first in India, provides the bridge with extensive spans, enhancing its structural integrity.
- **Reverse Circulation Rigs:** Implemented to reduce sound and vibrations, this technology plays a crucial role in protecting marine life in the vicinity.
- **Noise Reduction Measures:** The bridge includes noise silencers and sound barriers to minimise acoustic impact.
- **Eco-Friendly Lighting:** The lighting system on the bridge is designed to be non-disruptive to the aquatic environment.
- **No toll queues:** MTHL will have an open road tolling system which will solve the problem of long queues at tolls. Advanced scanners will be able to scan the vehicle and collect tolls electronically, reducing wait times to zero.
- **Displays:** The bridge will also have displays placed at certain intervals to provide real-time critical information to drivers. They will be notified about traffic jams or accidents on their route.

Conclusion:

The bridge is expected to provide several benefits such as:

- It will bring down the average travel time between Sewri and Chirle from 61 minutes currently to less than 16 minutes.
- It is expected to facilitate greater economic integration of Navi Mumbai with Mumbai, with benefits extending to Panvel, Alibaug, Pune, and Goa.
- The bridge also reduces the distance between Mumbai and Pune Expressway.

7 Swachh Survekshan Awards

Why in News:

The Union government has recently announced the Swachh Survekshan Awards 2023.

About Swachh Survekshan

- Swachh Survekshan, initiated by the Ministry of Housing and Urban Affairs (MoHUA) in 2016, is the world's largest urban sanitation and cleanliness survey. It serves as a competitive framework to promote urban sanitation improvements and citizen participation.
- In the 2023 edition (SS 2023), the survey puts emphasis on source segregation of waste, increasing cities' waste processing capacity, and reducing waste sent to dumpsites.
- It introduces new indicators with added importance, focusing on phased plastic reduction, enhanced plastic waste management, "waste to wonder" parks, and zero-waste events.
- The survey assesses cities on dedicated indicators addressing issues such as 'Open Urination' (Yellow Spots) and 'Open Spitting' (Red Spots).
- **Coverage:** Originally 73 cities in 2016, now has increased along with 4,416 urban local bodies, 61 cantonments and 88 Ganga towns.
- About 1.58 crore online citizen feedback and 19.82 lakh face-to-face views were received as a part of the ranking.

Criteria for Awards:

- Door-to-door collection of waste.
- Segregation at source.
- Cleanliness of public areas.
- Clean water bodies.
- Citizens' feedback regarding the cleanliness of their cities.

2023 Ranking:

- Among Cities with >1 lakh population – Indore and Surat were named the joint winners with 100% door-to-door collection of waste & remediation of dumpsites and 98% segregation at source.
- Surat won the top award for the 1st time. Of the 8 rounds of annual awards since 2016, this was the 1st time that 2 cities shared the top prize.
- Among States – Maharashtra bagged the top spot with 89.24% door-to-door collection and 67.76% source segregation followed by Madhya Pradesh.
- Sasvad in Maharashtra was named the cleanest city among those with population below 1 lakh.
- Chandigarh won the award for the city having the best safety standards for sanitation workers, Safaimitra Surakshit Shehar.
- Varanasi was named the cleanest 'Ganga town'.
- Mhow Cantonment was the cleanest cantonment in the country.
- Arunachal Pradesh, Mizoram, Rajasthan, Nagaland and Tripura were ranked the bottom five states.

Conclusion:

The Swachh Survekshan Awards 2023 celebrated the achievements of various stakeholders in promoting cleanliness and waste management, while also emphasizing the need for sustainable practices and the involvement of all citizens in the Swachh Bharat Mission.

International Issue

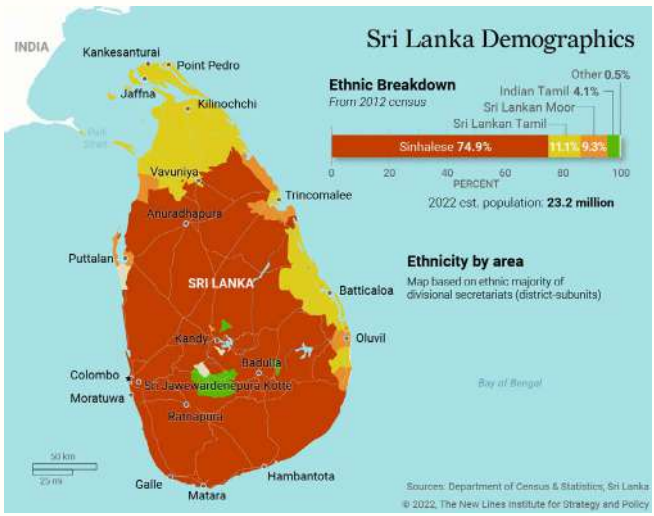
1 13th Amendment to the Sri Lankan Constitution

Why in News:

President Ranil Wickremesinghe of Sri Lanka has voiced support for the India-backed 13th Amendment as a potential solution to address the longstanding demand for political autonomy for the minority Tamil community. India has consistently urged Sri Lanka to implement the 13th Amendment, which outlines the devolution of power to the Tamil community, following the 1987 Indo-Sri Lankan agreement.

About 13th Amendment to the Sri Lankan Constitution:

- In a bid to resolve the ethnic conflict in Sri Lanka between Tamils and the Sinhalese, the 13th amendment was passed in 1987 as part of the Indo-Lanka Accord, which was signed by the then Prime Minister Rajiv Gandhi and Sri Lankan President JR Jayawardene.
- The 13th Amendment provides for a provincial council system and devolution of powers over land, police, education, health, agriculture, housing and finances to the nine provinces of the country, including Sinhala majority areas.



- However, its provisions were never fully implemented by successive Sri Lankan governments. The amendment also provided for making Tamil an official language, and English as a link language. Initially, the northern and eastern provinces were merged and a North-Eastern Provincial Council was created. However, they were de-merged in 2007 following a Supreme Court verdict.

Why Is It Not Been Implemented So Far:

- The 13th Amendment has been strictly opposed by the majority Sinhalese and Sinhala nationalist parties. The Sinhalese have argued that it would undermine the unitary nature of the Sri Lankan state.
- Moreover, Sinhala parties saw the accord as an imprint of Indian intervention and the country wielding its influence in Sri Lankan matters. Moreover, Sri Lankan governments under different leaders have refused to part with land and police powers in the nine provinces.

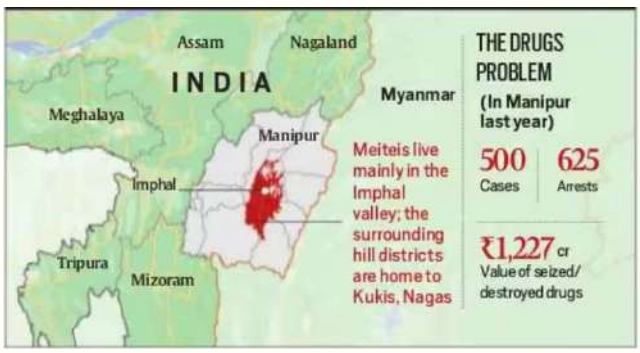
Conclusion:

Ever since the signing of the accord, India has stressed the importance of the implementation of the 13th Amendment besides giving attention to the requirements of the Indian-origin Tamil community; India has underscored that to create a united Sri Lanka, the devolution of powers to the Tamil regions was necessary for the long-term reconciliation of the issue between the ethnic communities. In 2022 as well as 2021, India urged Sri Lanka to implement the 13th amendment at the United Nations Human Rights Council (UNHRC) session in Geneva. Recent support of the president regarding the 13th constitutional amendment is commendable and will aid in consolidating the relationship between India and Sri Lanka.

2 India- Myanmar Free Movement Regime

Why in News:

The Union government is all set to scrap the Free Movement Regime (FMR) along the India-Myanmar border.



About Free Movement Regime:

- The FMR is a mutually agreed arrangement between the two countries that allows people living along the border on either side to travel

inside the other country to a certain distance without a visa.

- Under the India-Myanmar FMR, every member of the hill tribes, who is either a citizen of India or a citizen of Myanmar, and who resides within 16 km on either side of the border, can cross the border on the production of a border pass, usually valid for a year, and can stay for up to two weeks per visit.
- The FMR was implemented in 2018 as part of the India's Act East Ptolicy at a time when diplomatic relations between India and Myanmar were on the upswing.

Need for FMR:

- India shares a 1,643 km-long border with Myanmar, which passes through the States of Arunachal Pradesh (520 km), Nagaland (215 km), Manipur (398 km), and Mizoram (510 km).
- **People-to-people contact:** Border between India and Myanmar was demarcated by the British in 1826, without seeking the opinion of the people living in the region. The border effectively divided people of the same ethnicity and culture into two nations without their consent. The current IMB reflects the line the British drew and hence, FMR envisages to address this divide.
- **Boosting local trade:** In a region with a history of cross-border commerce through customs and border haats, such exchanges are crucial for sustaining local livelihoods in the low-income economy. For Myanmar's border residents, Indian towns offer closer access to business, education, and healthcare compared to their own country.

Issues with FMR:

- **Internal Conflict:** After a military coup in Myanmar in February 2021, there was an influx of undocumented migrants, over 40,000 refugees took shelter in Mizoram, and around 4,000 refugees are said to have entered Manipur.
- The illegal migration of tribal Kuki-Chin peoples into India from Myanmar is one of the key issues in the ongoing ethnic conflict between Meiteis and Kukis in Manipur.
- **Drug Trafficking and insurgency:** The free movement regime is being misused by militants and trans-border criminals who smuggle weapons, contraband goods and fake Indian currency notes. Taking advantage of the free-movement regime, occasionally they enter India, commit crimes and escape to their relatively safer hideouts.
- **Complicated geography:** The Indo-Myanmar border runs through forested and undulating terrain, is almost entirely unfenced, and difficult to monitor. In Manipur, less than 6 km of the border is fenced.

Way Forward:

Amidst increasing scrutiny, experts advocate improved regulation of the Free Movement Regime (FMR), acknowledging the need for revisions. However, striking a balance between local interests and border security is necessary to mitigate potential livelihood impacts and disruptions in essential travel for healthcare and education.

3 New Taiwanese President: William Lai Ching-te

Why in News:

Ruling party leader and current Vice President William Lai Ching-te has won the presidential election of Taiwan which was held on January 13. He is the same leader whom China had called dangerous separatists during election rallies. Before the election, China had openly warned voters not to vote for William Lai Ching-te to avoid military conflict.

About Taiwan's Elections:

- Taiwan has a multi-party electoral system consisting of the Democratic Progressive Party (DPP), the Kuomintang Party (KMT) and the Taiwan People's Party. Despite China's warning, about 70% of voters participated in voting for the presidential post in Taiwan. During voting, many mysterious Chinese balloons and fighter jets were also seen flying in Taiwan's airspace.

Significance from Global Perspective:

- With a population of only 23 million, Taiwan's elections wield global influence. While on one hand China has been claiming Taiwan Island spread over 36,193 square kilometres, the country is particular significance given its critical role in the semiconductor industry.
- The island is a key supplier, contributing 90% of the world's semiconductors—crucial components serving as the brains of electronic devices. This includes a wide array of products, from computers and laptops to cars, washing machines, ATMs, hospital machinery, and handheld smartphones.

Taiwan's strategic position and its conflict with China:

- Taiwan was under Chinese control during the Qing dynasty but was taken over by Japan in 1895 after China's defeat in the First Sino-Japanese War.
- China recaptured Taiwan in 1945 after Japan's defeat in World War II, but civil war between the Nationalists and Communists caused the Nationalists to flee Taiwan in 1949. Since then,

the PRC has continued to pressure Taiwan for Chinese unification.

- Taiwan is the base of a chain of islands strategically located in the western Pacific Ocean, adjacent to China, Japan and the Philippines. It provides a natural gateway to Southeast Asia and the South China Sea, which is essential for global trade and security.
- While China claims Taiwan as a Chinese province, Taiwan argues that it was never part of the People's Republic of China (PRC). Due to diplomatic pressure from China, only 13 countries currently recognize Taiwan as a sovereign country.

Way Forward:

In context of India, despite the absence of formal diplomatic ties, India and Taiwan have sustained representative offices in each other's capitals since 1995, operating as de facto embassies. While India hasn't officially recognized Taiwan as an independent nation, its stance on the One China Policy has been notably muted in recent years. India aims for peace and stability in South-East Asia recognizing the significance of adherence to international legal frameworks for fostering cooperative and constructive international relations. The call for China to adhere to international laws is resonant, emphasizing the necessity for actions aligning with established norms so that broader goal of peace and stability can be achieved.

4 Election in Bangladesh

Why in News:

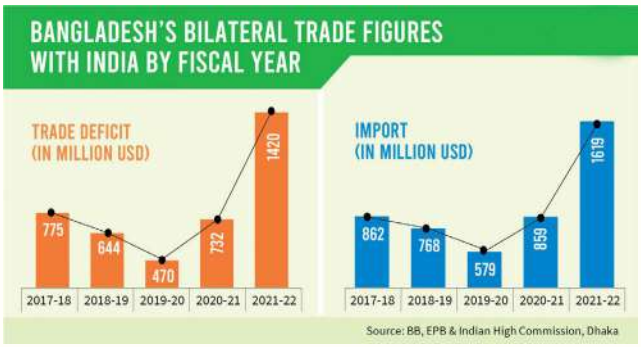
Bangladesh Prime Minister Sheikh Hasina won the re-election for a fifth term in the national election that was conducted amidst the boycott by the Bangladesh Nationalist Party (BNP) led by former PM Khaleda Zia, who is currently in jail. Sheikh Hasina's party Awami League has won a fourth consecutive term in the 12th parliamentary election. According to the Daily Star, this election witnessed the second-lowest voter turnout since the reinstatement of democracy in 1991.

Why the opposition boycotted the election in Bangladesh:

- Citing a lack of transparency in the election process, the opposition demanded a free and fair election and insisted upon an interim government.
- They alleged that Government machinery was used by Hasina for her electoral gains.

Why general people did not boycott the election:

- The general public trusted on Sheikh Hasina government which was able to provide a stable government in the last decade.
- During her tenure, Bangladesh achieved a good ranking in the Human Development Index and several major infrastructural developments took place.



India-Bangladesh Relations:

- India was the first country to recognise Bangladesh as a separate and independent state and established diplomatic relations with the country immediately after its independence in December 1971.
- Bangladesh is India's biggest trading partner in the subcontinent.
- India has provided duty free quota free access to Bangladesh on all tariff lines except tobacco and alcohol under South Asian Free Trade Area (SAFTA) since 2011.
- Bangladesh and India in July 2023 launched a trade transaction in rupees, a move aimed at reducing dependence on the US dollar and strengthening regional currency and trade.
- India and Bangladesh also conduct Joint Exercises - Army (Exercise Sampriti) and Navy (Exercise Bongosagar).
- India and Bangladesh have been cooperating in developing cross-border infrastructure projects, such as the Akhaura-Agartala rail link and Maitri Setu.
- India and Bangladesh are also engaged in regional cooperation through multilateral forums such as SAARC (South Asian Association for Regional Cooperation), BIMSTEC (Bay of Bengal Multi-Sectoral Technical and Economic Cooperation) and Indian Ocean Rim Association (IORA).

Way Forward:

The re-election of Hasina in Bangladesh would likely benefit India in several ways. It will aid in maintaining the Stability in Northeast India, while effectively controlling radical forces and addressing extremism and terrorism. It may further facilitate the early resolution of bilateral issues between India and Bangladesh, promoting diplomatic cooperation and strengthening ties. However, the challenges

persist in the relationship, including trans boundary river water sharing, illegal migration, Rohingya refugees, the National Register of Citizens (NRC), drug smuggling, and growing Chinese influence in Bangladesh. These issues require careful diplomatic efforts to find mutually acceptable solutions and maintain a stable regional environment.

5 United Nations Statistical Commission

Why in News:

India has started its four-year term as a member of the United Nations Statistical Commission beginning on 1 January 2024.

About United Nations Statistical Commission:

- It was established in 1947 by the Economic and Social Council and is the highest body of the global statistical system.
- It brings together the Chief Statisticians from member states from around the world.
- Headquarter: New York.

Functions of the Organization:

- It is the highest decision-making body for international statistical activities, responsible for setting statistical standards and the development of concepts and methods, including their implementation at the national and international levels.
- The Statistical Commission oversees the work of the United Nations Statistics Division (UNSD), and it is a Functional Commission of the UN Economic and Social Council.
- The Commission consists of 24 member countries of the United Nations elected by the United Nations Economic and Social Council based on an equitable geographical distribution according to the following pattern:
  - Five members from African States.
  - Four members from Asia-Pacific States.
  - Four members from Eastern European States.
  - Four members from Latin American and Caribbean States.
  - Seven members from Western European and other States.
- The term of office of members is four years.
- India was a member of the Statistical Commission last in 2004 and the country is returning to the UN agency after a gap of two decades.

About United Nations Economic & Social Council:

- The Economic and Social Council is at the heart of the United Nations system to advance the three dimensions of sustainable development – economic, social and environmental.
- It is the central platform for fostering debate and innovative thinking, forging consensus on ways forward, and coordinating efforts to achieve internationally agreed goals.
- It is also responsible for the follow-up to major UN conferences and summits.
- The UN Charter established ECOSOC in 1945 as one of the six main organs of the United Nations.

Conclusion:

The experience of India in the field of official statistics especially with regard to its diversity and demography is immense and will be a valuable addition to the functioning of the UN Statistical Commission.

6 Strike in Yemen

Why in News:

Russia has called for a United Nations Security Council meeting in connection with strikes carried out by the United States and the United Kingdom in Yemen. Russia is key ally of Iran who is backing the Houthi rebels.



Why the US and UK are targeting Houthi rebels?

- Houthis have recently conducted attacks in the Red Sea, including attacks against UK and US warships.
- Targeted strikes and proportionate action in self-defence against military facilities used by Houthi rebels in Yemen are necessary to ensure freedom of navigation and the free flow of trade.
- These countries are supported by the Netherlands, Canada and Bahrain against targets tied to these attacks, to degrade Houthi military capabilities and protect global shipping, thus representing global will.
- These targeted strikes are a clear message from the United States and their partners that they will not tolerate attacks on freedom of navigation in one of the world's most critical commercial routes.

Why Houthis Attacked?

- The Houthi rebels started the strikes in retaliation against Israel's conflict with Gaza. After the war between Israel and Hamas started, the Houthis claimed that they would launch strikes on Israeli territory and would not allow ships associated with it to pass through the waters of the Red Sea and the Bab el-Mandeb Strait until the operation in the Palestinian enclave stopped.
- The Houthis claim that their aggression in the Red Sea is in support of the Palestinians. It is only targeting vessels with ties to Israel and attacks will only stop when the Israeli siege of Gaza ends.

About Houthi rebels:

- The Houthi rebels belong to a Shiite political and military organization that was formed as an opposition force to the Yemeni government in Yemen during the 1990s.
- Through the years, the group became increasingly inspired by anti-American and anti-Israeli sentiments coursing through the Middle East.
- In 2011, the Houthis played a major role in sparking the Yemeni Revolution, which was born out of a wave of anti-government protests and uprisings known as the Arab Spring.
- In 2014 the group took control of Sanaa, the Yemeni capital, prompting an ongoing civil war that has ravaged the country.

Conclusion:

About 15% of global seaborne trade passes through the Red Sea. This includes 8% of global grain, 12% of seaborne oil and 8% of the world's liquefied natural gas. The Red Sea's strategic importance also makes it an important geopolitical area. Thus it is need of the hour to come up with a positive solution so that global trade is not affected.

7 UNESCO's World Heritage Committee

Why in News:

India is set to chair UNESCO's World Heritage Committee and host its 46th session in New Delhi from July 21 to 31, 2024, marking a historic milestone. During its 19th extraordinary session (UNESCO, 2023), the World Heritage Committee resolved to hold its 46th session in India.

About World Heritage Committee:

- The World Heritage Committee comprises representatives of 21 States Parties to the World Heritage Convention who meet annually to recognize the global cultural and natural heritage. Their work contributes to the prestigious UNESCO World Heritage Sites list.
- The Convention Concerning the Protection of the World Cultural and Natural Heritage is an international agreement that was adopted by the General Conference of UNESCO in 1972.
- It is based on the premise that certain places on Earth are of outstanding universal value and should therefore form part of the common heritage of humankind.
- It basically defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List.
- The Committee is in charge of implementing the Convention.

About UNESCO:

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialised agency of the United Nations (UN) aimed at promoting world peace and security through international cooperation in education, arts, sciences, and culture.
- UNESCO was founded in 1945 as the successor to the League of Nations International Committee on Intellectual Cooperation
- It has 193 member states and 11 associate members, as well as partners in the non-governmental, intergovernmental, and private sector
- Headquartered at the World Heritage Centre in Paris
- The UNESCO's founding mission is to advance peace, sustainable development and human rights by facilitating collaboration and dialogue among nations
- It pursues this objective through five major program areas:
  - Education
  - Natural sciences
  - Social/human sciences
  - Culture and
  - Communication/information
- UNESCO is governed by the General Conference, composed of member states and associate members, which meets biannually to set the agency's programmes and budget.
- It also elects members of the Executive Board, which manages UNESCO's work, and appoints every four years a Director-General, who serves as UNESCO's chief administrator.

Conclusion:

This decision stems from a proposal by Indian authorities, made in consultation with the UNESCO Director-General. Through this channel India can promote world peace and national security through international cooperation in education, arts, science and culture.

Environmental Issue

1 National Transit Pass System

Why in News:

Union Minister for Environment, Forest and Climate Change has launched the National Transit Pass System (NTPS) pan-India to facilitate the seamless transit of timber, bamboo, and other forest produce across the country. This initiative will streamline the issuance of timber transit permits by providing a unified, online mode for tree growers and farmers involved in agroforestry across the country, contributing to the ease of doing business.



What is the National Transit Pass System:

- The NTPS envisioned as a "One Nation-One Pass" regime, will enable seamless transit across the country. Currently, transit permits are issued for the transport of timber and forest produce based on state-specific transit rules.
- The QR-coded transit permits generated under NTPS will allow check gates across various states to verify the validity of the permits and allow seamless transit.
- This initiative is poised to facilitate the seamless transportation of timber and various forest products across the country. Its impact extends beyond merely encouraging agroforestry and tree farming, promising to incentivize the entire value chain.

Agroforestry and its Significance:

- India's forest cover is about 25% and out of this 16% is natural forest and the rest 9% is plantation. The forest cover in India has increased from earlier 21% to 25%, among which 4% has been contributed by agroforestry.
- India currently has 14 to 15 million hectares of arable land in the country. So, if 5% of that land would come under plantation, India's forest cover would increase from 25% to 30% of the entire surface area which would bring the country closer to the national target of 33%.
- Agroforestry contributes to the environment by helping in reducing carbon footprint and causing rainfall. It will increase the income of farmers, promote tree based industries, improve quality of soil and environment.

-: Prelims Insights :-

- ☑ ***Indian Forest & Wood Certification Scheme:*** *A voluntary third party certification, to provide incentives to various entities that adhere to responsible forest management and agroforestry practices.*
- ☑ *Uttar Pradesh is mulling to implement its first state agroforestry policy, after it implemented its first forest policy in 2017.*

Way Forward:

NTPS is designed for user convenience, featuring desktop and mobile applications for easy registration and permit applications. Transit permits will be issued for tree species which are regulated, while the users can self-generate No Objection Certificates for exempted species. Presently, 25 States and Union Territories have embraced the unified permit system, streamlining interstate business operations for producers, farmers, and transporters.

2 Aromatic Plantations

Why in News:

The Koraput district administration in Odisha has recently introduced aromatic plants for their tribal farmers with the help of the Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow.

About Aromatic Plant Cultivation:

- Aromatic plants are plants containing aromatic essential oil that is extracted for perfumery, cosmetics, flavoring, medicinal and other human uses.
- These plants are generally resistant to biotic stress, such as plant pests and diseases, and tolerant to abiotic stress, such as drought, untimely rains, salinity, heat, cold, and heavy metals.

Why aromatic cultivation should be encouraged:

- **As Lucrative Cash Crop:** Aromatic crops,

renowned for their resilience in challenging climates, are emerging as lucrative cash crops due to soaring market demand. Unlike medicinal plants, they encounter minimal regulatory hurdles, offering farmers a promising avenue for substantial returns with minimal effort.

- **Sustainability:** The cultivation of cinnamon, timur, surai, and damask rose in high-tech nurseries holds the potential to transform barren lands into thriving fields and orchards teeming with aromatic crops and plants.
- **Organic Nutrient Supply and Soil Enhancement:** Aromatic crop spent grass and spent wash serve as excellent organic nutrient sources for soil enrichment.
- **Natural Pest Repellents:** Species like lemongrass, citronella, and vetiver grass emit distinctive odors that repel insects, pests, and even larger animals like elephants.

Aroma Mission:

- The Aroma Mission was launched in 2016 by CSIR to increase the income of farmers through cultivation of aromatic plants. It aims to infuse scientific research and development into the cultivation of various aromatic plants.
- Under this mission, to support small and marginal farmers, the CSIR laboratories provide high quality planting material at no cost to give these farmers have access to finest resources to cultivate these precious aromatic plants, opening doors of opportunity and prosperity.

Conclusion:

In Odisha, the potential for aromatic plantation among tribal farmers is promising, as seen by its previous successful ventures into new crops like strawberries. Overall, there's encouraging potential for diversification in agriculture, particularly in aromatic crops, but floriculture development remains in its initial phase.

3 Decline in Population of African Raptors

Why in News:

A recent study published in the journal Nature Ecology & Evolution indicates a widespread decline of about 88% in the raptor population across Africa over the past four decades.

Key Findings of the Study:

- 37 of the 42 species examined, have seen a decline in their population, while 29 of them have seen a drop in population over three generation lengths (Criteria used by IUCN).
- Two-thirds of the 42 examined species from 1969-1995 and 2000-2020 across Africa show strong evidence to be globally threatened.
- Six species that are endemic/near-endemic to Africa and have declined more rapidly than the threshold rates include the Secretary bird; Lappet-faced vulture; Bateleur, Tawny eagle, Steppe eagle, and Martial eagle.
- Beaudouin's snake-eagle is another species that is showing a steep decline (80-85%) over three generation lengths.



Reasons behind the declining population of Raptors:

- **Loss of habitat:** The report noted that annually, nearly five million hectares of forest and non-forest natural vegetation were lost in sub-Saharan Africa. The declines were more prominent in West Africa where the situation was worse than sub-Saharan Africa.
- **Anthropogenic Disturbances:** Explosion of human population in the African continent leading to high expansion of land conversion and thus habitat degradation of raptors.
- **Prey base Depletion:** It is caused by various human activities and natural factors, such as overhunting, land-use change, and competition.
- Other reasons include unintentional poisoning, shooting, electrocution, and collisions with human-built energy infrastructure. Raptors that breed slowly also face difficulty recovering the rapidly lost population.

Impact of declining raptor population:

- Raptors provide crucial ecosystem services such as rapid removal of carcasses through consumption and decreasing the risks of the spread of zoonotic diseases to human populations.
- Its decline can trigger cascading effects on its prey populations and disrupt the ecosystem functioning.

About Raptors:

- Raptors are birds of prey. The word raptor has a

Latin origin meaning "to grasp or seize".

- It is a carnivorous medium-to-large sized bird (such as a hawk, eagle, owl, or vulture) that has a hooked beak and large sharp talons and that feeds wholly or chiefly on meat taken by hunting.

Conclusion:

These findings are very dangerous and a wake-up call for stakeholders, urging collaborative efforts to mitigate the identified threats, protect critical habitats, and ensure the survival of African raptor species to maintain the ecological balance.

4 Logging and Climate Change: Posing Threat to Montane Birds

Why in News:

Researchers at the Indian Institute of Science (IISc) in Bengaluru have found that logging and climate change are posing threat to montane birds. They studied the effects of forest logging and climate change on bird communities in tropical mountains, by examining over 10 years of data.

Key findings:

- The team collected data from the Eaglenest Wildlife Sanctuary, Arunachal Pradesh, situated in the biodiversity hotspot of Eastern Himalayas and home to over 500 bird species. It has found that many bird species have started shifting to higher elevations due to rising temperatures.
- It was further found that logging can lead to the loss of large-bodied, old, growth-dependent species, and decrease the overall biodiversity. Understorey insectivores, which are often found only in specific niches, are negatively influenced by logging and show steep declines in numbers.
- Logged forests also have lower densities of foliage-dwelling insects, reducing the resource availability for the birds. Since large species have higher energy requirements, this disproportionately reduces the abundance of large species.
- The study highlights the need to safeguard primary forests in order to mitigate the effects of climate change. Logging managers should ensure that undisturbed forests across large elevation gradients are protected.
- Tropical montane forests are unique ecosystems that start at about 150-200 metres in elevation, and reach up to 3,500 metres high up on mountains around the world. They are critical centres of biodiversity. Forest loss and climate change are major threats to these ecosystems.

Conclusion:

Forests are critical centres of biodiversity. Forest loss and climate change present major threats to these ecosystems. Birds and much of the flora and fauna of tropical mountain ranges are extremely temperature-sensitive and are responding to global heating rapidly. Also, most of the world's terrestrial biodiversity is concentrated in tropical mountains.

5 Wetland City Accreditation System

Why in News:

India has nominated Indore, Bhopal and Udaipur for the Wetland City Accreditation (WCA) scheme under the Ramsar Convention, which helps cities gain international recognition for their efforts to protect their natural or human-made wetlands.

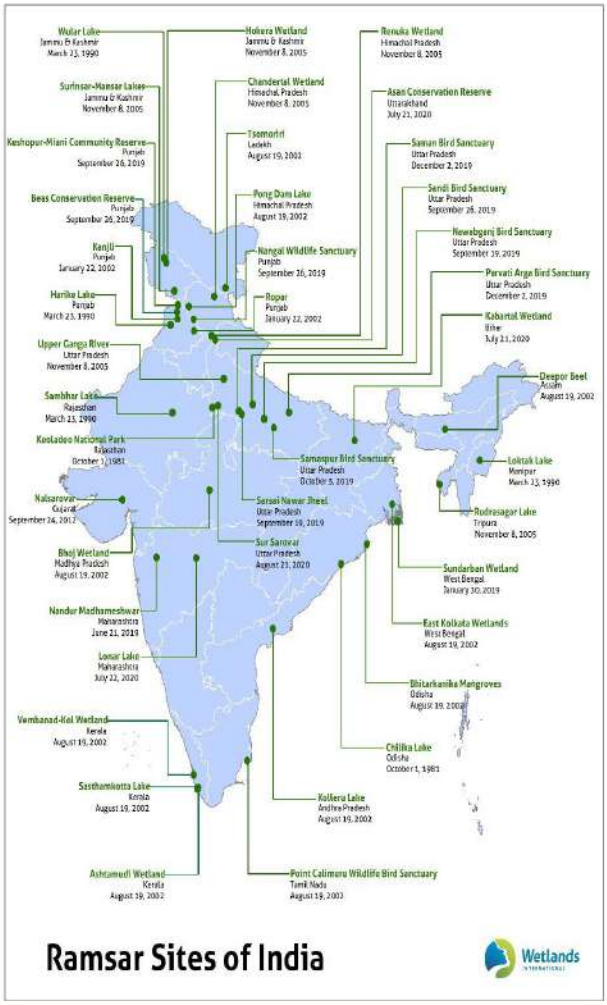
Key Points:

- The scheme aims to promote conservation and wise use of urban and peri-urban wetlands as well as sustainable socio-economic benefits for local populations.
- This will also provide an opportunity for cities that value their natural or human-made wetlands to gain international recognition and positive branding opportunities for their efforts in demonstrating strong positive relationships with wetlands.
- These are the first three Indian cities nominated for WCA based on the proposals received from state wetlands authorities in collaboration with municipal corporations.
- The wetlands situated in and around these cities provide a plethora of benefits to their citizens in terms of flood regulation, livelihood opportunities, and recreational and cultural values.
- Sirpur Wetland (Ramsar site in Indore), Yashwant Sagar (Ramsar site closer to Indore), Bhoj Wetland (Ramsar Site in Bhopal), and Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai in and around Udaipur are lifelines to these cities.

About Wetland City Accreditation (WCA):

- The WCA is a voluntary accreditation system established by the Ramsar Convention during the Conference of the Contracting Parties (COP) 12, 2015 to recognize cities that have taken exceptional steps to safeguard their urban wetlands.
- The scheme aims to promote the conservation and wise use of urban and peri-urban wetlands, as well as sustainable socio-economic benefits for local populations.

- The WCA is valid for 6 years.



About Ramsar Convention:

- The Ramsar Convention encourages the designation of sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity. Once designated, these sites are added to the Convention's List of Wetlands of International Importance and become known as Ramsar sites. The convention was signed in 1971 and entered into force in 1975.

Conclusion:

The ongoing Amrit Dharohar initiative of the MoEF&CC aims to achieve similar goals by promoting the unique conservation values of Ramsar Sites. In this context, WCA will not only generate public awareness about the conservation of urban and peri-urban wetlands but will also help in the implementation of Amrit Dharohar across the country.

6 India's First Dark Sky Park

Why in News:

The Pench Tiger Reserve (PTR) in Maharashtra has been marked as India's first Dark Sky Park and the fifth such park in Asia for protecting the night sky and preventing light pollution, making the facility ideal for astronomy enthusiasts.

About Dark Sky Park:

- It is recognised by the International Dark Sky Association. The International Dark Sky Association is a U.S.-based non-profit that designates places as International Dark Sky Places, Parks, Sanctuaries and Reserves, depending on the criteria they meet.
- International Dark-Sky Association (IDA) was founded in 1988 to reserve public or private land for an exquisite outlook of nocturnal territories and starry night skies. These reserves are specifically conserved for its scientific, natural, educational, cultural, heritage and public enjoyment
- IDA recognized Natural Bridges National Monument in Utah as the world's first International Dark Sky Park.
- The Dark and Quiet Skies for Science and Society Working Group, led by the International Astronomical Union, has recommended the establishment of 'Dark Sky Oases' by national and local governments.



About Pench Tiger Reserve:

- Pench Tiger Reserve or Pench National Park is one of the premier tiger reserves of India and the

first one to straddle across two states - Madhya Pradesh and Maharashtra.
- It belongs to the Indo-Malayan phytogeographical region. Ecologically, Pench is categorized as a tropical moist deciduous (TMD) tiger habitat.
- Pench Tiger Reserve is an excellent abode to almost all the major floral and faunal species including tiger, leopard, sloth bear, Indian gaur, wild dog, wolf etc. found in central India. It has good connectivity with Kanha, Pench (M.P), Tadoba Andhari, Navegao-Nagjhira and Bor Tiger Reserves.
- Pench River which divides the reserve into almost two equal halves and Totladoh Reservoir built on the Pench River plays an important role in enriching and sustaining the wildlife in the tiger reserve.

What is a Dark Sky reserve?
- The Indian Astronomical Observatory (IAO), a high-altitude astronomy station located in Hanle, and operated by the Indian Institute of Astrophysics, is India's first dark-sky reserve.
- Situated in the Western Himalayas at an elevation of 4,500 meters (14,764 ft), the IAO is one of the world's highest-located sites for optical, infrared and gamma-ray telescopes.

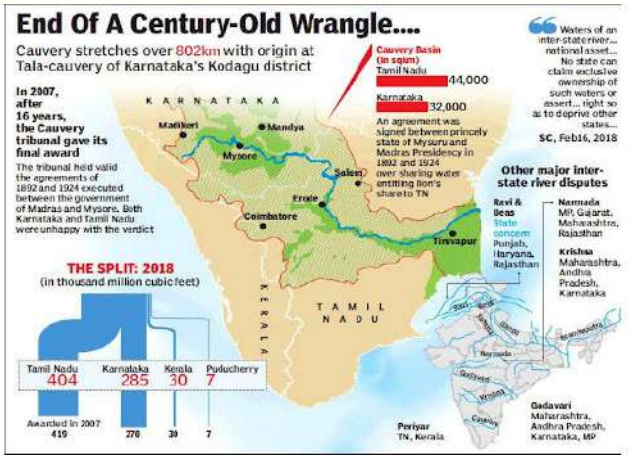
Way Forward:
Dark Sky Park offers several benefits, such as preserving natural night skies, improving the quality of life for nocturnal wildlife, reducing energy consumption and costs, and promoting astrotourism in India.

7 Massive Reduction of Green Cover in Cauvery Basin

Why in News:
NGT had recently issued notices to Karnataka, Tamil Nadu, and Kerala governments after an IISc report revealed a substantial reduction in green cover in the Cauvery basin over the past five decades. The report highlights a substantial loss of 12,850 sq. km of green cover in the Cauvery basin between 1965 and 2016.

The extent of Deforestation in Karnataka, Tamil Nadu and Kerala:
- Massive reduction in greenery with agricultural and horticultural activities covering 73.5% of the basin.
- Only 18% of area remains as forested areas, and dense forests constitute just 13% of the region.
- Natural green areas reduced from 28,154 sq. km to 15,345 sq. km over the past 50 years.

State-wise Impact:
- Karnataka lost 57% (9,664 sq. km), Tamil Nadu lost 29% (2,905 sq. km), and Kerala lost 27% (279 sq. km) of green cover.
- Prominent national parks like Bandipur and Nagarhole are facing significant declines in forest cover due to human intervention and development.



NGT's Categorization and Urgency:
- NGT had categorized the issue as a matter of environmental law and urged for prompt responses from the concerned states. The case will be heard at the Chennai bench of the Tribunal.
- It has emphasized the urgency of addressing environmental challenges and safeguarding the ecosystems in the Cauvery valley.

Ecological Impact of Western Ghats Deforestation:
- IIT-B study reveals a 35% loss (33,579 sq. km) of green cover in the Western Ghats since 1920.
- Deforestation negatively affects monsoon patterns, influencing 25% to 40% of Tamil Nadu's monsoon bounty.
- Simulations show a decline in daily rainfall and a 0.25-degree Celsius increase in surface temperature across Tamil Nadu.
- Several projects, including Isha Foundation's "Rally for Cauvery," aimed at safeguarding the Western Ghats through large-scale tree planting.

Conclusion:
Deforestation exacerbates water scarcity in regions like Tamil Nadu, impacting crucial Kharif crops. Rising temperatures due to bare land exposure further affect the moisture buildup, hindering the natural rain cycle. Thus it is need of the hour that the respective states take the necessary steps to curb the deforestation activities in the region for environmental and economic benefits.

1 Aditya-L1 Mission

Why in News:

Aditya-L1 reached its destination, L1 or the first Sun-Earth Lagrangian point, on January 6,2024.

Significance of Aditya-L1:

- Aditya-L1 has seven instruments for the observation of all the radiation and charged particles. Its location, 1.5 million km away from Earth towards the Sun, allows uninterrupted observations of the solar atmosphere.
- Since it is located outside the Earth's atmosphere, its instruments can effectively observe the ultraviolet radiation from the corona, and in the process, better understand its workings.
- It will have crucial role in monitoring the Solar atmosphere thereby aiding in better monitoring of eruptions on the Sun while simultaneously studying the properties of charged particles in the Solar wind.
- It can help in providing early warning of Solar eruptions so that appropriate actions can be taken to minimise the disruption they may cause.

What is L1, the location of Aditya:

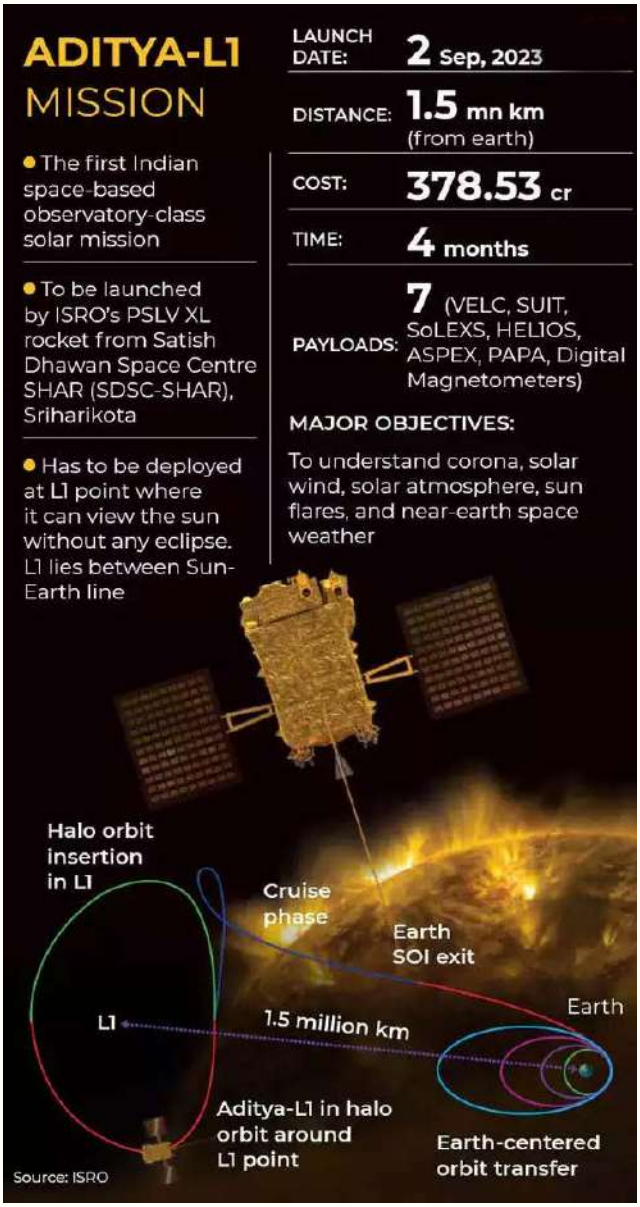
- L1 stands for the first Lagrangian point there are five such points, L1 to L5, associated with the motion of one astronomical body around another one, in Aditya's case, Earth and the Sun.
- These points were theoretically discovered by the Swiss mathematician Leonhard Euler and the Italian-French mathematician Joseph-Louis Lagrange in the 19th century.
- L1 is considered the most significant of the Lagrange points for solar observations. A satellite placed in the halo orbit around the L1 has the major advantage of continuously viewing the Sun without any occultation/ eclipses.
- It is currently home to the Solar and Heliospheric Observatory Satellite (SOHO).

About Aditya-L1 Mission:

- Aditya-L1 is the first space based observatory class Indian solar mission to study the Sun from a substantial distance of 1.5 million kilometres.
- Aditya-L1 is also ISRO's second astronomy observatory-class mission after AstroSat (2015).
- The mission's journey is notably shorter than India's previous Mars orbiter mission, Mangalyaan.

Objective:

- The mission aims to provide valuable insights into the solar corona, photosphere, chromosphere, and solar wind.
- The primary objective of Aditya-L1 is to gain a deeper understanding of the Sun's behaviour, including its radiation, heat, particle flow, and magnetic fields, and how they impact Earth.



Conclusion:

The Sun is the centre of our solar system, and its characteristics greatly influence the behaviour of all other celestial bodies. Studying the Sun enhances our understanding of the dynamics of our solar

neighbourhood. This mission gains importance since solar activities, such as solar flares and coronal mass ejection phenomena have the potential to cause disruptions to communication systems, navigation, and power grids. By monitoring such activities, better adaptations in the technology and approach can be made.

2 Polymer Electrolyte Membrane Fuel Cells

Why in News:

The Indian Space Research Organisation (ISRO) has successfully tested a 100 W class Polymer Electrolyte Membrane Fuel Cell based Power System (FCPS) in its orbital platform, POEM3 which was launched onboard PSLV-C58 on January 1, 2024.

More About the News:

- ISRO launched the PSLV-C58 X-ray Polarimeter Satellite (XPoSat) mission on January 1, 2024.
- During the mission, the POEM-3 experiment was also executed to meet the objective of 10 other payloads developed by start-ups, educational institutions and ISRO centres among them is the FCPS.
- The FCPS payload is significant as it has potential applications in India's space station which is proposed to come up by 2035.

Proton-exchange membrane fuel cell:

- PEM fuel cells, also termed Polymer Electrolyte Membrane Fuel Cells (PEMFC), represent a fuel cell variety primarily under development for use in transportation, stationary, and portable applications. These cell generate electricity and operate on the opposite principle to PEM electrolysis, which consumes electricity.
- The most common type of PEM fuel cell operates on pure hydrogen gas. Other than hydrogen, the fuel cell only needs oxygen (from the air) and water to work. It's simply two chemical reactions separated by an electrolyte membrane. The result is usable electricity, water, and heat.
- Their distinguishing features include lower temperature/pressure ranges (50 to 100 °C) and a special proton-conducting polymer electrolyte membrane.
- They are posed to replace the aging alkaline fuel-cell technology, which was used earlier in the Space Shuttle.

Potential for Future:

- Fuel Cells have broad applications, especially in vehicle engines and standby power systems due to their ability to match conventional engine performance. Yet, they offer similar range and recharge time as traditional engines, giving them an edge over batteries.
- Fuel Cells, like Hydrogen fuel cells, generate electricity from Hydrogen and Oxygen gases, producing pure water and heat without combustion, making them ideal for emission-free transportation and providing power and water for the Space Station.

Conclusion:

The ability to produce electricity directly from fuels without any intermediate step renders them very efficient. With water as the only by-product, they are totally emission free. These features make them ideal candidates for space missions involving humans where electric power, water and heat are essential since a single system can meet multiple requirements in the mission.

3 US Lunar Lander Mission Since 1972 Launch Failed

Why in News:

On January 8, 2024, a private US spacecraft, developed by Astrobotic Technology, embarked on a mission to become the first American spacecraft to land on the Moon in over half a century. Peregrine One suffered a propulsion fault that ended any prospect of a lunar touch-down and it was commanded to destroy itself instead. The craft into Earth's atmosphere was directed to burn up.

Mission Overview:

- This mission was a crucial part of NASA's Commercial Lunar Payload Services (CLPS) initiative, aligning with the broader Artemis program. If successful, it would have marked the first-ever lunar landing by a private spacecraft. The Peregrine lander carried five payloads from NASA, aimed at conducting various exploratory activities, including water detection. One notable instrument, the Laser Retroreflector Array, was designed for precision measurements by reflecting light from other orbiting or landing spacecraft, serving as a permanent lunar marker.

Challenges Faced:

- Despite the promising start, the mission encountered technical problems post-launch, with Astrobotic Technology reporting issues hindering the spacecraft from achieving a stable Sun-pointing orientation. This complication posed a threat to the mission's success, as efficient charging of solar power batteries is crucial for the spacecraft's functionality.

Significance and Historical Context:

- The last US spacecraft to land on the Moon was Apollo 17 in December 1972. The current mission signifies a revival of lunar exploration, showcasing NASA's renewed interest in extended stays and establishing a permanent base on the Moon through the Artemis program. Collaborating with private companies through CLPS, NASA aims to create a robust market and technology ecosystem for lunar exploration.

Future Lunar Exploration Plans:

- The Artemis program envisions a series of Moon missions, with the first crewed mission expected next year and a human landing on the Moon planned for 2025. The ultimate goal is to establish a permanent lunar base, facilitating comprehensive exploration and scientific studies. Collaborations with private entities, exemplified by the CLPS initiative, are integral to realizing these ambitious lunar exploration objectives.

Way Forward:

The successful execution of this private spacecraft mission not only signifies a historic lunar landing but also highlights the evolving role of private companies in shaping the future of space exploration.

4 Square Kilometre Array Observatory

Why in News:

India has taken a significant step in the field of radio astronomy by approving the Square Kilometre Array Observatory (SKAO) Convention and allocating Rs 1,250 crore for the mega-science project. The SKAO, set to become the world's largest radio telescope, is an international collaboration involving several countries, including India.

Radio Telescopes:

- **Detection Capabilities:** Unlike optical telescopes, radio telescopes can detect invisible gas, allowing them to unveil areas of space obscured by cosmic dust.

About Square Kilometre Array Observatory:

- **Establishment:** Formally established in 2021 as an intergovernmental organization after extensive negotiations involving various nations, including India.
- **Array of Antennas:** SKAO comprises thousands of antennas strategically placed in radio-quiet areas of Australia and South Africa.
- **Headquarter:** United Kingdom.

SKA-India Consortium:

- **Composition:** Involves engineers and scientists from over 20 national-level research institutions, including the National Centre for Radio Astrophysics (NCRA) and Aryabhatta Institute of Observational Sciences.
- **GMRT Responsibility:** NCRA, a part of the SKA-India Consortium, is entrusted with successfully constructing and operating the Giant Metrewave Radio Telescope (GMRT).

Giant Metrewave Radio Telescope (GMRT):

- **Largest and Most Sensitive:** GMRT operates within the 110-1,460 MegaHertz frequency range, making it the world's largest and most sensitive radio telescope.
- **Scientific Contributions:** GMRT has delivered significant scientific results, studying pulsars, supernovae, quasars, galaxies, and contributing to the unprecedented detection of nano-hertz gravitational waves.
- **Recognition:** In 2021, GMRT was honored as the third facility in India to receive the Institute of Electrical and Electronics Engineers (IEEE) Milestone.

Significance of the SKA Telescope:

Scientific Quarries Addressed:

- Origin of the universe.
- Birth of the first stars.
- Life-cycle of galaxies.
- Exploration of technologically-active civilizations in our galaxy.
- Understanding the origin of gravitational waves.

India's Role in SKA:

- **Telescope Manager Component:** India's primary contribution lies in creating and managing the Telescope Manager component, also known as the "neural network" or software powering the SKA telescope.
- **NCRA Expertise:** The National Centre for Radio Astrophysics (NCRA), part of the Tata Institute of Fundamental Research, operates India's largest network of radio telescopes, including GMRT.

International Collaborators:

- **Diverse Participation:** SKAO involves collaboration from countries like the UK, Australia, South Africa, Canada, China, France, Italy, Germany, and India.

Way Forward:

India's participation in the SKAO represents a significant stride in advancing radio astronomy, with the potential to unravel mysteries about the universe's origins and evolution. The nation's role in developing crucial components further solidifies its standing in the global scientific community.

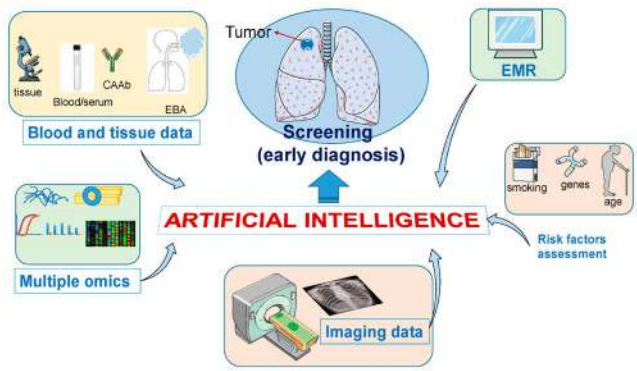
5 AI for Early Diagnosis of Cancer

Why in News:

Tata Memorial Hospital (TMH) in Mumbai, the country's largest cancer treatment center, is spearheading a groundbreaking initiative by integrating artificial intelligence (AI) into cancer detection and diagnosis. The hospital's 'Bio-Imaging Bank' project aims to leverage deep learning to create a comprehensive repository of radiology and pathology images, augmented by clinical data, to enhance early-stage cancer detection.

Bio-Imaging Bank Project:

- **Objective:** Establish a robust repository for training and validating AI algorithms in cancer detection.
- **Data Inclusion:** Incorporates data from 60,000 patients, with a focus on head-neck and lung cancers initially.
- **Multi-Institutional Collaboration:** Funded by the Department of Biotechnology, in partnership with IIT-Bombay, RGCIRC-New Delhi, AIIMS-New Delhi, and PGIMER-Chandigarh.



AI's Role in Early Cancer Detection:

- **Mimicking Human Brain:** AI emulates human information processing, analyzing radiological and pathological images to identify unique cancer features.
- **Early Detection:** Recognizes tissue changes and potential malignancies, enabling early cancer detection.
- **Predictive Models:** Develops predictive models for tumor survival, treatment response, and overall patient outcomes.

Current Implementation at TMH:

- **Radiation Reduction:** AI-enabled algorithms have reduced radiation exposure for pediatric patients by up to 40% during CT scans.
- **Thoracic Radiology Algorithm:** Pilot use in the ICU for diagnosing thoracic conditions, achieving 98% accuracy.
- **Swift Diagnosis:** AI delivers immediate diagnoses, saving time and aiding in early treatment.

Future Outlook and Challenges:

- **Reducing Cancer Fatalities:** Envisages a future where AI facilitates quick and accurate cancer detection, potentially reducing fatalities.
- **Tailoring Treatment Approaches:** AI optimizes therapy outcomes by tailoring treatments based on diverse patient profiles.
- **Enhancing Precision:** Continuous learning enhances accuracy, improving patient outcomes and aiding healthcare decision-making.

Debates and Considerations:

- **Potential Human Replacement:** The use of AI raises concerns about potential replacement of human radiologists.
- **Regulatory Scrutiny:** Faces regulatory scrutiny and resistance from some doctors and health institutions.

Way Forward:

Tata Memorial Hospital's pioneering use of AI in cancer detection not only demonstrates significant advancements in medical technology but also highlights the potential of AI to revolutionize cancer diagnosis and treatment in India.

6 Zosurabalpin

Why in News:

Recently, researchers have identified an entirely new class of antibiotic named Zosurabalpin that can kill bacteria that are resistant to most current drugs. Zosurabalpin was found to be effective against Carbapenem-resistant A baumannii (CRAB) which is listed as a critical pathogen by the WHO.

About Zosurabalpin:

- Zosurabalpin is highly effective against the bacterium carbapenem-resistant Acinetobacter baumannii (CRAB), which is classified as a "priority 1" pathogen by the World Health Organization due to its growing presence in hospitals.
- Zosurabalpin works by blocking a molecular machine called LptB2FGC that transports the lipopolysaccharide toxin from the inside barrier to the outside one.
- This LptB2FGC mechanism is pretty unique to CRAB, which has some advantages and disadvantages. The bad news is that zosurabalpin will only kill CRAB infections and not those caused by other types of bacteria.

- But a major advantage is that the chance of antibiotic resistance emerging is reduced, as this resistance could mostly emerge from CRAB and not other types of bacteria.

Mode of Action:

- Zosurabalpin operates by zeroing in on a crucial protein called FabI found within bacteria. FabI plays a pivotal role in synthesizing fatty acids, vital components of bacterial cell membranes. By disrupting FabI's function, Zosurabalpin impairs the integrity of the bacterial cell membrane, ultimately leading to bacterial death.

About Bacteria:

- Bacteria are classified into two groups: Gram-positive or Gram-negative, depending on whether they retain a specific stain color.
- Gram-positive bacteria retain a violet-colored stain, while Gram-negative bacteria appear pinkish or red.
- Gram-negative bacteria have a thin peptidoglycan layer in the cell wall, which is sandwiched between two lipid membranes, giving them a complex structure.
- This outer membrane acts as a barrier, making them more resistant to antibiotics.

Conclusion:

The significance of Zosurabalpin lies not only in its effectiveness but also in its natural origin, derived from nature's resources. This discovery underscores the potential of exploring diverse natural compounds as valuable sources for novel antibiotics, especially in combating drug-resistant infections.

7 AKASH-NG Missile

Why in News:

India's Defence Research and Development Organisation (DRDO) has recently conducted a successful flight test of the New Generation AKASH (AKASH-NG) missile. The test was done at the Integrated Test Range, Chandipur, off the coast of Odisha, against a high-speed unmanned aerial target at a very low altitude.

Key features of the missile:

- The AKASH-NG is a state-of-the-art missile system possessing the capability of intercepting high-speed, agile aerial threats with a range of around 80 km.
- It can strike targets up to 40 km as against the earlier variant's maximum range of 30 km.
- It has validated the functioning of the complete weapon system consisting of the missile with an indigenously developed radio frequency seeker, launcher, multi-function radar and command, control and communication system.
- The AKASH-NG has advanced technologies and features, such as improved missiles, seekers, and radars. It also includes an indigenously developed Radio Frequency Seeker, Launcher, and Multi-Function Radar.



About India's Akash Weapon System:

- The Akash Weapon System has been indigenously designed and developed by the DRDO and produced by defence public sector units along with other industries. Multiple advanced versions of the missile are under development by the team.
- It has been developed by DRDO under the Integrated Guided Missile Development Plan (IGMDP) along with Prithvi, Agni, Trishul, and Nag Missile systems.
- It is powered by a high-energy solid propellant and a Ramjet-rocket propulsion system.

About Integrated Guided-Missile Development Programme:

- It was conceived by Dr. A.P.J. Abdul Kalam to enable India to attain self-sufficiency in the field of missile technology.
- The 5 missiles (P-A-T-N-A) developed under this program are:
  - **Prithvi:** Short-range surface-to-surface ballistic missile.
  - **Agni:** Ballistic missiles with different ranges, i.e. Agni (1,2,3,4,5)
  - **Trishul:** Short-range low-level surface-to-air missile.
  - **Nag:** 3rd generation anti-tank missile.
  - **Akash:** Medium-range surface-to-air missile.

Conclusion:

Despite having the fifth largest defence budget in the world, India procures 60% of its weapon systems from foreign markets. Thus the development of an indigenous weapon system is a move in the right direction that will increase the defence capability of the nation and reduce its import dependence.

Economic Issues

1 16th Finance Commission of India

Why in News:

The Government of India, with the approval of the President of India, has constituted the Sixteenth Finance Commission, in pursuance to Article 280(1) of the Constitution. Dr Arvind Panagariya, former Vice-Chairman, NITI Aayog, will be the Chairman. Shri Ritvik Ranjanam Pandey has been appointed as Secretary to the Commission.

More Information:

- The Finance Commission normally takes about two years to make their recommendations. As per the clause (1) of article 280 of the Constitution, the Finance Commission is to be constituted every fifth year or earlier by the President.
- However, as the recommendations of the 15th FC cover the six-year period up to 31st March 2026, the 16th FC is proposed to be constituted now. This will enable the Finance Commission to consider and appraise the finances of the Union and the States for the period immediately, preceding the period of its recommendations.

Terms of Reference for 16th Finance Commission:

- **Distribution of Net proceeds:** The distribution between the Union and the States of the net proceeds of taxes which are to be, or may be, divided between them under Chapter I, Part XII of the Constitution and the allocation between the States of the respective shares of such proceeds.
- **Grant-in-aids:** The principles which should govern the grants-in-aid of the revenues of the States out of the Consolidated Fund of India and the sums to be paid to the States by way of grants-in-aid of their revenues under article 275 of the Constitution for the purposes other than those specified in the provisos to clause (1) of that article.
- **Consolidated Fund Augmentation:** The measures needed to augment the Consolidated Fund of a State to supplement the resources of the Panchayats and Municipalities in the State on the basis of the recommendations made by the Finance Commission of the State.
- **Disaster Management:** The Commission may review the present arrangements on financing Disaster Management initiatives, with reference to the funds constituted under the Disaster Management Act, 2005 (53 of 2005), and make appropriate recommendations thereon.

Conclusion:

In light of the post-GST changes, the need for 16th FC, to consider a fresh approach both conceptually and operationally to align the principle of vertical sharing with the new system, becomes crucial. Redefining the divisible pool to ensure its compatibility and effectiveness within the updated framework may work to increase cohesivity between States and Union.

2 Compliance with Virtual Digital Assets

Why in News:

As part of compliance action against the offshore entities, the Financial Intelligence Unit India (FIU IND) has issued compliance Show Cause Notices to the nine offshore Virtual Digital Assets Service Providers (VDA SPs) under Section 13 of the Prevention of Money Laundering Act, 2002 (PMLA). Virtual Digital Assets Service Providers (VDA SPs) were brought into the ambit of Anti Money Laundering/Counter Financing of Terrorism (AML-CFT) framework under the provisions of the Prevention of Money Laundering Act (PML) Act, 2002 in March 2023.

About regulation of Virtual Digital Assets:

- Virtual Digital Asset Service Providers (VDA SPs) operating in India (both offshore and onshore) and engaged in activities like exchange between Virtual Digital Assets, transfer of Virtual Digital Assets, safekeeping or administration of Virtual Digital Assets or instruments enabling control over Virtual Digital Assets etc. are required to be registered with FIU IND as Reporting Entity and comply with the set of obligations as mandated under Prevention of Money Laundering Act (PMLA) 2002.
- The obligation is activity-based and is not contingent on physical presence in India. The regulation casts reporting, record keeping, and other obligations on the VDA SPs under the PML Act which also includes registration with the FIU IND.
- Till date 31 VDA SPs have registered with FIU IND. However, several offshore entities though catering to a substantial part of Indian users were not getting registered and coming under the Anti Money Laundering (AML) and Counter Financing of Terrorism (CFT) framework.

About Virtual Digital Assets:

- Virtual assets have no physical form and are a digital representation of value that can be traded, transferred or used for payment or investment purposes. Examples of virtual assets include crypto assets, decentralized autonomous organisation tokens, non-fungible tokens etc. However, virtual assets do not include digital fiat currencies (e.g. e-currencies issued by central banks).

About FIU-IND:

- FIU-IND is the central, national agency responsible for receiving, processing, analysing and disseminating information relating to suspect financial transactions to enforcement agencies and foreign FIUs.

Conclusion:

Financial crime experts have warned that digital assets are increasingly being used for money laundering, drug trafficking, ransomware attacks, theft and fraud schemes, terrorist financing, and other crimes. Thus regulation of these assets and service providers is a need of the hour for security and financial benefits.

3 First Advance Estimates of National Income, FY 2023-24

Why in News:

The National Statistical Office (NSO), Ministry of Statistics and Programme Implementation has released the First Advance Estimates (FAE) of National Income for the financial year 2023-24, both at Constant (Base Year: 2011-12) and Current Prices.

Key Points of the report:

- **Real GDP** or GDP at Constant Prices in the year 2023-24 is estimated to attain a level of Rs.171.79 lakh crore, as against the Provisional Estimate of GDP for the year 2022-23 of Rs.160.06 lakh crore.
- The growth in real GDP during 2023-24 is estimated at 7.3% compared to 7.2% in 2022-23.
- **Nominal GDP** or GDP at Current Prices in 2023-24 is estimated at Rs. 296.58 lakh crore, as against the Provisional Estimate of GDP for 2022-23 of Rs. 272.41 lakh crore.
- The growth in nominal GDP during 2023-24 is estimated at 8.9% compared to 16.1% in 2022-23.
- The share of private final consumption expenditure in GDP is expected to drop this year to the lowest in at least three years at 56.9% from 58.5% in 2022-23 While the investment rate is likely to pick up to nearly 30% of GDP, driven by government capex and higher consumption growth.
- **GVA (Gross Value Added)** growth for the farm sector is estimated to more than halve from 4% a year ago to 1.8% this year. Manufacturing GVA growth is estimated to accelerate to 6.5% in 2023-24 from just 1.3% a year earlier, while mining GVA is expected to rise 8.1%, from 4.6% in 2022-23.

About First Advance Estimates of National Income:

- It was first introduced in 2016-17, is typically published at the end of the first week of January.
- They are the "first" official estimates of how GDP is expected to grow in that financial year. But they are also the "advance" estimates because they are published long before the financial year (April to March) is over.
- The main significance of FAE lies in the fact that they are the GDP estimates that the Union Finance Ministry uses to decide the next financial year's budget allocations.

About the Estimation Procedure:

- This is indicator-based and is compiled using the benchmark-indicator method, i.e. the estimates available for the previous year (2022-23) are extrapolated using the relevant indicators reflecting the performance of sectors.

Conclusion:

Many challenges inhibit the GDP growth of India such as:

- India's exports to GDP ratio has been very low
- Low Capital Investment
- Poor Performance of the Manufacturing Sector

These challenges should be resolved very soon for high growth of GDP.

4 Global Economy's Weakest Half-Decade Performance

Why in News:

The World Bank had warned of a sluggish global economy at the end of 2024, marking the slowest five-year GDP growth in 30 years, emphasizing the need for a major course correction.

Global Economic Trends:

- The World Bank has cautioned of potential near-term risks to the global economy due to mounting geopolitical tensions.
- The latest Global Economic Prospects report, released on January 9, 2024, predicts the slowest half-decade of gross domestic product (GDP) growth in 30 years.

- The major factors Impacting the Global Economy include sharp interest-rate increases, negative shocks from the COVID-19 pandemic, Russia's invasion of Ukraine, and monetary policy tightening to combat high inflation.

Current Status of Global Economy:

- The global economy although has improved when compared to the previous year, with a diminished risk of a global recession attributed to the strength of the United States' economy.
- However, the medium-term outlook has worsened for many developing economies, experiencing slowing growth, sluggish global trade, and tight financial conditions.

Global Trade and Borrowing Costs:

- Global trade growth in 2024 is expected to be half of the average of the decade preceding the pandemic.
- Borrowing costs for developing economies, particularly those with low credit ratings, are projected to remain high, with global interest rates at four-decade highs in inflation-adjusted terms.

Projected Global Growth:

- Global growth is expected to slow for the third consecutive year, from 2.6% last year to 2.4% in 2024, significantly lower than the average of the 2010s.
- Developing economies are forecasted to grow at a rate of 3.9%, more than a percentage point lower than the previous decade's average.

Challenges for Low-Income Countries:

- Low-income countries are expected to grow 5.5% lower than initially anticipated.
- By the end of 2024, a significant portion of developing and low-income countries' populations will still be poorer than pre-COVID pandemic levels.

Call for Increased Investment:

- The report recommends a significant increase in investment by developing countries, approximately $2.4 trillion per year, to address climate change and achieve key global development goals by 2030.
- Without such investment, per capita investment growth in developing economies is expected to average 3.7% between 2023 and 2024, about half the rate of the previous two decades.

Way Forward:

World Bank Group Chief Economist Indermeet Gill highlighted weak near-term growth, which is particularly impacting the poorest countries. Governments need to act quickly to accelerate investment and strengthen the fiscal policy framework to address global priorities.

5 Economic Crisis in Germany

Why in News:

Germany is currently grappling with widespread strikes by railway staff, lorry drivers, and farmers, staging nationwide protests on issues spanning pay, conditions, agricultural subsidy cuts, and increased road tolls. Despite its historical economic strength, Germany is currently faced with complex mix of short-term challenges and deeper structural issues. A divided and seemingly ineffective government has led economists to characterize Germany as the "sick man of Europe."

Reasons for the Crisis:

- In the late 1990s, sweeping labour reforms and heightened demand in China and developing markets propelled Germany's robust economic growth, generating millions of jobs. However this economic model now faces challenges. The IMF has forecasted that Germany will be the sole G7 economy to contract in 2023.
- The demand for Germany's major exports—machinery, cars, tools, and chemicals—is contingent on the broader economic climates. Issues such as a weakened Chinese economy and the repercussions of Russia's war on Ukraine, thus have their impact on German economy though they are circumstantial and potentially temporary.

Long-term issues affecting the country's economic efficiency:

- **Rapidly ageing population:** Official estimates suggest Germany's ageing society will be short of 7 million skilled workers by 2035. Additionally, Germany, like other industrialised countries around the world, is facing deep labour shortages, particularly in skilled high-growth sectors.
- **Lack of recent major investment in infrastructure:** Germany's extra cautious approach often impacts its development with respect to other countries. Its digitisation lags behind much of the rest of Europe. Germany still relies heavily on cash, which accounted for about 40% of point-of-sale payments last year against 8% in Sweden.
- **Other longer-term threats:** Red Tapism, Chinese competition in the electric car market and the cost of reaching net zero are higher in Germany because of its huge, energy-intensive industrial base and rejection of nuclear power.

Way Forward:

- With annual trade surpassing 30 billion Euros,

Germany stands as India's leading trading partner in Europe, hosting over 2000 permanent German companies. The robust people-to-people link is enriched by numerous Indian students studying in German universities.

- Germany's collaborative efforts with India extend to sustainable development, renewable energies, and urban mobility projects, showcasing their commitment to shared goals.
- Germany's tightrope walk with Western alliances, Russian energy and Chinese economic influence might pave way for possible future collaborations between India and Germany. Fostering stronger economic ties, expanding educational exchange programs, and deepening collaboration on various sectors such as defence will pave way for a mutually beneficial future for both nations.

6 India-US Trade Policy Forum

Why in News:

On January 12, 2024, the 14th Ministerial-level meeting of the Trade Policy Forum (TPF) between India and the United States took place in New Delhi.

Significance of Trade Policy Forum (TPF):

- The meeting emphasized the importance of the Trade Policy Forum (TPF) in strengthening bilateral trade ties and overall economic relationship.
- Further, it acknowledged the continuous growth in India-US bilateral trade, exceeding $200 billion in 2023 despite global trade challenges and expressed a mutual desire to further enhance engagement for increased and diversified bilateral trade.

Progress Since 13th TPF:

- Both nations reviewed significant advancements in addressing concerns impacting bilateral trade since the 13th TPF in January 2023 and highlighted the resolution of longstanding trade disputes at the World Trade Organization and understandings on market access.

Highlights of the meeting:

Areas of Cooperation:

- Both nations agreed to pursue enhanced engagement in critical areas like critical minerals, customs, trade facilitation, supply chains, and high-tech products.
- They committed to develop a forward-looking roadmap for cooperation and establish a foundation for future joint initiatives.

Bilateral Trade Concerns:

- Both countries highlighted progress in TPF Working Groups on various trade issues and established a pathway for mutual recognition of conformity assessment results to reduce compliance costs.
- They welcomed the finalization of the Turtle Excluder Device (TED) design to minimize the impact on sea turtle populations.

Intellectual Property:

- Both countries appreciated ongoing engagement on intellectual property (IP) in the TPF IP Working Group and discussed issues such as modernizing patent systems, protection for geographical indications, and trade secrets.
- They committed to continuing discussions on IP matters.

Agriculture:

- The countries acknowledged pending work for early finalization of market access for certain agricultural products and expressed interest in enhancing dialogue on food and agricultural trade issues in 2024.

Services:

- Both India and US acknowledged constructive engagement of the Services Working Group and discussed digital trade, Social Security totalization agreement, and India's Digital Personal Data Protection Act (DPDPA).
- They emphasized the potential of digital trade to spur economic growth and innovation.

Resilient Trade:

- India and the US welcomed continued engagement on best practices for customs and trade facilitation and committed to transparent regulatory practices and policies, including online accessibility and public consultations.
- They highlighted the importance of eliminating forced labour in global supply chains.

Way Forward:

Apart from the above mentioned, both India and the United States directed TPF Working Groups to reconvene quarterly while instructing the senior officials to hold an in-person inter-sessional TPF meeting by mid-2024. Both nations planned to reconvene the TPF at the Ministerial level before the end of 2024.

7 Vibrant Gujarat Summit

Why in News:

The 10th edition of the Vibrant Gujarat Global Summit was held in state capital Gandhinagar from January 10 to January 12, 2024. The Summit was

organised after a gap of five years. The first edition of the Vibrant Gujarat Summit was held in 2003 when the current Indian PM was the Chief Minister of Gujarat.

Theme: Gateway to the Future.

Significance of the Summit:

- The Vibrant Gujarat Summit 2024 was significant for more than one reason. There were over 60,000 delegates from 140 countries and 35 partner countries.
- MOUs for investment to the tune of over Rs. 26 lakh crore were signed during the 2024 Summit.
- One of the significant highlights of the summit was the participation of UAE President Sheikh Mohamed bin Zayed Al Nahyan as Chief Guest.

Other initiatives during the summit:

- A UAE-India Business Summit under the theme "Two Nations, One Vision", was held on the sidelines of the Vibrant Gujarat Summit.
- During the summit, A UAE-India Comprehensive Economic Partnership Agreement (CEPA) council was also set up with the objective of strengthening economic ties between both countries.
- Ever since the signing of the CEPA in 2022, bilateral trade between the UAE and India has risen significantly. In 2022-2023, the bilateral trade value was estimated at $84.9 billion.
- Both countries have set a target of $100 billion for bilateral trade between them. The UAE's investments in India have increased in recent years and the former is likely to make significant investments in India's infrastructure sector.
- MOUs were signed between both sides in food processing, energy and healthcare. The MOUs in food processing and renewable energy sync in with I2U2 (US, Israel, UAE and India), a US-led initiative also dubbed as Middle Eastern Quad.

Conclusion:

Vibrant Gujarat Summit has worked to transform ideas, platform innovation and bring investment to the ground, which has benefited not only Gujarat but the economy of the entire country. The presence of high-level political and business delegates from different countries at the Vibrant Gujarat Summit highlights the growing importance of state investor summits. The presence of the UAE President at the 10th Vibrant Gujarat Summit and the various agreements signed on the sidelines of the summit underscored the strengthening of ties between India and the UAE.



Miscellaneous Issues

1 Cybercrime in India

Why in News:

The chief executive officer of Indian Cybercrime Coordination Centre (I4C), while addressing a press conference informed that 50% of cybercrime complaints received on the national cybercrime helpline everyday have their origin in China and pockets of Cambodia and Myanmar.

Important statistics:

- In the past 5 years, 31 lakh cyber crime complaints were received and FIRs were filed in 66,000 cases. On day to day average around 5000 complaints are received everyday and estimated 40-50% of such complaint originates outside the country.
- In 2023, around 15.5 lakh cyber crime complaints were received, the number increasing from 26,049 complaints in 2019.
- From April 1, 2021-December 31, 2023, Rs 10,319 crore has been lost to cyber fraud. Since April 2021, 1,127 crore has been blocked in several bank accounts on complaint of 4.3 lakh victims, however, only 100 crore has been returned to the complainants so far.

-: Prelims Insights :-

Cyber Kidnapping: *A form of virtual kidnapping, it is crime where the kidnappers convince their victims to hide, and then contact their loved ones for ransoms. The kidnappers though not physically present, monitor the victim through video-call platforms and use deception and threat to coerce their victims.*

How Cybercrimes are dealt in India:

- 'Police' and 'Public Order' are State subjects as per the Seventh Schedule of the Constitution of India. The States/UTs are primarily responsible for the prevention, detection, investigation and prosecution of crimes including cyber crime through their Law Enforcement Agencies (LEAs).
- The Central Government supplements the initiatives of the States/UTs through advisories and financial assistance under various schemes for their capacity building.

Steps by Government in this direction:

- **Indian Cyber Crime Coordination Centre (I4C):** To deal with all types of cyber crime in the country, in a coordinated and comprehensive manner.
- **National Cyber Forensic Laboratory (Investigation):** To provide early stage cyber forensic assistance to Investigating Officers (IOs) of all State/UT Police both through online and offline modes.
- **CyTrain portal:** For capacity building of all the stakeholders, police officers, judicial officers and prosecutors through online courses on critical aspects of cyber crime investigation, forensics, prosecution, etc. along with certification.
- **Citizen Financial Cyber Fraud Reporting and Management System:** For immediate reporting of financial frauds and to stop siphoning off funds by the fraudsters. A toll-free Helpline number '1930' has been operationalized to get assistance in lodging online cyber complaints
- Assistance to States & UTs for Modernization of Police for the acquisition of latest weaponry, training gadgets, advanced communication/ forensic equipment, Cyber Policing equipment etc.

Conclusion:

Ensuring global collaboration in cybersecurity research and development is crucial, given that many cyberattacks originate internationally. Corporations and government departments should identify and address weaknesses within their organizations, implementing a layered security system that facilitates the sharing of security threat intelligence across different levels.

2 Warli Tribe

Why in News:

The members of the Warli tribal community in suburban Mumbai's Gorai village protested about the Shivaji museum project announced by the Maharashtra government, as it may potentially involve the destruction of their homes.

About the Museum:

- The Maharashtra Department of Tourism announced the construction of the Chhatrapati Shivaji Maharaj War Art Museum across 136 acres of land in Gorai in June last year. A budget of Rs 50 crore was set aside for the project. The boundary wall of the museum has been constructed – and that has already led to the demolition of some homes.
- The community is reportedly in the process of filing a petition in the Bombay High Court

against the takeover of their land. Earlier in 2011, the same court had rejected MTDC's tourism proposal to construct hotels and resorts in and around Gorai and Manori villages, as these areas are ecologically sensitive.

About the Warli Tribe:

- Warli Tribes are spread across Thane, Nashik and Dhule districts of Maharashtra, Valsad district of Gujarat, Karnataka, Goa and the Union Territories of Dadra & Nagar Haveli and Daman & Diu.
- They are small-scale cultivators and cultivate rice, pulses and vegetables. They also sell toddy, mahua and fuelwood to their tribesmen and neighbouring communities for a living.
- Warli are nature worshippers.

About Warli's Art Painting:

- Warli is a traditional art form of Maharashtra. Warli paintings are made of geometric shapes such as triangles, circles, and squares.
- Each of these symbols symbolizes a different natural element that they see around them – the circle represents the life forces of the sun and moon, the triangles represent the trees and the mountains.
- However, the square is not a natural element but rather a human innovation. It represents the sacred enclosure within which the Warli is made.
- The broad themes of the Warli paintings are gods and goddesses, harvest season, fauna, and different rituals.

Conclusion:

India comprises 8.6% tribal population, has access to an enormous indigenous knowledge which through recognition, adoption, and mainstreaming has the potential to provide sustainable solutions to concerns related to falling agricultural productivity and soil quality, biodiversity loss, water scarcity, pollution etc. Thus, any project that hampers life of tribal people should be implemented keeping their wellbeing and development in mind.

3 Sohrai Painting

Why in News:

Konedoba a remote village in West Bengal is organising a workshop on the ancient indigenous art of Sohrai painting. This village is near Jhargram and is dominated by the Santhal tribe. The members of an artists' initiative from Kolkata, called Chalchitra Academy, have been camping in this village since August last year and are organising this event.

About Sohrai Painting:

- Sohrai painting is practised by indigenous communities, particularly in the States of Jharkhand, Bihar, Odisha, and West Bengal, but it is the region of Hazaribagh in Jharkhand that has received the GI tag for this art form.
- It is the art of the women of the Kurmi, Santal, Munda, Oraon, Agaria, and Ghatwal tribes.
- Sohrai paintings are distinctive for their vibrant colours, intricate patterns, and symbolic motifs; and there is a Sohrai festival is held every year, marking the harvesting season and the arrival of winter.

Characteristics:

- **Matrilineal Passing of Skill:** The skills and techniques of Sohrai painting are passed down from mothers to daughters, portraying pregnant figures, nurturing animals, and symbols of fertility.
- **Symbolism:** Red lines symbolize ancestral blood, black lines represent Shiva or eternal death, and white lines depict food, emphasizing the harvest festival theme.

Festival Connection:

- Sohrai painting is associated with the Sohrai festival, which occurs post-Diwali.
- It is deeply connected to indigenous festivals, reflecting cultural beliefs and traditions.

Historical Context:

- Dating back to 7000-4000 BC, cave paintings in the Hazaribagh district bear resemblance to the motifs used in Sohrai paintings.
- These traditional art forms are believed to have roots in the practices of the ancestors, showcasing similar animal and floral patterns.

Conclusion:

The recognition and preservation of Sohrai paintings not only honours the indigenous heritage of Jharkhand but also serves as a testament to the artistic legacy passed down through generations, enriching the cultural fabric of the region.

4 New Epaulettes for Admirals in Indian Navy

Why in News:

The Navy has introduced a redesigned version of admirals' epaulettes, incorporating an octagon inspired by both the naval ensign and the rajmudra of Chhatrapati Shivaji.

Symbol of Maritime Heritage:

- The Navy describes the new epaulettes as a "true reflection of our rich maritime heritage".

It signifies a departure from the mind-set of subjugation, denoted as "Ghulami ki Maansikta."

- Further, the Navy plans to rename ranks, currently in British nomenclature, to establish a stronger connection with Indian identity. A step towards embracing "Bharatiyata" in all aspects, aligning with the pillars of "Panch Pran - Virasat Par Garv & Ghulami ki Mansikta se Mukti".

Symbolic Design Elements:

- The new epaulettes feature a golden Navy button top, followed by an octagon, an Indian sword, a crossed telescope, and stars denoting ranks.
- The new epaulettes align with the insignia of the Navy, presenting a cohesive visual identity.
- In September 2022, during the commissioning of INS Vikrant, Prime Minister Modi unveiled a new Naval ensign.
- He had also announced the Navy's intention to rename ranks in line with Indian traditions.

Symbolic Significance of Each Design Element:

- **Golden Navy Button:** Signifies the determination to eliminate the mind-set of subjugation known as 'ghulami ki maansikta' and represents a commitment to independence and self-reliance.
- **Octagon:** Represents the eight directions, symbolizing the comprehensive, all-encompassing vision of the forces, reflecting a long-term perspective, indicating a strategic approach to challenges.
- **Indian Sword:** Emphasizes the Navy's core purpose to serve as the forefront of national power, signifying the cutting edge of military strength, aiming to achieve victory in wars, dominate adversaries, and conquer challenges.
- **Telescope:** Symbolizes the Navy's commitment to long-term vision and foresight, representing a vigilant approach, akin to a "weather eye," in navigating the complexities of an ever-changing world.
- It also highlights the importance of preparedness and strategic planning in facing evolving challenges.

5 7 Odisha Products Get GI Tags

Why in News:

Seven Odisha products, which include Similipal Kai chutney and Kapdaganda shawl, have received the Geographical Indication (GI) tag, acknowledging their exclusivity to the state.

Geographical Indications (GI) in India:

Definition and Purpose:

- GIs indicate the place of origin of a product, emphasizing its unique qualities and authenticity. GI registration is granted to a product belonging to a specific geographical area, not an individual trader.
- In India, the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, awards GIs.
- Authorized traders receive a unique GI number and can apply to sell the product with the GI logo.
- Unauthorized traders attempting to sell the product can be prosecuted under The Geographical Indications of Goods (Registration and Protection) Act, 1999.

Protection and Benefits:

- GI tags serve as markers of authentic products, ensuring quality and distinctiveness.
- They safeguard the interests of local growers and artisans by preventing product duplication and unauthorized sales.
- Consumers can identify certified goods through GI tags.

Products Awarded GI Tag:

Kapdaganda Shawl:

- Woven and embroidered by Dongria Kondh tribe women in Odisha's Niyamgiri hills.
- It typically comprises off-white coarse cloth, embroidered with red, yellow and green threads symbolizing nature elements.

Lanjia Saura Painting:

- Oldest tribal art form belonging to the Lanjia Saura community in Odisha's Rayagada district.
- Exterior murals on mud walls featuring white paintings on crimson-maroon backgrounds.

Koraput Kala Jeera Rice:

- Black rice variety known as the 'Prince of Rice' from the Koraput region in Odisha.
- Aromatic with nutritional benefits, resembling cumin seeds in appearance.

Similipal Kai Chutney:

- Traditional delicacy from Odisha's Mayurbhanj district made with red weaver ants.
- Rich in medicinal and nutritional value, believed to boost immunity.

Nayagarh Kanteimundi Brinjal:

- Known for prickly thorns on stems and round fruits with a unique taste.
- Resistant to insects, cultivated in Nayagarh district, and has historical origins.

Odisha Khajuri Guda:

- Jaggery extracted from date palm trees in Odisha's Gajapati district.
- Organic, dark brown, and known for its unique

taste.

Dhenkanal Magji:

- Sweet made from buffalo milk cheese in Dhenkanal district, known for unique characteristics.
- Originated in the Mandar-Sadangi area and has historical significance in buffalo milk production.

6 11th Century Jain Sculptures

Why in News:

Recently three Jain sculptures from the 11th century were discovered in a heap of debris during drainage work in Varuna village in the Mysuru district. Among the three, one was severely damaged, while the other two were in relatively good condition. One of the sculptures supposedly appears to be a Jain Tirthankara, but its identity is yet to be confirmed due to erased or damaged symbols. The sculptures were transferred to the archaeology museum on the premises of the Indira Gandhi Rashtriya Manav Sangrahalay.

Jain Sculptures' Artistry:

Depiction of Tirthankaras:

- Jain sculptures showcase the brilliance of Jain Tirthankaras through delicate images.
- The sculptures can represent any of the twenty-four Tirthankaras, with popular depictions including Parshvanatha, Rishabanatha, and Mahavira.

Features of Jain Sculptures in Mathura School:

- Mathura School of sculpture developed around Mathura, a key city on the Uttarapatha and the second capital of the Kushanas.
- The discovered sculpture belonging to this school encompass all three religions:
  - Buddhism
  - Brahmanism
  - Jainism
- It is crafted using red spotted sandstone from the nearby Aravalli region.
- Jain Sculptures in Mathura School depict Jina in seated or standing poses. Standing Jina is straight with hands reaching the knee, while seated Jina is in padmasana with hands in dhyana mudra.
- Generally nude, these sculpture venerate 24 Tirthankaras distinguished by emblems on their throne or chest.
- They also contributed reliefs in stupa known as ayagapatas – square slabs depicting Jina stupa, swastika, twin fish symbols, and various scenes.

Other examples of Jain Sculptures:

- **Lohanipur Torso:** Polished sandstone statue in Patliputra, Bihar, representing a damaged Jain Tirthankara.
- **Gopachal Rock-cut Jain Monuments:** Located around the walls of Gwalior Fort, Madhya Pradesh. These monuments depict Tirthankaras in seated Padmasana and Kayotsarga postures in a typical naked form.
- **Vasantgarh Hoard:** Located in Rajasthan, evidence of a strong Jain presence with the discovery of 240 Jain bronze idols.
- The idols here feature images of Tirthankara, sashandevatas (yaksha and yakshi), and Jain deities in Shwetambar iconography.

7 National Sports Award

Why in News:

The President of India recently presided over a ceremony at Rashtrapati Bhavan to bestow the prestigious National Sports 2023. The awards are administered by the Ministry of Youth Affairs & Sports, Government of India.

Categories:

National Sports Awards are divided into six categories:

Major Dhyan Chand Khel Ratna Award:

- It is India's highest sporting honour established in 1991-92 and named after hockey legend Major Dhyan Chand.
- It is given for outstanding performances over 4 years.
- **2023 awardee:** Chirag Shetty and Satwik Sairaj Rankireddy (badminton) were awarded for the year 2023.

Arjuna Award:

- Instituted in 1961, it was India's highest sporting honour before the Khel Ratna came into being.
- It is named after the Mahabharata character Arjuna and awarded for consistently good performance over 4 years.
- Winners receive a statuette of Arjuna, a certificate, and a cash prize.
- **2023 awardee:** Aditi Gopichand Swami (archery), Mohammed Shami (cricket), Aishwary Pratap Singh Tomar (shooting) etc. were awarded

Dronacharya Award:

- India's highest sports honour for coaches, this award was instituted in 1985.

- Awardees receive a bronze statue of Dronacharya, a certificate, and a cash prize.
- The award is given for both recent accomplishments and lifetime contributions.
- **2023 awardee:**
  - Regular Category: Lalit Kumar (wrestling), RB Ramesh (chess) among others.
  - Lifetime Category: Jaskirat Singh Grewal (golf), Bhaskaran E (kabaddi) among others.

Major Dhyan Chand Award:

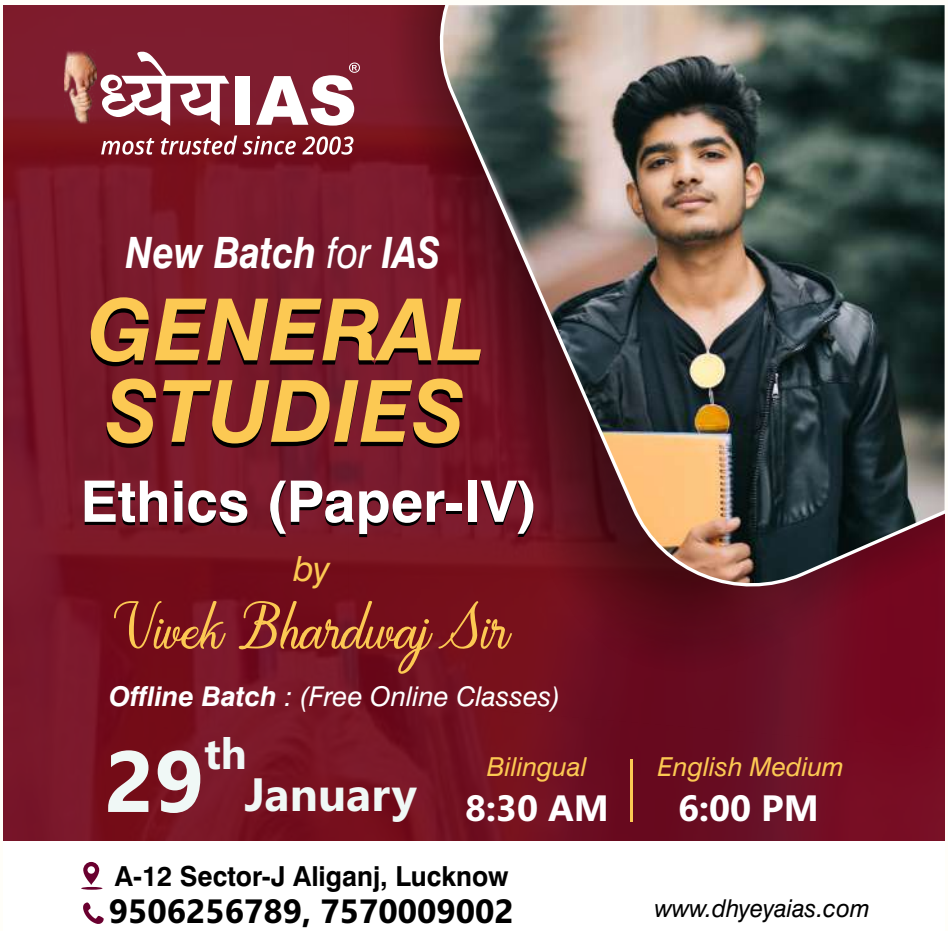
- Instituted in 2002, this award honours lifetime achievements in sports.
- It recognizes contributions to the promotion of sports in an individual capacity.
- **2023 awardee:** Manjusha Kanwar (badminton), Vineet Kumar Sharma (hockey), Kavitha Selvaraj (kabaddi).

Maulana Abul Kalam Azad Trophy (MAKA):

- Oldest National Sports Award in India, instituted in 1956–1957.
- It is given to an institution or university for top performance in inter-university tournaments.
- **2023 awardee:** Guru Nanak Dev University, Amritsar (overall winner university); Lovely Professional University, Punjab (first runner-up); Kurukshetra University, Kurukshetra (second runner-up).

Rashtriya Khel Protsahan Puraskar:

- Instituted in 2009, it is awarded to organizations and individuals for sports promotion and development.
- Categories include talent identification, corporate social responsibility, employment of sportspersons, and sports for development.
- **2023 awardee:** JAIN (Deemed-to-be-University), Odisha Mining Corporation Limited.





Brain Boosters- Year-End Review 2023

Ministry of New & Renewable Energy

Overview

- In line with India's announcement at COP26, Ministry of New and Renewable Energy is working towards achieving 500 GW Non-Fossil based electricity generation capacity by 2030.
- RE capacity of about 13.5 GW is expected to be installed during year 2023, corresponding to an investment of about Rs. 74,000 crores.
- India's Rank globally:
  - **4th** in **Renewable Energy Installed Capacity**
  - **4th** in **Wind Power capacity**
  - **5th** in **Solar Power capacity**

Data as per International Renewable Energy Agency - Renewable capacity statistics 2023.

National Green Hydrogen Mission

- National Green Hydrogen Mission was approved by the Union Cabinet on 4th January 2023, with an outlay of Rs.19,744 crore.
- The objective of the Mission is to make India the **Global Hub for production, usage and export of Green Hydrogen** and its derivatives.

PLI Scheme for High Efficiency Solar PV Modules

The Government of India is implementing the Production Linked Incentive (PLI) Scheme for National Programme on High Efficiency Solar PV Modules, for achieving manufacturing capacity of Giga Watt (GW) scale in High Efficiency Solar PV modules.

Offshore Wind Energy

- India has a coastline of about 7600 km (Mainland) surrounded by water on three sides and has good potential for offshore wind energy generation.
- A revised Strategy for development of offshore wind energy projects has been issued in September, 2023, which may lead to installation of 37 GW capacity of Off-shore Wind Energy.

Solar Parks

- The Scheme for "Development of Solar Parks and Ultra Mega Solar Power Projects" was rolled out in December 2014.
- As on 30-11-2023, Ministry has approved 50 solar parks with an aggregate capacity of around 37,490 MW in 12 States across the country.
- In these approved parks, an aggregate capacity of 10,401 MW of solar projects has been commissioned, out of which 284 MW has been commissioned in the calendar year of 2023.

PM KUSUM

The Government approved the expansion of PM KUSUM Scheme with revised targets of 49 lakhs pumps to be installed / solarized under the Scheme.

Rooftop Solar

- About 741 MW capacity has been installed under the grid connected rooftop solar programme during January to November 2023.
- An additional approximately 2.77 GW capacity has been installed in all sectors with or without Central Financial Assistance during this period.

Bioenergy

Initiative was undertaken for spreading the message of not burning biomass and using it for Bioenergy conversion, in 20 districts of Punjab, Haryana and Uttar Pradesh.



Ministry of Jal Shakti

Department of Water Resources, River Development and Ganga Rejuvenation

National Mission for Clean Ganga (NMCG)

- National Mission for Clean Ganga, in the year 2023, completed 38 projects which resulted in the completion of a cumulative total of 270 projects, so far and also sanctioned 45 new projects, bringing the cumulative total to 454 projects sanctioned.
- The **Global River Cities Alliance (GRCA)**, led by the National Mission for Clean Ganga (NMCG) was launched at COP28, the United Nations Climate Change Conference in Dubai, United Arab Emirates.

National Water Mission

Jal Shakti Abhiyan- Catch the Rain 2023 Campaign:

Key activities:

- Water conservation and rainwater harvesting.
- Enumerating, geo-tagging & making inventory of all water bodies; preparation of scientific plans for water conservation based on it.
- Setting up of Jal Shakti Kendras in all districts.
- Intensive afforestation.
- Awareness generation.

Bureau of Water Use Efficiency (BWUE):

- BWUE will act as a facilitator for promotion of improving water use efficiency across various sectors namely irrigation, drinking water supply, power generation, industries, etc. in the country, for promotion, regulation and control of efficient use of water in irrigation, industrial and domestic sectors.

National Water Development Agency (NWDA): Inter-Linking of Rivers Project

Under National Perspective Plan formulated by Government of India, 30 inter-basin water transfer links (16 Peninsular and 14 Himalayan component) have been identified by NWDA for preparation of feasibility reports.

Central Ground Water Board

National Aquifer Mapping and Management Programme:

- It envisages mapping of aquifers, their characterization and development of Aquifer Management Plans to facilitate sustainable management of ground water resources.
- Out of 32 lakh km^2 of the entire country, entire mappable area of 25 lakh km^2 has been covered under this programme.
- The web-based application "INDIA-GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES) developed by CGWB in association with IIT-Hyderabad, provides a common and standardized platform for GW Resource Assessment for the entire country.

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

PMKSY – Har Khet Ko Pani – Ground Water:

- It envisages to provide irrigation facility for small and marginal farmers in areas having sufficient potential for future development of ground water.

PMKSY-Accelerated Irrigation Benefit Programme:

- The Government of India on 27.07.2016 approved funding of the 99 prioritized irrigation projects for completion in phases.
- Funding arrangement for both Central Assistance (CA) and State Share are made through NABARD under Long Term Irrigation Fund (LTIF).



Department for Promotion of Industry and Internal Trade

Production Linked Incentive Scheme

- Keeping in view India's vision of becoming 'Atmanirbhar', Production Linked Incentive (PLI) Schemes for 14 key sectors were announced to enhance India's Manufacturing capabilities and Exports.
- PLI Scheme across these key specific sectors is poised to
  - Make Indian manufacturers globally competitive.
  - Attract investment in the areas of core competency and cutting-edge technology.
  - Ensure efficiencies.
  - Create economies of scale.
  - Enhance exports.
  - Make India an integral part of the global value chain.

PLI Scheme for White Goods (ACs and LED Lights)

- It was approved by the Union Cabinet on 7 April 2021, with total outlay of Rs.6,238 crore.
- 64 Companies have been selected under the Scheme.
- 34 Companies to invest Rs.5,429 crore for Air Conditioner Components and 30 Companies to invest Rs.1,337 crore for LED Component Manufacturing.

Startup India Initiative

- Startup India initiative launched by the Prime Minister on 16th January 2016, has evolved into the launchpad for ideas to innovation in the country.
- Several programs have been implemented over the years under the Startup India initiative to:
  - Support entrepreneurs.
  - Build a robust startup ecosystem.
  - Transform India into a country of job creators rather than job seekers.
- More than 1,14,000 startups have been recognized by the Government which have reported creation of more than 12 lakh jobs with an average of 11 jobs created by each recognised startup.
- Under the **Fund of Funds for Startups (FFS)** Scheme, the Government has committed about Rs. 10,229 crore to 129 Alternative Investment Funds (AIFs).
- Under the **Startup India Seed Fund Scheme (SISFS)**, a total sum of Rs. 747 crore has been approved to 192 incubators.

Credit Guarantee Scheme for Startups (CGSS):

- The Government has also notified the establishment of the CGSS for providing credit guarantees to loans extended by Scheduled Commercial Banks, Non-Banking Financial Companies and AIFs.
- The Scheme has been operationalized on 1st April 2023.

One District One Product

- One District One Product (ODOP) aims to foster balanced regional development across all districts of the country by being vocal for local products.
- More than 1,200 products have been identified across 767 districts of the country which are showcased on ODOP portal and many of these products are also being sold on GEM and other e-commerce platforms.

Open Network for Digital Commerce

- Open Network for Digital Commerce (ONDC) is an initiative by DPIIT aiming at promoting open networks for all aspects of exchange of goods and services over digital or electronic networks.
- 2.3 Lakh+ sellers and service providers are active on the ONDC network spread across 500+ cities and towns across India.
- Presently, over 3000 Farmer Producer Organisations (FPOs) have registered to be a part of the ONDC network through various Seller Network Participants.
- Around 400 Self-Help Groups (SHGs), micro-entrepreneurs and social sector enterprises have been onboarded on the network.
- The ONDC Network started with two categories
  - F&B and Grocery
- Now it has expanded the categories to:
  - Mobility
  - Fashion
  - Beauty and Personal Care
  - Home & Kitchen
  - Electronics and Appliances
  - Health & Wellness
  - B2B

ODOP- Ekta/Unity Mall

- Setting up of Ekta/Unity Mall in the States was announced in the Union Budget 2023-24 for:
  - Promotion and sale of their own ODOPs
  - GI products
  - Other handicraft products
- At present, 27 States have submitted their Detailed Project Reports, out of these, 17 have been approved.

Promoting Ease of Doing Business and Reducing Compliance Burden

- India has reported meteoric improvement in Ease of Doing Business (EoDB) Ranking from 142nd rank in 2014 to 63rd rank in the World Bank Doing Business 2020 report.
- The **Jan Vishwas (Amendment of Provisions) Bill, 2023** was passed by the Parliament.
- Through this Amendment Act, a total of 183 provisions are proposed to be decriminalized in 42 Central Acts administered by 19 Ministries/Departments.
- Under EoDB reforms, Government is moving towards centralized KYC and PAN as Single Business Identity and Regulatory Impact Assessment, thereby giving impetus to FDI in the country and domestic manufacturing

Make in India 2.0

- Make in India is now focusing on 27 sectors under **Make in India 2.0**.
- DPIIT is coordinating Action Plans for 15 manufacturing sectors, while the Department of Commerce is coordinating for 12 service sectors.
- DPIIT is working closely with 24 sub-sectors which have been chosen keeping in mind the following:
  - Indian industries strengths and competitive edge
  - Need for import substitution
  - Potential for export
  - Increased employability
- These 24 sub-sectors are:
  - Furniture
  - Air-conditioners
  - Leather and footwear
  - Ready to eat
  - Fisheries
  - Agri-produce
  - Auto components
  - Aluminum
  - Electronics
  - Agrochemicals
  - Steel
  - Textiles
  - EV components and integrated circuits
  - Ethanol
  - Ceramics
  - Set top boxes
  - Robotics
  - Televisions
  - Close circuit cameras
  - Toys
  - Drones
  - Medical devices
  - Sporting goods
  - Gym equipment

IPR Strengthening

- Various Policy and Legislative reforms have been undertaken in last 9 years in the area of institutional strengthening and process digitalization.
- India's rank in the Global Innovation Index (GII) amongst 132 economies has improved from 81st in 2015 to 40th in GII 2022 ranking and **in 2023 India has retained its 40th position**.
- The number of **Patents granted** has seen an eight-fold growth from 5978 in 2014-15 to **47735 in 2023-24**.
- Number of Designs registered has recorded a two-fold increase from 7147 in 2014-15 to 15506 in 2023-24.
- Patents filed by women have seen a rise of more than 345 times, from 15 in 2014-15 to 5183 in 2023- 24.

Industrial Corridor Programme

- The Programme aims to develop futuristic industrial cities in India at par with the world's best manufacturing and investment destinations.
- It will create employment opportunities and economic growth leading to overall socio-economic development.

Project Monitoring Group (PMG)

- The PMG portal has been upgraded from an issue-based resolution mechanism to a **Milestone-based monitoring system**.
- The new system will ensure proactive monitoring of projects and will help in initiating course correction measures in time.
- This will put the PMG at the forefront of driving transformational change in the infrastructure space.

Growth of Eight Core Industries

- The Index of Eight Core Industries (ICI) measures the performance of eight core industries.
- Eight Core Industries (ICI)consist of:
  - Cement
  - Coal
  - Crude Oil
  - Electricity
  - Fertilizers
  - Natural Gas
  - Petroleum Refinery Products
  - Steel
- The industries included in the **ICI comprise 40.27 % weight** in the Index of Industrial Production (IIP).
- During 2022-23, the ICI recorded an annual growth of 7.8% compared to average growth rate of 1.5% during the last 3 years i.e. 2019-20 to 2021-22.
- During Apr - Oct 2023 in the current Financial Year 2023-24, output of core industries further increased by 8.6% over the corresponding period last year.

Foreign Direct Investment

- The Government has put in place an investor friendly Foreign Direct Investment (FDI) policy under which most sectors except certain strategically important sectors are open for 100% FDI under the automatic route.
- During FY 2022-23, FDI inflow of USD 71 billion (provisional figure) has been reported.
- During the current FY 2023-24 (up-to September 2023) FDI worth USD 33 billion has been reported.

Brain Boosters- Year-End Review 2023



Ministry of Fisheries, Animal Husbandry and Dairying

Department of Fisheries

About the Fisheries Sector

- Fisheries sector contributes to the national income, exports, food and nutritional security as well as employment generation.
- Fisheries sector is recognized as the **'Sunrise Sector'** and is instrumental in sustaining livelihoods of around 30 million people in India particularly that of the marginalized and vulnerable communities.
- With record fish production of 175.45 lakh tons in FY 2022-23, India is the **third largest fish producing country** in the world accounting for 8% of global production.
- It contributes about 1.09% to the country's Gross Value Added (GVA) and over 6.724% to

Pradhan Mantri Matsya Sampada Yojana (PMMSY)

- The Cabinet on 20th May 2020 approved the Pradhan Mantri Matsya Sampada Yojana (PMMSY) with the highest ever total investment of Rs 20,050 crore.
- PMMSY was launched by the Prime Minister on 10th September 2020 as part of the COVID-19 Relief Package (AatmaNirbhar Bharat package) of the Government of India for implementation in 5 years from FY 2020-21 to FY 2024-25.

Fisheries and Aquaculture Infrastructure Development Fund (FIDF)

- To address the infrastructure requirement for fisheries sector, **Fisheries and Aquaculture Infrastructure Development Fund (FIDF)** was created during 2018-19 with a total funds size of Rs 7,522.48 crore.
- FIDF provides concessional finance to the Eligible Entities (EEs), for development of identified fisheries infrastructure facilities through Nodal Loaning Entities (NLEs) namely:
  - National Bank for Agriculture and Rural Development (NABARD)
  - National Cooperatives Development Corporation (NCDC)
  - All scheduled Banks

Kisan Credit Card (KCC)

Kisan Credit Card (KCC) scheme was extended by the Government of India (GoI) in the 2018-19 to fisheries and animal husbandry farmers to help them meet their working capital requirements.

Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)

- Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana, is a Central Sector Sub-scheme under PMMSY.
- It has been introduced to further enable activities for fishermen, fish vendors and micro & small enterprises.
- PM-MKSSY envisages to focus on **gradual formalization of the unorganized fisheries sector**.

Development of 5 Major Fishing Harbours as Hub of Economic Activities

As per the union budget announcement in FY 2021-22, development of 5 Major fishing harbours **(Chennai, Kochi, Paradip, Petuaghat and Visakhapatnam)** is being undertaken at a total cost of Rs 518.68 crore with the central share of Rs 199.75 crore.

Department of Animal Husbandry & Dairying

About Livestock Sector

- Livestock Sector grew at a Compound Annual Growth Rate (CAGR) of 13.36% from 2014-15 to 2021-22.
- The contribution of livestock in total agriculture and allied sector Gross Value Added (GVA) has increased from 24.38% (2014-15) to 30.19% (2021-22).
- Livestock sector contributed 5.73% of total GVA in 2021-22.

Livestock Population

There are about 303.76 million bovines (cattle, buffalo, mithun and yak), 74.26 million sheep, 148.88 million goats, 9.06 million pigs and about 851.81 million poultry as per **20th Livestock Census** in the country.

Dairy Sector

- Dairy is the single largest agricultural commodity contributing 5% of the national economy and employing more than 8 crore farmers directly.
- India is ranked **first in milk production** contributing **24.64% of global milk production**.
- Milk production is growing at the Compound Annual Growth Rate (CAGR) of 5.85% over the past 9 years from 146.31 million tonnes during 2014-15 to 230.58 million tonnes during 2022-23.
- World milk production has grown by 0.51% during 2022 in-comparison to the year 2021 (Food Outlook June, 2023).
- The per capita availability of milk is 459 grams per day in India during 2022-23 as against the world average of 322 grams per day in 2022 (Food Outlook June, 2023).

Egg and Meat Production

- According to Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) production data (2021), India ranks
  - 2nd in egg production
  - 5th in meat production
- Egg production in the country has increased from 78.48 billion in 2014-15 to 138.38 billion Nos. in 2022-23.
- Egg production in the country is growing at the Compound Annual Growth Rate (CAGR) of 7.35% over the past 9 years.
- The per capita availability of egg is at 101 eggs per annum in 2022-23 as against 62 eggs in 2014-15.
- Meat production in the country has increased from 6.69 million tonnes in 2014-15 to 9.77 million tonnes in 2022-23.

Rashtriya Gokul Mission

It is for development and conservation of indigenous bovine breeds. Major Achievements/ Interventions under the mission are:

- Nationwide Artificial Insemination Programme
- Promotion of IVF Technology in the country
- Sex sorted semen production
- DNA based Genomic selection
- Animal Identification and traceability
- Progeny testing and Pedigree selection
- National Digital Livestock Mission
- Breed Multiplication Farms

Nritya Kalanidhi Award

Classical dancer and choreographer Vasanthalakshmi Narasimhachari was presented with 'Nritya Kalanidhi' award at the 17th Dance Festival of The Music Academy in Chennai.



About Nritya Kalanidhi Award:

- The Nritya Kalanidhi award is presented in the field of dance by the Madras Music Academy.
- It is considered the highest honor in Carnatic music and was established in 1942.
- The award includes a gold medal and a citation.
- The Madras Music Academy also gives out other awards, including the TTK (Tiruvellore Thattai Krishnamachari), Sangita Kala Acharya and Sangita Kalanidhi awards.

Bharatnatyam:

- Bharatanatyam is a classical Indian dance form that originated from the Tanjore district of Tamil Nadu.
- It is one of the eight classical dances of India and is considered to be over 2,000 years old.
- It is performed by both men and women.
- Bharatanatyam is known for its symbolism and three important features-Nritta, Natya and Nritya.
- It is also known as Ekaharya, where one dancer performs multiple roles in a single performance.

Prerana Programme

Recently, the Ministry of Education has launched 'Prerana', programme at Vadnagar, Gujarat.

About Prerana Programme:

- Prerana: An Experiential Learning Programme, which will operate from the vernacular school in Prime Minister Narendra Modi's birthplace Vadnagar, Gujarat.
- It is a weekly residential programme, that will host 20 students (10 boys and 10 girls) from across the country on a rotational basis.
- The primary objective of this program is to provide the students with a meaningful, distinctive and exciting learning experience, ultimately fostering leadership abilities among them.
- The curriculum of Prerana School prepared by IIT Gandhi Nagar is rooted in nine value based themes: Swabhiman and Vinay, Shaurya and Sahas, Parishram and Samarpan, Karuna and Sewa, Vividhta and Ekta, Satyanishtha and Shuchita, Navachar and Jigyasa, Shraddha aur Vishwas, and Swatantrata and Kartavya.
- It aims to leverage the best-in-class technology while honoring the rich heritage of the region.
- This initiative targets students in Classes 9 to 12.

Highly Pathogenic Avian Influenza

Recently, the first recorded case of a polar bear dying from Highly Pathogenic Avian Influenza (HPAI) was confirmed in the Arctic region.

About Highly Pathogenic Avian Influenza:

- HPAI is a virus that mainly affects birds and can be deadly.
- It is caused by subtypes H5 and H7 of type A.
- It can cause serious illness in birds that can spread quickly, resulting in high death rates.
- It can also infect other mammals, such as minks, ferrets, seals and domestic cats.
- The initial outbreak of HPAI H5N1 in India occurred in 2006 in Navapur, Maharashtra.
- The main risk factor for transmission from birds to humans is direct or indirect contact with infected animals or with environments.
- Exposure to avian influenza viruses can lead to infection and disease in humans, ranging from mild, flu-like symptoms or eye inflammation.

- World Health Organisation data indicate 60% of cases classified as H5N1 resulted in death.

K-SMART App

Recently, the Kerala Government launched K-SMART app which will bring all services of the three tier local selfgovernment institutions on a unified digital platform.

About K-SMART App:

- The K-SMART (Kerala Solutions for Managing Administrative Reformation and Transformation) app is a digital platform to integrate and provide various services offered by three-tier local self-government institutions.
- It is the first such initiative in the country that the entire bouquet of services of a department is being made available to the public on a digital platform.
- It would provide a major relief to ex- patriates who want to avail various services of the local bodies without visiting the offices.
- This initiative will reduce the digital divide in society.
- Initially, K-SMART app was developed by Information Kerala Mission of the state IT department, will be operational in corporations and municipalities.
- It adapts diverse technological disciplines, encompassing blockchain, artificial intelligence, GIS/ spatial data, chatbot, message integration, API integration of various software, machine learning, data science, cloud computing, virtual and augmented reality, Internet of things among others.

Kalaram Temple

Recently, the Prime Minister of India visited the Kalaram Mandir situated in Nasik district of Maharashtra.

About Kalaram Temple:

- The Kalaram temple derives its name from a black statue of the Lord -Kala Ram translates literally to "Black Ram".
- Kalaram Temple is situated on the banks of the Godavari river in Panchvati, Maharashtra.
- The name Panchavati comes from the existence of five banyan trees in the area.
- According to the epic, Lord Ram, Sita and Lakshman set up a hut here as the presence of five banyan trees made this spot auspicious and they spent the first few years of their 14-year exile in Dandakaranya.
- The temple is also the site of a land mark agitation led by Babasaheb Ambedkar, demanding temple entry rights for Dalits more than 90 years ago.
- In 1930, BR Ambedkar and the Marathi teacher and social activist Pandurang Sadashiv Sane, known as Sane Guruji, led an agitation to demand access for Dalits to Hindu temples.
- The temple was built in 1792 with the efforts of Sardar Rangarao Odhekar.

Sisal Leaves

Recently, The Stanford University team has found that an absorbent material can be produced using sisal leaves and could replace cotton, wood pulp, and chemical absorbents in sanitary napkins.

About Sisal Leaves:

- Sisal is a member of the Asparagaceae family and its fiber is the most important of the leaf fiber group.
- Sisal leaves are stiff, green, sword-like and possess exceptional durability.
- These leaves store water due to their succulent nature, making sisal plants drought-resistant.
- Each sisal plant typically yields around 200-250 usable leaves during its lifespan of 7-10 years.
- Sisal fibers are used for making ropes, paper, cloth and now, highly absorbent materials for menstrual hygiene products.
- Aztec and Mayan civilizations were among the first to make paper from sisal leaves.
- Sisal leaves historically used for various purposes like making twine, cloth, carpets and even in the production of mezcal, a distilled alcoholic beverage.
- Brazil is the largest producer, followed by Tanzania, Kenya, Madagascar and China.

Prasadam

Recently Union Minister for Health & Family Welfare inaugurated India's first healthy and hygienic food street 'Prasadam' in Ujjain, Madhya Pradesh.

About Prasadam:

- The newly launched food street is designed to provide various facilities including including a kids' play area, drinking water facility, CCTV surveillance, parking public conveniences and seating spaces.
- Spread over an area of 939 square metres with a total number of 17 shops, 'Prasadam' offers convenient and culturally rich dining options for the 1-1.5 lakh devotees who visit Mahakaleshwar temple daily.
- In addition to enhancing Ujjain's tourism appeal and preserving its culinary traditions, Prasadam will also contribute to economic growth and community engagement.

Copilot

Microsoft has recently revealed that it is bringing its biggest transformation with AI to Windows 11 by integrating Copilot AI into its Windows Keyboards.

About Copilot:

- Microsoft collaborated with OpenAI last year to integrate GPT-4 into Edge and introduced its own AI assistant called Copilot. Copilot is a AI powered chatbot which can offer answers to the user-generated queries similar to ChatGPT.
- The Microsoft will replace the iconic Windows/Start button on its keyboards and will launch the Windows Copilot that's built into Windows 11 with new Copilot key. It will sit to the right of the space bar.

Five new members in BRICS

The upcoming BRICS summit in Russia this October is set to expand its membership to include five new nations alongside the original founding five – Brazil, Russia, India, China, and South Africa.

More about the news:

- BRICS expansion, featuring Egypt, Ethiopia, Iran, Saudi Arabia, and the United Arab Emirates, signifies a shift in the global landscape, characterized by increasing multipolarity and assertive middle powers challenging the established Western-led order.
- The last expansion of the BRICS took place in 2010 when South Africa joined, adding an "S" to the acronym a year after the bloc's inception.
- Notably, Argentina, under its new President Javier Milei, has decided to withdraw from its planned entry into the expanding BRICS club of nations.

Golden Globe Awards

The 81st Golden Globes Awards was organised recently. This award is believed to be the third biggest award show of United States after Oscars and Grammys.

More Information:

- Christopher Nolan's blockbuster biopic Oppenheimer won five awards including the award for best drama. The film also won best director for Nolan, best drama actor for Cillian Murphy, best supporting actor for Robert Downey Jr.
- Lily Gladstone won best actress in a dramatic film for Martin Scorsese's Killers of the Flower Moon.

Mukhyamantri Mahila Udyamita Abhiyaan (MMUA)

The Assam government has launched a financial support scheme for rural women entrepreneurs called Mukhyamantri Mahila Udyamita Abhiyaan. The scheme however comes with a few conditions — including a cap on the number of children beneficiaries should have.

More about the Scheme:

- The scheme aims to help women who are part of self-help groups in rural parts of the state develop into "rural micro entrepreneurs", with the target being an annual income of Rs 1 lakh for each member.
- Around 145 business plans have been prepared by the government, of which they can select one to avail the grant. In the first year, the government will provide them with Rs 10,000 if they fulfil the basic eligibility criteria.
- Subject to whether they utilise these funds, over the next two years they will be given Rs 12,500 by the government and a Rs 12,500 loan from a bank.
- Further, the beneficiaries must meet two additional conditions: enrolling girl children in school or signing an undertaking for future enrollment, and ensuring the survival of trees planted under the Amrit Brikshya Andolan initiative.

All India Conference of Directors General & Inspectors General of Police

All India Conference of Directors General and Inspectors Generals of Police 2023 was recently organised at the Rajasthan International Centre in Jaipur.

About the conference:

- The three-day Conference was inaugurated by Union Home Minister Amit Shah.
- The conference was held in hybrid mode with DGPs, IGPs and Chiefs of Central Police Organisations attending physically from Jaipur and over 500 Police officers of various ranks participating through video conferencing from across the country.
- A wide range of issues were discussed at the conference including policing and internal security issues including Cyber Crime, Technology in Policing, Counter Terrorism challenges, Left Wing Extremism, and Prison Reforms .

Henley Passport Index

Recently the Henley Passport Index (which ranks the world's most travel-friendly passports) released its list for 2024. The Henley Passport Index is an annual list prepared by London-based Henley & Partners.

Key Points:

- In this report, European countries France, Germany, Italy, Spain and Asia's Japan and Singapore have been given first place.
- India has improved its ranking to 80th position from last year's 84th position. Those holding an Indian passport have visa-free access to 62 destinations.
- Pakistan (101), Iraq (102), Syria (103) and Afghanistan (104) are at the bottom in this index.

Gabriel Attal nominated the new Prime Minister of France

- French President Emmanuel Macron has nominated 34-year-old Gabriel Attal as the new Prime Minister of France. Gabriel Attal is the youngest Prime Minister in the history of France and the country's first formally declared Prime Minister.
- Gabriel Attal replaced Elizabeth Bourne, 62. Gabriel's appointment as Prime Minister took place when President Macron is preparing to make major changes to his team ahead of EU elections later this year.

Nobel laureate Muhammad Yunus jailed for six months

- A Bangladesh court has sentenced Nobel laureate Muhammad Yunus to six months in jail for violating the country's labour laws. Known internationally as the 'Banker of the Poor', 83-years-old Yunus is credited with setting up a pioneering system of micro-finance loans that has helped lift millions of people out of poverty.
- Professor Yunus and his Grameen Bank were jointly awarded the Nobel Peace Prize in 2006 for this pioneering work.

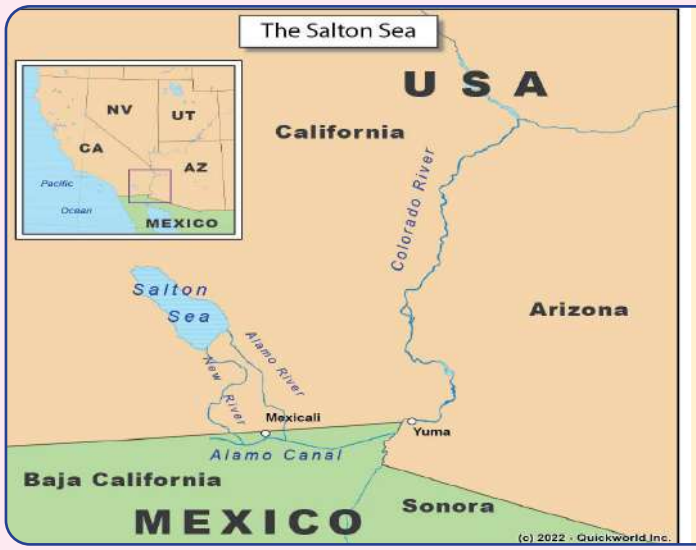
Current Affairs at a Glance

1. Recently, famous Urdu poet Munawwar Rana passed away on January 14 in Lucknow. He was suffering from throat cancer. He was awarded the Sahitya Akademi Award in 2014 and the Jnanpith Award in 2014 for his poem Shahdaba. His poem Maa is considered one of his most famous works.
2. A Guinness World Record was recently made when more than 50,000 people simultaneously performed 'Surya Namaskar' at 108 locations in Gujarat.
3. Recently Crown Prince Frederick X became the King of Denmark. He is the eldest son of Queen Margrethe. Under the Danish Constitution, the Danish monarch has a limited role in the government of Denmark.
4. State Bank of India recently launched Green Rupee Term Deposit for tenures of 1,111 days, 1,777 days and 2,222 days. The purpose of this deposit is to collect funds to support environment-friendly initiatives and projects.
5. Recently, the government appointed Sheel Vardhan Singh as member of the Union Public Service Commission. The members of UPSC are appointed by the President under Article 316 (11) of the Constitution of India.
6. A joint exercise 'Sahyog Kaijin' between Indian Coast Guard and Japan Coast Guard was conducted off the coast of Chennai on 8 January with the aim of pollution response training on hazardous and narcotic substances to combat marine pollution.
7. Recently Odisha Chief Minister Naveen Patnaik inaugurated an airport in Malkangiri, the southernmost district of Odisha. The airport will lead to development in the region and open new avenues of communication, tourism and trade in Malkangiri and surrounding areas.
8. China recently launched a satellite named Einstein Probe (EP) on a Long March-2C carrier rocket from the Xichang Satellite Launch Center in Sichuan province of southwest China. This satellite will observe mysterious momentary events in the universe.
9. Tshering Tobgay was elected the Prime Minister of Bhutan for the second time. He is the leader of the Liberal People's Democratic Party (PDP). He served as Prime Minister of Bhutan from 2013 to 2018.
10. Recently, five Lok Sabha MPs including BJP's Sukant Majumdar, Sudhir Gupta, NCP's Amol Ramsingh Kolhe, Congress's Kuldeep Rai Sharma and Shiv Sena's Shrikant Eknath Shinde have been selected for the Sansad Ratna Awards.
11. Famous classical singer Ustad Rashid Khan died in Kolkata due to cancer at the age of 55. He was born in Badaun, Uttar Pradesh. He belonged to the Rampur-Sahaswan family. He received his initial training from his maternal grandfather, Ustad Nisar Hussain Khan. He was awarded the Padma Shri and the Sangeet Natak Akademi Award in 2006. He was awarded the Padma Bhushan in 2022.
12. According to a report released by the State Bank of India, personal income inequality has declined significantly in India between the financial years 2013-2014 and 2021-2022.
13. Recently Raghuram Iyer was appointed the Chief Executive Officer of the Indian Olympic Association.
14. Kyrgyzstan officially declared the snow leopard as its national symbol. Kyrgyzstan has played a leading role in snow leopard conservation at the international level.
15. Randhir Jaiswal took charge as the official spokesperson of the Ministry of External Affairs on January 3. He has served in the Permanent Mission of India to the United Nations in Portugal, Cuba, South Africa and New York.
16. G. Ram Mohan Rao has been appointed as Executive Director by SEBI. He has been appointed as the Executive Director for a period of three years. He will handle the Internal Inspection Department and Investigation Department.
17. Senior diplomat Indra Mani Pandey takes over as the new Secretary General of BIMSTEC. Indra Mani Pandey is an Indian Foreign Service (IFS) officer of the 1990 batch. He replaced Tenzin Lekphell of Bhutan. His tenure on this post will be for three years.

Places in News

Salton Sea

Recently, the U.S. Department of Energy has discovered the world's largest Lithium reserve beneath California's Salton Sea.



About Salton Sea:

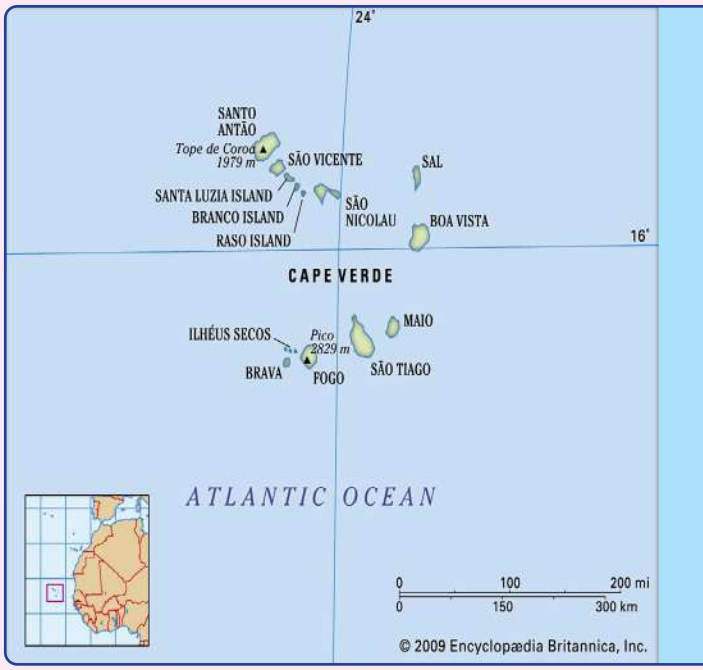
- The Salton Sea is a shallow, saline lake in the lower Colorado Desert of southern California.
- It is the largest lake in California and the third largest saline lake in the United States.
- It is in the Great Lakes region of Minnesota.
- It is an important resting place for migrating waterfowl and a vital habitat for birds migrating north to Canada.
- This sea was accidentally created in the early 20th century when the Colorado River broke an irrigation canal, causing water to flow into the Salton Sink.
- It is a Known Geothermal Resource Area (KGRA) with about 400 MW of geothermal electricity-generation capacity.

Lithium:

- Lithium is a solid element with a low density and is used in rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles.
- It is also used in ceramics and glasses, greases, pharmaceutical compounds, air conditioners and aluminium production.
- In February 2023, the Geological Survey of India (GSI) discovered 5.9 million tonnes of lithium in the SalalHaimana area of the Reasi district in Jammu and Kashmir.

Cape Verde

Recently, the World Health Organization (WHO) has certified Cabo Verde (also known as Cape Verde) as a malaria free country, becoming the third country to acquire the status in the global health organisation's African region.



- **Capital:** Praia
- **Location:** The Republic of Cabo Verde, also known as Cape Verde, is an island country in West Africa, located in the central Atlantic Ocean.

Physical Features:

- Santiago, a southern island group of the Cape Verde is the largest and most populated island.
- Pico do Fogo, the largest active volcano, erupted in 2014, with an impressive caldera and interior cone.
- The island is composed of igneous rocks, volcanic structures and pyroclastic debris.
- **Official Language:** Portuguese is the official language of Cape Verde.
- **Independence:** Cape Verde gained independence from Portugal on July 5, 1975.

MCQs Based on Current Affairs

1. Consider the following statements regarding SMART 2.0:

1. Recently, the Central Council for Research in Ayurvedic Sciences (CCRAS) in collaboration with the National Commission for Indian Systems of Medicine (NCISM) launched SMART 2.0 to promote Ayurvedic research.
2. The objective of this program is to facilitate robust clinical studies in priority areas of Ayurveda through collaborative efforts with academic institutions and hospitals across the country.

Which of the statements given above is/are correct?

A. Only 1 B. Only 2
C. Both 1 and 2 D. Neither 1 nor 2

2. Which of the following statements is/are correct?

1. Sohrai paintings mainly depict deities and mythology
2. Sohrai painting has strong matriarchal roots and is passed down from mothers to daughters.
3. Paintings are traditionally made on mud walls and are associated with harvest festivals and marriage rituals.

Choose the correct option:

A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. Only 1 and 2

3. Consider the following statements regarding raptors in Africa:

1. Recent studies indicate a widespread decline of about 88% in raptor populations across Africa over the past four decades.
2. Of the 42 species they examined, 37 showed population decline.
3. Six species that are endemic to Africa have declined rapidly.

Choose the correct option:

A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

4. Consider the following statements regarding Wetland City Accreditation (WCA) Scheme:

1. Recently, India has nominated Indore, Bhopal and Udaipur for the Wetland City Accreditation (WCA) scheme under the Ramsar Convention.
2. WCA is a voluntary recognition system established by the Ramsar Convention during the Conference of the Contracting Parties (COP) 12, 2015 to recognize cities that have taken exceptional steps to protect their urban wetlands.

Which of the statements given above is/are correct?

A. Only 1 B. Only 2
C. Both 1 and 2 D. Neither 1 nor 2

5. Consider the following regarding virtual digital asset service providers:

1. Recently, the Financial Intelligence Unit India (FIU IND) has issued compliance show cause notices to nine offshore Virtual Digital Assets Service Providers (VDA SPs) under Section 13 of the Prevention of Money Laundering Act, 2002 (PMLA).
2. Virtual Digital Assets Service Providers (VDA SPs) were brought under the ambit of the provisions of the Prevention of Money Laundering (PML) Act, 2002 in June 2023.
3. FIU-IND is a central, national agency responsible for receiving, processing, analyzing and disseminating information related to suspicious financial transactions to enforcement agencies and foreign FIUs.

Choose the correct option:

A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. Only 1 and 2

6. Consider the following with respect to the First Advance Estimates (FAE) of National Income:

1. Recently, the National Statistical Office (NSO) released the first advance estimates (FAE) of national income for the financial year 2023-24.
2. Gross domestic product (GDP) at constant prices is estimated to reach Rs 171.79 lakh crore in 2023-24, while the provisional estimate of GDP for 2022-23 is Rs 160.06 lakh crore.
3. GDP at current prices in 2023-24 is estimated at Rs.196.58 lakh crore, while the provisional estimate of GDP for 2022-23 is Rs. 172.41 lakh crore.

Choose the correct option:

A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. Only 1 and 2

7. Consider the following with respect to Atal Bihari Vajpayee Sewri-Nhava Sheva Atal Setu:

1. Recently, Prime Minister Narendra Modi inaugurated the Atal Bihari Vajpayee Sewri-Nhava Sheva Atal Setu.

2. The sea bridge connects Mumbai and Navi Mumbai.
3. Atal Setu is the longest bridge in India and also the longest sea bridge in the country.
Select the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

8. Consider the following regarding Dark Sky Park:
1. Recently, Pench Tiger Reserve (PTR) in Maharashtra has been marked as India's first dark sky park.
2. This is the fifth park in Asia to prevent light pollution
3. The International Dark Sky Association is a U.S.-based non-profit that designates locations as International Dark Sky Places, Parks, Sanctuaries and Reserves based on the criteria they meet.
choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

9. Consider the following regarding Major Dhyan Chand Khel Ratna Award:
1. It is India's highest sporting honor established in 1991-92.
2. It is given for outstanding performance over 4 years.
3. India's star badminton duo of Chirag Shetty and Satwiksairaj Rankireddy were honored for the year 2023.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

10. Consider the following with respect to Zosurabalpin:
1. Researchers have identified a new class of antibiotic name Zosurabalpin that can kill bacteria that are resistant to most current drugs.
2. Zosurabalpin is highly effective against the bacterium carbapenem-resistant Acinetobacter baumannii (CRAB), which is classified as a "priority 1" pathogen by the World Health Organization.
3. Zosurabalpin works by blocking a molecular machine called LptB2FGC.
Select the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

11. Consider the following regarding India-Bangladesh relations:
1. India was the first country to recognize Bangladesh as a separate and independent state and established diplomatic relations with the country soon after its independence in December 1971.
2. Bangladesh is India's largest trading partner in the subcontinent.
3. India has provided duty free quota free access to Bangladesh on all tariff lines except tobacco and alcohol under the South Asian Free Trade Area (SAFTA) since 2011.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

12. Consider the following regarding the United Nations Statistical Commission:
1. Recently, India has started a four-year term as a member of the United Nations Statistical Commission from January 1, 2024.
2. It was established in 1947 and is the supreme body of the global statistical system.
3. The Statistical Commission was established by the Economic and Social Council.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

13. Consider the following regarding the Houthis rebel:
1. The Houthis are a Shia political and military organization that emerged in Yemen during the 1990s as the opposition to the Yemeni government.
2. The group was increasingly inspired by the anti-American and anti-Israel sentiments spreading in the Middle East.
3. In 2011, the Houthis played a major role in instigating the Yemeni revolution, known as the Arab Spring.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

14. Consider the following regarding the World Heritage Committee:
1. India will assume the chair of the UNESCO World Heritage Committee and host its 46th session in New Delhi from July 21 to 31, 2024.
2. The World Heritage Committee is made up of representatives of the 21 nations of the World

Heritage Convention who meet annually to recognize global cultural and natural heritage.
3. The main function of the committee is to approve the list of prestigious UNESCO World Heritage Sites.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

15. Consider the following regarding the UAE-India Business Summit:
1. Recently, UAE-India Business Summit was held under the theme Two Nations, One Vision.
2. During the summit, a UAE-India Comprehensive Economic Partnership Agreement (CEPA) Council was also established with the aim of strengthening economic ties between the two countries.
3. Since the signing of CEPA in 2022, bilateral trade between UAE and India has increased significantly.
Choose the correct option:
A. Only 1 and 3 B. Only 2 and 3
C. Only 2 D. All

16. Consider the following statements regarding Distributed Ledger Technology (DLT).
1. Distributed Ledger Technology (DLT) is a digital system for recording asset transactions in which details are recorded in multiple places at the same time.
2. Block chain technology is a specific type of distributed ledger technology.
3. Unlike traditional databases, distributed ledgers have central data store or administration functionality
How many of the statements given above are correct?
A. Only one B. Only two
C. All three D. None

17. Consider the following statements regarding Inland Waterways Authority of India.
1. Recently, the Inland Waterways Authority of India under the Ministry of Ports, Shipping and Waterways (MoPSW) has hosted the inaugural 'Inland Waterways Development Council' meeting in Kolkata on January 8, 2023.
2. Ports Minister Sarbananda Sonowal unveiled "Guidelines for Green Transition of Inland Vessels and River Cruise Tourism Roadmap, 2047 " during the meeting.
How many of the statements given above are correct?
A. Only 1 B. Only 2
C. Both 1 and 2 D. Neither 1 nor 2

18. Consider the following statements regarding the 13th Constitutional Amendment.
1. The 13th Constitutional Amendment was passed as part of the India-Lanka Accord in 1987
2. The 13th Amendment provides for the formation of a provincial council system and the transfer of powers over land, police, education, health, agriculture, housing and finance to the nine provinces of the country, including the Sinhalese majority areas.
How many of the statements given above are correct?
A. Only 1 B. Only 2
C. Both 1 and 2 D. Neither 1 nor 2

19. Consider the following statements regarding Akash-NG missile.
1. Recently, India's Defense Research and Development Organization (DRDO) successfully flight tested the new generation Akash (AKASH-NG) missile.
2. The Akash-NG missile is a state-of-the-art missile system that can intercept high-speed, agile air threats up to a range of approximately 80 km.
3. It has indigenously developed radio frequency seeker, launcher, multi-function radar and command, control and communication systems.
How many of the statements given above are correct?
A. Only one B. Only two
C. All three D. None

Answer

1. **C**	4. **C**	7. **D**	10. **D**	13. **D**	16. **B**	19. **D**
2. **B**	5. **A**	8. **D**	11. **D**	14. **D**	17. **C**	
3. **D**	6. **D**	9. **D**	12. **D**	15. **D**	18. **C**	

Science & Technology

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IBM-NASA Collaboration

IBM in collaboration with NASA unveiled a new geospatial foundation model designed to convert satellite data into high-resolution maps of floods, fires, and other landscape changes.

Details of the Geospatial Foundation Model

- This model is a part of IBM's watsonx.ai, a nextgen enterprise studio for AI builders to train, test, tune, and deploy both traditional machine learning and new generation AI capabilities.
- The goal of the NASA and IBM collaboration is to provide an easier way for researchers to analyse and draw insights from large NASA datasets related to Earth processes.
- This collaboration is part of NASA's Open-Source Science Initiative (OSSI), a commitment to building an inclusive, transparent, and collaborative open science community over the next decade.
- The new geospatial foundation model is designed to enable the first steps by converting NASA's satellite observations into customised maps of natural disasters and other environmental changes.
- This model will be applied to NASA's Harmonized Landsat Sentinel-2 (HLS) dataset.

Potential Applications:

- Helpful to estimate climate-related risks to crops, buildings, and other infrastructure.
- Valuing and monitoring forests for carbon-offset programmes.
- Developing predictive models to help enterprises create strategies to mitigate and adapt to climate change.

e-Skin

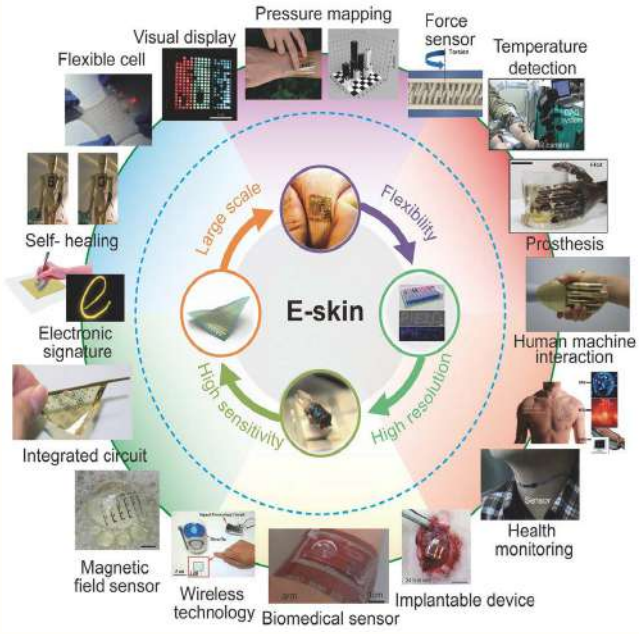
The California-based Stanford University research team have developed a soft, flexible electronic skin that can mimic the function of natural skin.

About e-Skin:

- Electronic skin or e-skin refers to flexible, stretchable and self-healing electronics that can mimic the functionalities of human or animal skin.
- This development has been made to develop a soft and flexible prosthetic skin which can also transmit electrical signals to the brain (somatosensory cortex in the brain) to allow the wearer to feel pressure, strain or changes in temperature.

How does e-Skin work?

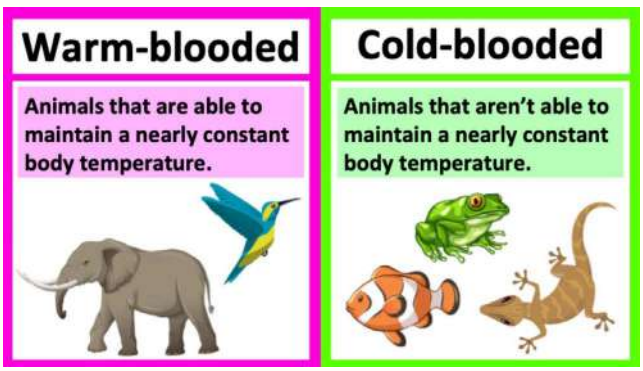
- The healthy living skin comprises mechanical receptors tasked with sensing information and converting it into electrical pulses.



- Then these pulses are transmitted through the nervous system of the brain to react further. The e-skin will need sensors and integrated circuits made from rigid semiconductors.
- These sensors can transform physical changes into an electrical pulse and send it to the brain.

Cold-Blooded Animals

Recently Scientists have conducted a study on the Eurasian perch (Perca fluviatilis) to learn more about cold-blooded creatures.



Key Points of the study:

- Aquatic animals such as fish would actually grow larger due to warm water pollution, i.e. water heated by warm pollutants.

- Cold-blooded animals develop quicker at a younger age and have lower mature body sizes.
- Cold-blooded creatures are also referred to as ectotherms.

About Cold-Blooded Animals:

- Cold-blooded animals rely on their physical surroundings to control their body temperature.
- It is more appropriate to call such animals ectotherms because "ecto" is Greek for "external" or "outside" and "therm" is Greek for "heat". In other words, ectotherms must capture heat from the sun, either directly or indirectly, to raise and maintain their body temperature.

Mitochondrial Donation Treatment

Recently Mitochondrial Donation Treatment (MDT) was utilized to successfully deliver a baby in the United Kingdom. It is also known as a three-parent baby since the newborn has genetic material from three parents. To prevent the infant from acquiring the mother's mitochondrial illness, cutting-edge technology was applied.

Key Points:

- Mitochondrial Donation Treatment is available to families with severe hereditary mitochondrial disorders who do not pass the gene on to their offspring.
- It's a type of IVF in which damaged mitochondrial DNA in the patient's eggs is replaced with healthy mitochondrial DNA from a donor egg.
- The majority of the baby's DNA comes from its parents, with only a little portion coming from the donor, whose mitochondria were used to fertilise the egg.



About Mitochondria:

- It is membrane-bound cell organelles that serve as the cells' energy producers by producing the necessary energy for the cell's metabolic operations.
- The mitochondrial energy is stored in a tiny molecule known as adenosine triphosphate (ATP). Mitochondria have their own set of chromosomes.

Mitochondrial Diseases:

- When the mitochondria are damaged and do not create enough energy, organ function suffers. The disorders caused by mitochondrial mutations are known as mitochondrial diseases.

Human Pan-Genome Map

A study published in Nature Journal describes a pangenome reference map, built using 47 anonymous individuals mainly from Africa, Caribbean, Americas, East Asia and Europe. The pangenome map is represented like a graph, unlike the previous linear reference genome map.

What is Genome Sequencing?

- The Genome is an entire set of DNA instructions found in a cell. It contains all the information needed for an individual to develop and function.
- Genome Sequencing is the method used to determine the precise order of the four bases (Adenine, Thymine, Guanine and Cytosine) and how they are arranged in chromosomes. The chromosome is a contiguous stretch of DNA string which in turn is composed of millions of individual building blocks called nucleotisdes or bases.
- Genome sequencing helps us to understand human diversity at a genetic level and how prone humans are to certain diseases.s

Abaucin

A paper published in nature chemical biology, mentioned that researchers have used machine learning to identifying new antibiotics against life threatening bacteria Acinetobacter baumannii. The compound name Abaucin has been identified as an effective inhibitor against Acinetobacter baumannii growth.

About A. baumannii:

- Baumannii is a Gram-negative bacteria, which means it has a protective outer membrane that allows it to resist antibiotics. It has been associated with hospital-acquired infections in India.
- Baumannii was acknowledged even a decade ago to be a "red alert" pathogen primarily because of its exceptional ability to develop resistance to all currently available antibiotics.

About Abaucin:

- Abaucin is a compound which has been reported to show useful activity as a narrow-spectrum

antibiotic. It is effective against Acinetobacter baumannii, which is one of the three superbugs identified by the World Health Organization as a "critical threat" to humanity. Its mode of action involves inhibiting lipoprotein transport. A lipoprotein is a molecular framework required to transport fat inside cells. The compound had previously been reported as an antagonist of the chemokine receptor CCR2, but its antibiotic activity was not discovered during earlier research.

Chytridiomycosis

The Centre for Cellular and Molecular Biology (CCMB) Hyderabad in collaboration with Australian and Panama researchers have developed a new test for successful diagnosis of Chytridiomycosis. This is the deadliest animal disease for amphibians known to date.

About the disease:

- Chytridiomycosis is an infectious disease that has driven more than 90 amphibian species to extinction globally. It is caused by two fungal pathogens – Batrachochytrium dendrobatidis (Bd) and Batrachochytrium salamandrivorans (Bsal).
- This diagnosis method can test the new marker on several amphibian species including frogs, toads, caecilians (limbless amphibians) and salamanders (tailed amphibians).

How it infects?

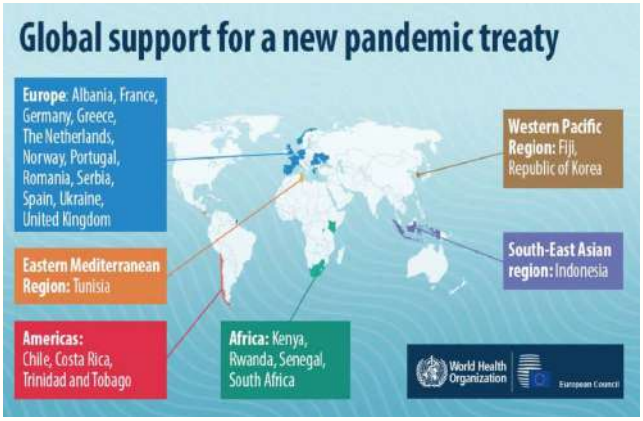
- Chytridiomycosis or Chytrid infects frogs by reproducing in their skin. The single-celled fungus enters a skin cell, multiplies, and then breaks back out onto the surface of the animal.
- The damage to the skin affects the frog's ability to balance the water and salt levels and eventually leads to death if infection levels are high enough.

Pandemic Treaty

The World Health Organization has recently published a 'Zero-Draft' of the Pandemic Treaty.

About the Pandemic Treaty:

- The objective behind the designing of this treaty is to bring in global and national level pandemic preparedness.
- The zero draft of the pandemic treaty is prepared as a response to the catastrophic failure of the international community in solidarity and equity in response to the novel coronavirus disease (COVID-19) pandemic.
- It is drafted to prevent future pandemics and to improve the response system against any global outbreak.



Key Provisions of the Pandemic Treaty:

- The draft encompasses pandemic definitions with various guiding principles and also recognizes common but differentiated responsibilities.

About Pandemic:

- An outbreak is considered a Pandemic when an infection spreads quickly around the globe with high morbidity and mortality.
- Other factors to define it can be; infecting immunologically naïve human populations, pushing health systems to their capacity and beyond and other socio-economic disruptions.

World Malaria Report

WHO recently released World Malaria Report 2023, revealing the global surge in malaria cases with estimated 249 million cases in 2022.

Key Points of the report:

- Global malaria cases dropped from 243 million to 233 million between 2000 and 2019. However, there was an increase of 11 million cases in 2020. They remained stable in 2021, before seeing another increase of 5 million in 2022 to 249 million.
- The number of malaria deaths also remained higher than the pre-pandemic levels. There were 608,000 deaths reported in 2022 as compared to 576,000 cases in 2019.
- With an estimated 33.8 lakh cases and 5,511 deaths, India saw a decline of 30 per cent in malaria incidence and 34 per cent in mortality in 2022, compared to the previous year.

Satellite NVS-01

Recently, the Indian Space Research Organisation (ISRO) successfully launched the NVS-01 navigation satellite into Geosynchronous Transfer Orbit, weighing approximately 2232 kg.

About NVS-01:

- The 2232 kg satellite was launched by a GSLV rocket into the planned GTO at an altitude of roughly 251 kilometres. NVS-01 carries navigation payloads in the L1, L5, and S bands.
- During the eclipse, the satellite is powered by two solar arrays capable of generating up to 2.4 kilowatts of electricity, as well as a lithium-ion battery that supports the payload and bus load.



- For the first time, the second generation satellite carried an indigenously designed rubidium atomic lock built by the Ahmedabad based Space Application Centre. Previously, ISRO scientists had employed and imported atomic lock.
- The navIC signals are designed to offer users position precision of more than 20m and timing accuracy greater than 50 nanoseconds.
- NVS-01 is the first in a five-satellite series. NVS-01's mission life is projected to be around 12 years. NVS-02 through NVS-05 are the next four satellite launches, and NavIC 2.0 is planned to contain 11 to 12 satellites.

About the NavIC system:

- The IRNSS (Indian Regional Navigation Satellite System) is a working navigational system in India; with operational designation navIC (navigation with Indian constellation).
- ISRO created it to address the country's positioning, navigation, and timing requirements, primarily for civil aviation and military purposes over India and the region spanning around 1500km around the Indian mainland.
- NavIC will be comprised of seven satellite-regional navigation constellations in geosynchronous/ inclined geosynchronous orbits.
- It will provide two services: normal position service for civilian users and restricted service for strategic users.
- NavIC SPS signals are interoperable with GPS (Global Positioning System) GLONASS signals from Russia, Galileo (European Union), and BeiDou signals from China.

Indian Space Research Organization:

- ISRO's headquarter is in Bengaluru.
- ISRO is India's space agency and a major component of the Government of India's Department of Space (DOS).
- Its principal goal is to develop and apply space technologies for varied national needs.
- ISRO was formerly known as the Indian National Committee for Space Research (INCOSPAR), which was established by the Government of India in 1962.
- ISRO was established on August 15, 1969, to replace INCOSPAR with a broader mandate to exploit space technology.

Higgs Boson Decay

Physicists working with the Large Hadron Collider (LHC) particle-smasher at CERN, in Europe, reported that they had detected a Higgs boson decaying into a Z boson particle and a photon. This is a very rare decay process that gives critical information about the Higgs boson as well as about our universe.

About the Higgs boson:

- The Higgs boson is a type of boson, a force-carrying subatomic particle. It carries the

force that a particle experiences when it moves through an energy field called the Higgs field.

- It is believed that it is present throughout the universe. For example, when an electron interacts with the Higgs field, the forces it experiences are said to be due to its interaction with Higgs bosons.

How electrons and proton gain their mass:

- An electron is a subatomic particle that has mass. They gain their mass through interaction with the Higgs boson. The subatomic particles' mass depends on how strongly they interact with the Higgs boson. Electron has less mass than protons due to lesser interaction compared to proton.
- Since all the matter in the universe is made of these particles, working out how strongly each type couples to Higgs bosons, together with understanding the properties of Higgs bosons themselves, can tell us a lot about the universe itself. Photons, the particles of light, have no mass because they don't interact with Higgs bosons.
- So a question should arise: How did a Higgs boson decay to a Z boson and a photon if it doesn't interact with photons? This is a good question whose answer lies in space-time.

About virtual particles:

- According to quantum field theory, which is the theory, physicists use to study these interactions, said that space at the subatomic level is not empty. It is filled with virtual particles, which are particles that quickly pop in and out of existence. They can't be detected directly, but according to physicists their effects sometimes linger.
- The LHC creates a Higgs boson by accelerating billions of highly energetic protons into a head-on collision, releasing a tremendous amount of energy that condenses into different particles. When a Higgs boson is created in this hot soup, it has a fleeting interaction with virtual particles that creates a Z boson and a photon.

Transgenic Crops

Recently, Gujarat, Maharashtra and Telangana, have deferred a proposal, approved by the Centre's Genetic Engineering Appraisal Committee (GEAC), to test a new kind of Transgenic Cotton Seed that contains a gene, Cry2Ai. Gene Cry2Ai purportedly makes cotton resistant to pink bollworm, a major pest. The conflict shows that a broad acceptance of genetically modified crops continues to be elusive.

About Transgenic or GM Crops:

- Transgenic crops are plants that have been modified through genetic engineering techniques. These crops have had specific genes inserted into their DNA to give them new characteristics or traits that are not naturally found in the species through traditional breeding methods.
- The characteristics of all living organisms are determined by their genetic makeup and their interaction with the environment. The genetic makeup of an organism is its genome, which in all plants and animals is made of DNA.
- The genome contains genes, regions of DNA that usually carry the instructions for making proteins. It is these proteins that give the plant its characteristics. For example, the colour of flowers is determined by genes that carry the instructions for making proteins involved in producing the pigments that colour petals.
- Genetic modification of plants involves adding a specific stretch of DNA into the plant's genome, giving it new or different characteristics. This could include changing the way the plant grows or making it resistant to a particular disease. The new DNA becomes part of the GM plant's genome, which the seeds produced by these plants will contain.

Status of GM crops in India:

- There is an array of crops — brinjal, tomato, maize, chickpea — in various stages of trials that employ transgenic technology. However, cotton remains the only transgenic crop that is being commercially cultivated in India. The GEAC, the apex technical body charged with evaluating proposals for testing genetically modified (GM) seeds, approved the environmental release of Mustard hybrid DMH-11 and its parental lines, during its 147th meeting on 18 October 2022 for seed production and testing.

Genetic Modified Crops Regulation in India:

- In India, all GMOs including GE plants are regulated by the Ministry of Environment, Forest and Climate Change (MoEFCC) as per rules notified under the Environment (Protection) Act, 1986.
- Guidelines and protocols are in place for the safety assessment of GM foods. GM foods are also subjected to regulations by the Food Safety and Standards Authority of India (FSSAI) under the Food Safety and Standards Act, 2006.
- Genetic Engineering Appraisal Committee (GEAC) under MoEFCC is authorised to review, monitor and approve all activities including the

import, export, transport, manufacture, use or sale of GMOs.

Acts and Rules that Apply to GM Crops in India:

- Environment Protection Act, 1986 (EPA),
- Biological Diversity Act, 2002,
- Plant Quarantine Order, 2003,
- GM policy under Foreign Trade Policy, Food Safety and Standards Act, 2006,
- Drugs and Cosmetics Rule (8th Amendment), 1988.

Jellyfish Galaxy JO206

Recently, NASA released a Hubble image showcasing the jellyfish galaxy JO206 as it trails across the universe about 700 million light-years away from our planet in the constellation Aquarius.

Highlights of the image:

- Hubble telescope captured stunning images of a jellyfish galaxy, J0206, swimming in the sea of stars.
- Astronomers were surprised by the lack of significant differences in star formation in the jellyfish galaxy's discs and tendrils.
- Discovery suggests that new stars are less influenced by their environment than previously believed.

About Jellyfish Galaxy (JO206):

- Jellyfish galaxies are shaped like discs that have many tentacle-like arms streaming away from the disc.
- They are formed when a disc-shaped galaxy rams into a galaxy cluster, which is a dense region containing many hundreds or thousands of galaxies packed into a small region.
- This can happen when the galaxy is attracted by the gravitational attraction of the cluster.
- As the individual galaxy rams into the galaxy cluster, the cold gas in its disc interacts with the hot plasma in the cluster.
- Acting like a strong wind, the plasma in the cluster strips away the cold molecular gas of the disc, causing it to stream behind like tentacles.
- Unlike usual galaxies that have stars forming in the disc, the jellyfish galaxies have star formation in the tentacles also.

Artemis Accord

Recently, India and the US signed the Artemis Accord to take space cooperation to new heights; ISRO-NASA will start joint space mission next year. The signing of the "Artemis Accord" and a joint India-US mission to the International Space Station in 2024 will give a new impetus to the space sector.



About Artemis Accord:

- The Artemis Accord was signed on October 13, 2020 by the eight founding countries - Australia, Canada, Italy, Japan, Luxembourg, UAE, UK and the United States. The Artemis Agreement is a non-binding agreement with no financial commitments.
- Its purpose is to enhance the administration of civilian exploration and uses of outer space with the intention of furthering the Artemis program.
- The Artemis Accord reinforces and implements key obligations in the 1967 Outer Space Treaty. They also reinforce the commitment of the United States and signatory countries to the Registration Convention, the Salvage and Return Agreement, as well as to the best practices and norms of responsible behaviour supported by NASA and its partners, including the public release of scientific data.

Significance of Artemis Agreement for India:

- By joining the Artemis Accord, India has now aligned itself with like-minded countries committed to the peaceful exploration and uses of outer space. The Artemis Agreement, based on the 1967 Outer Space Treaty (OST), provides a non-binding framework of principles that guide civilian space activities.
- India's participation in the Accord reflects its ambition to be at the forefront of cutting-edge space exploration initiatives. By collaborating with NASA and other international partners, India can access advanced technologies, expertise and resources, and propel its own

space program to new heights.
- The collaboration between NASA and ISRO in a joint mission to the International Space Station in 2024 presents a unique opportunity for India to take advantage of technological advances and gain valuable experience in human space flight.
- There is immense economic potential in India's participation in the Artemis Accord. It allows Indian companies and industries to participate in the global space economy and access new markets.
- By participating in the Artemis Accord, India can actively contribute to humanity's understanding of the universe, harnessing the collective knowledge of the global scientific community.

Dark Patterns

Central Government decided to issue norms against 'dark patterns' in online ads. In addition, the Union Consumer Affairs Ministry has also urged consumers to flag such manipulative online practices on the National Consumer Helpline.

What are Dark Patterns?

- Dark patterns refer to tricks implemented by websites or apps to make users do things that they didn't intend to. They are designed to subvert user autonomy, decision-making or choice. Deceptive patterns in online advertising mislead consumers and ruin their online experience and erode trust in brands and advertising.
- The prevalence of dark patterns in the online space poses a significant threat to consumers and comes within the ambit of Unfair Trade Practices and Misleading Advertisements of the Consumer Protection Act, 2019.

Types of Dark Patterns:

Dark patterns encompass a wide range of manipulative practices:
- **False Urgency:** This tactic creates a sense of urgency or scarcity to pressure consumers into making a purchase.
- **Basket Sneaking:** Websites or apps use dark patterns to add additional products or services to the shopping cart without user consent.
- **Subscription Traps:** This tactic makes it easy for consumers to sign up for a service but difficult for them to cancel it.
- **Bait and Switch:** This involves advertising one product or service but delivering another, often of lower quality.
- **Hidden Costs:** This tactic involves hiding additional costs from consumers until they are already committed to making a purchase.
- **Disguised Ads:** Disguised ads are advertisements that are designed to look like other types of content, such as news articles or user-generated content.

Brucellosis

A case of brucellosis infection in seven years old girl has been reported in Kollam, Kerala. Brucellosis is a deadly bacterial infection that is usually found in cattle and it is transmitted from animals to humans via contact.

Brucellosis:

- Brucellosis infection is caused by various species of Brucella bacteria and it usually affects cattle, swine, goats, sheep and dogs. It is also known as Mediterranean fever or Malta fever.
- It can be transmitted from animals to humans via direct contact or consumption of animal or dairy products, especially unpasteurized milk or cheese from goats or sheep.
- It can also be transmitted by inhaling contaminated air or touching the blood and body fluids of infected animals.
- The transmission of brucellosis from human to human is very rare.

Symptoms:

- This bacterial infection can start to show symptoms in humans from a few days to a few months after having been infected. They are alike to flu-kind symptoms- fever, chills, loss of appetite or anorexia (a psychological disorder in which one less eats due to fear of weight gain) weakness, joint pain and fatigue.

Crimean-Congo Hemorrhagic Fever

A recent warning has been issued by the World Health Organization (WHO) about the possible transmission of Crimean Congo Hemorrhagic Fever (CCHF), a tick-borne infection known for high mortality.

What is CCHF?

- CCHF is a viral hemorrhagic fever, transmitted by ticks.
- It can also occur through contact with viraemic animal tissues (animal tissues where the virus has entered the bloodstream) during and immediately after slaughter.
- Outbreaks of CCHF are threat to public health

services, as the virus can cause epidemics, has a high case-fatality ratio (10–40%), and potentially causes more outbreaks in hospitals and healthcare facilities.

Intercontinental Ballistic Missile Hwasong-18

North Korea tested its latest Hwasong-18 Intercontinental Ballistic Missile (ICBM), which is the first missile to use solid propellant. Missiles using solid propellant can be deployed and fired faster.

About Hwasong-18:

- The Hwasong-18 is a solid-fueled ICBM and it was first unveiled in 2023.
- The use of solid propellant in Hwasong-18 allows rapid deployment of missiles. Solid propellants can fire faster and accelerate more quickly at liftoff.
- Solids materials have been used for many military applications, such as short-range rockets, but had not been used for any longer-range applications.
- Solid propellants are mainly considered to be very good for military missile use because they can be stored easily.

What is ICBM?

- ICBMs are ballistic missiles that have a range of more than 5,500 km and have good nuclear weapon delivery techniques.
- Currently, apart from the DPRK (Democratic People's Republic of Korea), Russia, the United States, France, the United Kingdom, China, India, and Israel are the countries that have land-based ICBM missiles.

Akira Ransomware

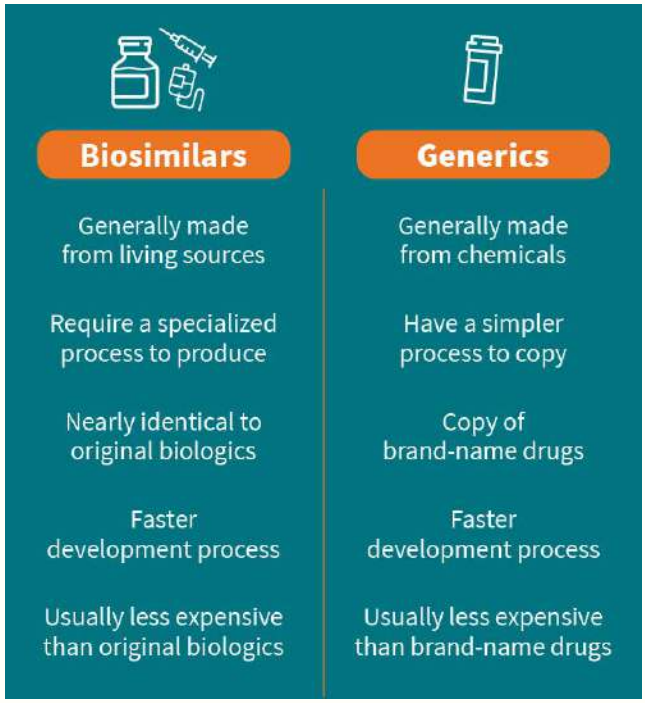
Recently the Computer Emergency Response Team (CRT) of India has issued an alert for ransomware named "Akira". This ransomware targets both Windows and Linux devices, stealing and encrypting data, forcing victims to pay a double ransom for decryption and recovery.

How does it infect devices?

- This ransomware is typically spread through spear phishing emails that include malicious attachments in the form of archived content (ZIP/RAR) files.
- Other methods used to infect devices include drive-by-download and cyber-attacks, which unknowingly download malicious code to the device.
- This ransomware also spreads via unsecured Remote Desktop Connection.

Biosimilars

The approval process of biosimilars has been under discussion due to demand from several NGOs to the Union Health Ministry and Department of Biotechnology for relaxing the norms for its approval. Such demand is being made to ensure its easy availability into the market at cheaper prices.



What are Biosimilars?

- A biosimilar is a 'biological photocopy' of already approved biological medicine (the reference medicine).
- They are higher similar to other already approved biological medicine. They are approved according to the same standard of pharmaceutical quality, safety and efficacy that apply to all biological medicines i.e. in terms of structure, biological activity and efficacy, safety and immunological profile.
- A biosimilar is not regarded as a generic of biological medicine because of its natural variability. Further, more complex manufacturing of biological medicines does not allow an exact replication of the molecular micro-heterogeneity.

Neglected Tropical Diseases (NTD)

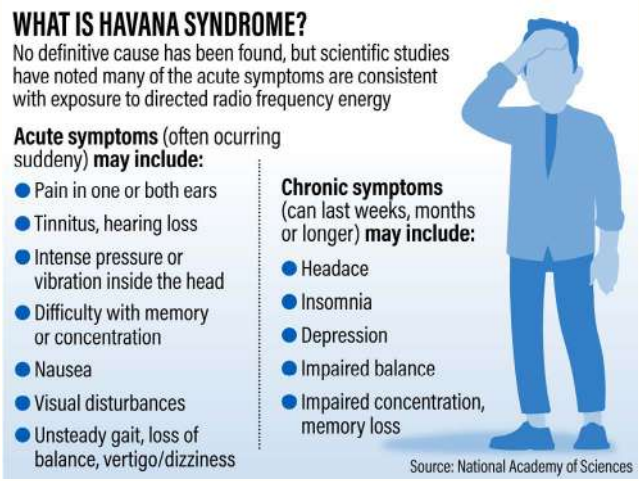
- Neglected Tropical Diseases (NTDs) refer to a group of diverse infectious diseases that primarily affect populations in tropical and subtropical regions with limited access to adequate healthcare, sanitation, and economic resources.
- Examples of NTDs include trachoma, lymphatic filariasis, onchocerciasis (river blindness) and leishmaniasis, among others.

About Trachoma:

- Trachoma is the primary infectious cause of blindness worldwide. It stems from Chlamydia trachomatis infection, leading to eyelash inward growth and potential blindness if untreated.
- Trachoma thrives in water-scarce, unsanitary environments with fly infestations.
- Despite trachoma's persistence in six Eastern Mediterranean countries, treatment demand has decreased significantly from 39M (2013) to 6.9M (April 2023), supporting elimination endeavours.

Havana Syndrome

The Karnataka High Court has directed the central government to investigate the possibility of 'Havana Syndrome' in India. This was taken after a Bengaluru resident appealed to the court, citing the mysterious disease and its high frequency in India.



What is Havana Syndrome?

- It is a mysterious neuropsychiatric disorder known as the 'Havana Syndrome' which is said to have been first experienced by United States intelligence and embassy officials in Havana, Cuba.
- It has been found through research that this disease is caused by exposure to electromagnetic energy through radio waves.
- A 'syndrome' is usually not a unique medical condition, but rather a group of symptoms commonly experienced together whose origin may be difficult to confirm.

Microplastic in Human Heart

The latest study by the American Chemical Society (ACS) states that a team of scientists at Beijing Anzhen Hospital in China has discovered microplastics in the human heart for the first time. Scientists at the hospital discovered this while analyzing heart tissue from 15 heart surgery patients.

What are Microplastics?

- Microplastics are small pieces of plastic that are less than five millimetres in size.
- They are transported around the world, including to remote areas like Antarctica. Last year, microplastics were found in icebergs.
- Studies have found that these micro plastics can enter the human body through the mouth, nose, and other body openings.
- They are indirectly responsible for diseases like obesity, diabetes, and chronic liver disease as they cause changes in the gastrointestinal tract.

India's First Indigenous MRI Scanner

Bangalore-based Voxelgrids Innovations Private Limited has unveiled its first made-in-India MRI scanner at the Sathya Sai Institute of Higher Medical Sciences, Bengaluru. This MRI scanner is designed in a way to avoid reliance on liquid helium for use as a coolant in large superconducting magnets powering MRI scanners. Liquid nitrogen will be used in place of liquid helium for cooling the superconducting magnets.

Working of MRI scanner:

- MRI uses strong magnetic fields and radiofrequency waves to create detailed images of the body's internal structures.
- The human body is composed mostly of water, which contains hydrogen nuclei (protons). When placed in a strong magnetic field, these nuclei align with the magnetic field.
- A brief radiofrequency pulse is applied to the aligned hydrogen nuclei. This pulse is in resonance with the hydrogen nuclei's natural frequency, causing them to absorb energy.

- To form a detailed image, the scanner employs complex mathematical algorithms to convert the raw signal data into a visual representation.

Application of MRI Scanner:

- Detailed visualization of internal body structures for diagnosing a wide range of medical conditions, from brain disorders to musculoskeletal issues.
- Detection and characterization of tumors, lesions, and abnormalities.

Smishing Scams

The Indian government has issued a warning about a new scam known as 'Smishing,' which is a combination of SMS and phishing.

What is Smishing?

- Smishing refers to a type of cybersecurity attack known as SMS phishing, conducted through mobile text messaging. It is a variation of phishing where individuals are tricked into providing confidential data to an attacker in disguise.

How it is done?

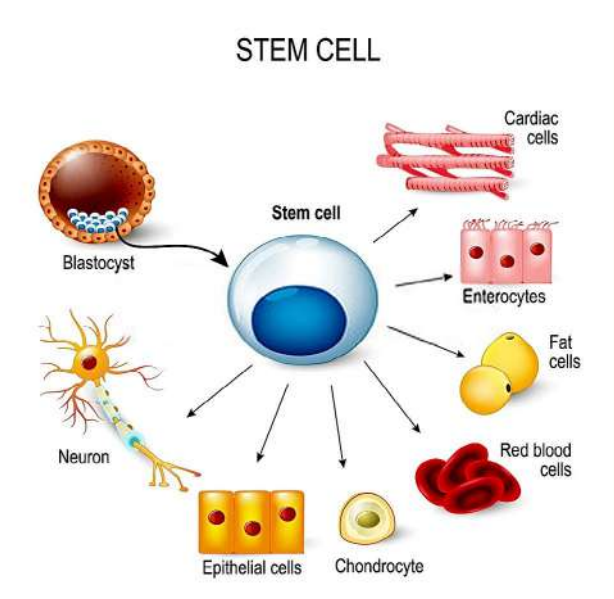
- **Initial Contact:** Cybercriminals use urgent or enticing content to prompt victims to click malicious links, call provided numbers, or share sensitive data.
- **Deceptive links:** Once engaged, victims are directed to fake websites or phone lines resembling legitimate sources.
- **Data Collection:** When the victim enters sensitive information like username, password, credit card numbers and other personal details, the attackers harvest it, leading to potential data theft or malware installation.

Stem Cell Therapy

The Delhi High Court allowed two children with Autism spectrum disorder (ASD) to continue their ongoing stem cell therapy, despite a previous recommendation by the Ethics and Medical Registration Board (EMRB) of the National Medical Commission (NMC) against the use of stem cell treatment for ASD.

What are stem cells?

- Stem cells are cells that can give rise to other cells with specialized functions in the body.
- There are two main types of stem cells:
  - Pluripotent stem cells (found in embryos)
  - Adult stem cells (organ-specific)
- Pluripotent stem cells can be reprogrammed from mature human adult cells, known as induced pluripotent stem cells (iPSCs).



- Stem cell therapy is commonly used in medicine for conditions like leukemia through hematopoietic stem cell transplantation, where healthy stem cells are introduced to replace damaged ones.
- Adult stem cells have limited dividing capacity once removed from the body, which is a limitation of current stem cell therapies.

Global Impact of High Blood Pressure

World Health Organization (WHO) released its first report at the global level, which states that almost four out of every five people suffering from high blood pressure are not adequately treated .

Key points of the report:

- According to the report hypertension is a significant risk factor for death and disability in India but less than a quarter of hypertensive patients in India had their blood pressure under control during 2016-2020, compared to previous years. There has been improvement, but there is still high inequality across sectors.
- The National Family Health Survey (NFHS-5) in 2019-2020 reported 24% hypertension among men and 21% among women, an increase of 19% and 17% respectively from the previous round (2015-16).
- The report states that high blood pressure affects one in three adults worldwide leading to stroke, heart attack, heart failure, kidney damage, and many other health problems.

- According to the report, only 37 percent of people suffering from high blood pressure are diagnosed and only 30 percent get treated.
- The number of people suffering from high blood pressure (those taking medication to control blood pressure of 140/90 mmHg or higher) doubled from 650 million to 1.3 billion between 1990 and 2019.

Draft Digital India Act 2023

The new Digital India Act will replace the two-decade-old Information Technology Act 2000 (IT Act).



- It is designed to address the growth, challenges, and opportunities of the Internet and emerging technologies.
- Its main objective is to align India's regulatory landscape with the digital revolution of the 21st century.
- When the IT Act was introduced, the Internet was at its nascent stage and was struggling to keep pace with the rapid changes in technology and user behavior.
- India's Internet user base has increased from 5.5 million at the time of the inception of the IT Act to 850 million.
- This will also lead to an evolving nature of Internet use, with the proliferation of cyberstalking, trolling, and doxing of users with various mediators.

R21/Matrix-M Malaria Vaccine

World Health Organization (WHO) recommended a new malaria vaccine 'R21/Matrix-M' to prevent the deadly disease spread to humans by mosquitoes. This vaccine is the second malaria vaccine recommended by the WHO after the RTS, S/AS01 vaccine.

About R21/Matrix-M:

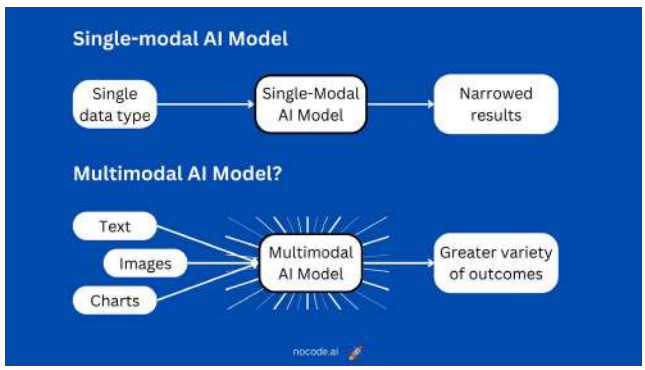
- The R21/Matrix-M malaria vaccine is a readily available vaccine that can be manufactured on a large scale at a modest cost.
- The Matrix-M component is owned by Novavax, which is licensed by the Serum Institute for use in endemic countries.
- This malaria vaccine has been licensed for use in three countries in West Africa: Ghana, Nigeria, and Burkina Faso.
- The Phase III clinical trial of the vaccine was conducted on 4,800 children in Burkina Faso, Kenya, Mali, and Tanzania.

What is Malaria?

- Malaria is a fever caused by a parasite called Plasmodium. It is spread by the female Anopheles mosquito.
- The disease is found in tropical and subtropical regions around the equator, including sub-Saharan Africa and much of Asia.
- According to the WHO, India accounts for 77% of total malaria cases in South East Asia.
- Of the total five species of Plasmodium parasite, two species, P. falciparum, and P. vivax, are considered the most dangerous.

Multimodal Artificial Intelligence

The recent developments by OpenAI, Google, and Microsoft, such as GPT-4V, integration of DALL-E 3 into ChatGPT and assistance with Bard, highlight the significance of multimodal artificial intelligence in the present world.



About Multimodal Artificial Intelligence:

- Multimodal Artificial Intelligence refers to a type of AI system that can simultaneously understand and process information from multiple modalities or sources, such as text, images, video, audio, and other forms of data.
- This means that it can analyse different types of data and extract insights to gain a more comprehensive understanding of a situation or

problem.

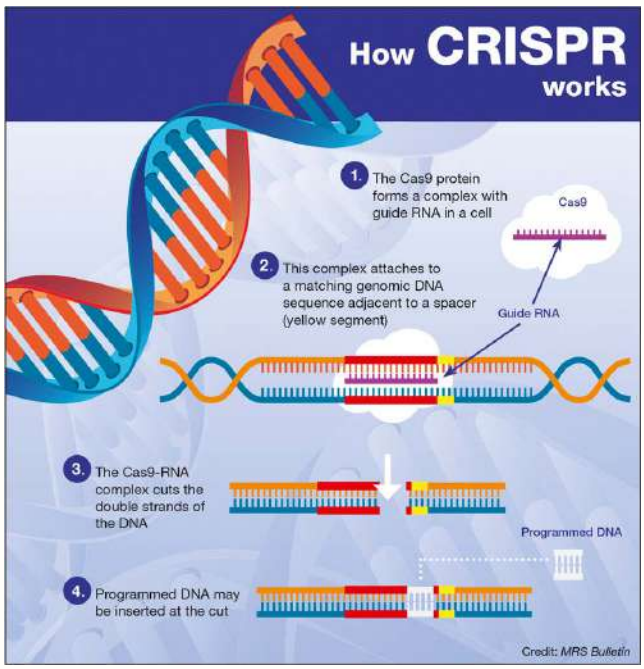
Technologies associated with multimodal AI:

Multimodal AI systems are typically built from a series of three main components-

- **An input module:** A series of neural network responsible for ingesting and processing, or encoding, different types of data such as speech and vision.
- **A fusion module:** Responsible for combining, aligning and processing the relevant data from each modality -speech, text, vision, etc.
- **An output module:** Responsible for creating the output from the multimodal AI, including making predictions or decisions or recommending other actionable output the system or a human operator can utilize.

CRISPR Technology

Scientists have used a gene-editing technique called CRISPR to create chickens that have some resistance to avian influenza. The researchers edited the chicken gene to form ANP32A, which the flu virus hijacks to mimic itself.



About the study:

- Scientists have used a gene-editing technique called CRISPR to create chickens that have some resistance to avian influenza.
- The study suggests that genetic engineering could potentially be a tool to reduce the toll of bird flu, a group of viruses that pose a serious threat to both animals and humans.
- However, the study also highlights the limitations and potential risks of the approach.

About Bird Flu:

- Avian influenza refers to a group of flu viruses circulating in birds. Over the past several years, a highly lethal variant of the bird flu virus known as H5N1 has spread rapidly around the world, killing countless farm and wild birds. It has also repeatedly infected wild mammals and has been detected in a small number of people. Although the virus is adapted to birds, scientists worry that it may acquire mutations that help it spread more easily between humans, potentially leading to a pandemic.
- Many countries have tried to eliminate the virus by increasing biosecurity on farms, isolating infected premises, and culling infected herds. But the virus has become so widespread in wild birds that it has proven impossible to stop, and some countries have begun vaccinating poultry, although the effort presents some logistical and economic challenges.

About CRISPR Technology:

- CRISPR-Cas9 is a technology that allows highly specific and rapid modification of the DNA in a genome, which is the complete set of genetic instructions in an organism.

mRNA Vaccines

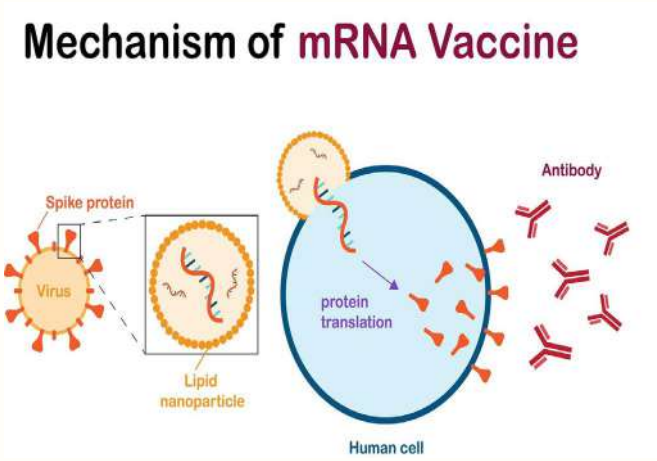
Katalin Karikó and Drew Weissman, have received Nobel Prize in medicine for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19.

- Nucleoside-modified messenger RNA (modRNA) is a synthetic messenger RNA (mRNA) in which some nucleosides are replaced by other naturally modified nucleosides or synthetic nucleoside analogues. modRNA is used to induce the production of desired proteins in certain cells.

About Vaccine:

- Vaccines help prevent infection by preparing the body to fight foreign invaders (such as bacteria, viruses, or other pathogens).
- All vaccines inject a harmless piece of a particular bacteria or virus into the body, triggering an immune response. Most vaccines contain weakened or dead bacteria or viruses.
- However, scientists have developed a new type of vaccine that uses a molecule called messenger RNA (mRNA) instead of part of the actual bacteria or virus.

- Messenger RNA is a type of RNA that is essential for protein production. Once cells finish making proteins, they rapidly break down the mRNA.
- The mRNA from vaccines does not enter the nucleus nor they alter the DNA.



About mRNA Vaccines:

- mRNA vaccines work by introducing a fragment of mRNA that matches the viral protein, usually a small piece of protein found on the outer membrane of the virus. Using this mRNA, cells can produce viral proteins.
- As part of the normal immune response, the immune system recognizes that the protein is foreign and produces special proteins called antibodies.
- Antibodies help protect the body from infection by recognizing individual viruses or other pathogens, attaching to them, and marking the pathogens for destruction.
- Once produced, antibodies remain in the body even after the pathogen is rid of it so that the immune system can respond immediately if re-exposed.
- If a person is exposed to the virus after receiving an mRNA vaccination, antibodies can quickly recognize it, attach to it, and mark it for destruction before it can cause severe disease.
- Individuals who receive the mRNA vaccine are not exposed to the virus, nor can they become infected with the virus from the vaccine.

Quantum Computing

Quantum computing is a cutting-edge field of computing that leverages the principles of quantum mechanics to perform computational tasks in fundamentally different ways than classical computers. In classical computing, information is processed using bits, which can represent either 0 or 1. In contrast, quantum computing uses quantum bits or qubits, which can exist in a superposition of states, representing both 0 and 1 simultaneously.

Quantum Algorithms vs. Classical Algorithms:

- Quantum computers can efficiently solve problems that are extremely challenging for classical computers.
- Quantum algorithms are essential for harnessing the power of quantum computers and require the use of quantum gates for implementation.
- Quantum computers use qubits, which can exist in superposition, meaning they can be in a state of both 0 and 1 simultaneously, which is a fundamental difference from classical bits.

CAR T-Cell Therapy

A Mumbai-based ImmunoAdaptive Cell Therapy Pvt Ltd (ImmunoACT) has announced India's first Chimeric Antigen Receptor (CAR) T-cell vaccine approved by the Central Drugs Standard Control Organization (CDSCO) for the treatment of relapsed-refractory B-cell lymphoma and leukemia.

What is CAR T-Cell Therapy?

- This is a type of cancer immunotherapy treatment, in which firstly, the blood is taken from the patient. Then, immune cells called T-cells are genetically modified in a laboratory and injected back into the patient to make the cells being able to more effectively detect and destroy cancer cells.
- CAR T-cells release large amounts of chemicals called cytokines into the blood as they grow, which can strengthen the immune system.

How does it work?

- The patient's blood is used to collect T-cells and immune cells that play an important role in destroying tumor cells.
- In CAR T-cell therapy, when modified T-cells are introduced into the body, the immune system is activated, allowing these cells to slowly and steadily kill the tumor as it grows.

Importance:

- CAR T-cell therapy costs around Rs 3-4 crore per patient. NexCAR19 will cost Rs 30-40 lakh per patient, which is a fraction of the cost abroad.
- Technical availability puts India among the select few countries that have access to CAR-T therapy.

World's First Global Summit on Artificial Intelligence

The world's first Artificial Intelligence (AI) Security Summit was held in Britain. Leaders from 28 countries including India, America, France, Singapore, China etc. participated in this AI Security Summit.

- This was the first international AI Security Summit focused on cutting-edge frontier AI, held in a former codebreaking spy base near London.
- It identified the risks, opportunities, and the need for international collaboration before uncovering consensus on the scale, importance, and urgency of AI opportunities.
- The summit aimed to highlight the transformative benefits that AI technology can provide, with a key focus on 'areas of education and international research collaboration'.

About Frontier AI:

- It is known to be a highly capable Foundation Generator AI model that may have dangerous capabilities that could pose a serious risk to public safety.

About AI:

- Artificial Intelligence is a transformative technology, which is bringing many changes in our lives. It can perform complex tasks and mimic human intelligence.

Benefits of Artificial Intelligence:

- AI systems can analyze massive amounts of data, recognize patterns, and provide critical insights that support decision-making.
- They improve production, innovation and economic growth by increasing human capabilities.

Tuberculosis

According to Global Tuberculosis Report 2023 by the World Health Organization (WHO), India had the highest number of tuberculosis (TB) cases in the world, accounting for 27% of the global total.

Key points of the Global Tuberculosis Report:

- In India, 2.8 million (28.2 lakh) cases of tuberculosis were recorded in 2022, with a mortality rate of 12 percent and the number of deaths due to tuberculosis was approximately 342,000.
- The report indicates that multidrug-resistant tuberculosis (MDR-TB) has become a public health crisis, with 1.1 lakh cases recorded in India in 2022.

What is Tuberculosis ?

- It is an infectious disease usually caused by the bacteria Mycobacterium tuberculosis (Mtb).
- It typically affects the lungs but it can also impact other parts of the body.
- It spreads from person to person through the air, often when individuals with TB in their lungs cough or sneeze.

The WHO's TB elimination goals:

- The goal of WHO is to reduce the number of deaths from TB by 95% by 2035 and to achieve a 90% reduction in the incidence of TB by 2035. Along with this, it envisages the goal of reaching zero TB-affected families facing catastrophic costs.

NASA's Atmospheric Waves Experiment (AWE)

- National Aeronautics and Space Administration (NASA) has launched the Atmospheric Waves Experiment (AWE). The mission is aimed at studying the complex interactions between terrestrial and space weather.

The Significance of Space Weather:

- When Earth's weather turns extreme, space weather experiences parallel upheavals. These events directly impact vital installations on Earth, including satellite-based communication, radio communication, and the orbits of space-based aircraft — disrupting the seamless operation of navigation systems, Global Positioning Systems (GPS) and power grids.

Ixchiq Vaccine for Chikungunya

Food and Drug Administration (FDA) in the U.S. approved the world's first chikungunya vaccine, Ixchiq. It is developed by European manufacturer Valneva.

About Chikungunya:

- Chikungunya, a viral infection transmitted by Aedes mosquitoes, is characterized by severe joint pain, impaired mobility, and fever. Despite its prevalence in Africa, Asia, and the Americas, sporadic outbreaks in other regions have been reported. Since 2004, the virus has become more widespread, partly due to viral adaptations facilitating easier transmission by Aedes albopictus mosquitoes.

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