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1. Polity and Governance

1.1 National Turmeric Board

- Prime Minister Narendra Modi recently, announced the setting up of a National Turmeric Board for Telangana.

About National Turmeric Board:-
- Location: Telangana.
- Set up: 2023.
- Objective: to harness the potential of our turmeric farmers and give them the support they rightly deserve.
- The National Turmeric Board will focus on value addition to the supply chain.
- The board will extend help to all turmeric farmers on all aspects of Turmeric crops.
- It would serve various purposes, including enhancing value addition in the turmeric supply chain.
- It will help in addressing infrastructure-related needs for farmers.
- It will help the Telangana farmers in having a value chain right from production to export and research in addition to infrastructure.
- It will boost the country's position as a key player in the global turmeric market.

Significance:-
- These infrastructure and developmental projects will increase employment opportunities.
- It improves the lives of people.

Turmeric:-
- Turmeric is a flowering plant. (Lakadong Turmeric)
- It is used as a condiment, dye, drug, and cosmetic in addition to its use in religious ceremonies.
- Its color comes mainly from curcumin, a bright yellow phenolic compound.
- It requires temperatures between 20 and 30 °C (68 and 86 °F).

Significance of Turmeric for India:-
- India holds a prominent position as a major producer, consumer, and exporter.
- Currently, India contributes to approximately 80 percent of the world's turmeric production, yielding nearly 1.1 million tonnes of spice annually.
- The top five turmeric-producing states of India in 2020-21 are Telangana, Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh.
- Awareness of the health benefits of turmeric had grown during the COVID-19 pandemic, leading to increased demand for the spice globally.
- Turmeric exports have been on the rise, with shipments totaling around 1.5 lakh tonnes, particularly since the onset of the pandemic.

Health Benefits of Turmeric:-
- Depression
- Type 2 Diabetes

- Viral Infections
- Premenstrual Syndrome
- High Cholesterol

1.2 Protection of Children from Sexual Offences (POCSO) Act

The Law Commission in its recent report on the Protection of Children from Sexual Offences (POCSO) Act suggested the government keep the consent age 18.

Background:-
- Headed by former Karnataka High Court Chief Justice Ritu Raj Awasthi, the Commission, in its Report No. 283 on 'Age of Consent under the Protection of Children from Sexual Offences Act, 2012' submitted to Union Law Minister Arjun Ram Meghwal, has accordingly called for certain amendments to the Act "to remedy the situation in cases wherein there is tacit approval in fact though not consent in law on part of the child aged between l6 to l8 years".
- Stating that "it is not advisable to tinker with" the existing age of consent — 18 years — under the Protection of Children from Sexual Offences (POCSO) Act to exempt adolescent sexual acts from the purview of the criminal law, the Law Commission of India has instead favoured introducing "guided judicial discretion in the matter of sentencing" in cases involving those in the 16-18 age group.
- It says "This will ensure that the law is balanced, thus safeguarding the best interests of the child".

About the Protection of Children from Sexual Offences (POCSO) Act:-
- Enacted: 2012. (National Commission for Protection of Child Rights)
- Ministry: Ministry of Women and Child Development.
- Objectives: to address offenses of sexual exploitation and sexual abuse of children, which were either not specifically defined or adequately penalized.

Historic Background:-
- It was enacted as a consequence of India's ratification of the UN Convention on the Rights of the Child in 1992.
- The POCSO Act was enacted in 2012 to provide a robust legal framework for the protection of children from offences of sexual assault, sexual harassment, and pornography while safeguarding the interests of children at every stage of the judicial process.
- In 2019, the Act was amended to strengthen the penalties for specified offenses in order to deter abusers and promote a dignified upbringing.

Salient Features:-
- The Act defines a child as "any person" under the age of 18. (Mandatory Minimum Sentencing)
- The Act recognizes that both girls and boys can be victims of sexual abuse.
- Any person in charge of an institution (excluding children) who fails to report the commission of a sexual offense involving a subordinate faces punishment.
- A victim may report an offense at any time, even years after the abuse has occurred.
- The Act forbids the disclosure of the victim's identity in any form of media unless authorized by the special courts established by the Act.
- The new rules include the provision of mandatory police verification of staff in schools and care homes,

procedures to report sexual abuse material (pornography), and imparting age-appropriate child rights education among others.

- For a crackdown on child pornography, any person who has received any pornographic material involving a child or any information regarding such pornographic material shall report the contents to the Special Juvenile Police Unit (SJPU) or police, or the cybercrime portal.
- Under the rules, the State Governments have been asked to formulate a child protection policy based on the principle of zero-tolerance to violence against children, which shall be adopted by all institutions, organizations, or any other agency working with or coming in contact with children.
- The Central Government and every State Government shall provide periodic training.
- The Centre and State Governments have been asked to prepare age-appropriate educational material and curriculum for children, informing them about various aspects of personal safety.
- According to rules, orientation programme and intensive courses may also be organized for police personnel and forensic experts.
- Any institution housing children or coming in regular contact with children, including schools, crèches, sports academies, or any other facility for children must ensure a police verification and background check on a periodic basis of every staff.

Challenges:-
- Low Representation of Women in the Police Force.
- Lapses in the Investigation.
- No Conditions to Prove Recent Intercourse.

1.3 Global Terrorism Index

A recent report discussed the effects of India's improved ranking in the Global Terrorism Index.

Background:-
- India's Global Terrorism Index (GTI) score of 7.43 and crime index score of 44.7 indicated a decline in terror and crime incidents since 2016 which can be attributed to strengthened security measures.
- The report by Ficci Cascade highlighted the need to curb illicit trade, which threatens national security and has negative impacts on manufacturing, government revenue, public health, and consumer trust.

About Global Terrorism Index:-
- Published by: Institute for Economics and Peace (IEP).
- Publication timing: annually.
- The Institute for Economics and Peace (IEP), a global think tank.
- HQ: Sydney, Australia.
- The index is based primarily on the Global Terrorism Database (GTD) collated by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland, besides other sources.
- The index provides a comprehensive summary of the key global trends and patterns in terrorism since 2000.
- GTI scores are directly used in the Global Peace Index, the Global Slavery Report.
- It is also indirectly used in reports of the World Economic Forum's Travel and Tourism Competitiveness and Global Competitiveness Indices and compilation of the Safe Cities Index by the Economist Intelligence

Unit.

Key Highlights of the report:-
- Attacks have become more deadly with the lethality rising by 26%.
- Islamic State (IS) and its affiliates remained the world's deadliest terrorist group in 2022 for the eighth consecutive year, with attacks in 21 countries.
- Ideological terrorism continues to be the most prominent and deadliest form of terrorism in the West.
- The Sahel is the most impacted region, representing 43% of global terrorism deaths.
- Pakistan recorded the second-largest surge in terror-related deaths worldwide in 2022, with the toll increasing significantly to 643.
- South Asia remains the region with the worst average GTI score.
- India ranks 13th on The Global Terrorism Index (GTI).

1.4 UN Convention against Transnational Organized Crime (UNTOC)

India expressed commitment towards combating organized crimes at the UN Convention against Transnational Organized Crime (UNTOC) recently.

About the UN Convention against Transnational Organized Crime(UNTOC):-
- Adopted by the UN General Assembly: 15 November 2000.
- Entry into force: 29 September 2003.
- Signatories: 147.
- Parties: 191 (as of 20 February 2023)
- The United Nations Convention against Transnational Organized Crime, is the main international instrument in the fight against transnational organized crime.
- It is also known as the Palermo Convention.
- Objective: combatting transnational organized crime, fostering international cooperation, and strengthening legal frameworks.
- UNTOC enables cooperation between member states for tackling international organized crime.
- All member parties to the convention must take measures including:
- Creating domestic criminal offenses.
- Adopting frameworks for extradition, mutual legal assistance, and law enforcement cooperation.
- Promoting training and technical assistance for upgrading or building the adequate capacity of national authorities.
- The United Nations Office on Drugs and Crime (UNODC) is the custodian of the UNTOC.

Three protocols of UNTOC:-
- The UNTOC is supplemented by three Protocols, namely:-
- Protocol to Prevent, Suppress, and Punish Trafficking in Persons, Especially Women and Children
- Adopted in 2003, it is the first global legally binding instrument with an agreed definition of trafficking in persons.

Protocol against the Smuggling of Migrants by Land, Sea and Air
- Adopted in 2004, this protocol deals with the problem of organized criminal groups who smuggle migrants, often at high risk to the migrants and at great profit for the offenders.

- Protocol against the Illicit Manufacturing of and Trafficking in Firearms, their Parts and Components and Ammunition
- Adopted in 2001, its objective is to promote, facilitate, and strengthen cooperation among States inorder to prevent, combat, and eradicate the illicit manufacturing of and trafficking in firearms, their parts and components, and ammunition.

India and UNTOC:-
- India ratified the UNTOC in 2011 becoming the fourth South Asian country to do so.
- The nodal agency for all dealings with UNTOC is the Central Bureau of Investigation (CBI).

About UNODC:-
Establishment:
- HQ: Vienna, Austria.
- The United Nations Office on Drugs and Crime (UNODC) contributes to global peace and security, sustainable development, and human rights by helping to make the world safer from drugs, crime, corruption, and terrorism.
- It provides technical assistance, research, and normative support to Member States to help them develop and implement comprehensive, evidence-based solutions to the complex and interconnected threats that they face at the national, regional, and global levels. In today's challenging times, our work is needed more than ever.

Functions: -
- Tackling the world drug problem
- Preventing corruption
- Countering terrorism
- Counter-Terrorism Strategy
- Combating organized crime
- Preventing crime and promoting

Funding: -
UNODC relies on voluntary contributions, mainly from governments, to carry out the majority of our work.

1.5 Intelligent Grievance Monitoring System (IGMS) 2.0

The Intelligent Grievance Monitoring System (IGMS) 2.0 was launched recently.

About Intelligent Grievance Monitoring System (IGMS) 2.0: -
- Developed by IIT Kanpur.
- Ministry: Ministry of Personnel, Public Grievances and Pensions.
- Objectives: Provide instant tabular analysis of Grievances Filed and disposed of. Offer State-wise and district-wise Grievances Filed data. Offer Ministry-wise data. Enhance grievance redressal process with AI capabilities.
- IGMS 2.0, is an Intelligent Grievance Monitoring System. (Grievance Appellate Committee (GAC) portal)
- It is for upgrading DARPG Information Systems (CPGRAMS) with Artificial Intelligence capabilities.
- CPGRAMS, or Centralised Public Grievance Redress and Monitoring System, serves as an online platform

for citizens to lodge grievances with government authorities 24/7, streamlining the process for efficient service delivery.

- The Dashboard provides instant tabular analysis of Grievances Filed and disposed of, State-wise and district-wise Grievances Filed, and ministry-wise data.
- It also helps the officials identify the root cause of the grievance.
- This portal falls under the Department of Administrative Reforms and Public Grievances (DARPG).
- It offers real-time analysis of grievances filed and resolved, categorizing data by state, district, and ministry.
- The system leverages artificial intelligence (AI) to identify the root causes of grievances and facilitates drafting letters for scheme or ministry selection, expediting grievance resolution.

1.6 The concerns of using Aadhaar in welfare schemes

- Recently, credit rating agency Moody's Investor Service released a report, 'Decentralised Finance and Digital Assets,' which advocates for decentralized digital identity systems instead of centralized biometric systems like India's Aadhaar.
- Referring to "security and privacy vulnerabilities posed by centralized ID systems like Aadhaar", the report states "the Aadhaar system faces hurdles, including the burden of establishing authorization and concerns about biometric reliability."
- The government stated that it is evident that the authors of the report are unaware that the seeding of Aadhaar in the MGNREGS database has been done without requiring the worker to authenticate.

About Aadhaar:
- The Aadhaar card is a 12-digit unique number issued by the Unique Identification Authority of India (UIDAI).
- It contains biometric information, such as fingerprints and iris scans, along with demographic information, including individuals' addresses and date of birth.
- It serves as proof of identity and is valid anywhere in India for any identification purposes.
- Having an Aadhaar card is compulsory while applying for a new PAN card or filing Income tax returns.

Advantages of using Aadhaar:
- Transparency in identification of beneficiaries for welfare schemes: Aadhaar has helped to remove fake and duplicate identities of beneficiaries.
- It has been used to filter the list of beneficiaries and stop the leakage of public money.
- Targeted delivery of welfare measures: JAM trinity (Jan Dhan Yojana, Aadhaar and Mobile numbers) has been employed for targeted delivery of subsidies.
- Use of Aadhaar Card for distributing social welfare schemes has led to better targeting of poor which were suffering by leakages.
- Aadhaar has helped in mapping development parameters: In critical sectors of the country like healthcare and education, Aadhaar has been used to map the development processes and parameters.
- It has also been used to map skilled manpower, based on the vocational training acquired by the individual with the suitable job vacancies/ skill requirements.
- Quick and easy Income tax returns: Use of Aadhaar in income tax filing has reduced the number of documents needed for filing income tax.
- It has made the process more efficient and cost-effective.

- Phase out of corruption: The use of Aadhaar in financial transactions has reduced the menace of black money in the country thereby reducing the corruption.

Concerns associated with Aadhaar:
- Quantity fraud: In the distribution of rations, the prevalent type of corruption is quantity fraud, where beneficiaries receive less than their entitled share.
- Aadhaar does not address this issue effectively.
- Authentication failures: Many individuals in rural areas face authentication failures due to unreliable internet connections, fading fingerprints, or lack of phone connectivity for OTP verification. The extent of these failures remains undisclosed.
- A report by the Comptroller and Auditor General of India (CAG) from 2022 states "UIDAI did not have a system to analyze the factors leading to authentication errors."
- Privacy at risks: UIDAI has not ensured that the applications or devices used by agencies or companies for authentication "were not capable of storing the personal information of the residents, which put the privacy of residents at risk".
- Authentication Errors: Discrepancies between job card information and UID data can lead to authentication errors, causing wage payment delays and complications.
- Misdirected Payments: Aadhaar payments can be misdirected when an individual's Aadhaar number gets linked to another person's bank account, making it challenging to detect and resolve such issues.
- Aadhaar payments people got redirected to Airtel wallets causing much havoc. Misdirected payments through Aadhaar are difficult to detect and are nearly impossible to resolve.
- Last-mile delivery in rural areas faces issues of lesser Bank penetration: The last-mile delivery is a significant challenge with the problem of lesser banking infrastructure in rural areas and the failure of the banking correspondent model to take off.
- Questionable savings claims: Claims of substantial savings through Aadhaar implementation in MGNREGA have been challenged by researchers, citing insufficient funds as the primary reason for wage payment delays.

Supreme Court opinion:
- The government must abide by and enforce Supreme Court directions, including;
- Restriction of mandatory Aadhaar to permissible purposes,
- Provision of an alternative whenever Aadhaar authentication fails
- Unconditional exemption for children.

Way Forward:
- Although the Aadhaars system has undoubtedly brought transparency and efficiency to welfare programs, it is crucial to address the challenges and concerns raised by its implementation. Balancing security, accessibility, and reliability is essential to ensure that Aadhaar continues to benefit those it was intended to serve. Addressing these concerns will help optimize the effectiveness of Aadhaar in government welfare schemes while safeguarding the rights and privacy of citizens.

1.7 Law Commission on e-FIR

The Law Commission has recently recommended allowing the filing of online first information reports (e-FIRs) for cognisable offences to overcome difficulties in filing FIRs and improve police to public ratio.

About e-FIR:
- An e-FIR is the electronic version of a First Information Report.
- For filing an e-FIR, the complainant does not have to visit the police station instead they can register their complaint through a mobile app or the police's online network.
- This initiative is being implemented partially in Delhi, Gujarat, Karnataka, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, and Uttarakhand.
- It only works in a non-heinous case (theft, reporting lost items and vehicle thefts).

Advantages of e-FIRs:
- Increased Accessibility: In areas with security or infrastructural issues, e-FIRs offer a convenient alternative rather than visiting a police station.
- Overcoming Reluctance: e-FIRs can mitigate the reluctance of policemen in cases of petty offences.
- Addressing Police-to-Public Ratio: It would overcome the difficulties resulting from low police to public ratio.
- Reporting crimes in real time: e-FIR would tackle the long persisting issue of delay in registration of FIRs by reporting crime in real time.

Criticisms of e-FIRs:
- Potential for Exaggeration: There's a risk of complainants exaggerating claims, which can lead to legal complexities and discomfort for the accused.
- Thus, it requires checks and balances.
- Lack of Immediate Investigation: E-FIRs might not be suitable for cases requiring immediate investigation, such as fatal accidents or grievous hurt incidents.
- Infrastructure Constraints: Not all police stations have the necessary infrastructure to handle e-FIRs efficiently.
- There are 17,535 police stations in total, of which 628 are operating without a landline, while 285 run without wireless/mobile connection.
- The total number of computers in 17,535 police stations is 172,168.

Recommendations by the Law Commission:
- To enable the online submission of FIRs for two specific situations:
- All cognizable offenses, even when the accused is unknown.
- Cognizable offenses with a maximum punishment of three years, even when the accused is known.
- It has been partially implemented in some states but the commission has recommended expanding the facility.
- States are granted additional powers to expand the list of eligible offenses for e-FIR based on the effectiveness of the system.
- Suggested amendments span various legislations, including the Code of Criminal Procedure, 1973, Indian Evidence Act, 1872, Information Technology Act, 2000, Indian Penal Code, 1860, and other relevant laws.
- It referred to the Supreme Court's landmark verdict in Lalita Kumari v. State of Uttar Pradesh, in which the court held that preliminary enquiry should be conducted in cases pertaining to matrimonial disputes, commercial offences, medical negligence and corruption, among others.

1.8 Swachhata Hi Seva Campaign

- Recently, Indian Renewable Energy Development Agency Ltd. (IREDA) began the 'Ek Taarikh, Ek Ghanta, Ek Saath' Cleanliness Initiative under Swachhata Hi Seva Campaign.

Background:-
- As part of the ongoing 'Swachhata Hi Seva' Campaign 3.0, Indian Renewable Energy Development Agency Ltd. (IREDA) joined the nation in organizing 'Ek Taarikh, Ek Ghanta, Ek Saath' cleanliness drive, at its office premises in Bhikaiji Cama Place, Delhi and adjoining areas recently.

Ek Tareekh Ek Ghanta Ek Saath:-
- It is an initiative that is a massive voluntary effort for cleanliness in India, endorsed by Prime Minister Narendra Modi.
- The initiative encourages citizens to engage in one hour of "shramdaan" (voluntary labour) for cleanliness at 10 a.m. on October 1st as a tribute to Mahatma Gandhi.

About Swachhata Hi Seva Campaign:-
- Ministry: Ministry of Housing and Urban Affairs (MoHUA).
- Duration: The Swachhata Hi Seva (SHS) campaign is being celebrated from 15th September to 2nd October this year (2023).
- It is being celebrated as a prelude for the Swachh Bharat Diwas (2nd October) with nationwide participation.
- Implementation: It is under the joint aegis of DDWS & MoHUA.
- Theme of SHS-2023: 'Garbage Free India'.
- Focus: visual cleanliness and welfare of SafaiMitras.
- The focus of these swachhata drives would be on high footfall public places like bus stands, railway stations, cantonment boards, beaches, tourist places, zoos, national parks & and sanctuaries, historical monuments, heritage sites, river fronts, ghats, drains and nallahs etc. in both rural & urban areas of State/ UT.

Objectives:-
- For undertaking shramdaan activities aiming to generate Jan andolan through community participation.
- To provide impetus for the implementation of SBM.
- To disseminate the importance of a sampoorna swachh village.
- To reinforce the concept of Sanitation as everyone's business.

Activities:-
Activities proposed for States / Districts / Blocks to organize SHS from 15th September 2023 to 2nd October 2023 are as follows:-
- Removal of garbage from all important places.
- Repair, painting, cleaning, and branding of all sanitation assets like litter bins, public toilets, dhalaos, waste transport vehicles, MRFs, etc. in the area.
- Drives to clean riverbanks and remove of waste (including plastic) from water bodies, especially in Ganga Grams and Ganga Towns.
- Cleaning of zoos, national parks, wildlife sanctuaries, etc. under MoEFCC along with regulation of plastic materials in protected areas to prevent littering.

- Cleanliness drives of tourist spots, ASI protected monuments along with IEC initiatives to discourage usage of single-use plastic items, saturating dry and wet waste bins in line with the Hara Geela Sookha Neela campaign, etc.

1.9 National Cooperative Development Corporation (NCDC)

- Union Home Minister and Minister of Cooperation addressed the 89th General Council meeting of the National Cooperative Development Corporation (NCDC) in New Delhi recently.

About National Cooperative Development Corporation (NCDC):-
- Establishment: 1963.
- Ministry: Ministry of Cooperation.
- HQ: New Delhi.
- The National Cooperative Development Corporation (NCDC) was established by an Act of Parliament in 1963 as a statutory Corporation.

Organization & Management:-
- The Management vests in 51 members widely represented General Council to give shape to its policies and programmes and the Board of Management with 12 members to cater to day-to-day activities.

Functions:-
- Planning, promoting, and financing programmes for the production, processing, marketing, storage, export, and import of agricultural produce, foodstuff, and certain other notified commodities e.g. fertilizers, insecticides, agricultural machinery, lac, soap, kerosene oil, textile, rubber, etc.
- Supply of consumer goods and collection, processing, marketing, storage, and export of minor forest produce through cooperatives, besides income generating stream of activities such as poultry, dairy, fishery, sericulture, handloom, etc.
- Assist different types of cooperatives and to expand its financial base. (India's Cooperative Sector)
- Finance projects in the rural industrial cooperative sectors and for certain notified services in rural areas like water conservation, irrigation, micro irrigation, agri-insurance, agro-credit, rural sanitation, animal health, etc.
- Loans and grants are advanced to State Governments for financing primary and secondary level cooperative societies and direct to the national level and other societies having objects extending beyond one State.
- The Corporation can also go in for direct funding of projects under its various schemes of assistance on fulfillment of stipulated conditions.

1.10 Same-sex marriage case

- Recently, the Constitution Bench of the Supreme Court delivered a judgment in the same-sex marriage case.

Background :-
- In a rulin Tuesday that disappointed LGBTQ+ rights campaigners, a Constitution Bench of the Supreme

Court unanimously rejected their prayer to grant legal recognition to same-sex marriage and left it to Parliament to change the law for such a union.

About same-sex marriage case:-
- The SC took up the case as petitioners claimed that the non-recognition of same-sex marriage amounted to discrimination that strikes at the root of dignity and self-fulfilment of LGBTQIA+ couples.
- The petitioners cited the Special Marriage Act, of 1954 and appealed to the Court to extend the right to the LGBTQIA+ community, by making the marriage between any two persons gender-neutral.

Arguments in Favour:-
- Considering Marriage as a Fundamental Right.
- Need to extend Special Marriage Act to Queer Indians.
- Assimilation of same-sex couples in society. (Same-Sex Marriage)
- Preserving Human Dignity. (LGBTIQ+)
- Ease in Surrogacy and adoption.

Arguments against:-
- Against traditional and religious definitions of Marriage.
- Preserving the Right to Privacy of same-sex couples which is not possible in marriage as it has a public element involved.
- Only Parliament has the authority to decide on same-sex marriage as it is a matter of democratic right and the court should not legislate on the issue.
- When queer couples adopt children, it can lead to societal stigma, discrimination, and negative impacts on the child's emotional and psychological well-being.
- The Special Marriage Act (SMA) cannot be interpreted to include same-sex marriage because the Act's entire architecture would need to be examined.

Judgement:-
- Citing "institutional limitations", a five-judge bench, comprising Chief Justice of India D Y Chandrachud, Justices Sanjay Kishan Kaul, S Ravindra Bhat, Hima Kohli and P S Narasimha, in four separate judgments, declined to strike down or tweak provisions of the Special Marriage Act, 1954 (SMA).
- They said that there is "no unqualified right" to marriage, and a same-sex couple cannot claim it as a fundamental right under the Constitution.
- However, the bench recognized equal rights for queer people and their protection and called for sensitization of the public to ensure they are not discriminated against.

1.11 Ayushman Bharat Pradhan Mantri - Jan Arogya Yojana (AB- PMJAY)

- Recent reports show that 26 crore Ayushman Cards have been created under Ayushman Bharat Pradhan Mantri – Jan Arogya Yojana (AB- PMJAY) so far.

About Ayushman Bharat Pradhan Mantri – Jan Arogya Yojana (AB- PMJAY):-

- Launched:2018.
- Ministry: Ministry of Health and Family Welfare. (PMBJP)
- Implementing Agency: National Health Authority.
- Objectives: to meet Sustainable Development Goals (SDGs) and its underlining commitment, which is to "leave no one behind."
- Historical Background: Ayushman Bharat, a flagship scheme of the Government of India, was launched as recommended by the National Health Policy 2017, to achieve the vision of Universal Health Coverage (UHC).

Salient Features:-

- This scheme aims to undertake path-breaking interventions to holistically address the healthcare system (covering prevention, promotion and ambulatory care) at the primary, secondary and tertiary levels. (Ayushman Bharat PMJAY)

Ayushman Bharat comprises two inter-related components:-

Health and Wellness Centres (HWCs):–

- In February 2018, the Government of India announced the creation of 1,50,000 Health and Wellness Centres (HWCs) by transforming the existing Sub Centres and Primary Health Centres. (Pradhan Mantri Janaushadhi Kendra (PMJK))
- These centres are to deliver Comprehensive Primary Health Care (CPHC) bringing healthcare closer to the homes of people.
- They cover both, maternal and child health services and non-communicable diseases, including free essential drugs and diagnostic services.

Pradhan Mantri Jan Arogya Yojana (PM-JAY):-

- This scheme was launched on 23rd September, 2018.
- Ayushman Bharat PM-JAY is the largest health assurance scheme in the world.
- It provides health cover of five lakh rupees per family per year for secondary and tertiary care hospitalization to twelve crore beneficiary families.
- The households included being based on the deprivation and occupational criteria of the Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas respectively.
- PM-JAY was earlier known as the National Health Protection Scheme (NHPS) before being rechristened.

- It subsumed the then-existing Rashtriya Swasthya Bima Yojana (RSBY) which had been launched in 2008.
- It provides cashless access to health care services for the beneficiary at the point of service, that is, the hospital.
- It covers up to 3 days of pre-hospitalization and 15 days of post-hospitalization expenses such as diagnostics and medicines.
- There is no restriction on the family size, age or gender.
- All pre–existing conditions are covered from day one.

Benefits:-
- PM-JAY envisions to help mitigate catastrophic expenditure on medical treatment which pushes nearly 6 crore Indians into poverty each year.
- Benefits of the scheme are portable across the countrye. a beneficiary can visit any empanelled public or private hospital in India to avail cashless treatment.

1.12 Election Commission of India

Recently, the Election Commission of India provided an alternative facility of postal ballots to the elderly aged, disabled and Corona-infected.

Background:-
- In the upcoming polls of five States, the Election Commission of India has provided the alternative facility of postal ballot to the elderly aged 80 years and above, the disabled and Corona-infected voters.

Postal Voting:-
- A restricted set of voters can exercise postal voting.
- Through this facility, a voter can cast her vote remotely by recording her preference on the ballot paper and sending it back to the election officer before counting.
- Members of the armed forces like the Army, Navy and Air Force, members of the armed police force of a state (serving outside the state), government employees posted outside India and their spouses are entitled to vote only by post.
- Voters under preventive detention can also vote only by post.
- Special voters such as the President of India, Vice President, Governors, Union Cabinet ministers, Speaker of the House and government officers on poll duty have the option to vote by post.

About the Election Commission of India:-
- The Election Commission was established in accordance with the Constitution on 25 January 1950.
- The Election Commission of India is an autonomous constitutional body responsible for administering Union and State election processes in India.
- The body administers elections to the Lok Sabha, Rajya Sabha, State Legislative Assemblies, State Legislative Councils and the offices of the President and Vice President of the country.
- For this, the Constitution of India provides for a separate State Election Commission.

Constitutional Provisions:-
- Its powers, appointment and duties are mentioned in Part XV of the Constitution (Article 324 to Article 329) and the Representation of People Act.

- Article 324: Superintendence, direction and control of elections to be vested in an Election Commission.
- Article 325: No person to be ineligible for inclusion in, or to claim to be included in a special electoral roll on the grounds of religion, race, caste or sex.
- Article 326: Elections to the Lok Sabha and Legislative Assemblies of States to be on the basis of adult suffrage.
- Article 327: Power of Parliament to make provision with respect to elections to legislature.
- Article 328: Power of Legislature of a State to make provision with respect to elections to such Legislature.
- Article 329: Bar to interference by courts in electoral matters.

Composition of Election Commission:-
- Originally the commission had only a Chief Election Commissioner.
- It currently consists of the Chief Election Commissioner and two Election Commissioners.
- For the first time, two additional Commissioners were appointed on 16th October 1989 but they had a very short tenure till 1st January 1990.
- Later, on 1st October 1993 two additional Election Commissioners were appointed.
- The concept of a multi-member Commission has been in operation since then, with decision-making power by majority vote.

Appointment, Tenure and Privileges of Commissioners:-
- The President appoints Chief Election Commissioner and Election Commissioners. (Appointment of Chief Election Commissioner and Other ECs)
- They have a tenure of six years, or up to the age of 65 years, whichever is earlier.
- They enjoy the same status and receive salary and perks as available to Judges of the Supreme Court of India.
- The Chief Election Commissioner can be removed from office only through impeachment by Parliament.

Removal of Election Commissioners:-
- They can resign anytime or can also be removed before the expiry of their term.
- The CEC can be removed from office only by the order of the President, just like a judge of the Supreme Court.

2. International Relations

2.1 Seventh India-EU Cyber Dialogue

- The Seventh India-EU Cyber Dialogue was held recently.

About Seventh India-EU Cyber Dialogue:-
- Date: 05 October 2023.
- Venue: Brussels, Belgium.
- In the context of the vibrant Strategic Partnership between India and the EU, the two sides expressed appreciation for the Cyber Dialogue mechanism.
- Objective: to provide a platform to discuss a wide range of issues related to cyberspace.
- Both sides exchanged views on cyber policies, strategies, and areas of mutual interest.
- They discussed cyber cooperation in multilateral fora, including at the United Nations, and in regional settings, including at OSCE, ARF, and G20.
- They also discussed cooperation in promoting capacity building in cyberspace and combating the criminal use of ICTs.

About India-EU Relations:-
- The EU is a political and economic union of 27 member states that are located primarily in Europe.
- The union and EU citizenship were established when the Maastricht Treaty came into force in 1993.
- India was one of the first countries to establish relations with the European Economic Community in the 1960s.
- The retreat of the U.S. from global leadership has provided opportunities for EU-India cooperation.

Political Cooperation:-
- 2000: The first India-EU Summit was held in 2000 which marked a watershed in the development of the relationship.
- 2004: The relationship was upgraded to a 'Strategic Partnership' during the 5th India-EU Summit held in 2004.
- 2018: the EU's strategy on India entitled "A Partnership for Sustainable Modernization and Rules-based Global Order" was issued by the European Commission and the EU High Representative for Foreign Affairs and Security Policy.

Trade:-
- India is an important trade and investment partner for the EU. (India-EU: Trade talks)
- It is the second-largest destination for Indian exports after the United States.
- India's bilateral trade with the EU amounted to USD 116.36 billion in 2021-22.
- Despite the global disruptions, bilateral trade achieved impressive annual growth of 43.5% in 2021-22.
- The trade agreement with the EU would help India further expand and diversify its exports of goods and services, including securing the value chains.

Defense & Security:-
- EU and India have instituted several mechanisms for greater cooperation on pressing security challenges

like counterterrorism, maritime security, and nuclear non-proliferation.

- Information Fusion Centre – Indian Ocean Region in New Delhi (IFC-IOR) has recently been linked up with the Maritime Security Centre – Horn of Africa (MSC-HOA) established by the EU Naval Force (NAVFOR).

Climate Change:-

- EU and India also underline their highest political commitment to the effective implementation of the Paris Agreement and the UNFCCC. (EU's Sustainability Push on India)
- The India-EU Clean Energy and Climate Partnership was agreed at the 2016 Summit.
- EU and India also cooperate closely on the Clean Ganga initiative.

Research and Development:-

- The India-EU Science & Technology Steering Committee meets annually to review scientific cooperation.
- Both have official mechanisms in fields such as Digital Communications, 5G technology, Biotechnology, artificial intelligence, etc.
- ISRO has had a long-standing cooperation with the European Union, since the 1970s.
- It has contributed to the EU's satellite navigation system Galileo.

Challenges:-

- Deadlock over BTIA: The negotiations for a Broad-based Bilateral Trade and Investment Agreement (BTIA) were held between 2007 to 2013 but have remained dormant/suspended since then.
- EU primarily remains a trade bloc: This has resulted in a lack of substantive agreements on matters such as regional security and connectivity.
- China's influence: The EU has a high dependence on the Chinese market.
- It is a major partner in China's Belt and Road Initiative (BRI).
- Ukrainian war: EU expects India to criticize Russia.

2.2 Israel's Iron Dome

Israel's Iron Dome anti-missile system intercepted rockets launched from the Gaza Strip in the recent attack.

Background:-

- The Hamas militant group launched its worst attack inside the Jewish state's territory since 1948 on Saturday (October 7), killing at least 250 Israelis and abducting several others.

About Israel's Iron Dome:-

- Iron Dome is a short-range, ground-to-air, air defense system.
- It includes radar and Tamir interceptor missiles that track and neutralize any rockets or missiles aimed at Israeli targets. (Ballistic missiles)
- It is used for countering rockets, artillery & mortars (C-RAM) as well as aircraft, helicopters, and unmanned aerial vehicles.

Historical Background:-
- The genesis of the Iron Dome goes back to the 2006 Israeli-Lebanon war when Hezbollah fired thousands of rockets into Israel.
- The following year, Israel announced that its state-run Rafael Advance Systems would come up with a new air defense system to protect its cities and people.
- It was developed with Israel Aerospace Industries.
- The Iron Dome was deployed in 2011.

Salient Features:-
- The Iron Dome has three main systems.
- Radar: It has a detection and tracking radar to spot any incoming threats.
- Weapon Control: It has a battle management and weapon control system (BMC).
- The BMC basically liaises between the radar and the interceptor missile.
- The BMC basically liaises between the radar and the interceptor missile.
- Missile Fire: It also has a missile firing unit.
- All these three units work together to provide a shield over the area where it is deployed.

Advantages of Iron Dome:-
- It has a detection and tracking radar to spot any incoming threats.
- It can handle multiple threats.
- It is capable of being used in all weather conditions, including during the day and night.

2.3 Comprehensive Nuclear Test Ban Treaty (CTBT)

- A day after indicating that Russia might revoke its ratification of the Comprehensive Nuclear Test Ban Treaty (CTBT), President Vladimir Putin said that the country would do so to be on level terms with the United States, and not to resume nuclear testing.

About CTBT:
- The CTBT is a multilateral treaty that bans all nuclear explosions, whether for military or peaceful purposes.
- It was negotiated at the Conference on Disarmament in Geneva.
- It has been signed by 187 countries and ratified by 178 but cannot go into force until eight countries have signed and ratified it.
- China, Egypt, Iran, and Israel have signed but not ratified it.
- North Korea, India and Pakistan have not signed.
- While Russia ratified the agreement in 2000, the US is still to do so.
- While the US signed but did not ratify the treaty, it has observed a moratorium on nuclear weapon test

- explosions since 1992 that it has no plans to abandon.
- When the United Nations General Assembly (UNGA) adopted the CTBT in September 1996, 2048 nuclear explosions were already conducted worldwide.
- 18 years later, the number of explosions has further increased to 2055.
- In this regard, the CTBT has an important role in ensuring a world where nuclear weapons tests are barred and thus constrain the development of new nuclear weapons and new nuclear weapon countries.

Implications of Russian Move:
- Global Disarmament: Since the CTBT, 10 nuclear tests have taken place.
- India conducted two in 1998, Pakistan also two in 1998, and North Korea conducted tests in 2006, 2009, 2013, 2016 (twice) and 2017, according to the United Nations.
- It would be a big setback to the Nuclear disarmament movement.
- Nuclear Arms Race: This move would enable Russia to build and deploy more nuclear weapons targeting its adversaries without the treaty's constraints.
- Both sides could get sucked into a dangerous arms race.
- Russia-Ukraine Crisis: The missile attacks against each other by both Russia and Ukraine have also led to a growing escalation of mutual suspicion.
- The present Russian decision has only aggravated the crisis.
- Undermining Future Agreements: Arms control has been a progression from one treaty to the next. If Russia revokes its ratification, it will leave the world without a common starting point for future efforts.
- The Treaty on Prohibition of Nuclear Weapons (TPNW) did not find support from any of the P-5 countries.
- Russia-West Relations: The Russian decision can be described as symbolic and strategic in nature. It wants to pressurize the West by sending an ambiguous message strategically.
- Russia has tried not to appear aggressive and has attempted to put all the blame on the US this will further erode Russia and West ties.
- Global Politics and Security: Taking a cue from the present stand-off between Russia and the United States over the current nuclear question, many countries like North Korea, Pakistan, Turkey, Iran, and China may go for further proliferation of nuclear weapons without any scrutiny.

India's view on nuclear disarmament:
- Complete Disarmament: India has consistently advocated global nuclear disarmament since the concept's inception in the United Nations.
- Two-Front Nuclear War: India, faced with two nuclear neighbours (Pakistan and China) with one declaring its nuclear arsenal as India-specific, reluctantly had to become a nuclear weapon state.
- Universal Non-discriminatory and verifiable Treaty: India remains committed to negotiating a universal, non-discriminatory and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices, one that considers India's national security interests.
- Delinking Disarmament and Non-Proliferation: In 1965, India was a member of the eighteen nation disarmament committee (ENDC) that advocated for delinking disarmament and non-proliferation.
- India opposed the signing of the NPT (treaty of Non-Proliferation of Nuclear Weapons which it views as discriminatory (dividing the world into Nukes haves and haves not).
- In 1988, India Proposed a Comprehensive Proposal for complete Universal disarmament (Rajiv Gandhi Action Plan) – to the UN General Assembly Special Session on Disarmament.

Way Forward:

- India supports the commencement of negotiations on a comprehensive Nuclear Weapons Convention in the Conference on Disarmament, which is the world's single multilateral disarmament negotiating forum working on the basis of consensus. Considering the present pessimistic environment, the Russian revocation of the Treaty may not seem shocking or startling.

2.4 Asia-Pacific Institute for Broadcasting Development (AIBD)

- India re-elected the Asia-Pacific Institute for Broadcasting Development (AIBD) General Conference (GC) president for the third successive term recently.

Background:-

- The Information & Broadcasting Ministry Secretary, Apurva Chandra, said this was a first in the history of AIBD.
- The move showed the confidence broadcasting organizations across the Asia Pacific and the world reposed in India.

About Asia-Pacific Institute for Broadcasting Development (AIBD):-

- Established:1977
- Host: Government of Malaysia
- Secretariat: Kuala Lumpur.
- Objective: to achieve a vibrant and cohesive electronic media environment in the Asia Pacific region through policy and resource development.
- Membership: It has 92 member organizations from across 44 countries, including 26 government members (countries) represented by 48 broadcasting authorities and broadcasters.
- It also has 44 affiliates (organizations) represented by 28 countries and regions in Asia, the Pacific, Europe, Africa, Arab States, and North America.
- India is one of the founding members of this organization.
- Representative body: The Prasar Bharati is the representative body of the Ministry of Information & Broadcasting, Government of India, at AIBD.
- It was established under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO).
- It is a unique regional inter-governmental organization servicing countries of the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) in the field of electronic media development.
- The Institute seeks to fulfill this mandate by mobilizing the intellectual and technological resources available within the national broadcasting organizations of its member countries as well as regional and international bodies.
- It does it through a well-established infrastructure and networking mechanism which includes government agencies, non-governmental organizations, institutions of higher learning, the private sector, and individual professionals.

2.5 India-Israel Relation

- Recently, Hamas, the militant group ruling the Gaza Strip, mounted one of the most audacious attacks on Israel known as "Operation 'Al-Aqsa Storm".

- In retaliation, Israel has formally declared war on Hamas under "Operation Iron Sword".
- The Indian PM expressed outrage, referring to the event as a terrorist attack, and voiced solidarity with Israel.

History of India's Position on the Israel-Palestine Conflict:
- India's Initial Rejection of the Two-Nation Solution and Support for the Palestinian Cause: In the wake of India's independence in 1947, its early political stance on Israel was rooted in the rejection of the two-nation solution and unwavering support for the Palestinian cause.
- India's Votes against Israel at the United Nations: India's position regarding Palestine was also shaped by the broader consensus in the Arab world, the Non-Aligned Movement, and the United Nations.
- When Israel applied for admission to the United Nations, India once again voted against its inclusion.
- Recognition of Israel as a Nation: Despite its early stance against Israel, India eventually recognized Israel as a sovereign nation on September 17, 1950, following the footsteps of two Muslim-majority countries, Turkey and Iran.
- Engagement with Palestinian Leadership Under Yasser Arafat: In the late 1960s and early 1970s, the Palestine Liberation Organisation (PLO) emerged as the principal representative of the Palestinian people, under the leadership of Yasser Arafat.
- During this period, India actively engaged with the largest political faction within the PLO, Al Fatah.
- Recognition of PLO as the Legitimate Representation of Palestinian People: On January 10, 1975, India took a significant diplomatic step by officially recognizing the PLO as the sole and legitimate representative of the Palestinian people.
- This recognition culminated in India permitting the PLO to establish an independent office in New Delhi.
- Remarkably, India, despite being one of the last non-Muslim states to recognize Israel, became the first non-Arab state to formally acknowledge the legitimacy of the PLO.
- Strong Solidarity for Palestine Struggle at NAM Summit in Delhi: The relationship between India and Palestine further strengthened when the NAM summit took place in India in 1983 with a strong statement of solidarity for Palestine.

Present India- Israel Relations
- Economic and trade: Bilateral merchandise trade surged from USD 200 million in 1992 to USD 6.35 billion (excluding defense) by 2022.
- India emerged as Israel's third-largest trade partner in Asia and seventh globally, with trade diversifying into pharmaceuticals, agriculture, IT, telecom, and homeland security.
- Israeli companies have facilitated technology transfer to India, particularly in renewable energy, telecom, and water technologies.
- Defense Cooperation: India imports crucial defense technologies from Israel, with regular exchanges between armed forces.
- Security cooperation includes a Joint Working Group on Counter-Terrorism.
- India uses Israeli defense systems such as Phalcon AWACS, Heron drones, and Barak anti-missile defense systems.
- Agricultural Cooperation: A three-year joint work program was signed in 2021 to enhance agricultural cooperation, focusing on Centers of Excellence, value chains, and private investment.
- Israel's expertise and technologies have benefitted India in horticulture, irrigation, and dairy farming.
- Science and Technology: The Joint Committee on Science and Technology, established in 1993, fosters collaboration in research and development.

- The India-Israel Industrial R&D and Technological Innovation Fund (I4F) supports joint industrial projects in specific sectors.
- Energy cooperation includes India's interest in exploring gas fields off Israel's coast.
- I2U2 Grouping: It stands for India, Israel, the UAE, and the US.
- It was formerly known as the 'International Forum for Economic Cooperation' and is also referred to as the 'West Asian Quad.'
- It aims to strengthen economic partnerships, identify areas of cooperation, and encourage joint investments six key sectors: water, energy, transportation, space, health, and food security.
- Indian diaspora in Israel: There are approximately 85,000 Jews of Indian-origin in Israel, who are Israeli passport holders.
- There are approximately 900 Indian students studying in Israel, mostly at the doctoral and post-doctoral levels.

Challenges in the relations:
- Trade: Since 2010, the two countries have been talking about a free-trade deal for goods and services.
- This should make it easier to invest and do business with each other.
- To tap into the untapped potential, there is a need to increase bilateral trade and broaden the types of economic partnership.
- Israel and the Arab World: India's close relationships with the Arab world have always made it hard for the country to publicly work with Israel.
- Approach towards China: India and Israel treat China in different ways.
- India is worried about China's rise, but China is Israel's biggest trading partner in Asia and the two countries have strong links in science and investment.
- De-Hyphenating Israel-Palestine: The "two-state solution" and the fact that India voted in favour of the resolution to raise the Palestinian flag at the United Nations and signed on to BRICS declarations "opposing the continuous Israeli settlement activities in the Occupied Territories" show that India's support for Palestinians hasn't changed.
- However, during the Indian Prime Minister's visit to Israel in July 2017, the media reported that India was "dehyphenating" its relationship with Israel.
- Pegasus issue: Pegasus is a spyware developed by NSO Group, an Israeli surveillance firm, that helps spies hack into phones.
- A case was filed in the Supreme Court accusing the government for indiscriminate spying on more than 1000 phone numbers.
- New York Times reported that India bought Israeli Pegasus spyware as part of weapons deal in 2017.

Way Forward:
- India's evolving stance on the Israel-Palestine conflict, coupled with its growing relations with both Israel and Palestine, demonstrates its commitment to contributing to a peaceful resolution. As a nation with ties to multiple stakeholders in the region, India has a crucial role to play in promoting stability and cooperation in the Middle East.

2.6 VIENNA CONVECTION ON DIPLOMATS

- The "Vienna Convention on Diplomats," is an international treaty that was adopted by 61 countries on April 18, 1961. This convention is a fundamental document in international law and governs the conduct

of diplomatic relations between independent states. It was drafted during the United Nations Conference on Diplomatic Intercourse and Immunities, held in Vienna, Austria. It is considered a cornerstone of modern diplomatic law and practice.

KEY PROVISIONS

Diplomatic Immunity (Articles 29 to 36)

- Diplomats and their families are granted immunity from the jurisdiction of the host country's legal system for their official actions.
- Extends to criminal and civil matters and ensures that diplomats cannot be prosecuted or sued in the host country's courts.

Inviolability of Diplomatic Premises (Articles 22 to 27)

- Diplomatic premises, such as embassies and consulates, are considered inviolable.
- They cannot be entered or searched by the host country's authorities without the permission of the sending state.

Non-Interference (Article 41)

- Diplomatic agents are expected not to interfere in the internal affairs of the host country.
- This principle promotes peaceful coexistence and respectful relations between states.

Protection of Diplomatic Missions (Articles 22 to 27)

- Host country is responsible for ensuring the security and protection of diplomatic missions and their staff.
- Includes safeguarding the physical premises and preventing any intrusion or damage.

Termination of Diplomatic Relations (Articles 45 to 50)

- Outlines procedures for the termination of diplomatic relations between states.
- Includes orderly withdrawal of diplomatic personnel and the closure of diplomatic missions.

Article 11.1

- It deals with the size of international missions within other countries.
- In the absence of a specific agreement as to the size of the mission, the receiving State may require that the size of a mission be kept within limits considered to be reasonable and normal.

NEED OF VIENNA CONVECTION

- Establishing a Standardized Framework: The convention provides a universally accepted and standardized framework for diplomatic relations between states. This common set of rules and principles helps to avoid misunderstandings and conflicts related to diplomatic conduct.
- Promoting Diplomatic Relations: By establishing a clear legal framework for diplomatic relations, the convention encourages states to engage in diplomatic relationships. This, in turn, contributes to open channels of communication and peaceful means of dispute resolution.
- Protection of Diplomats: It ensures that diplomats can perform their duties without fear of harassment, arrest, or harm. This protection is essential for diplomats to represent their countries effectively and safely.
- Promoting Diplomatic Immunity: It allows diplomats to carry out their responsibilities without being subject to the jurisdiction of the host country's legal system, which could lead to politically motivated

- arrests or interference in their work.
- Respect for the Principle of Non-Interference: The Vienna Convention reinforces the principle of non-interference in the internal affairs of the host country. This principle is essential for maintaining peaceful relations and respecting the sovereignty of states.
- Preventing Diplomatic Crises: Clear rules and guidelines help prevent diplomatic incidents that could lead to crises. The convention stipulates how diplomatic missions and agents should conduct themselves, minimizing the potential for misunderstandings and conflicts.

Conclusion:
- The Vienna Convention on Diplomatic Relations has been widely adopted by countries around the world and is considered a cornerstone of diplomatic law and practice. It establishes a framework that helps maintain peaceful relations among nations and ensures the functioning of diplomatic missions in a manner that respects the sovereignty and dignity of both sending and receiving states. Violations of the convention can have significant diplomatic and legal consequences.

2.7 Shi Yan 6

- Recently, a Chinese research ship, Shi Yan 6 docked at Colombo port.

Background:-
- The Chinese research vessel 'Shi Yan 6' has stirred concerns due to its visit to Sri Lanka, with both the US and India voicing objections.
- Shi Yan 6 was given permission to enter the (Colombo) port for replenishment.
- US Under Secretary Victoria Nuland, who met Sri Lankan Foreign Minister Ali Sabry in New York on the sidelines of the UN General Assembly session, had reportedly raised concerns about the visit of 'SHI YAN 6'.

Reasons behind India's Object to Chinese Vessels Docking in Sri Lanka:-
- India's objection to Chinese vessels docking in Sri Lanka stems from security concerns. (India-Sri Lanka relations)
- India perceives Chinese ships in close proximity to its mainland as potential security threats, suspecting espionage activities even when their stated purpose is scientific research.
- This apprehension has led to objections to Chinese vessels docking in Sri Lankan ports.

China's Statement on the matter:-
- China has maintained that the marine scientific research activities of Yuan Wang 5 and similar vessels align with international law and common practice and do not jeopardize the security or economic interests of any country.

Sri Lanka's Response:-
- In response to the US' concerns, the Sri Lankan Foreign Minister emphasized Sri Lanka's commitment to neutrality. (Sri Lanka's India First Policy)

About Shi Yan 6:-
- Shi Yan 6 is a Chinese Research/Survey Vessel.

- It has a carrying capacity of 1115 DWT (deadweight tonnage).
- Its current draught is reported to be 5.3 meters.
- It has an overall length of 90.6 meters and a width of 17 meters.
- This three-month voyage seeks to gather extensive fundamental data.
- It aims to study and uncover how dynamic processes impact the biogeochemical cycles, ecosystems, and sedimentary processes in the region.
- It wants to elucidate the geographical patterns of biodiversity, understand the response of biological communities to physical processes and gain insights into paleoclimate changes.

2.8 India and Oman

- Recently, External Affairs Minister Dr.S.Jaishanka held a conversation with Omani Foreign Minister Badr Albusaidi.

About India and Oman:-

- India and Oman are linked by geography, history and culture.
- They enjoy warm and cordial relations, which are attributed to historical maritime trade linkages.
- People-to-people contact between India and Oman can be traced back 5,000 years.
- The diplomatic relations were established in 1955.
- Gandhi Peace Prize 2019 was conferred on Late HM Sultan Qaboos in recognition of his leadership in strengthening the ties between India & Oman and his efforts to promote peace in the Gulf region.

Political Relations:-

- The historical India-Oman bilateral ties were transformed into a strategic partnership in November 2008.

- Visits at the highest level have been exchanged frequently between India and Oman.
- Ministerial-level visits have taken place regularly.
- The Sultanate of Oman is a strategic partner of India in the Gulf and an important interlocutor at the Gulf Cooperation Council (GCC), Arab League and Indian Ocean Rim Association (IORA) fora.
- Nine areas of cooperation were listed between the two countries, i.e. agriculture, healthcare, infrastructure, tourism, chemicals & fertilizers, education, oil & gas, power and mining.

Defence Cooperation:-
- Oman is the first nation in the Persian Gulf to have formal defence relations with India.
- Both countries conducted joint military exercises in 2006 and later signed a defence agreement.
- The Ministries of Defence of both countries review their relations annually under the aegis of a Joint Military Cooperation Committee meeting.
- India and Oman conduct regular biennial bilateral exercises between all three services.
- Army exercise: Al Najah
- Air Force exercise: Eastern Bridge
- Naval Exercise: Naseem Al Bahr
- Since 2008, Oman has been extending its support to the Indian Navy's anti-piracy missions and Indian Naval Ships are regularly welcomed by Oman for Overseas Deployments.

Economic & Commercial Relations:-
- For Oman, India was the 3rd largest (after UAE and China) source for its imports and 3rd largest market (after UAE and Saudi Arabia) for its non-oil exports in 2019.
- Major Indian financial institutions have a presence in Oman.
- Indian companies have invested in Oman in sectors like iron and steel, cement, fertilisers, textiles etc.
- India-Oman Joint Investment Fund (OIJIF), a JV between the State Bank of India and the State General Reserve Fund (SGRF) of Oman, a special purpose vehicle to invest in India, has been operational.

2.9 INDIA QATAR RELATIONS

- The recent verdict of the death penalty for eight Indian Navy officials in Qatar has sent shockwaves through diplomatic circles.

Historical Relations

- India and Qatar have maintained friendly relations for decades.
- PM Manmohan Singh's visit to Qatar in 2008 marked a significant turning point, followed by reciprocal visits from the Emir of Qatar and PM Narendra Modi.

Economic Relations

- India is considered to be the fourth largest export destination for the State of Qatar.
- Qatar's key exports to India include LNG, LPG, chemicals and petrochemicals, plastics, and aluminum articles.
- India's key exports to Qatar include cereals, copper articles, iron and steel articles, vegetables, plastic products, construction material, textiles & garments, etc.
- Qatar is the largest supplier of liquefied natural gas (LNG) to India. India imports around 70% of its needs for the natural gas from Qatar.

Defence Cooperation

- Defence cooperation is a key component of India-Qatar ties, with the India-Qatar Defence Cooperation Agreement serving as a pivotal milestone.
- India's Defence cooperation with Qatar has so far been limited to training, participation in each other's conferences/events and visits by ships of Indian Navy and Coast Guard.
- Za'ir-Al-Bahr (Roar of the Sea) is the naval exercise between Indian and Qatar Navy.

Cultural Relations

- Qatar was a co-sponsor, to India's Resolution at the United Nations General Assembly, adopted unanimously with a record 177 co-sponsors, declaring 21 June as the International Day of Yoga (IDY).
- There are 14 Indian schools in Qatar, offering CBSE curricula to over 30,000 students, most of whom are the children of Indian nationals working in Qatar.
- There is a regular flow of Indian artists performing in Qatar at events organised by community organizations affiliated to the Indian Cultural Centre (ICC).

Indian Community

- Indian community is the largest expatriate group in Qatar which is estimated to be around 700 million people.
- They are making their contribution in different sectors. Indians are highly respected in Qatar for their sincerity, hard work, technical expertise and law-abiding nature.
- Indians are employed in almost every local establishment, governmental or private, in various capacities.
- The remittances which the Indian expatriate community in Qatar send to India are estimated to be around 750 million dollar per annum.
- The Indian Community Benevolent Forum (ICBF), functioning under the aegis of Embassy of India, Doha – ICBF was awarded Pravasi Bharatiya Samman in January, 2011.

IMPORTANCE OF QATAR TO INDIA

- Expatriate Community: Indians constitute the largest expatriate community in Qatar, with approximately 800,000 individuals working and living there.
- Remittances: The flow of remittances from Qatar and the safety of Indian citizens make Qatar vital for India's interests.

- Energy Security: Qatar is the largest supplier of LNG to India, making it critical for India's energy security.
- GCC Membership: Qatar's membership in the Gulf Cooperation Council (GCC) is strategically significant for India, especially concerning issues like Kashmir.
- UNSC Support: India's bid for a permanent seat at the United Nations Security Council requires support from countries like Qatar.
- Business Presence: Several Indian companies, including Tata Consultancy Services Ltd, Wipro, MahindraTech, and Larsen & Toubro Limited, operate in Qatar.
- Stability in the Gulf: The stability of the Gulf region is of paramount importance to India's energy and maritime security.

The detention and sentencing of eight Indian nationals in Qatar have posed a complex diplomatic challenge for India.

Against the backdrop of India-Qatar relations, this incident underscores the importance of navigating cultural sensitivities and geopolitical dynamics to secure the release of these individuals.

3. Economy

- The National Bank for Agriculture and Rural Development (NABARD) has issued India's first 'AAA' rated Indian Rupee-denominated Social Bonds.

About Social bonds:
- Social bonds, also known as social impact bonds (SIB), are the type of bond where the bond issuer is gathering funds for a project that had some socially beneficial implications.
- Similar to any other bond, social bonds imply that the bond issuer owes a debt to the bondholder.
- The Pimpri Chinchwad Municipal Corporation (PCMC) in Maharashtra's Pune and United Nations Development Programme (UNDP) in 2020 co-created India's first Social Impact Bond (SIB).

Sustainability Bond Framework
- NABARD recently announced a Sustainability Bond Framework which seeks to finance and refinance new or existing eligible green and social projects.
- Eligible social projects: Includes affordable basic infrastructure, access to essential services, affordable housing, employment generation, food security, socioeconomic advancement, and empowerment.
- Projects that promise energy efficiency including green buildings, energy storage, and smart grids.

Key features of Social Bonds:
- Designed for social cause: These bonds are raised to improving healthcare access, advancing education, providing affordable housing, alleviating poverty, and promoting environmental sustainability.
- The defining characteristic of social bonds is their commitment to generating tangible and positive societal outcomes.
- Broad spectrum of issuers: They are not limited to government entities but can be issued by a diverse array of organizations.
- This includes governments at various levels. international multilateral organizations, financial institutions and corporations.
- This diversity of issuers underscores a collective commitment to addressing social issues and leveraging financial markets to do so.
- Certification and reporting: The certification ensures that the bond's proceeds are used exclusively for the intended social projects and adhere to predefined social goals.
- Issuers are obligated to provide regular and transparent reporting on the progress and impact of the projects financed.
- This reporting helps investors, regulators, and the public assess whether the social bonds are fulfilling their intended purpose.

Challenges associated with the social bonds:
- Complexity of identifying projects: Identifying suitable social projects that can effectively absorb the capital raised through social bonds can be a complex task.
- This challenge arises from the need to align the projects with the specific criteria and goals of social bonds.
- Therefore, careful project selection and prioritization are critical to the success of social bond issuances.

- Measuring Impact: As it generate tangible and positive social outcomes, measuring the social impact of projects can be intricate, as it often involves assessing complex and multifaceted social variables.
- Robust monitoring and evaluation systems are necessary to track progress and demonstrate the impact of financed projects.
- Lack of awareness and education: To foster broader adoption of social bonds, there is a need to increase awareness among both investors and issuers about their benefits and mechanisms.
- Many potential stakeholders may not fully understand the unique attributes of social bonds, including their potential for positive social impact. Education campaigns and targeted outreach efforts can help bridge this knowledge gap and encourage more participation in the market.

Way Forward:
- Therefore, issuance of social bonds is a significant development in the Indian financial market, providing an avenue for financing projects that have a positive impact on society and addressing social issues. The strong investor response reflects growing interest in socially responsible investing and sustainable finance in India.

3.2 India's Creative Economic Industries: Opportunities and Challenges

- The creative industries encompass a diverse range of economic activities rooted in original ideas and artistic expression.

About Creative Economy:
- It is an evolving concept which is building on the interplay between human creativity and ideas and intellectual property, knowledge and technology.
- The creative industries are a group of economic activities that are based on original ideas.
- They include businesses that are centred around creativity.
- These industries include design, music, publishing, architecture, film, crafts, visual arts, fashion, literature, computer games, and more.
- The Nataraja, a statue of Hindu lord Shiva as the cosmic dancer, installed next to 'Bharat Mandapam', at the venue of the G20 Summit is a prime examples of creative economy.

Benefits of Creative Economic Industries:
- Employment generation: Creative industries provide employment opportunities for a significant portion of the population, especially talented individuals.
- According to Asian Development Bank report 2023, these industries contribute nearly 8% of India's total employment.
- Spillover Effects on the Wider Economy: Creative industries drive innovation, fostering creativity, experimentation, and collaboration across various sectors and disciplines.
- These industries positively impact sectors like tourism, education, and urban development.
- Tourism Boost: Creative industries attract tourists who engage in cultural experiences, contributing significantly to India's tourism industry.
- Education and skills development: Creative industries play a pivotal role in providing learning opportunities, enhancing cultural awareness, and nurturing talent.
- Urban economic growth: Creative industries revitalize urban areas by creating vibrant cultural hubs, theatre's, galleries, and entertainment districts.

- Promotion of India's Heritage and Resources: Creative industries showcase India's rich culture, history, and traditions, leveraging abundant natural and human resources.
- Global branding and soft power: Exporting creative goods and services enhances India's brand value and soft power, strengthening diplomatic and cultural ties.

Challenges associated with creative economy:
- Common issues: Indian artists and artisans face challenges that are related to economic sustainability, market access, and the preservation of traditional art forms in a rapidly changing society.
- Need of support and finances: Government support, cultural institutions, and initiatives provide financial assistance, training programmes, and opportunities for artists to exhibit their work.
- However, more efforts are needed to promote contemporary artists as brands and ensure equal representation and financial assistance.
- Limited reach of sponsored platforms: There are challenges in the selection of artists for financial assistance in organising cultural events.
- Lack of transparency in the selection process creates inequality in representation.
- So, talented artists, particularly those based outside the city, are unable to gain from sponsored platforms.
- Lack of promoting platforms: Unlike in other countries, there are no serious efforts by private or public institutions to promote contemporary artists as brands.
- Crime in the art sector: Crime in the art world includes art theft, copyright infringement, forgery, fraud, and illicit trafficking.
- There is no institutional infrastructure, expertise and technology to verify the original artwork.

Govt Initiatives aimed at promoting creative industries:
- National Film Development Corporation (NFDC): NFDC is a government enterprise under the Ministry of Information and Broadcasting.
- It focuses on planning, promoting, and efficiently developing the Indian film industry.
- National Institute of Design (NID): NID operates autonomously under the Ministry of Commerce and Industry.
- It provides education, research, consultancy, and outreach services across various design domains.
- Scheme for Promotion of Culture of Science (SPoCS): SPoCS, under the Ministry of Culture, encourages a culture of science, technology, and innovation.
- It achieves this through science festivals, exhibitions, competitions, workshops, and camps, primarily targeting the youth.
- Scheme for Promotion of Indian Classical Music and Dance (SPIC MACAY): SPIC MACAY is a voluntary movement that arranges programs covering classical music, dance, folk arts, crafts, yoga, meditation, and cinema.
- India's Culture Working Group (CWG) is to increase and support the growth of cultural and creative industries and the creative economy
- It is aimed at promoting job creation, innovation, inclusiveness, and improving the status of cultural practitioners.

Way Forward:
India's creative economy holds immense potential for job creation, economic growth, and cultural promotion. However, addressing the challenges faced by creative industries and implementing strategic initiatives are essential to fully unlock this potential and establish India as a global creative powerhouse.

3.3 TIR Executive Board (TIRExB)

The Central Board of Indirect Taxes and Customs, Ministry of Finance (CBIC) recently requested support for India's candidature for the TIR Executive Board (TIRExB).

Background:-
- The Central Board of Indirect Taxes and Customs, Ministry of Finance, in association with the Ministry of External Affairs organized an event in New Delhi yesterday for ambassadors and delegates from Contracting Parties to the Convention on International Transport of Goods Under Cover of TIR Carnets (TIR Convention, 1975).

About TIR Executive Board (TIRExB):-
- The TIR Executive Board (TIRExB) is a subsidiary body of the TIR Administrative Committee.
- Composition: it is composed of 9 members, each from different Contracting Parties to the TIR Convention.
- The TIRExB supervises and provides support in the application of the TIR procedure at the national and international levels.

About TIR Convention:-
- Establishment: 1975.
- The TIR Convention stands for the "Convention on International Transport of Goods Under Cover of TIR Carnets."
- The Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention, 1975).
- It is one of the most successful international transport conventions.
- It is so far the only universal Customs transit system in existence. (International Customs Day, 2023)
- To date, it has 78 Contracting Parties, including the European Union.
- It covers the whole of Europe and reaches out to North Africa and the Near and Middle East.
- More than 33,000 operators are authorized to use the TIR system and around 1.5 million TIR transports are carried out per year.
- It is an international harmonized system of Customs control, which enables seamless transport of goods crossing multiple international borders using a single customs document (TIR Carnet) and a unified system of guarantee.

India and TIR:-
- India became a party to the TIR Convention in 2017.
- India is a significant trading nation in the Asia Pacific region.
- It has been a key participant in the International North-South Transport Corridor (INSTC).
- Since its accession to the Convention, India has taken several measures to promote the use of TIR.
- A National Guaranteeing Association has been appointed and a Circular 48/2018-Cus has been issued detailing the procedure and authorizing ports and other customs stations of the country.
- India has also conducted pilot runs, including one using digital TIR. (Free Trade Agreements regime)
- Measures have been initiated to ensure effective usage of TIR through stakeholder consultations.

3.4 National Investment and Infrastructure Fund

Recently, the National Investment and Infrastructure Fund has unveiled a $600 m India-Japan Fund.

Background:-
- The National Investment and Infrastructure Fund has entered into a collaboration with the Japan Bank for International Cooperation (JBIC) to unveil a $600 million India-Japan Fund.

About National Investment and Infrastructure Fund:-
- Establishment: 2015.
- Objective: to maximize economic impact, especially by infrastructure investment in commercially viable projects.
- NIIF is India's first sovereign wealth fund set up by the government of India.
- It is a fund manager that invests in infrastructure and related sectors in India.
- The Indian government has a 49% stake in NIIF with the rest held by foreign and domestic investors.
- NIIF currently manages three funds each with its distinctive investment mandate.
- The funds are registered as Alternative Investment Funds (AIF) with the Securities and Exchange Board of India (SEBI).
- It has been incorporated as a company under the Companies Act, 2013, duly authorized to act as investment manager of the National Investment and Infrastructure Fund.

Governance:-
- NIIF has a Governing Council, which is chaired by the Hon'ble Finance Minister of India.
- It comprises of eminent members from corporates, investments, and policy sectors.
- The Governing Council meets annually and provides guidance on the overall strategy of NIIF.

Functions:-
- Fund raising through suitable instruments including off-shore credit enhanced bonds, and attracting anchor investors to participate as partners in NIIF.
- Servicing of the investors of NIIF.
- Considering and approving candidate companies/institutions/ projects (including state entities) for investments and periodic monitoring of investments.
- Investing in the corpus created by Asset Management Companies (AMCs) for investing in private equity.
- Preparing a shelf of infrastructure projects and providing advisory services.

3.5 Fixing the Rot in the Cooperative Sector

The Enforcement Directorate (ED) investigation was recently constituted citing financial irregularities in the Karuvannur Service Cooperative Bank of Kerala.

About Cooperative Societies:
- According to the International Cooperative Alliance (ICA), cooperatives are people-centred enterprises jointly owned and democratically controlled by and for their members to realise their common economic, social and cultural needs and aspirations.
- The Union Ministry of Cooperation was formed in 2021, its mandate was looked after by the Ministry of

Agriculture before.

Constitutional provisions related to cooperatives:
- The 97th Constitutional Amendment Act 2011 established the right to form cooperative societies as a fundamental right under Article 19.
- It included a new Directive Principle of State Policy on the Promotion of Cooperative Societies under Article 43-B.
- It added a new Part IX-B to the Constitution titled "The Co-operative Societies" from articles 243-ZH to 243-ZT.
- It authorizes the Parliament to establish relevant laws in the case of multi-state cooperative societies (MSCS) and state legislatures in the case of other cooperative societies.

Status of cooperatives in India:
- Currently, there are about 10 lakh cooperatives, of which 1.05 lakh are financial cooperatives.
- Among the financial co-operatives, rural co-operatives have a three-tier system with around 1.02 lakh primary agricultural cooperative societies (PACS);
- 351 District Central Cooperative Banks (DCCBs),
- 34 State Cooperative Banks (SCBs),
- 616 rural cooperatives for long-term lending.
- India has 1,514 primary urban cooperative banks (UCBs), of which, 52 are scheduled and the rest unscheduled, some are multi-State UCBs.

Advantages of cooperative societies:
- Easy establishment: Any ten members who have acquired the majority can form a cooperative society with few legal formalities.
- Transparency and Equality: A cooperative society is based on the principle of 'one man, one vote'.
- All members have equal rights in handling the internal affairs.
- The surplus generated by these societies is dispensed equally among the members.
- Support agriculture and allied activities: Cooperative societies have supported the government's effort to improve agricultural production.
- They act as a bridge between the government and farmers.
- For example, the government disburses High-Yielding Variety (HYV) seeds and fertilizers via Cooperatives.
- Social Benefits: Cooperative societies have played a significant role in modulating social customs and controlling irrelevant expenses.
- The profits reaped by the cooperatives can be used for facilitating fundamental amenities of the society.
- Limited Liability: The member's liability in a cooperative society is confined to the extent of their capital contribution.
- Access to Credit: Cooperative societies have helped in reducing the influencing of private money lenders in rural areas.
- Cooperatives facilitate credit at the nominal interest rate.

Challenges associated with cooperative sector in India:
- No accountability and transparency: The government gave too many benefits to cooperatives, but then there was no further accountability which led to these cooperatives becoming more and more lethargic.
- Besides as there was no competition, they became more and more costly they were not at all efficient and

the worst part was that the government allowed them to function like this and pass on the burden of costs to consumers.

- Vested interest of some people: A lot of times people who are in position in control of cooperatives are actually people who have joined cooperatives for personal gains.
- Lack of coordination: Generally what happens in cooperatives is that different cooperatives at different level don't coordinate this makes the work of cooperatives difficult.
- The Internal free rider problem: New members who provide very little capital enjoy the same benefits as long-standing or founding members who have major investments in the cooperative
- New members get a "free ride" on the investments and other efforts of existing members, thereby diluting the returns to existing members.
- No balanced growth: The cooperatives in northeast areas and in areas like West Bengal, Bihar, Orissa are not as well developed as the ones in Maharashtra and the ones in Gujarat.
- Political Interference: Frequent political interference is the ruining administration of the sector.
- This is the biggest problem faced by Sugar cooperatives in Maharashtra.
- Mismanagement: A hugely large membership turns out to be mismanaged unless some secure methods are employed to manage such co-operatives.
- In the elections to the governing bodies, money became such a powerful tool that the top posts of chairman and vice-chairman usually went to the richest farmers who manipulated the organization for their benefits.
- Lack of awareness and restricted coverage: People are not well informed about the objectives of the Movement, rules and regulations of co-operative institutions.
- Most of these societies are confined to a few members and their operations extended to only one or two villages.

Way Forward:

Co-operatives have great potential to rejuvenate growth, formalise the economy, and reduce inequality besides improving the standard of living of the poor in the rural areas. Provision of adequate financial and technical assistance can enable them to address rural challenges and contribute to India's growth story. The government has to fix responsibility for the scam and ensure that the culprits are brought to book regardless of their political affiliation.

3.6 GST Council

The Union Finance Minister Nirmala Sitharaman will chair the 52nd GST Council meeting in New Delhi recently.

About GST Council:-
- The GST Council is a constitutional body established under Article 279A of the Indian Constitution.
- It is a joint forum of the Centre and the states to discuss issues relating to GST.
- GST is one of the biggest indirect tax reforms in the country.
- It has subsumed indirect taxes like excise duty, Value Added Tax (VAT), service tax, luxury tax, etc.
- The 101st Amendment Act of 2016 (122nd Amendment Bill), paved the way for the implementation of GST.

Salient features of GST Council:-
- Article 279-A: gives the President the authority to appoint a GST Council by executive order.

- Members: The members of the Council include the Union Finance Minister (chairperson), and the Union Minister of State (Finance) from various states.
- Chairperson: The GST Council is chaired by the Union Finance Minister.

Functions:-
- As per Article 279, is meant to make recommendations to the Union and the states on important issues related to GST.
- These include the goods and services that may be subjected or exempted from GST and model GST Laws.
- It also decides on various rate slabs of GST.

3.7 Insolvency and Bankruptcy Code, 2016

- Recently, the Ministry of Corporate Affairs issued a notification stating that certain provisions of the Insolvency and Bankruptcy Code (IBC) will no longer apply to aircraft, their engines, airframes, and helicopters.

Highlights of the changes:
- The provisions of sub-section (1) of section 14 of the Insolvency and Bankruptcy Code, 2016 , which imposes a moratorium on assets of a company undergoing insolvency ,shall not apply to transactions, arrangements or agreements, under the Cape Town Convention and the protocol, relating to aircraft, aircraft engines, airframes and helicopters.
- It is a global treaty that guarantees the rights of lessors to repossess leased high-value equipment such as aircraft, engines, and helicopters in case of payment defaults.
- It was adopted at a conference in Cape Town in November 2001 under the International Civil Aviation Organisation (ICAO) and the International Institute for the Unification of Private Law (UNIDROIT).
- It is expected to have a significant impact on the aviation industry in India, making it easier to recover assets especially aircraft and engines even when an airline goes through insolvency.

About Insolvency and Bankruptcy Code (IBC):
- In 2016, at a time when India's Non-Performing Assets and debt defaults were piling up, the Insolvency and Bankruptcy Code (IBC) code was introduced to overhaul the corporate distress resolution regime in India and consolidate previously available laws to create a time-bound mechanism.
- Insolvency resolution in India took 4.3 years on an average compared to countries such as UK and USA took 1 year and 1.5 years, respectively.
- The Bankruptcy Legislative Reforms Committee under the leadership of TK Viswanathan projected the IBC.
- Insolvency and Bankruptcy Code 2016 was implemented through an act of Parliament.
- The law was necessitated due to huge pile-up of non-performing loans of banks and delay in debt resolution.

Significance of IBC code:
- Post the implementation of IBC, as per the World Bank's report, India's rank in resolving insolvency went from 136 in 2017 to 52 in 2020.
- Addressing NPA problem: The IBC was instrumental in reviving India's insolvency regime and successfully addressing the looming threat of Nonperforming assets (NPAs).
- Credit discipline: Ease of credit flow is necessary for attainment of Ease of doing business and economic

growth.
- Under the IBC regime, Rs. 2.5-lakh crore has been brought back into the banking system as a result of resolution of insolvencies.

Advantages of IBC code:
- Speedy and Timely resolution of insolvency process: The process of resolution is carried out in a time-bound manner, the business is transferred as an ongoing concern to the resolution applicant.
- It ensures nil loss to the economy due to stoppage of production or under-utilization of resources, and minimum loss of employment, revenues to government, local ecosystem and ancillary industries.
- Certainty and clean title: When insolvency is resolved through the Code, there is a certainty in the settlement of liabilities and ownership of assets.
- Since all liabilities including government dues are settled, the resolution applicant is vested with a clean and litigation-free business and assets, etc.
- Prevents fraudulent activities by debtors: Since the ownership and control of the business entity, its assets and business activities stand transferred from the debtor to an insolvency professional as soon as an application is admitted by the adjudicating authority, the debtor is pre-empted from indulging in any activity to defraud the creditors.
- Relief for bona fide debtors: Prior to the IBC, the liabilities that remained unpaid after proceedings continued to haunt the debtors for the rest of their lives.
- However, resolution through the Code guarantees final settlement of all liabilities, thus freeing the bona fide debtors from debt traps and government liabilities.

Challenges for the IBC:
- Lack of proper resolution: As per the IBBI data of 3400 cases in the last six years, more than 50% of the cases ended in liquidation while only 14% cases found a proper resolution.
- Huge delays in resolution: The amended IBC act made the total timeline for completion of the resolution process to 330 days from the earlier 180- day deadline (with a permitted 90- day extension).
- However, in FY22, it took 772 days to resolve cases involving companies owing more than Rs. 1,000 crore.
- Haircuts: It means the debt foregone by the lender as a share of the outstanding claim.
- The Parliamentary Standing Committee on Finance in 2021 noted an average haircut of 80% by the creditors in more than 70% of the cases in the 5 years of the IBC.
- As per The Hindu Data Team, almost 33 of 85 companies with more than Rs. 1,000 crore debt had been given haircuts above 90% by the lenders.
- For example, the Videocon Group was given a haircut of 95.3% by the creditors.
- Lack of digitisation: It has led to the delays beyond the prescribed statutory limits in the insolvency resolution process.
- Overburdening of courts: As the number of NCLTs and NCLATs are limited, they are weighed down by a deluge of applications, naturally impeding the timely conclusion of proceedings.
- Thus it is time to double the number of benches of both the NCLT and NCLAT.
- Lack of coordination between parties involved: Time and again, a lack of coordination between the parties in the process (creditors, stakeholders) is encountered which delays and stymies the insolvency proceedings.

Way Forward:
- As the Parliamentary Standing Committee suggested, the timeline of not more than 30 days to admit the

insolvency application and transfer control of the company to a resolution process after filing. The Insolvency and Bankruptcy Board of India (IBBI) also suggested that haircuts not be looked at as the difference between the creditor's claims and the actual amount realized. But the difference between what the company offers while entering IBC and the value realized.

- It is important for the key stakeholders to make their best endeavours to ensure that the power of the IBC does not diminish. The goal must be to fill the voids that are discovered and move towards a more complex legal system over time.

3.8 Card-on-file tokenization facility

The RBI recently, announced the introduction of a card-on-file tokenization facility at the issuer bank level.

Background:-
- Currently, Card-on-File (CoF) tokens can only be created through merchant applications or on the webpage of the e-commerce website.
- Given the growing acceptance and benefits of tokenization of card data, it is now proposed to introduce Card-on-File Tokenisation (CoFT) creation facilities directly at the issuer bank level.

About card-on-file tokenization facility:-
- The central bank introduced Card-on-File Tokenization (CoFT) in September 2021 and began implementation on October 1, 2022.
- Objective: to enhance convenience for cardholders in getting tokens created and linking them to their existing accounts with e-commerce applications.
- Tokenization is the replacement of actual credit and debit card details with an alternate code called the "token", which will be unique for a combination of card, token requestor, and device.
- A CoF transaction occurs when a cardholder authorizes a retailer to store the cardholder's Mastercard or Visa payment information.
- The cardholder then authorizes the business to charge the stored Mastercard or Visa account.
- Card information is typically stored in the systems of e-commerce companies, airlines, and supermarket chains.
- Significance: The move will facilitate the creation and linking of tokens to cardholders' existing accounts with e-commerce applications.

Benefits of tokenization:-
- Enhanced safety and security: It eliminates the risk of storing card details online and ensures the uncompromised convenience of storing customer's token details on the merchant site.
- Quicker checkouts: Tokenized Mastercard will allow the convenience of quick checkouts as one doesn't need to punch in the card number for each purchase.
- No more 'False Declines': Many times, legitimate online payments using valid cards are declined on the grounds of the transaction looking like a fraud. With tokenization, this becomes a thing of the past as the usage of tokens for payments confirms the security of the highest order.
- Easy card management: With tokenization, one can also keep track of all their cards and the merchants they have been tokenized with.
- No need for a physical card
- Added benefits: Tokenization also comes with cashback benefits when secured with platforms like

Amazon, Paytm, Swiggy, etc.

3.9 Appreciation of currency

The rupee appreciated by 5 paise to 83.22 against the US dollar recently.

Background:-
- At the interbank foreign exchange, the rupee opened at 83.24 against the dollar and then touched an early high of 83.22.

About Appreciation of currency:-
- It is an increase in the value of one currency in relation to another currency in a floating exchange rate system.
- Causes: Currencies appreciate against each other for a variety of reasons, including government policy, interest rates, trade balances and business cycles.
- Impact on trade: Currency appreciation discourages a country's export activity as its products and services become costlier to buy.

Factors affecting appreciation:-
- Appreciation is directly linked to demand.
- If the value of the currency appreciates (or goes up), demand for the currency also rises.

Effects of currency appreciation on India:-
- Export costs rise: If the Indian Rupee (INR) appreciates, foreigners will find Indian goods more expensive because they have to spend more for those goods in INR.
- That means that with the higher price, the number of Indian goods being exported will likely drop.
- This eventually leads to a reduction in gross domestic product (GDP).
- Cheaper imports: If Indian goods become more expensive on the foreign market; foreign goods, or imports, will become cheaper in India.

About Exchange rate:-
- Exchange rate is a rate at which a currency of one country can be exchanged with the currency of another country.
- Under a fixed exchange rate system, devaluation and revaluation are official changes in the value of a country's currency relative to other currencies.
- Devaluation is when the price of the currency is officially decreased in a fixed exchange rate system.
- Revaluation is when the price of the currency is increased within a fixed exchange rate system.
- Under a floating exchange rate system, market forces generate changes in the value of the currency, known as currency depreciation or appreciation.
- Currency appreciation refers to the increase in value of one currency relative to another in the forex markets.
- Currency depreciation is a fall in the value of a currency in a floating exchange rate system. Rupee Depreciation

Effects of currency depreciation:-
- Improves export competitiveness.
- May lead to pulling of foreign investment.
- A weaker currency may escalate imported oil and edible oil prices and lead to higher food inflation.
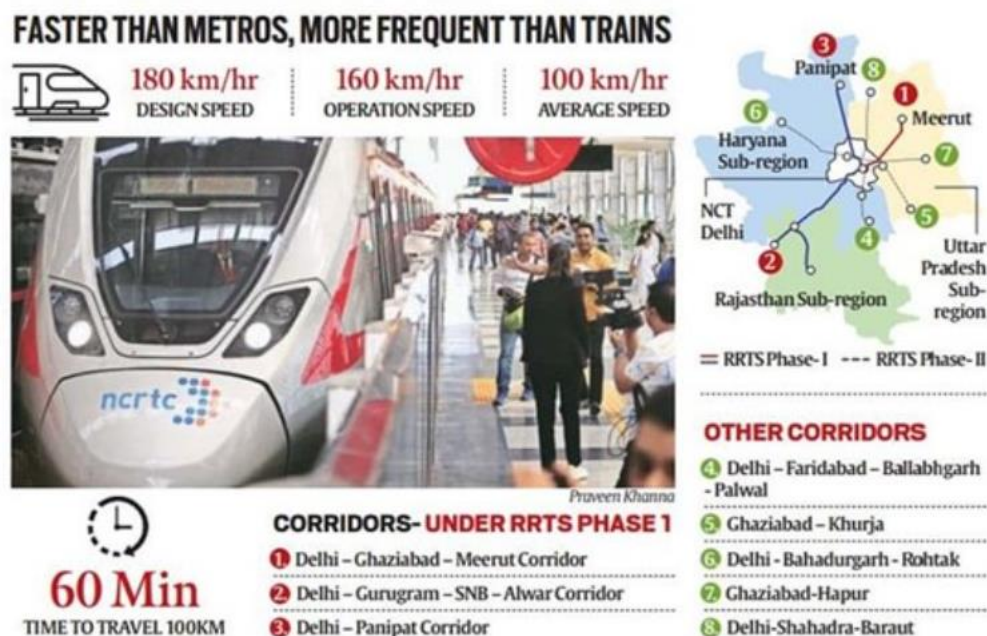
3.10 Regional Rapid Transit System (RRTS)

Prime Minister Narendra Modi recently inaugurated the country's first Regional Rapid Transit System (RRTS) called Namo Bharat in Ghaziabad.

Background:-
- It is capable of running at speeds up to 180 km/hour which will eventually cut the journey time between Delhi and Meerut to less than an hour.

About Regional Rapid Transit System (RRTS):

FASTER THAN METROS, MORE FREQUENT THAN TRAINS

180 km/hr DESIGN SPEED | 160 km/hr OPERATION SPEED | 100 km/hr AVERAGE SPEED

60 Min TIME TO TRAVEL 100KM

CORRIDORS- UNDER RRTS PHASE 1
1. Delhi – Ghaziabad – Meerut Corridor
2. Delhi – Gurugram – SNB – Alwar Corridor
3. Delhi – Panipat Corridor

OTHER CORRIDORS
4. Delhi – Faridabad – Ballabhgarh - Palwal
5. Ghaziabad – Khurja
6. Delhi – Bahadurgarh - Rohtak
7. Ghaziabad-Hapur
8. Delhi-Shahadra-Baraut

- Launched: October, 2023.
- Constructed by: The National Capital Region Transport Corporation (NCRTC).
- NCRTC: It is a joint venture company of the Central government and the governments of Delhi, Haryana, Rajasthan and Uttar Pradesh.
- Ministry: Ministry of Housing and Urban Affairs.
- Objective: to ensure "balanced and sustainable urban development" through better connectivity and access across the NCR.
- It is a state-of-the-art regional mobility solution, comparable to the best in the world.

Historical Background:-
- The idea of such a network lies in a study that the Indian Railways was commissioned to carry out in the year 1998-99.
- The study identified the possibility of an RRTS network to connect various locations in the NCR through fast commuter trains.

- The proposal was re-examined in the year 2006 with the extension of the Delhi Metro lines to some NCR towns such as Gurgaon, Noida and Ghaziabad.
- It was soon taken up by the National Capital Region Planning Board (NCRPB) while developing its "Functional Plan on Transport for NCR-2032".

Salient Features:-
- Rapid Transit System (RRTS) is also known as Namo Bharat.
- It is an integrated, mass transit network.
- The RRTS is modelled on systems such as the RER in Paris, Regional-Express trains in Germany and Austria as well as the SEPTA Regional Rail in the United States, among others.
- In line with PM GatiShakti's National Master Plan, the RRTS network is to have extensive multi-modal integration with Railway stations, Metro stations, Bus services etc.
- Eight corridors will be developed under the project, of which three are being constructed under phase I: the 82-km Delhi-Ghaziabad-Meerut, the 164-km Delhi-Gurugram-SNB-Alwar, and the 103-km Delhi-Panipat corridors.
- The corridors to be developed in future include Delhi – Faridabad – Ballabgarh – Palwal; Ghaziabad – Khurja; Delhi – Bahadurgarh – Rohtak; Ghaziabad-Hapur; and Delhi-Shahadra-Baraut.

Advantages:-
- The development of RRTS will boost economic activity. (National Rail Plan for Infrastructure Capacity Enhancement)
- It will provide improved access to employment, education & healthcare opportunities.
- It will help in the significant reduction of air pollution.
- The RRTS network is faster than the Metro.
- It will cater to commuters who want to travel relatively longer distances across the NCR in a short time.

3.11 DAM SAFETY IN INDIA

CAUSES OF DAM FAILURE
- Overtopping, usually caused by floods that exceed the capacity of the dam
- Structural failure of materials used in dam construction
- Inadequate maintenance and upkeep
- Movement and/or failure of the foundation supporting the dam
- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Deliberate acts of sabotage

DAMS REGULATION IN INDIA
- Dam Safety Act 2021– It aims to prevent dam failure related disasters and provide for institutional mechanisms for surveillance, inspection, operation and maintenance of the specified dams.
- Central Water Commission (CWC) – It provides technical expertise and guidance on all matters related to dams.
- Dam Rehabilitation and Improvement Project (DRIP)- It was launched in 2012 with World Bank assistance to improve the safety and operational performance of selected dams, coupled with institutional

strengthening through a system wide management approach.

- National Centre for Earthquake Safety of Dam- Located in Malaviya National Institute of Technology (MNIT), Jaipur, Rajasthan, it is an initiative of Ministry of Jal Shakti towards effective implementation of Dam Safety Act 2021.
- Efforts of States- Under the 7th Schedule of the Constitution, water and water storage is a state subject. Therefore legislating dam safety is the responsibility of state governments. Bihar was the 1st State to enact the Dam Safety Act in 2006.

NEED OF DAM REGULATION

- Ageing of Dams: As the dams become old, their design and hydrology do not remain at par with the latest understanding and practices. Huge siltation is taking place as a result of which the water holding capacity of dams is getting reduced.
- Dependent on Dam Managers: The regulation of dams is entirely dependent upon individual dam managers. There is no proper system and understanding in terms of the downstream water requirement.
- Other factors: Dam safety is dependent upon other factors such as landscape, land-use change, patterns of rainfall, structural features, etc.
- Failures: In the absence of a proper dam safety framework, shortcomings may get involved in the investigation, design, construction, operation, and maintenance of dams which might lead to serious incidents and sometimes dam failure.

The recent catastrophe in Sikkim have shown how important dam safety regulations are and how it depends on many external factors such as ecology, hydrology, etc. Hence a holistic approach is the need of the hour in which experts from all the concerned areas should be involved. Furthermore, building large dams is proving to be a more environmentally damaging and costly affair than the gains it provides, hence ecological sensitivity should be taken into consideration from now onwards.
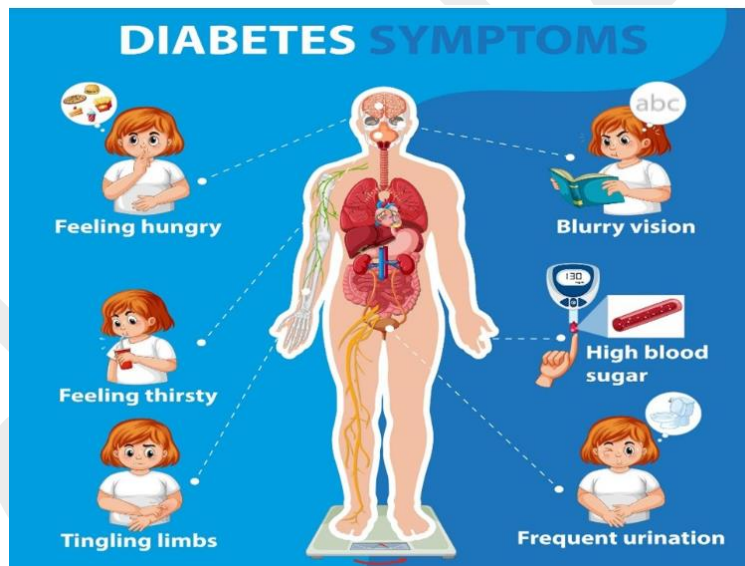
4. Science & Technology

- Recent studies have found out that India has the 2nd-highest number of diabetes diagnostic centres globally.

Background:-
- In 2021, nearly seven million people died globally as a result of diabetes, while $970 billion was the world's quantified healthcare expenditure that year, according to a new report titled Diabetes Global Industry Overview 2023.
- Currently, 537 million adults globally are living with diabetes, with three in four of them living in low- and middle-income countries.
- After the US, the highest numbers of medical centres for diabetes are located in India (58), Canada (51), the UK (42), Japan (29), and Australia (24).

About Diabetes:-

- Diabetes mellitus refers to a group of diseases that affect how the body uses blood sugar (glucose).
- Glucose is an important source of energy for the cells that make up the muscles and tissues.
- It is a condition that happens when the blood sugar (glucose) is too high.
- It develops when your pancreas doesn't make enough insulin or any at all, or when the body isn't responding to the effects of insulin properly.
- Diabetes affects people of all ages.

Types of diabetes:-
- There are several types of diabetes. The most common forms include:-
- Type 2 diabetes: With this type, the body doesn't make enough insulin, and/or the body's cells don't respond normally to the insulin (insulin resistance).
- This is the most common type of diabetes.
- Prediabetes: The blood glucose levels are higher than normal but not high enough to be officially

diagnosed with Type 2 diabetes.
- Type 1 diabetes: This type is an autoimmune disease in which your immune system attacks and destroys insulin-producing cells in your pancreas for unknown reasons.
- Gestational diabetes: This type develops in some people during pregnancy.

Symptoms:-
- feeling very thirsty
- needing to urinate more often than usual
- blurred vision
- feeling tired
- losing weight unintentionally

Management and Treatment:-
- Blood sugar monitoring.
- Oral diabetes medications.
- Insulin injections.
- Diet management.
- Exercise.

Prevention:-
- Keeping a healthy body weight.
- Staying physically active with at least 30 minutes of moderate exercise each day.
- Eating a healthy diet and avoiding sugar and saturated fat.
- Avoiding smoke tobacco.
- Avoiding stress. (Mental Health)

Government initiatives:-
- India's National non-communicable disease (NCD) Target aims to prevent the rise in obesity and diabetes prevalence. (Disease Surveillance System)
- National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) in 2010, was launched to provide support for diagnosis and cost-effective treatment at various levels of health care.

4.2 Regulating Generative Artificial Intelligence

- The Governments across the world are grappling with the regulation of Artificial Intelligence.
- In less than a year, chatbots like ChatGPT, Bard, Claude, and Pi have shown what gen AI-powered applications can do. These tools have also revealed their vulnerabilities, which has pushed policymakers and scientists to think deeply about these new systems.

About Generative Artificial Intelligence:
- Generative AI is a type of AI system that can create new content or data that resembles human-made content, such as text, images, music, code, etc.
- It works by using neural networks to learn from large amounts of data and then generate outputs based on the patterns and rules it has learned.

Various significant reasons to regulate AI:

- Lack of transparency: Many AI algorithms operate as black boxes, making it difficult to understand how they reach their decisions.
- This lack of transparency raises concerns about accountability and the potential for unfair or biased outcomes.
- Discrimination and bias outcomes: AI systems can inherit biases from the data they are trained on, leading to discriminatory outcomes.
- For example, facial recognition algorithms have been shown to have higher error rates for women and people with darker skin tones.
- Privacy and data protection: AI systems often rely on vast amounts of personal data, raising concerns about privacy and data protection.
- Improper handling of data can result in unauthorized access, misuse, or breaches of sensitive information.
- Security risks: AI systems can be vulnerable to cybersecurity threats and attacks.
- Adversarial attacks can manipulate AI models to produce incorrect or malicious results, posing risks in critical domains such as autonomous vehicles or healthcare.
- Ethical considerations: AI raises ethical questions related to the impact on jobs, social inequality, and the concentration of power.
- For example, automated decision-making in hiring processes may perpetuate existing biases and result in unfair outcomes.
- Lack of regulation and standards: The rapid advancement of AI has outpaced the development of comprehensive regulatory frameworks and industry standards.
- This creates a regulatory gap and potential risks associated with unchecked AI development and deployment.

Advantages of Generative AI:

- Creative assistance: Generative AI tools can assist and inspire creative professionals in their work.
- Professionals such as artists, designers, and writers can use generative AI to generate ideas, explore new possibilities, and overcome creative blocks.
- Real data augmentation: Generative AI can generate synthetic data that closely resembles real data.
- This is particularly useful in machine learning applications where a large amount of labelled data is required.
- Creation of multiple content: Generative AI enables the automated creation of various types of content, such as text, images, videos, music, and more.
- This can significantly speed up the content generation process for industries like advertising, entertainment, and marketing.
- Healthcare: By generating new medical images and simulations, improving the accuracy and efficiency of medical diagnoses and treatments.
- Personalization: Generative AI can be used to create personalized experiences for users.
- By analysing user preferences and behaviour, generative AI systems can generate tailored recommendations, product suggestions, and customized content, enhancing customer satisfaction and engagement.
- Problem Solving: Generative AI can be applied to problem-solving tasks, such as generating new drug compounds, optimizing supply chain logistics, or creating efficient designs.
- By exploring vast solution spaces, generative AI algorithms can propose novel solutions and accelerate the discovery process.

- Simulation and training: Industries like autonomous vehicles or robotics, generative AI can create virtual environments to train algorithms and test systems without the need for physical resources or risking safety.

Concerns associated with regulating AI:
- Rapid technological advancement: Recent advancements in AI posing challenges for regulators to keep up with the latest developments and effectively regulate a technology that is constantly evolving.
- Deepfakes: These are the synthetic media that generative AI models can create by manipulating or combining existing images, videos, or audio.
- Deepfakes can be used for malicious purposes such as spreading disinformation, impersonating people, or blackmailing.
- Increased costs and competition: Compliance with regulations may impose additional costs on businesses, particularly smaller companies and startups, limiting their ability to compete in the AI market.
- The burden of regulatory compliance could disproportionately affect smaller players.
- Accountability: Determining responsibility and liability when AI systems cause harm or make erroneous decisions can be challenging.
- Clarifying the legal frameworks and accountability structures surrounding AI is crucial for effective regulation.
- Cybersecurity: Generative AI models can be used by hackers to create new and complex types of malwares, phishing schemes, or other cyberattacks that can evade conventional security measures.
- Such attacks can have serious consequences such as data breaches, financial losses, or reputational damage.
- International cooperation: AI regulation requires international cooperation and collaboration to address global challenges, harmonize standards, and prevent regulatory arbitrage.
- Developing consensus among different countries with varying interests and priorities can be a complex task.

Artificial Intelligence across the globe:

- India: The Ministry of Information Technology and Electronics is working on framing the draft Digital India Act, which will replace the existing IT Act.
- India has established a National AI Programme to promote the efficient and responsible use of AI.
- Overall generative AI has the potential to enable efficiency and productivity across multiple industries and

applications at scale. However, if not designed and developed responsibly with appropriate safeguards, Generative AI can create harm and adversely impact society through misuse, perpetuating biases, exclusion, and discrimination.

4.3 Nobel Prize in Physics 2023

The Nobel Prize in Physics 2023 was announced recently.

About Nobel Prize in Physics 2023:-
- Awarded by: Royal Swedish Academy of Sciences.
- The 2023 Nobel Prize in Physics has been awarded to Pierre Agostini, Ferenc Krausz, and Anne L'Huillier. (Nobel Prize In Physics 2020)
- They were awarded for their work in "experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter.
- Attosecond pulses of light offer an unprecedented capability to study rapid electron movements and energy changes within atoms and molecules.
- These pulses have revolutionized the field of electrodynamics in matter.
- They provide a powerful tool for exploring fundamental processes in physics and chemistry.
- These pulses can be used to provide images of the processes inside atoms and molecules.
- They have opened new avenues for studying the behavior of electrons within atoms and molecules, revolutionizing the field of electrodynamics in matter.
- While Ferenc Kraus is a German Physicist, Anne L'Huillier is from Sweden and Pierre Agostini is an American.
- Anne L'Huillier is the fifth woman to receive the Nobel Prize in Physics.
- Significance: The laureates' contributions have enabled the investigation of processes that are so rapid they were previously impossible to follow.

Application Potentials:-
- Blood Sample Analysis: It can revolutionize disease diagnosis, including conditions like lung cancer.
- Semiconductor Technologies: The technology can serve as a powerful imaging tool.
- Understanding Nature Processes: This can deepen our understanding of complex natural processes, particularly photosynthesis.

4.4 2023 Nobel Prize for Medicine

- The 2023 Nobel Prize for Medicine has been jointly awarded to United States scientists Katalin Kariko and Drew Weissman.

About the 2023 Nobel Prize for Medicine:-
- Katalin Kariko and Drew Weissman were awarded for work that led to effective mRNA vaccines against COVID-19.
- The discoveries and findings by Kariko and Weissman fundamentally changed the understanding of how mRNA interacts with the human immune system. (Nobel Prize in Medicine 2022)
- They eliminated critical obstacles on the way to clinical applications of mRNA, paving the way for the

speedy development of mRNA vaccines that saved millions during the pandemic.

- Genetic information encoded in human DNA is transferred to messenger RNA (mRNA) in the body's cells and is used as a template for protein production.

Using mRNA in vaccine development:-
- Scientists were able to produce mRNA without cell culture in the 1980s, in a process known as in vitro transcription.
- This began the research on using mRNA for vaccine and therapeutic purposes.
- However, in vitro transcribed mRNA was considered unstable and challenging to deliver.
- It required the development of sophisticated carrier lipid systems to encapsulate the mRNA.
- Moreover, in vitro-produced mRNA gave rise to inflammatory reactions.
- Karikó and Weissman performed an experiment to seek a remedy to this problem.
- Hypothesis: Karikó and Weissman tested whether the absence of altered bases in the in vitro transcribed RNA could explain the unwanted inflammatory reaction.
- Experiment: They produced different variants of mRNA, each with unique chemical alterations in their bases, and then delivered them to the dendritic cells.
- Findings: They found that the inflammatory response was almost abolished when base modifications were included in the mRNA.
- By this, Karikó and Weissman showed that the delivery of mRNA generated with base modifications can markedly increase protein production compared to unmodified mRNA and also reduce the inflammatory responses.
- Using this approach, two base-modified mRNA vaccines encoding the SARS-CoV-2 surface protein were developed at record speed during the outbreak of the COVID-19 pandemic.
- Protective effects of around 95 percent were reported, and both vaccines were approved as early as December 2020.
- Significance: Such vaccines have resulted in saving saved millions of lives and prevented severe disease in many more, allowing societies to open and return to normal conditions.

About DNA:-
- DNA is a deoxyribonucleic acid and is a hereditary material.
- It occurs inside the nucleus of the cell and some cell organelles.
- In plants it is present in mitochondria and plant cells.
- It is a double-stranded molecule consisting of a long chain of nucleotides.
- It stores and transfers genetic information to generate new cells and organisms.
- It has two nucleotide strands consisting of a phosphate group, five-carbon sugar (stable deoxyribose 2), and four nitrogen bases.
- The four nitrogen bases in RNA include adenine, guanine, cytosine, and thymine.
- They for complementary pairs of Adenine links to Thymine (A-T) and Cytosine links to Guanine (C-G).
- DNA is self-replicating.
- Quantity of DNA is fixed for cells.

About RNA:-
- RNA contains four bases, abbreviated A, U, G, and C, corresponding to A, T, G, and C in DNA, the letters of the genetic code.
- RNA, an abbreviation of ribonucleic acid.

- It is a type of nucleic acid that contributes to protein synthesis.
- It is synthesized from DNA when needed.
- It is single consisting of a phosphate group, a five-carbon sugar (less stable ribose), and four nitrogen bases.
- The four nitrogen bases in RNA include adenine, guanine, cytosine, and uracil.
- It replaces DNA (deoxyribonucleic acid) as a carrier of genetic codes in some viruses.
- It consists of ribose nucleotides (nitrogenous bases bound to a ribose sugar) connected by phosphodiester bonds, forming variable-length chains.
- Uracil is replaced by thymine in DNA.
- The quantity of RNA in a cell is variable.

RNA Types:-
- tRNA: it is responsible for selecting the correct protein or the amino acids that the body requires to help the ribosomes in turn.
- rRNA: it is the ribosome portion and is located within a cell's cytoplasm, where ribosomes are found.
- It is mainly involved in the synthesis and translation of mRNA into proteins.
- mRNA – Messenger RNA: this RNA is responsible for bringing the genetic material to the ribosomes and insists on what kind of protein the body needs.
- It is therefore called messenger RNA.
- This m-RNA is usually involved in the transcription process, or during the process of protein synthesis.

4.5 Chemistry Nobel 2023

The Chemistry Nobel 2023 was announced recently.

Background:-
- The Nobel Prize in Chemistry 2023 was awarded to Moungi G. Bawendi, Louis E. Brus, and Alexei I. Ekimov. (Nobel Prize for Chemistry 2021)

About Chemistry Nobel 2023:-
- The 2023 Nobel Prize in Chemistry was awarded for the discovery of quantum dots used in light-emitting diode or LED lights.
- These particles have unique properties and now spread their light from television screens and LED lamps.
- They catalyze chemical reactions and their clear light can illuminate tumour tissue for a surgeon.

Timeline of the experiments:-
- In the early 1980s, this year's chemistry laureates Louis Brus and Alexei Ekimov succeeded in creating (independently of each other) quantum dots.
- In 1993, chemistry laureate Moungi Bawendi revolutionized the methods for manufacturing quantum dots, making their quality extremely high which is a vital prerequisite for their use in today's nanotechnology.

Understanding the significance of the Experiment:-
- Quantum dots are nanoparticles or small particles ranging between 1 and 100 nanometres in size. (Cordy gold nanoparticles)

- These are so tiny that their size determines their properties.
- The smallest quantum dots shine in blue and the big ones shine in yellow and red, and they only differ by size.
- The team succeeded in growing nanocrystals of a specific size.
- They did this by varying the temperature of the solution.
- These crystals also had a smooth and even surface.
- Researchers primarily utilized quantum dots to create coloured light.

Applications:-
- The quantum dots can contribute to flexible electronics, miniscule sensors, slimmer solar cells, and perhaps encrypted quantum communication.
- It can Help spread light from television screens.
- It can help LED lamps use their clear light to illuminate tumor tissue during surgery.

4.6 Nanoparticles

Recent studies show that Nanoparticles from vehicle fumes in Delhi can cause acute illness.

Key Highlights of the study:-
- The study analyzed nanoparticles (10 to 1090 nanometers in diameter) in Delhi in 2021, over two periods — from April to June, and October to November.
- Nanoparticles in Delhi's air, a major chunk of which comes from vehicular emissions.
- It can potentially be transported from the respiratory system to other parts of the human body, creating more chronic and acute illnesses.
- These "very small particles" may come from natural sources or from human activities.
- In urban road environments, nanoparticles come mainly from the combustion process in automobiles.
- In urban environments, ultrafine particles of 1 to 100 nanometers can contribute up to 90% to the total particle number concentration.
- Meteorology and other factors can also influence the concentration of these particles.
- With the rise in relative humidity, coagulation of these particles results in their concentration becoming high.
- The high concentrations of these pollutants are found during peak morning and evening hours due to vehicular emissions. (AIR POLLUTION)

About Nanoparticles:-
- The nanoparticles are small particles which have a range between 1 to 100 nanometers in size
- They are naturally occurring substances.
- These materials can be fashioned as the by-products of combustion reactions.
- These are not visible to the eyes.
- They can have different types of physical and chemical properties.

Properties:-
- There are three major physical properties of nanoparticles, and all are interrelated:-
- They are highly mobile in the free state.
- They have enormous specific surface areas.

- They may exhibit what are known as quantum effects.

Applications:-
- Nanoparticles are used in aerospace.
- Nanoparticles are also used in different types of environmental preservation processes.
- They are widely used in cosmetic industries.
- The use of nanoparticles in sports industries is quite important.
- The use of nanomaterials among other industries for the manufacturing of the towels and mats used by sportspeople.
- Developers use Nano-titanium dioxide to promote the self-cleaning process of the surfaces of plastic garden chairs.
- Photovoltaics (PV) are the types of nanoparticles that can control the size, shape, and material of the nanoparticle.
- These nanoparticles allow engineers to design different types of solar thermal products.

4.7 Abort Mission 1(TV-D1)

- The Indian Space Research Organisation (ISRO) has started preparing for the flight test Vehicle Abort Mission 1(TV-D1) for the Gaganyaan mission.

Background:-
- The Space Agency has said that the unmanned flight tests for the Gaganyaan mission will commence soon.
- ISRO will also test the efficacy of the Crew Escape System which is a crucial part of the Gaganyaan mission, resulting in unmanned and manned missions to outer space by 2024.

About Abort Mission 1(TV-D1):-
- Conducted by: The Indian Space Research Organization (ISRO).
- Objective: to ensure crew safety during the Gaganyaan mission.
- The abort missions are meant to test the systems that can help the crew escape from the spacecraft mid-flight in case of a failure.
- ISRO has developed test vehicles for the abort missions.
- These can send the systems up to a certain height, simulate failure, and then check the escape system.
- Test Vehicle (TV-D1) is the first development flight.
- The Test Vehicle is a single-stage liquid rocket.
- Payloads: consist of the Crew Module (CM) and Crew Escape Systems (CES) with their fast-acting solid motors, along with CM fairing (CMF) and Interface Adapters.
- Escape system is designed with five "quick-acting" solid fuel motors with a high burn rate propulsion system, and fins to maintain stability.
- The Crew Escape Systems (CES) will separate from the crew module by firing explosive nuts.

Mission plan:-
- This flight will simulate the abort condition during the ascent trajectory corresponding to a Mach number of 1.2 encountered in the Gaganyaan mission.
- CES with CM will be separated from the Test Vehicle at an altitude of about 17 km.
- Subsequently, the abort sequence will be executed autonomously commencing with the separation of CES

- and deployment of the series of parachutes.
- Finally, culminating in the safe touchdown of CM in the sea, about 10 km from the coast of Sriharikota.

Significance:-
- The success of this test flight will set the stage for the remaining qualification tests and unmanned missions, leading to the first Gaganyaan mission with Indian Astronauts.
- It will help ISRO focus on perfecting the system that will launch and land Indians on missions to space and protect the astronauts if the mission fails.

4.8 (CAR) T-cell therapy

- India's first chimeric antigen receptor (CAR) T-cell therapy was approved recently.

Background:-
- For treating relapsed-refractory B-cell lymphoma and leukaemia, Mumbai-based Immunoadoptive Cell Therapy Private Limited (ImmunoACT) announced the approval of India's first chimeric antigen receptor (CAR) T-cell therapy by the Central Drugs Standard Control Organization (CDSCO) on October 13, 2023.
- Priorly, CAR-T cell therapy cost around $400,000 or over Rs 3.3 crore and patients could avail of it in the United States.
- With this development, the therapy will be accessible at 20 Indian government and private hospitals treating cancer across major cities at around Rs 30-35 lakh per patient.

About (CAR) T-cell therapy:-
- Chimeric antigen receptor (CAR) T-cell therapy is a kind of cancer treatment that uses cells from your own immune system.
- It treats certain cancers by turning your T-lymphocytes or T-cells into more efficient cancer-fighting machines.
- CAR T-cell therapy is proving to be a very effective way of treating certain blood cancers.

Treatment Mechanism:-
- The blood is first drawn from the patient.
- Then, immune cells called T-cells are genetically modified in a laboratory.
- These modified T-cells are injected back into the patient to enable the cells to locate and destroy cancer cells more effectively.

Applications:-
- The U.S. Food and Drug Administration (FDA) has approved several CAR T-cell therapies for people who have certain blood cancers that don't respond to chemotherapy and other treatments. (National Cancer Registry Programme Report 2020)
- This therapy is also used to treat people who have blood cancer that returns after other successful treatments.

Challenges:-
- Cytokine release syndrome (CRS): This happens when CAR T-cells begin attacking cancer and trigger an immune response in your body.

- Brain and nervous system problems.
- Serious infections.

4.9 BlueWalker 3 satellite

Recent observations taken within weeks of its launch showed the BlueWalker 3 satellite was among the brightest objects in the sky.

Background:-
- According to a new study, is as bright as the brightest stars in the 89 constellations of Canis Minor and Eridanus.

About BlueWalker 3 satellite:-
- Launched: 9:20 p.m. ET
- Launch date: 10 September 2022.
- BlueWalker 3 is a prototype satellite. (NASA and ISRO collaborate on satellite NISAR)
- It is part of a satellite constellation planned by its owner AST SpaceMobile (a U.S.-based company).
- It is designed to operate directly with standard, unmodified mobile devices.
- It has a 64-square-meter (693-square-foot) antenna system.
- It uses its large phased-array antenna to generate power from space and deliver cellular broadband directly to mobile phones.
- This is the largest commercial antenna system ever deployed into low Earth orbit.
- It is the first of what is expected to be more than a hundred similar or even larger satellites.
- It is a predecessor to planned commercial satellites called Blue birds.

Applications:-
- The spacecraft was built to establish connectivity directly with cell phones via 3GPP-standard frequencies.
- It is intended to deliver mobile or broadband services anywhere in the world.

Challenges:-
- Bluewalker 3's large size and bright reflective surfaces could interfere with astronomical observations.
- Its light could be mistaken for stars or interfere with the ability to detect dimmer objects.
- It actively transmits at radio frequencies that are close to bands reserved for radio astronomy, which may hamper radio telescope observations.

4.10 Exclusome

Recently, Cell biologists identified a new organelle called exclusome.

Background:-
- Researchers at ETH Zurich recently identified a previously unknown compartment in mammalian cells. They have named it the exclusome.

About Exclusome:-
- It is present in mammalian cells made of rings of DNA.
- It is made up of DNA rings known as plasmids.
- It lies in the cell plasma.
- It is exceptional because eukaryotic cells (cells with nuclei) usually keep most of their DNA in the cell nucleus, where it is organized into chromosomes.
- The exclusome primarily comprises plasmids, which are circular DNA molecules.
- These can replicate independently of chromosomes.
- They are usually found in bacteria and other microscopic organisms.
- Some of these plasmids are derived from external sources, while others are called telomeric rings as they originate from the telomeres or capped ends of chromosomes.
- These plasmids lack the genetic instructions required for protein synthesis.
- This sets them apart from chromosomal DNA. (DNA Technology Regulation Bill)

4.11 Hunter's Moon Lunar Eclipse

Hunter's Moon Lunar Eclipse is predicted to be seen on October 28th,2023.

Background:-
- The "Hunter's Moon" will officially be 100% illuminated at 3:35 p.m. EST on Saturday, October 28, 2023.

About Hunter's Moon Lunar Eclipse:-
- The Hunter's Moon is one of the many names given to the full moons throughout the year.
- Each of these names have its own unique cultural and historical significance.

Historical Significance:-
- Rooted in Native American, Colonial American, and other traditional North American cultures, the names of these moons were used to track the changing seasons and were adopted by colonial settlers.
- The Hunter's Moon follows the Harvest Moon, which is the full moon closest to the autumnal equinox.

Naming:-
- Historically, the Harvest Moon allowed farmers to work late into harvesting their crops by the moon's light.
- Once the harvest was completed, the Hunter's Moon would rise signaling a time when game would be fattened and hunted to store for the winter.
- This moon was a beacon for hunters to begin stocking up for the colder months ahead.

Features:-
- The Hunter's Moon can sometimes appear red or orange in color, due to the way that sunlight is scattered by the Earth's atmosphere.
- This is especially common when the moon is low in the sky, such as during sunrise and sunset.
- This year's Hunter's Moon" will look both more colorful and larger than it will at any other time of night.
- It will only for about 15 minutes.
- It will also be more impactful because it's being viewed in twilight, not darkness.
- Europe and Africa will be the best placed to see watch the entire event, but it's a very slight partial lunar

eclipse.

- At the peak of the event about 6% of the full moon will be inside Earth's dark central shadow .
- It may look like a small bite has been taken from it.
- However, as it drifts through Earth's lighter, outer penumbral shadow it will mostly just seem less bright than usual.

About Lunar Eclipse:-

- An eclipse happens when a planet or a moon gets in the way of the sun's light. (Eclipses)
- A lunar eclipse occurs when the Sun, Earth, and Moon align so that the Moon passes into Earth's shadow.
- In the Lunar Eclipse, the Earth arrives in between the sun and the moon.
- In this way, the shadow of the earth falls on the moon.
- The lunar eclipse can only happen during the Full Moon. But, the orbits of the moon and earth are different.
- That's why the lunar eclipse happens only up to 3-4 times a year.
- There are three types of lunar eclipses: Total lunar eclipses, partial lunar eclipses, and penumbral lunar eclipses.
- Total lunar eclipse: entire Moon falls within the darkest part of Earth's shadow, called the umbra.
- When the Moon is within the umbra, it will turn a reddish hue.
- Lunar eclipses are sometimes called "Blood Moons" because of this phenomenon.
- Partial lunar eclipse: An imperfect alignment of Sun, Earth and Moon results in the Moon passing through only part of Earth's umbra.
- The shadow grows and then recedes without ever entirely covering the Moon.
- Penumbral eclipse: The Moon travels through Earth's penumbra, or the faint outer part of its shadow.
- The Moon dims so slightly that it can be difficult to notice

4.12 David's Sling

- Recently, Israel recently confirmed using its David's Sling air-defence system to intercept a Hamas rocket.

About David's Sling:-

- David's Sling is a highly sophisticated and state-of-the-art anti-missile defence system.
- It is also sometimes called Magic Wand.
- It was developed jointly by Rafael Advanced Defence Systems, an Israeli defence contractor, and Raytheon, an American defence contractor.
- The system is designed to intercept various types of missiles that may be fired towards Israel by hostile countries.
- At the core of David's Sling lies the "Stunner" or "SkyCeptor," an advanced multi-mission interceptor.
- This cutting-edge technology is capable of effectively countering a wide array of threats.
- It makes it lethal, flexible, and affordable for dealing with mass raids of enemy missiles and rockets.
- David's Sling achieved operational status in April 2017.
- It plays a critical role in Israel's theatre missile defence system.
- It complements other systems like Arrow 2, Arrow 3, Iron Dome, and Iron Beam.
- It is aimed to fill an operational gap between Iron Dome, which shoots down short-range rockets, and Arrow, which shoots down long-range ballistic missiles, both are already in use.

5. Environment & Ecology

5.1 Pygmy hogs

- 18 rare pygmy hogs were reintroduced in their historical home in Assam recently.

Background:-
- Eighteen captive-bred pygmy hogs, the smallest and rarest pigs on earth, were released in western Assam's Manas National Park and Tiger Reserve on Saturday, September 30.
- It was the fourth such exercise undertaken under the Pygmy Hog Conservation Programme (PHCP) annually since 2020, helping up the total number of this critically endangered species released at the park to 54.
- The PHCP target is to reintroduce 60 pygmy hogs in Manas, its historical habitat, by 2025.
- Backed by the United Kingdom-based Durrell Wildlife Conservation Trust, the PHCP was started near Guwahati in 1996 with two males and two females captured from the Bansbari Range of Manas National Park.
- The reintroduction of captive-bred hogs to the wild began in 2008.
- The PHCP has so far successfully bred and reintroduced 170 pygmy hogs that belong to a unique genus without any close relatives.

About Pygmy hogs:-
- Scientific Name: Porcula salvinia.
- Habitat: Pygmy Hogs prefer undisturbed patches of grassland.
- Distribution: The species was historically known from only a few locations in northern West Bengal and northwestern Assam in India.
- Pygmy Hogs measure about 65 cm in length.
- The pygmy hog is the smallest and rarest wild pig in the world.
- Females are a little smaller.
- Pygmy Hogs differ from members of the genus Sus in the extreme reduction in body, ears, and tail size, and relatively short medial false hooves.
- Their snout disc is perpendicular to the axis of the head.
- It is one of the very few mammals that build its own home, or nest, complete with a 'roof'.
- It is also an indicator species.
- Indicator species: Its presence reflects the health of its primary habitat, the tall, wet grasslands of the region.
- Threats: loss and degradation, and illegal hunting.

Conservation Status:-
- IUCN: Critically Endangered.
- Wildlife (Protection) Act, 1972: Schedule I. (Animal Welfare Board of India (AWBI))
- CITES: Appendix I

5.2 Hirakud reservoir

- High levels of cancer-causing heavy metals such as lead and chromium have been found in eight wetlands in Odisha, including the Hirakud reservoir recently.

Background:-

- The findings were recorded in a new study published in the journal Scientific Reports on September 28, 2023.
- The selected eight wetlands were: Natural ones such as Chandaneswar, Chilika, Daringbadi, and Koraput as well as constructed ones like Bhadrak, Hirakud, Talcher, and Titlagarh.
- The highest concentrations of heavy metal pollutants, lead (51.25 micrograms per gram) and chromium (266 micrograms per gram) were recorded in Hirakud.
- Heavy metal pollutants that commonly accumulate in wetlands as a result of human activity include lead, chromium, cadmium, copper, mercury, nickel, zinc, manganese, and arsenic. These metals can enter crops through the soil, which are then consumed by humans.

About Hirakud reservoir:-

- Location: Odisha.
- Area: 65,400 ha
- River: Mahanadi. (Mahanadi Coalfields Ltd (MCL))
- The Hirakud reservoir is one of the largest human-made reservoirs in India.
- It is built across the Mahanadi River by a combination of earth and modern dams with a total length of almost 26 kilometers.
- The reservoir helps regulate the water level of the river.
- It thereby moderates the impact of floods in the Mahanadi Delta.
- It was designated a Ramsar site in 2021 (COP14 of Ramsar Convention on Wetlands)
- Biodiversity: It provides habitat for over 130 bird species and about 54 fish, with one classified as endangered and six others as near-threatened.

- Economic significance: 21 fish species are economically important to the region as they provide a total yield of 480 tonnes per year, supporting the livelihoods of over 7,000 fishermen.
- The reservoir also produces around 350 megawatts of hydropower.
- It also irrigates 436,000 hectares of land.
- Tourism: The rich biodiversity and other recreational activities in and around the reservoir make it a popular tourist destination, with over 30,000 tourists visiting annually.
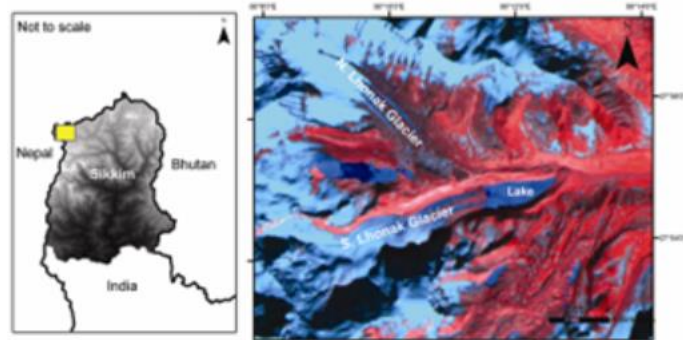
5.3 South Lhonak lake

- Bursting of South Lhonak Lake which took place recently was forewarned by researchers two years ago.

Background:-
- Scientists had warned in 2021 that the South Lhonak lake in Sikkim would burst.
- The disaster finally took place on the intervening night of October 3-4, 2023.

About South Lhonak Lake:-

- Location: North Sikkim.
- Altitude: approximately 17,000 feet above sea level.
- Formation: Its formation is attributed to the melting glaciers of the region, a process accelerated by rising global temperatures.
- It plays a role in the hydrological cycle, releasing water downstream, ultimately benefiting the Teesta River basin.
- It is one of the fastest expanding lakes in the Sikkim Himalaya region.
- South Lhonak Lake is a Glacial lake.
- It is also one of the 14 potentially dangerous lakes susceptible to Glacial lake outburst floods (GLOFs).
- Glacial lakes are large bodies of water that sit in front of, on top of, or beneath a melting glacier.
- As they grow larger, they become more dangerous because glacial lakes are mostly dammed by unstable ice or sediment composed of loose rock and debris.
- In case the boundary around them breaks, huge amounts of water rush down the side of the mountains, which could cause flooding in the downstream areas.
- This is called glacial lake outburst floods or GLOF.

5.4 Sendai Framework

- Heavy rains that led to a landslide in Uttarakhand last week brought back the significance of implementing the Sendai Framework.

About Sendai Framework:-
- Adopted: 2015.
- Adopted in Sendai, Japan.
- Duration: 2015-2030.
- The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted at the Third UN World Conference in Sendai, Japan.
- It applies to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards, as well as related environmental, technological, and biological hazards and risks.
- It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations from July 2014 to March 2015, supported by the United Nations Office for Disaster Risk Reduction at the request of the UN General Assembly.
- It is a 15-year, voluntary, non-binding agreement that recognizes that the State has the primary role to reduce disaster risk.
- It aims for the substantial reduction of disaster risk and losses in lives, livelihoods, and health.

Historical Background:-
- The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.
- The HFA was conceived to give further impetus to the global work under the International Framework for Action for the International Decade for Natural Disaster Reduction of 1989, and the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action, adopted in 1994 and the International Strategy for Disaster Reduction of 1999.

Four Priority Areas:-
- Understanding Disaster Risk: To promote the collection, analysis, and management.
- Strengthening disaster risk governance to manage disaster risk: To carry out an assessment of the technical, financial, and administrative disaster risk management capacity.
- Investing in disaster risk reduction for resilience: To allocate the necessary resources.
- Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction: To establish community centers for the promotion of public awareness and the stockpiling of necessary materials.

The Seven Global Targets:-
To support the assessment of global progress in achieving the outcome and goal of the present Framework, seven global targets:-

- Target 1 to reduce mortality: The first target aims to substantially reduce global disaster mortality by 2030, with an aim to lower the average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015.
- Target 2 to reduce the number of affected people: The second target aims to reduce the number of affected people globally by 2030, with a target to lower the average global figure per 100,000 in the decade 2020 -2030 compared to the period 2005-2015.
- Target 3 to reduce direct disaster economic loss: It aims to reduce loss in global gross domestic product (GDP) due to disaster by 2030.
- Target 4 to substantially reduce disaster damage to critical infrastructure and disruption of basic services:

This includes reducing damage to health and educational facilities through developing their resilience by 2030.

- Target 5 to spread disaster risk efforts: It envisages substantially increasing the number of countries with national and local disaster risk reduction strategies by 2020.
- Target 6 to increase cooperation and support: It aims to enhance international cooperation with developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030.
- Target 7 to increase accessibility: It aims to substantially increase the availability and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030. (National Disaster Management Authority (NDMA)

5.5 Glacial Lake Outburst Flood (GLOF)

- Flash floods occurred in north Sikkim after the South Lhonak Lake burst due to incessant rains.
- For years, numerous studies highlighted the lake's rapidly growing size and marked it as susceptible to glacial lake outburst flood.

About Glacial Lake Outburst Flood (GLOF):
- A glacial lake outburst flood (GLOF) is a type of catastrophic flood that occurs when the dam containing a glacial lake fails, releasing a large volume of water.
- This type of flood is typically caused by rapid melting of glaciers or the buildup of water in the lake due to heavy precipitation or the inflow of meltwater.
- In February 2021, Chamoli district in Uttarakhand witnessed flash floods which are suspected to have been caused by GLOFs.

Causes behind GLOFs:
- Structural failure: When glaciers start to melt, they can create glacial lakes. The water in these lakes can put pressure on the natural dam that holds the water in, causing it to fail.
- Earthquakes: Earthquakes can cause sudden changes in the shape and stability of a glacial lake and its dam, leading to a GLOF.
- Climate change: Rising temperatures and increased rainfall can lead to more meltwater and therefore more glacial lakes, as well as increase the risk of GLOFs.
- Human activities: Human activities, such as construction or mining, can cause changes in the area around a glacial lake that can lead to a GLOF.

Impact:
GLOF has the potential to catastrophically threaten people's lives, livelihoods and regional infrastructure.
Old Study Warned About Threat of Lake Bursting in Sikkim:
- A study by an international team of researchers had warned two year ago that the South Lhonak lake in Sikkim may burst in the future and significantly impact the downstream region.
- The 2021 study, published in the journal Geomorphology, highlighted that South Lhonak Lake had witnessed a significant growth in the past decades due to glacial retreat, thereby increasing its chances of glacial lake outburst floods (GLOF).

Key measures to tackle GLOF:

The National Disaster Management Authority (NDMA) to tackle Glacial Bursts: Some of the key measures recommended by the NDMA include:

- Risk assessment: Conducting regular assessments of the risk posed by GLOFs in order to identify vulnerable areas and communities, and to prioritize areas for intervention.
- Early warning systems: Establishing early warning systems that can detect potential GLOFs and provide timely alerts to communities and authorities.
- Disaster management plans: Developing and implementing disaster management plans that outline the measures to be taken in the event of a GLOF, including evacuation plans, rescue and relief operations, and post-disaster rehabilitation.
- Capacity building: Building the capacity of local communities, authorities, and emergency responders to respond to GLOFs and other natural disasters, through training and awareness programs.
- Risk reduction measures: Implementing risk reduction measures, such as glacial lake stabilization to mitigate the risk posed by GLOFs.

Way Forward:

- The series of disasters that occurred in Sikkim after the triggering of GLOF of South Lhonak Lake again proves that cascading hazards are becoming frequent due to climate change and human activities. It also reinforced that Himalayan regions are more susceptible to such disasters.
- Addressing these disasters requires an "integrated disaster management approach" that considers the connection between hazards and specific incidents to formulate effective risk-mitigation plans.

5.6 Amphibians

- Recent studies show that two of five amphibians are threatened with extinction due to climate change.

Key Highlights of the report:-

- Habitat loss, diseases, and climate change are majorly deteriorating the status of vertebrates.
- Climate change is the new driver pushing the amphibian population towards extinction.
- Climate change was the primary threat for only 1 percent of amphibian species whose conservation status in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species worsened between 1980 and 2004.
- But since then, it has emerged as the primary threat for 39 percent of species.
- Two of every five amphibians were threatened with extinction.
- Amphibians were also found to be particularly vulnerable, with 7 percent of the species being globally threatened – the highest for any species.
- The status of amphibians, according to the latest Red List, continues to be deteriorating globally, especially for salamanders of which three of every five species are threatened.
- Disease and habitat loss drove 91 percent of status deteriorations between 1980 and 2004.
- The highest concentration of threatened species was mapped to be located in India's Western Ghats, Sri Lanka, Madagascar, Caribbean islands, tropical Andes, Mesoamerica, and the mountains and forests of western Cameroon and eastern Nigeria. (Wildlife Institute of India (WII))
- Other geographic locations of high concentrations included the Atlantic Forest biome of southern Brazil, central and southern China, and the southern Annamite Mountains of Vietnam.
- The second most threatened group of vertebrates included cycads which faced 69 percent threat.

- Sharks and rays faced 37.4 percent threat, conifers faced 34 percent, reef-building corals 33.4 percent, mammals 26.5 percent, and reptiles 21.4 percent.
- Dragonflies, birds, and cone snails faced 16 percent, 12.9 percent, and 6.5 percent threats respectively.

About Amphibians:-
- Amphibians come in a range of sizes.
- The smallest is a frog known as Paedophryne amanuensis from New Guinea, which is the size of a housefly.
- The largest is the Chinese Giant Salamander which can grow to six feet in length and weigh 140 pounds.
- They are Ectothermic (cold-blooded).
- They live on both land and water.
- They are Vertebrates.
- They can smell, see, and hear.
- They have 4 legs except for some salamanders and caecilians.
- They have teeth but swallow their prey whole.
- They have lungs and permeable skin.
- They are carnivorous.

5.7 United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

- A new report by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has put forward 10 principles.

Background:-
- The Sustainable Finance: Bridging the Gap in Asia and the Pacific report was launched on October 6, 2023.
- Objective: These principles are for the action of policymakers, regulators, and private finance for mobilizing and deploying financing for key UN-mandated Sustainable Development Goals, particularly around climate action.
- Significance: The principles will help stakeholders cooperatively and efficiently shift and scale up capital to finance climate action by reducing obstacles, addressing climate risk underpricing, and reducing sectoral and regional capital-investment mismatches.

The principles put forward are:-
- Developing new climate finance partnerships
- Developing effective NDC financing strategies
- Developing policy coherence and capacities across key government ministries
- Taking decisive regulatory action to shift capital in Asia and the Pacific towards the Net Zero transition
- Driving investment in the capacities of financial personnel
- Driving investment in much-needed sectoral and project-based financial data is undertaken
- Committing to Net Zero pledges for 2050 with credible transition pathways and including 2030 goals
- Increasing local-currency financing of energy transition projects as well as green technologies and other net-zero investments
- Expanding and accelerating concessional financing and risk-sharing by multilateral development banks, bilateral development financial institutions, and public development banks

- Increasing investment of time and effort with partners in project preparation

About United Nations Economic and Social Commission for Asia and the Pacific (ESCAP):-
- Founded in 1947.
- HQ: Bangkok, Thailand.
- The Economic and Social Commission for Asia and the Pacific (ESCAP) is one of the five regional commissions of the United Nations. (Need for Reforms in UN)
- It is the most inclusive intergovernmental platform in the Asia-Pacific region.
- Objective: to facilitate coordinated efforts for the economic recovery and advancement of Asia and the Far East in the post-war period.
- Historical Background: In 1974, it was restructured and renamed the Economic and Social Commission for Asia and the Pacific (ESCAP), reflecting its dual focus on economic and social aspects of development.
- Members: ESCAP comprises 53 Member States and nine Associate members.

Functions:-
- To enhance economic activity in Asia and the Pacific, foster economic relationships between this region and other global areas, and promote sustainable development.
- To Coordinate Development Efforts.
- It promotes cooperation among its 53 member States and 9 associate members in pursuit of solutions to sustainable development challenges.
- It generates action-oriented knowledge, and by providing technical assistance and capacity-building services in support of national development objectives, regional agreements, and the implementation of the 2030 Agenda for Sustainable Development.
- It also provides support to partners at the national level.
- It carries out work, in close cooperation with other United Nations entities and intergovernmental organizations in the region.

5.8 Methane emission

- A recent study states that cutting down on Methane emission by Targeted methane mitigation can avoid 0.1°C warming in 2050.

Key Highlights of the report:-
- The report was released jointly by the International Energy Agency, the United Nations Environment Programme (UNEP) and the UNEP-convened Climate and Clean Air Coalition.
- Around 580 million tonnes (Mt) of methane is emitted every year globally, 60 per cent of which comes from human activities, according to the latest assessment.
- Under current trajectories, total anthropogenic methane emissions could rise by up to 13 per cent between 2020 and 2030.
- The report called for rapid cuts in methane emissions from fossil fuels as it will prevent global warming to an extent greater than the emissions impact of immediately taking all cars and trucks in the world off the road.
- It urged that methane abatement measures should be above and beyond the decarbonization efforts for the energy sector.
- Without targeted action on methane, even with deep reductions in fossil fuel use, the increase in the

global average surface temperature will likely exceed 1.6°C by 2050.

- The fossil fuel sector likely holds the largest potential for rapid and low-cost reductions in methane emissions.
- More than 80 Mt of annual methane emissions from fossil fuels can be avoided by 2030 using existing technologies, often at low – or even negative – costs.
- Around $75 billion is required by 2030 for all methane abatement measures in the oil and gas sector in the Net Zero scenario, according to the findings. "This is equivalent to less than 2 per cent of the income generated by the oil and gas industry in 2022,".
- Controlling methane emissions will also provide health benefits and enhance food security.

About Methane Emission:-
- Methane (CH4) is the simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms.
- It is a colorless, odorless, and highly flammable gas, and the main component in natural gas.
- It is such a potent heat absorber.
- It is the primary component of natural gas.
- It is a powerful greenhouse gas.
- It warms the planet more than 80 times as quickly as a comparable volume of atmospheric CO2 over a comparable amount of time.
- It is estimated to have been responsible for 30 per cent of global warming since the Industrial Revolution.
- Methane pollution, which is a primary component of ground-level ozone.
- It has been linked to heart disease, birth defects, asthma and other adverse health impacts.

Sources of Methane:-
- Biological Sources: it is made from some organic compounds by methane-generating microbes known as
- Agriculture: Livestock emissions from manure and gastroenteric releases account for roughly 32% of human-caused methane emissions.
- Cows also belch out methane.
- Emissions from Fuel and Industries.

Initiatives to reduce methane emission:-
- COP 26 Pledges: At COP26 in Glasgow, over 100 countries signed an agreement to cut methane emissions by 30% by 2030 as methane might be easier to deal with than carbon dioxide.
- MethaneSAT: a planned American-New Zealand space mission scheduled for launch later in 2022.
- It will be an Earth observation satellite that will monitor and study global methane emissions in order to combat climate change.
- UN Initiatives: The UN Food Systems Summit in September 2021 was also aimed at helping make farming and food production more environmentally friendly.
- India's Initiative: Central Salt & Marine Chemical Research Institute (CSMCRI) in collaboration with the country's three leading institutes developed a seaweed-based animal feed additive formulation that aims to reduce methane emissions from cattle.

5.9 Amazon Rainforest

- Recently, in Brazil's Amazon Rainforest, rivers have fallen to record low levels during drought.

Background:-

- The record confirms that this part of the world's largest rainforest is suffering its worst drought, just a little over two years after its most significant flooding.

About Amazon Rainforest:-

- Location: South America.
- Temperatures: 20°C and 35°C.
- The name 'Amazon' was given by Spanish explorer Francisco Orellana, after he was attacked when exploring the region by female warriors named the Icamiabas, or 'women without husbands'.
- He compared them to the Amazons of Greek mythology.
- The Amazon rainforest covers some 40% of the South American continent.
- It is in 9 countries: Brazil, Colombia, Peru, Venezuela, Ecuador, Bolivia, and the three Guyanas.
- They are the world's largest tropical rainforests.
- They occupy the drainage basin of the Amazon River and its tributaries in northern South America.
- As of 2021, the Amazon had 74% of its area covered by tropical rainforests and 9% of other natural vegetation types.
- They are home to nearly a fifth of the world's land species and over 45 million people.
- The rainforest of the Amazon is home to 400–500 indigenous Amerindian tribes. (Amazon Cooperation Treaty Organization (ACTO))
- Tropical forests are closed-canopy forests growing within 28 degrees north or south of the equator.
- They are very wet places, receiving more than 200 cm of rainfall per year, either seasonally or throughout the year.

Significance:-

- It is the source of 20% of the oxygen used by the planet.
- 25% of all Western pharmaceuticals come from rainforest-based ingredients.
- More than 80% of the world's food has its origins in the Amazon rainforest.
- An estimated 30% of the world's species live in the Amazon.
- Around 30% of our carbon emissions come from burning the Amazon rainforest.

5.10 Fukushima nuclear plant tragedy

- Scientists recently, tested the fish after water release from the Fukushima nuclear plant.

Background:-
- A team of international scientists collected fish samples from a port town near Japan's crippled Fukushima nuclear plant, seeking to assess the impact of the plant's recent release of treated radioactive water into the sea.

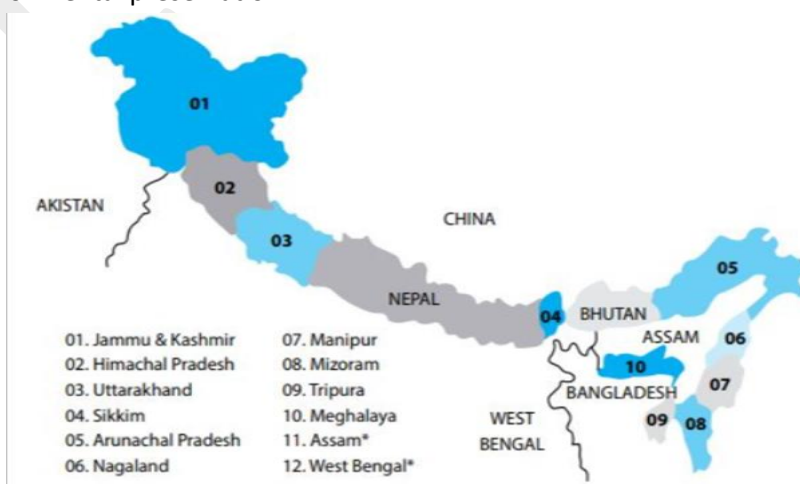**About the Fukushima nuclear plant tragedy:-**
- Fukushima Daiichi Nuclear power plant meltdown: (Zaporizhzhia nuclear plant)
- Nuclear power plant: a type of power plant that uses the process of nuclear fission in order to generate electricity.
- Nuclear fission: atoms are split apart to form smaller atoms, releasing energy.
- Location: Japan. (India – Japan Relations)
- Causes: a massive earthquake and tsunami.
- Impact: It released large amounts of radioactive materials into the environment.
- Causalities: No deaths were initially attributed to the incident.
- Although around 18,000 people lost their lives as a result of the earthquake and tsunami. (Early Tsunami Warning System in India)

Development after tragedy:-
- Since then, Japan has been storing the cooling water for nuclear fuel, and rain and groundwater seeping through the damaged reactor buildings in large tanks on site.
- The water is treated using a filtering system called Advanced Liquid Processing System (ALPS).
- ALPS: a filtering system that removes most of the radioactive elements except for tritium.
- Tritium: a hydrogen isotope that is difficult to separate.

5.11 RESTORING THE ECOLOGICAL HEALTH OF THE HIMALAYAS

The environmental devastation caused in the Himalayan States of Himachal Pradesh, Uttarakhand and Sikkim has reinvigorated the debate on the "carrying capacity' of the regions. Carrying capacity refers to the maximum sustainable population size an ecosystem can support without significant harm. It's crucial for balancing human activities with environmental preservation.

01. Jammu & Kashmir
02. Himachal Pradesh
03. Uttarakhand
04. Sikkim
05. Arunachal Pradesh
06. Nagaland
07. Manipur
08. Mizoram
09. Tripura
10. Meghalaya
11. Assam*
12. West Bengal*

IMPORTANCE OF ECOLOGICAL HEALTH OF HIMALAYAS

- Biodiversity Hub: The Himalayas host diverse flora and fauna, making the region crucial for the conservation of numerous endemic and endangered species.
- Water Source for Asia: As the "Water Tower of Asia," the Himalayas contribute to major river systems, providing water to millions downstream, emphasizing the importance of ecological health.
- Climate Regulation: The Himalayas play a pivotal role in global climate regulation, influencing weather patterns, monsoons, and serving as a natural buffer against the impacts of climate change.
- Energy Security- Almost 33% of the country's thermal electricity and 52% of its hydro power is dependent on river waters originating in the Himalayas.
- Cultural and Spiritual Significance: Beyond ecology, the Himalayas hold cultural and spiritual importance, and their ecological well-being is intertwined with the traditional practices and beliefs of local communities.
- Global Impact: Changes in the Himalayan region, such as glacial melt and altered river flows, can have a global impact. They contribute to rising sea levels, affect regional weather patterns, and have consequences for people and ecosystems far beyond the immediate area.

CHALLENGES TO THE ECOLOGICAL HEALTH OF HIMALAYAS

- Climate Change and Glacial Melting- Rising temperatures due to climate change have led to the rapid melting of glaciers triggering Glacial lake Outburst Flood (GLOF) and affected the downstream flow of water.
- Tectonic activities in the Himalayas- the Himalayas are young, Fold Mountains are prone to tectonic activities. This makes the region prone to natural disasters such as landslides, avalanches, and earthquakes.
- Soil Erosion and Landslides- Deforestation, construction activities and improper land use practices increase soil erosion and the risk of landslides during heavy rainfall or seismic events. Ex- Recent Landslides in HP during the heavy rainfall.
- Unsustainable Tourism- Himalayan Mountains are treated only as tourist destinations, ignoring their micro-climate which has led to upset in the natural balance of the Himalayan ecosystem. Ex- Large crowds and jams in Shimla, Manali.
- Erosion of Cultural Values of Environmental conservation- Traditional Himalayan communities have distinct cultural practices and ways of life closely tied to their natural surroundings. However, Unsustainable urbanisation has been led to the erosion of cultural values of environmental conservation. Ex- Movements like Chipko Movement are no longer observed.
- Growth of Invasive species- The growth of Invasive species in the Himalayan natural ecosystem has disrupted the delicate balance of ecosystem and threatened the survival of native species. Ex- Clusters of purple flowers (Cirsium arvense), mats of white clover (Trifolium repens) and small tumbleweed mustard with bright yellow flowers (Sisymbrium loeselii) are the threatening invasive species of the Himalayas.
- Improper Waste Management- The slopes of HimalayanMountains have been dumped with garbage which has affected the natural flora and fauna balance of the Himalayan ecosystem.

The imperative for sustainable development in the Himalayan region requires a comprehensive assessment of carrying capacity. The Supreme Court's intervention serves as a catalyst for a people-centric, inclusive, and holistic approach, emphasizing long-term environmental health and citizen involvement. With united efforts we will restore Himalayan glory again.

5.12 Tej

- Extremely severe cyclonic storm Tej has weakened into a very severe cyclonic storm recently.

About Tej:-
- Location: Arabian Sea.

Impacts in different regions:-
- Light to moderate rainfall at most places with isolated heavy rainfall over Mizoram and heavy to very rainfall over Tripura is likely to occur today and tomorrow.
- Isolated heavy rainfall is likely over the same region on the 25th of this month.
- Rainfall intensity will decrease on 26th November with light to moderate rainfall at a few places over the region.
- Light to moderate rainfall is likely at many places over south Assam and eastern Meghalaya with isolated heavy rainfall over south Assam.
- In coastal Districts of Odisha, light to moderate rainfall is expected to occur in most places.
- Fishermen have been advised not to venture into the adjoining east-central Bay of Bengal.

About Cyclone:-
- A cyclone is a pattern of winds (or air mass) that circulates a low-pressure system.
- It rotates counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
- It is typically associated with wet and stormy weather. (Naming of Cyclone)

Classification:-
There are two types of cyclones:
1. Tropical cyclones and
2. Extra-tropical cyclones (also called Temperate cyclones)

Tropical cyclone:-
- It is an intense circular storm that originates over warm tropical oceans.
- It is characterized by low atmospheric pressure, high winds, and heavy rain. (Colour Coded Weather Warning)
- These are formed over slightly warm ocean waters.
- The temperature of the top layer of the sea, up to a depth of about 60 meters, needs to be at least 28°C to support the formation of a cyclone.
- April-May and October-December periods are conducive for cyclones.
- Then, the low level of air above the waters needs to have an 'anticlockwise' rotation (in the northern hemisphere; clockwise in the southern hemisphere).
- During these periods, there was an ITCZ in the Bay of Bengal.

Temperate cyclones:-
- It occurs in temperate zones and high-latitude regions, though they are known to originate in the Polar Regions.
- These are active above the mid-latitudinal region between 35° and 65° latitude in both hemispheres.
- The direction of movement is from west to east and is more pronounced in the winter seasons.

6. Security issues

6.1 SAMPRITI-XI

- The 11th edition of the Exercise SAMPRITI, began recently.

About SAMPRITI-XI:-
- Date: October 3, 2023.
- Venue: Umroi, Meghalaya, India.
- SAMPRITI, was initiated in 2009.
- Objective: to boost interoperability, share tactical expertise, and promote best practices between the Indian and Bangladeshi armies.
- It is an annual joint military exercise, between India and Bangladesh.
- This exercise, alternates between the two nations.
- It highlights the strong bilateral defense cooperation between the two countries. (Maitri Diwas)
- SAMPRITI-XI is scheduled for a duration of 14 days.
- It will involve approximately 350 personnel from both India and Bangladesh.
- Focus: enhancing cooperation and interoperability while conducting Sub-Conventional Operations as per Chapter VII of the UN mandate.
- It consists of a Command Post Exercise (CPX), a Field Training Exercise (FTX), and a Validation Exercise.

6.2 Swavlamban 2.0

- The second edition of the Indian Navy's Naval Innovation and Indigenization Seminar, Swavlamban 2.0, took place in Delhi recently.

Background:-
- The event will unveil the Autonomous Weaponized Boat Swarms for the Indian Navy.

About Swavlamban 2.0:-
- Date: 4th and 5th October 2023.
- Venue: New Delhi.
- Maiden edition of the seminar: July 2022.
- Naming: the term"Swavlamban" signifies self-reliance or self-sufficiency in Hindi.
- "Swavlamban 2.0" is an updated indigenization roadmap aimed at fostering self-reliance in technological capabilities. (Military Exercises)
- Objective: to showcase the Navy's achievements in developing new technologies and outline the course for future developments.
- It is the Naval Innovation & Indigenisation Organisation's (NIIO) annual seminar.
- Niche technologies are being progressed across the spectrum, including:-
- Blue-green lasers for underwater application
- Autonomous weaponised swarms and
- Underwater swarm drones
- Multiple firefighting aid

- Introduction of Artificial Intelligence (AI) for various uses
- Development of an ultra-endurance small drone for maritime missions.
- 75 prototypes of these will be showcased during "Swavlamban-2023".
- This will include a live demo of a few promising technologies.

Historic Background:-
- The Hon'ble Prime Minister launched the 75 challenges for the start-ups/ MSMEs as a part of the 'SPRINT' initiative.
- The 'SPRINT Challenges', are aimed at giving a boost to the usage of indigenous technology in the Indian Navy, and the Navy is committed to developing at least 75 technologies/ products as part of the 'Azadi ka Amrit Mahotsav'.
- SPRINT is a collaborative initiative being undertaken in conjunction with the Defence Innovation Organisation (DIO) and stands for Supporting Pole-Vaulting in R&D through Innovations for Defence Excellence (iDEX), NIIO and Technology Development Acceleration Cell (TDAC).

Significance:-
- It aims to reduce dependence on foreign technologies and promote domestic innovation.
- It aligns with efforts to involve Micro, Small, and Medium Enterprises (MSMEs) and start-ups in developing futuristic technologies that meet global standards at a more economical cost.

6.3 Indian Air Force Day 2023

The Indian Air Force celebrated Indian Air Force Day 2023 recently.

About Indian Air Force Day 2023:-
- Date: 8 October.
- Venue: Prayagraj, Uttar Pradesh.
- Theme 2023: 'IAF-Airpower Beyond Boundaries'.
- The ceremonial parade of Indian Air Force Day was conducted at Air Force Station Bamrauli and the Air Display was conducted over the Sangam area, in the vicinity of the Ordnance Depot Fort in Prayagraj.
- The day commemorates the official establishment of the Indian Air Force on October 8, 1932.
- It acknowledges the Air Force's long and distinguished history in serving the country.
- The day often features air displays, aerobatics, flypasts, and demonstrations of aircraft and equipment.
- These events showcase the technological prowess and capabilities of the Indian Air Force.
- Significance: Indian Air Force Day also serves as an opportunity to raise public awareness about the importance of the Air Force and its contributions to national security.

6.4 9M730 Burevestnik missile

- Russia recently, tested the 9M730 Burevestnik missile, a next-generation nuclear missile.

Background:
- Russian President Vladimir Putin confirmed that Moscow has successfully tested a next-generation nuclear missile.

About 9M730 Burevestnik missile:

- Country: Russia.
- Type: nuclear-powered cruise missile. (BrahMos Missiles)
- Range: intercontinental range.
- The missile is claimed to have an essentially unlimited range.
- It is also known as the "Storm petrel ".
- It is designated SSC-X-9 Skyfall by NATO.
- Its primary objective is to penetrate any interceptor-based missile defense system, thereby enhancing Russia's nuclear strike capability.
- It is capable of carrying a nuclear warhead.
- It is nuclear-powered. (Ballistic missiles)
- No country has to date deployed a cruise missile using an onboard nuclear reactor, largely given the engineering challenges and safety concerns involved.
- This makes it a truly revolutionary weapon.
- It is a ground-launched, low-flying cruise missile which would make it harder for air-defense radar to detect.

6.5 CHAKRAVAT 2023

- Recently, the Annual Joint HADR Exercise 2023 (AJHE-23) 'CHAKRAVAT 2023' concluded in Goa.

Background:-
- It concluded with a Multi-Agency Capability Demonstration at Mole Berth, within the Port of Mormugao.

About CHAKRAVAT 2023:-
- Hosted by: Indian Navy. (Exercise 'Varuna' 2023)
- Date: 09-11 October 23.
- Venue: Goa.
- First edition: 2015.
- CHAKRAVAT is an Annual Joint Humanitarian Assistance and Disaster Relief HADR Exercise (AJHE).
- The exercise has been conducted by the Indian Army, Indian Navy (IN) and Indian Air Force (IAF) in rotation.
- AJHE-23 commenced with a Seminar on 09 Oct 23 to discuss synergy in response to climate change and associated disaster adaptation and mitigation.
- An Industrial Display was also organized by FICCI on 10 Oct in coordination with the Indian Navy to showcase ready-to-export HADR equipment manufactured by both public and private sectors.
- The Logo for AJHE-23 depicted crests and logos of all participating agencies and flags of all nations subsumed into one single entity to signify that HADR will hinge on joint and integrated action by all the agencies.
- Participating agencies discussed and presented joint plans for rendering humanitarian assistance.
- AJHE-23 witnessed participation from various national agencies namely, National Disaster Management Authority (NDMA), National Disaster Response Force (NDRF), National Institute for Disaster Management (NIDM), Indian Army, Indian Navy, Indian Air Force, Coast Guard, Indian Metrological Department (IMD), National Remote Sensing Agencies (NRSA), State Disaster Management Agency (SDMA) and State Fire Services, Goa, District Disaster Management Agency (DDMA) of North and South, Goa, Indian National

Centre for Ocean Information Services (INCOIS), Central Water Commission (CWC), Defence Research and Development Organisation (DRDO) and representatives from Federation of Indian Chambers of Commerce and Industry (FICCI).
- Representatives were also present from eight friendly foreign countries viz. Comoros, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka and Tanzania.
- Significance: the 2023 edition would further synergize efforts at the national level among all stakeholders, as well as witness participation from eight countries of the Indian Ocean Region.

6.6 AI IN DEFENCE SECTOR

Artificial Intelligence (AI) is playing an increasingly significant role in the defense sector, transforming the way military operations are conducted, and improving decision-making, efficiency, and safety. Here are some key areas where AI is being utilized in the defense sector:
- Autonomous Systems: AI is used to develop autonomous drones, ground vehicles, and maritime vessels for tasks like surveillance, reconnaissance, and logistics. These systems can operate in hazardous environments or carry out repetitive tasks, reducing human risk.
- Predictive Maintenance: AI is employed to predict equipment failures and conduct preventive maintenance, ensuring that military vehicles and equipment remain operational and reducing downtime.
- Cybersecurity: AI-powered cyber security tools help defend against cyber threats and attacks. These systems can identify and respond to threats in real-time, protecting sensitive military data and communication.
- Data Analysis and Intelligence: AI is used for data analysis to sift through vast amounts of information, from satellite imagery to communications intercepts, and extract valuable intelligence. AI can be used to process unused or underused data to provide more actionable intelligence for the Indian armed forces. It will enhance the Intelligence, Surveillance, and Reconnaissance (ISR) capabilities.
- Simulation and Training: AI-driven simulations provide realistic training environments for soldiers, pilots, and commanders. These simulations can help personnel develop critical skills in a safe and controlled setting.
- Biometrics and Identity Verification: AI can be used for biometric identification and verification, helping ensure that only authorized personnel have access to sensitive areas or information.
- Language Translation and Cross-Cultural Communication: AI-powered translation and communication tools help military personnel interact with foreign populations and allies, aiding in diplomacy and peacekeeping efforts.

ADVANTAGES OF AI IN DEFENCE SECTOR
- Safety – Reducing human casualties and risks
- Adaptability – It can be made adaptable to new threats by constant learning.
- Improved decision-making – More precise, faster situation assessments and analyses.
- Emotions – It offsets emotions and prejudices

CHALLENGES OF USING AI IN DEFENCE SECTOR
- Prejudices – Prejudices can be inherent through biased algorithms
- High cost of Implementation – Given the complexity of engineering in building AI technology, these equipment's are highly expensive.
- Lack of skill – Requires skilled labour for using the new technologies.

- Ethical issues- AI can raise questions about the responsibility, accountability, and transparency of military actions and decisions. For example, who is liable if an autonomous weapon causes harm or violates international law? How can we ensure that AI respects human dignity and rights?
- Cyber-attacks- AI systems are vulnerable to hacking, manipulation, or sabotage by adversaries.

It's worth noting that the adoption of AI in the defense sector raises ethical and legal concerns, such as questions about autonomous weapons, data privacy, and accountability. Many countries and international organizations are working to establish guidelines and regulations for the responsible use of AI in military applications

7. Social issues

- In India, internal migration, which is migration within a particular country or State, has almost always been circular.
- With rapid industrialisation, there has been a huge flow of migrants from rural areas to urban cities.

About circular migration:
- Circular migration is defined by temporary residence, potential for multiple entries, and freedom of movement between origin and destination.
- A circular migrant completes at least two loops between the origin and destination.
- India experiences substantial internal circular migration, notably from rural to urban areas, often for jobs in sectors like construction.
- According to Philippe Fargues, migration can define as circular if it meets the following criteria:
- There is a temporary residence in the destination location ,
- There is the possibility of multiple entries into the destination country,
- There is a freedom of movement between the country of origin and the country of destination during the period of residence,
- There is a legal right to stay in the destination country,
- There is protection of migrants' rights, and
- If there is a healthy demand for temporary labour in the destination country.

Circular migration within India:
- In India, internal migration has almost always been circular.
- Between 2004–2005 and 2011–2012, the construction sector witnessed one of the largest net increases in employment for all workers, specifically for rural males.
- In India, the uneven development post-liberalisation, has led to a lot of inter-State migration, with States like West Bengal, Odisha and Bihar having some of the highest rates of out-migration.
- Initially, while most of the migration was to Delhi, nowadays it has increased to southern States as well.

Positive Impacts of circular migration:
- Labor Demand and Supply: Migration fills gaps in demand for and supply of labor, and efficiently allocates skilled labor, unskilled labor, and cheap labor.
- Economic Remittances: The economic well-being of migrants provides insurance against risks to households in the areas of origin, increases consumer expenditure and investment in health, education and assets formation.
- Skill Development: Migration enhances the knowledge and skills of migrants through exposure and interaction with the outside world.
- Social Remittances: Migration helps to improve the social life of migrants, as they learn about new cultures, customs, and languages which helps to improve brotherhood among people and ensures greater equality and tolerance.
- Food and Nutrition Security: According to the 2018 State of Food and Agriculture report by Food and Agriculture Organization (FAO), outmigration often leads to improved food and nutrition security for

migrants.

- Demographic Advantage: As a result of outmigration, the population density of the place of origin is reduced and the birth rate decreases.
- Climate Change Adaptive Mechanism: Migration has also emerged as a possible adaptive mechanism in the context of climate change and the occurrence of extreme weather events like floods, droughts, and cyclones.

Negative Impact of circular migration:

- Demographic Profile: Emigration in large numbers can alter demographic profiles of communities, as most of the young men move out, leaving only the women and elderly to work on the land.
- Political Exclusion: Migrant workers are deprived of many opportunities to exercise their political rights like the right to vote.
- Population Explosion and the Influx of workers in the place of destination increases competition for the job, houses, school facilities etc and a large population puts too much pressure on natural resources, amenities, and services.
- Illiterate and Under-skilled Migrants are not only unfit for most jobs, because of a lack of basic knowledge and life skills but are also prone to the victimization of exploitation, trafficking, psychological abuse, and gender-based violence in the case of female migrants.
- Increased Slum: Mass Migration results into an increase in slum areas, compromising quality of infrastructure and life at the destination, which further translates into many other problems such as unhygienic conditions, crime, pollution, etc.

Challenges of circular migration:

- Worker Exploitation: In India, circular migrants, particularly to southern states, can face exploitation and unsafe working conditions.
- They sometimes work in unsanitary conditions, with limited protective equipment, and might deal with middlemen or brokers who may take advantage of them.
- Economic Strain: Migrants often engage in low-skill jobs, earning just enough to support themselves and their families, with little room for savings or asset creation.
- Although they may access higher-paying jobs in the destination, the work is often seasonal and irregular, leading to financial instability.
- Pressure on Society and Infrastructure: Both rural and urban areas can experience different kinds of strain.
- Rural areas might see economic and demographic declines, while urban areas might face infrastructural breakdown due to the influx of migrants.

Steps taken by the Government for Migrant Workers:

- Prime Minister Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) Scheme: Provides affordable working capital loans to street vendors to restart their livelihoods that have been adversely affected due to the Covid-19 lockdown.
- Pradhan Mantri Garib Kalyan Yojana: It is a food security welfare scheme announced during the COVID-19 pandemic in India.
- Garib Kalyan Rojgar Abhiyaan (GKRA) initiative: GKRA aims to give employment to migrant workers, that has gone back to rural areas during COVID-19 migrant crisis.
- E-Shram portal: It is a centralized database of unorganized workers seeded with Aadhaar.
- It envisages the optimum realization of their employability and extension of social security scheme

- benefits to them.
- National policy on migrant workers: The draft policy by NITI Aayog makes efforts to bring together different sectoral concerns related to migration, including social protection, housing, health and education.
- One Nation One Ration Card scheme: It allows migrant labourers to get ration benefits from any part of the country, irrespective of the place where their ration card is registered.
- PM Awas Yojana: A scheme to provide affordable housing for migrants too.
- Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY): Provides for life & disability cover due to natural or accidental death.
- Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY): Provides Rs.5 lakh health coverage for secondary and tertiary health benefits to those migrant workers who are covered as eligible beneficiaries as per deprivation and occupation criteria.

7.2 Empowering Women – A driving force for the sustainable development

- Maharashtra Chief Minister Office took over the coordination and control of a year-long women empowerment mission amid political tussle within the ruling party.
- The programme called "Mukhyamantri Mahila Sashaktikaran Abhiyan" (Chief Minister Women Empowerment Mission) was initially to be run by the Women and Child Welfare Department in a bid to promote women empowerment.

About Women empowerment:
- Empowerment is the process of obtaining basic opportunities for marginalized people, either directly by those people, or through the help of non-marginalized others who share their own access to these opportunities.
- Empowerment of women signifies harnessing women power by promoting their tremendous potential and encouraging them to work towards attaining a dignified and satisfying way of life through confidence and competence.
- In the last few decades, the concept of women empowerment has changed from welfare to equity approach by which the powerless gain control over their lives and resources to overcome external barriers and gain internal qualities such as self-awareness and self-confidence.
- In India, where population maintain equal ratio of males and females the emergence of women entrepreneurs have great relevance and importance otherwise it will be amounting to neglecting 50 per cent of the entrepreneurial talent of the country.

Significance of women empowerment:
- Encourages gender equality: Challenging traditional gender roles allows women to make choices about their lives, including family planning.
- Encouraging communities to support women's empowerment can create an environment conducive to population control.
- Financial autonomy: When women have control over their finances, they can make informed decisions about family planning.
- Employment opportunities: Access to stable jobs allows women to delay marriage and childbirth, reducing fertility rates.
- Literacy and awareness: Educated women are more likely to understand the importance of family planning

- and make informed choices.
- Higher education often leads to later marriages, resulting in fewer children.
- Family planning services: Access to contraceptives and reproductive health services enables women to control their fertility.
- Improved maternal health reduces infant mortality, leading to smaller family sizes.
- Marriage and divorce laws: Fair legal frameworks empower women to make decisions about their relationships and family size.
- Property rights: Secure property rights give women the confidence to make long-term family planning decisions.

Challenges associated with women empowerment:
- Social Pressure: Women often face societal pressure, fearing stigma from their communities when they engage in paid work, which might be seen as a sign of their husband's inability to provide for the family, traditionally the main breadwinner role.
- Conservative Attitudes: There is a growing trend in conservative beliefs that dictate a woman's primary place as being within the home and kitchen.
- Stepping outside these socially approved boundaries is sometimes met with backlash.
- Informalization of Work: In the past few decades, there has been a significant decline in agricultural jobs, without a corresponding increase in rural non-farm employment opportunities.
- This has resulted in many women moving into sporadic and often short-term informal and casual work.
- Unrecognized Women's Work: A substantial portion of women's work, particularly in family enterprises like farming, livestock, small shops, and handmade product sales, is not officially recognized as "work."
- This leads to their exclusion from labor force statistics.
- Inadequate Social Security: Even women who are part of the workforce often work in roles that fall outside the purview of labor laws and social security protections, including the recently enacted Social Security Code.
- This disproportionately affects women in self-employment and informal jobs, comprising over 90% of the female workforce.
- Land Ownership Disparities: Land ownership in agriculture is primarily in the names of men, excluding women from being recognized as farmers, despite their significant involvement in agricultural work.
- This prevents women from accessing various beneficial programs, including priority sector loans and income support cash transfers.

Some of the schemes taken by the Government to encourage and empower women:
- Beti Bachao Beti Padhao: Aim to address the declining Child Sex Ratio.
- PM Matru Vandana Yojana (PMMVY): Provides Cash incentives for improved health and nutrition to Pregnant and nursing mothers.
- Scheme for Adolescent Girls: Aims at girls in the age group 11-18, to empower and improve their social status through nutrition, life skills, home skills and vocational training.
- Rashtriya Mahila Kosh (RMK): To provide micro-credit to poor women for various livelihood support and income-generating activities at concessional terms.
- Swadhar Greh: To provide relief and rehabilitation to destitute women and women in distress.
- Ujjawala: A comprehensive Scheme for the prevention of trafficking and for rescue, rehabilitation, reintegration and repatriation of victims of trafficking for commercial sexual exploitation.
- One-Stop Centre (OSC) and Women Helpline (WH) are being implemented to facilitate access to an

integrated range of services including medical aid, police assistance, legal aid/ case management, psychosocial counselling and temporary support services to women affected by violence.

- Gender Budgeting Scheme is being implemented as a tool for mainstreaming gender perspective at various stages of planning, budgeting, implementation, impact assessment and revisiting of policy/programme objectives and allocations.
- Protection of Women from Domestic Violence Act 2005
- Dowry Prohibition Act, 1961
- Pradhan Mantri Mudra Yojana
- Prime Minister's Employment Generation Programme (PMEGP)
- Pradhan Mantri Ujjwala Yojna (PMUY): Aims to safeguard the health of women by providing them with clean cooking fuel and also from drudgery of collecting firewood.
- The Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA) mandates that at least one third of the jobs generated under the scheme (MGNREGS) should be given to women.
- The National Education Policy (NEP), 2020 prioritises gender equity and envisions ensuring equitable access to quality education to all students, with a special emphasis on Socially and Economically Disadvantaged Groups (SEDGs).
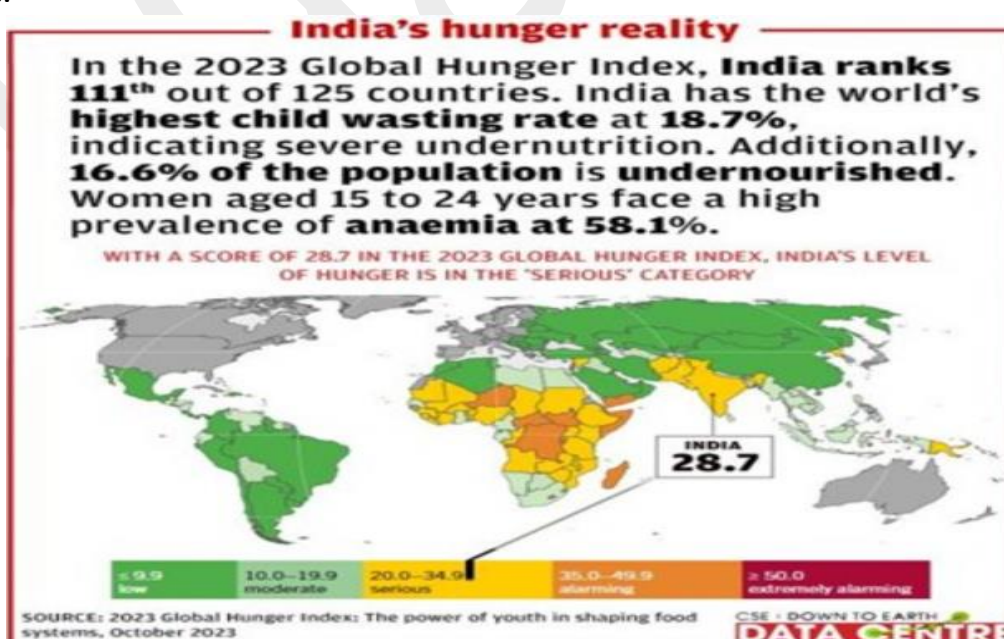
Way Forward:

- Yatra Nari Astu Pujyante, Ramante Tatra Devaata (The God reside in places where women is worshipped). This statement is proof that in Vedic period, Women are worthy of worship. Women should be respected".
- When we empower the women in a family, we empower the entire house-hold. When we support women's education, we ensure that the entire family is educated. When we facilitate her good health, we help keep the entire family healthy. When we secure her future, we secure the future of the entire home.

7.3 Global Hunger Index 2023

Global Hunger Index 2023 was released recently.

Key Highlights:

India's hunger reality

In the 2023 Global Hunger Index, **India ranks 111th** out of 125 countries. India has the world's **highest child wasting rate** at **18.7%**, indicating severe undernutrition. Additionally, **16.6% of the population** is **undernourished**. Women aged 15 to 24 years face a high prevalence of **anaemia** at **58.1%**.

WITH A SCORE OF 28.7 IN THE 2023 GLOBAL HUNGER INDEX, INDIA'S LEVEL OF HUNGER IS IN THE 'SERIOUS' CATEGORY

INDIA 28.7

SOURCE: 2023 Global Hunger Index: The power of youth in shaping food systems, October 2023

- The 2023 GHI shows that, after many years of advancement up to 2015, progress against hunger worldwide remains largely at a standstill.
- As the effects of crises multiply and intensify, more and more people are experiencing severe hunger, with the situation expected to worsen throughout the year.
- South Asia and sub-Saharan Africa are the global regions characterized by the most severe hunger levels, both holding a GHI score of 27, signifying a serious state of hunger.
- India topped the list of countries with the highest child-wasting rate in the world, at 18.7 per cent, reflecting acute undernutrition.
- The country's child wasting rate is higher than that of conflict-ridden Yemen (at 14.4 per cent) and Sudan at (13.7 per cent), which hold the second and third positions, respectively
- India has been ranked at the 111th position out of 124 countries, with neighbouring Pakistan (102th), Bangladesh (81st), Nepal (69th) and Sri Lanka (60th) faring better than it in the index.
- The country slipped four notches from its 107th position in 2022.
- Child wasting: refers to the share of children under age five who have low weight for their height.
- Indian government's stand: The Indian government has questioned the methodology of GHI.

Initiatives taken by the government:-
- National Food Security Act, 2013: It legally entitled up to 75% of the rural population and 50% of the urban population to receive subsidized food grains under the Targeted Public Distribution System.
- Integrated Child Development Services (ICDS) Scheme: Launched on 2nd October 1975, the ICDS Scheme offers a package of six services (Supplementary Nutrition, preschool non-formal education, Nutrition & health education, Immunization, Health check-up and Referral services) to children in the age group of 0-6 years, pregnant women and lactating mothers.
- Pradhan Mantri Matru Vandana Yojana: A centrally sponsored scheme executed by the Ministry of Women and Child Development, is a maternity benefit programme being implemented in all districts of the country with effect from 1st January 2017.
- POSHAN Abhiyan: Launched in 2018, it aims to reduce stunting, undernutrition, and anaemia (among young children, women and adolescent girls).
- Food Fortification: Food Fortification or Food Enrichment is the addition of key vitamins and minerals such as iron, iodine, zinc, and Vitamin A & D to staple foods such as rice, milk and salt to improve their nutritional content.

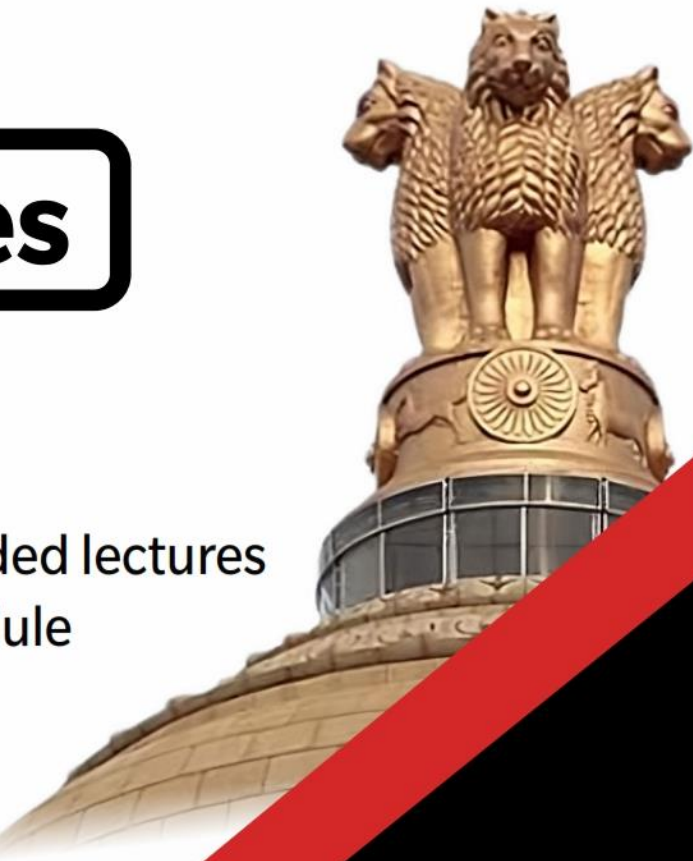**About Global Hunger Index 2023:-**
- Time period: Annual.
- Published by: Concern Worldwide and Welthungerhilfe.
- The Global Hunger Index (GHI) is a tool for comprehensively measuring and tracking hunger at global, regional, and national levels. GHI scores are based on the values of four component indicators:
- Undernourishment: the share of the population with insufficient caloric intake.
- Child stunting: the share of children under age five who have low height for their age, reflecting chronic undernutrition.
- Child wasting: the share of children under age five who have low weight for their height, reflecting acute undernutrition.
- Child mortality: the share of children who die before their fifth birthday, partly reflecting the fatal mix of inadequate nutrition and unhealthy environments.

- Based on the values of the four indicators, a GHI score is calculated on a 100-point scale.
- The scale reflects the severity of hunger, where 0 is the best possible score (no hunger) and 100 is the worst.
- Each country's GHI score is classified by severity, from low to extremely alarming. (Understanding the Global Hunger Index)

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