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1. AGRICULTURE

1.1 Clean Plant Program

In news-The Union Government is planning to launch an Atma Nirbhar Clean Plant Program with an outlay of Rs. 2,200 crore.

What is Clean Plant Program?

- It seeks to boost availability of disease-free, quality planting material for high value horticultural crops.
- Under this program, **the Centre plans to set up 10 'Clean Plant Centres', on the lines of those in developed countries such as the US, Netherlands and Israel**, to boost domestic production of the selected crops.
- The concept of Clean Plant Centres is unique in itself and does not exist in India.
- **10 centres will be established for fruit crops like apple, walnut, almond, grapes, mango, pomegranate**, among others, with an overall budget of Rs 2,200 crore in the next seven years till 2030.
- The Clean Plant Centres will provide **services of disease diagnostic, therapeutics, multiplying of plants and generation of mother plants**.
- The centres will be **fully funded by the Centre**.
- It will be **implemented in a PPP mode in partnership with research organisations**, agriculture universities and private sector partners.
- **The National Horticulture Board (NHB) will anchor the clean plant programme.**

Demand for imported planting material in India-

- The demand for imported planting material of various fruit plants has risen sharply over the years.
- According to a source in 2018, 21.44 lakh apple plants were imported, which increased to 49.57 lakh in 2020.
- Besides, fruit plants of banana, date palm, kiwi, pomegranate, raspberry, strawberry, walnut, winegrape, grape, guava, olive, peach, pear and plum plants are also being imported in the country,

1.2 Global Millets (Shree Anna) Conference

In news- The Prime Minister of India has recently inaugurated the Global Millets (Shree Anna) Conference at Subramaniam Hall, NASC Complex, IARI Campus, PUSA New Delhi. The Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry, Government of India had organized the Conference.

About the conference-

- The Prime Minister unveiled a Commemorative Stamp and Commemorative Coin.
- This was followed by the Prime Minister digitally launching a compendium of Indian Millet (Shri Anna) startups and a book of millet (Shri Anna) standards.
- PM also **declared the Indian Institute of Millets Research of ICAR as a Global Centre of Excellence**.
- He informed that **millets were declared nutri-cereals in 2018** where work was carried out on all levels from making the farmers aware of its benefits to generating interest in the market.
- Millets have also been selected in 19 districts of the country under the 'One District, One Product' scheme.
- He suggested including Shree Anna in the mid-day meal.

Background-

- Based on India's proposal, the year 2023 was declared the International Year of Millets (IYM) by the United Nations General Assembly (UNGA)

- In line with the Prime Minister's vision to make the celebrations of IYM 2023 a 'people's movement' and position India as the 'global hub for millets', all central government ministries/departments, states/UTs, farmers, start-ups, exporters, retail businesses and other stakeholders are being engaged to promote and spread awareness about the benefits of millets (Shree Anna) for the cultivator, consumer and climate.

1.3 Gamma rays irradiation of Onions

In news- The Centre is planning to irradiate onions with Gamma rays before sending them into cold storage on a pilot basis.

Why irradiation?

- Post-harvest losses of onion in India are significant.
- Onion noticeably gets rotted and starts sprouting even in cold storage.
- To reduce post-harvest losses to 10-12% from prevailing 25%, the government will send freshly procured onion to irradiation plants and then to cold storage.
- According to govt irradiation prevents sprouting and thus brings down post-harvest losses.
- The perishable nature of onions, combined with lower processing penetration and sub-optimal storage infrastructure causes post-harvest losses.

How is it done?

- Onion production in 2022-23 (July-June) is estimated to be 31.8 million tonnes compared to 31.7 MT.
- Currently, red onions are being procured by the National Agricultural Cooperative Marketing Federation of India and National Cooperative Consumers' Federation of India to support farmers amid falling prices.
- **Kharif and late kharif onion or red onion is highly perishable** and cannot be stored for over a month.
- Therefore, the **rabi variety, which accounts for 65% of the onion harvest and has a longer shelf life of about 5-7 months, would be considered for irradiation.**
- Rabi onion will be sent to Krushi Utpadan Sanrakshan Kendra at Lasalgaon, Nashik and Avantee Maga Food Irradiation in Indore within seven days of procurement.
- **Gamma ray irradiation is an effective form of preservation that extends the shelf life of the crops** and reduces spoilage.
- The process also **benefits the consumer by reducing the risk of illnesses caused by foodborne diseases.**
- If the pilot project succeeds, the recovery rate of onion is expected to increase to about 88-90%, leading to an extension in shelf life of rabi onion.

Note: Maharashtra is the leading onion producing state, followed by Madhya Pradesh, Karnataka and Gujarat. These states account for about 80% of India's total production.

1.4 Berry Borer infestation in Coffee

In news- The Coffee Board has issued an advisory to coffee farmers to tackle the attack of berry borer in Robusta coffee plants.

What is a Borer infestation?

- The Coffee Berry Borer or Coffee Borer Beetle (CBB) is an insect found around the world and prevalent in most coffee producing countries.
- It is among the most harmful pests to commercial coffee plantations and can attack 50-100% of berries on a farm if no control measures are applied.
- The CBB belongs to the genus *Hypothenemus*, which has more than 181 species and can be found not only in coffee but also in plants, fungi and even drawing boards and books.

- The CBB will usually enter the coffee cherry when the water content is 20% or higher and the cherries are still green.
- This is about 120-150 days after flowering and 30 – 150 days before harvesting.

How to control it?

- The berry borer-infested gleanings, leftover fruits, and off-season berries should be collected and disposed of by burning or burying in the soil or disinfected by dipping in boiling water to mitigate attack in the next season.
- Brocca traps, an effective measure to control berry borer population in coffee plantations, should be installed and backing irrigation should be provided for Robusta coffee plants.
- The installation of brocca traps at 10 units per acre would be helpful to control the pest attack.

Note:

- Coffee production in India is dominated in the hill tracts of South Indian states, with **Karnataka accounting for 71% (Kodagu alone produces 33% of India's coffee), followed by Kerala with 21%** and Tamil Nadu (5% of overall production with 8,200 tonnes).
- Indian coffee is said to be the finest coffee grown in the shade rather than direct sunlight anywhere in the world.
- **The two well known species of coffee grown are the Arabica and Robusta.**
- The first variety that was introduced in the Baba Budan Giri hill ranges in Chikmagalur district of Karnataka state in the 17th century was marketed over the years under the brand names of Kent and S.795.

2. DISASTER MANAGEMENT

2.1 3rd Session of National Platform for Disaster Risk Reduction

In news- The 3rd Session of the National Platform for Disaster Risk Reduction (NPDRR) concluded in New Delhi recently.

About 3rd Session of NPDRR-

- It was jointly organized by the Ministry of Home Affairs (MHA), National Disaster Management Authority (NDMA), National Disaster Response Force (NDRF), and National Institute of Disaster Management (NIDM).
- **The theme of the third session of NPDRR was 'Building Local Resilience in a Changing Climate'**, which is aligned with the 10-Point agenda promulgated by the Prime Minister of India, to build local capacities, especially in the context of a rapidly changing disaster risk scenario in the wake of climate change.
- The 1st and 2nd sessions of NPDRR were held in 2013 and 2017.

What is NPDRR?

- It was constituted by Government of India vide resolution dated 26th February 2013.
- NPDRR is a multi-stakeholders National Platform which is characterized by a process, where all stakeholders get together to share knowledge, experiences, views and ideas, and discuss the latest developments and trends in disaster risk reduction (DRR), identify gaps, make recommendations, and forge partnerships to further accelerate disaster risk reduction efforts.
- The NPDRR is **chaired by the Union Home Minister and the Minister of State in-charge of Disaster Management in the Ministry of Home Affairs** and Vice-Chairman, National Disaster Management Authority is the Vice-Chairperson of the NPDRR.
- Special Secretary/Additional Secretary/Joint Secretary in-charge of Disaster Management Division in the Ministry of Home Affairs will be the convener of NPDRR.

Prime Minister's Ten Point Agenda on DRR



Prime Minister's Ten Point Agenda for Disaster Risk Reduction

Sl No.	Agenda Point
1	All development sectors must imbibe the principles of disaster risk management ▼
2	Risk coverage must include all, starting from poor households to SMEs to multi-national corporations to nation states ▼
3	Women's leadership and greater involvement should be central to disaster risk management ▼
4	Invest in risk mapping globally to improve global understanding of Nature and disaster risks ▼
5	Leverage technology to enhance the efficiency of disaster risk management efforts ▼
6	Develop a network of universities to work on disaster-related issues ▼
7	Utilise the opportunities provided by social media and mobile technologies for disaster risk reduction ▼
8	Build on local capacity and initiative to enhance disaster risk reduction ▼
9	Make use of every opportunity to learn from disasters and, to achieve that, there must be studies on the lessons after every disaster ▼
10	Bring about greater cohesion in international response to disasters ▼

The other members of NPDRR are:

- Representatives of Government of India, Representatives of State Governments and Union Territory Administrations, Representatives of Local Self-Governments, Representatives from Parliament, which includes 4 members from Lok Sabha and 2 from Rajya Sabha;
- **Ex-officio members viz.** Union Home Secretary and Secretaries/heads of various relevant Central Institutions/Ministries; Heads of institutions of National Importance;
- **Persons representing industries viz.** President, Associated Chamber of Commerce and Industry, New Delhi; President, Confederation of Indian Industries, New Delhi; Director General, Federation of Indian Chamber of Commerce and Industries, New Delhi;
- Media representatives;
- Representatives of Civil Society Organizations;
- International Representatives and Special Invitees.

Its functions-

- To review the progress made in the field of disaster management from time to time.
- To appreciate the extent and manner in which the Disaster Management Policy has been implemented by the Central and State Governments, and other concerned agencies, and to give appropriate advice in the matter.
- To advise on coordination between the Central and State Governments/UT Administrations, local self-governments and civil society organizations for Disaster Risk Reduction.
- To advise suo-moto or on a reference made by the Central Government or any other State Government or a Union territory Administration on any question pertaining to disaster management.
- To review the National Disaster Management Policy.

3. ECONOMY

3.1 International IP Index

In news- The US Chambers of Commerce Global Innovation Policy Center has released the International IP Index recently.

Key highlights of the index-

- By analysing the IP landscape in global markets, the Index aims to help nations navigate toward a brighter economic future marked by greater innovation, creativity, and competitiveness.
- It **covers everything from patent and copyright laws to the ability to monetize IP assets** and the ratification of international agreements.
- It evaluates the protection of IP rights in **55 of the world's leading economies**, together representing around 90% of global GDP.
- According to the index, **Asia had the greatest improvement in the regional average score** as a result of score improvements in Malaysia and Singapore, in addition to Thailand and Vietnam.
- Morocco and Thailand at 2.5% each and Vietnam at 2.02% had the largest improvements in their overall score.

India's ranking-

- According to the Index India is ripe to become a leader for emerging markets seeking to transform their economy through IP-driven innovation.
- India has been **ranked 42nd** out of 55 countries in the index.
- It said that India not only has generous R&D and IP-based tax incentives, but also has a strong awareness-raising efforts regarding the negative impact of piracy and counterfeiting.
- However, the report said **the 2021 dissolution of the Intellectual Property Appellate Board**, combined with the long standing issue of an under-resourced and overstretched judiciary, raises serious concerns about rights holders' ability to enforce their IP rights in India and to resolve IP-related disputes.

3.2 SWAYATT

In news- A function was held to commemorate the success of "SWAYATT", an initiative to promote **'Start-ups, Women and Youth Advantage Through eTransactions'** on Government eMarketplace (GeM) in New Delhi.

About SWAYATT-

- It was launched in February 2019 under the Ministry of Commerce and Industry.
- It seeks to promote inclusiveness of various categories of sellers and service providers on the portal, by taking proactive steps to facilitate their training and registrations of such specific category of manufacturers and sellers, develop women entrepreneurship and encourage participation of MSME sector and Start-ups in public procurement.

What is Government eMarketplace (GeM)?

- The Government e Marketplace is an online platform for public procurement in India.
- GeM is a Section 8 company setup under the administrative control of the Department of Commerce for procurement of goods and services by Central Ministries, State Departments, PSEs and Autonomous Bodies.
- The initiative was launched on August 9, 2016 with the objective to create an open and transparent procurement platform for government buyers.

- Social inclusion is a core value at GeM and is focused on increasing participation from under-served sellers who face challenges in public procurement.

3.3 Hallmark Unique Identification (HUID) number

In news- The Union Ministry of Consumer Affairs, Food and Public Distribution has said that from April 1, the sale of gold jewellery will not be allowed without a HUID number.

What is a HUID number?

- HUID number is a six-digit alphanumeric code.
- It is given to every piece of jewellery at the time of hallmarking, and is a unique identifier for each gold item.
- The jewellery is stamped with the unique number manually at the Assaying & Hallmarking centre.
- Earlier, the HUID used to be of four digits. As of now both HUIDs (4- and 6-digit) are used in the market.
- The HUID makes it easy to trace the individual piece of jewellery, and is a guarantee of quality.
- In HUID-based Hallmarking, registration of jewellers is automatic with no human interference.
- It is aimed at ensuring the purity of Hallmarked jewellery and check any malpractice.
- HUID is a secure system and poses no risk to data privacy or security.

What is hallmarking?

- Hallmark is a mark on gold jewellery which is affixed by an entity recognised by Bureau of Indian Standards (BIS) to assure its fineness and purity.
- A BIS Hallmark consists of three symbols — the BIS logo, a symbol to indicate the purity and fineness of the jewellery, and then the HUID.
- No gold jewelry is made of 100 per cent gold, as the yellow metal in itself is very soft and has to be mixed with other metals to shape it into jewelry items.
- The “purer” the jewellery, i.e., the more gold a piece of jewellery has, the more expensive it will be.
- The three categories of hallmarked jewellery are:
 1. 22K916 means that it is a 22 carat gold and the piece of jewellery has 91.6 percent gold.
 2. 18K750 means that it is an 18 carat gold and the piece of jewellery has 75 percent gold.
 3. 14K585 means that it is 14 carat gold and the piece of jewellery has 58.5 percent gold.
- One may check the purity of gold jewellery at any BIS-recognized Assaying and Hallmarking Centre.
- **However, a consumer cannot apply to the Assaying and Hallmarking Centre for getting a hallmark on her gold jewellery** as this has to be done through a BIS-registered jeweler.

3.4 Har Payment Digital mission of RBI

In news- Reserve Bank of India (RBI) launched the Mission ‘Har Payment Digital’ on the occasion of Digital Payments Awareness Week(DPAW) from 6th to 12th of March 2023.

About the mission-

- It is part of RBI’s endeavour to make every person in India a user of digital payments.
- The DPAW campaign theme is “Digital Payment Apnao, Auro ko bhi Sikhao” (Adopt digital payments and Also teach others).
- It is aimed at reinforcing the ease and convenience of digital payments and facilitating onboarding of new consumers into the digital fold.

Note:

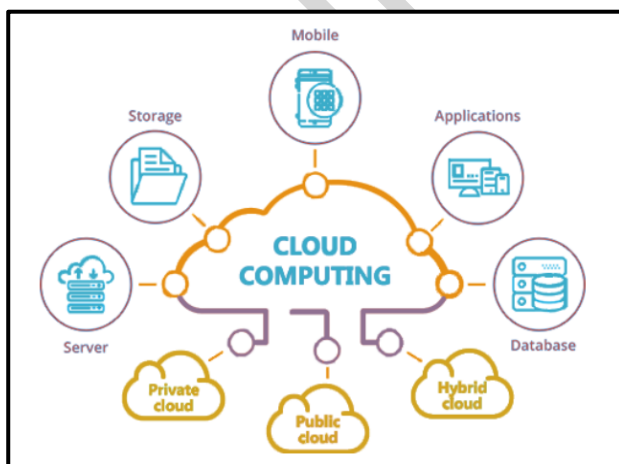
- The Reserve Bank will also initiate a '75 Digital Villages' programme in observance of 75 years of Independence.
- Under this programme, Payment System Operators will adopt 75 villages across the country and convert them into digital payment enabled villages.

3.5 SEBI issues framework for the adoption of cloud services

In news- SEBI has issued a framework for the adoption of cloud services recently.

What does the framework say?

- It asks stock exchanges, clearing corporations and other regulated entities (REs) including depositories, stock brokers through exchanges, asset management companies (AMCs) and KYC registration agencies (KRAs) to adopt cloud services.
- The cloud framework has been **drafted to provide baseline standards of security and for the legal and regulatory compliances by the Regulated Entities (REs)**.
- It will be in addition to the existing circulars, guidelines and advisories of Sebi.
- **The major purpose of this framework is to highlight the key risks, and mandatory control measures** which REs need to put in place before adopting cloud computing.
- The framework will come into force immediately for all new or proposed cloud onboarding assignments or projects of the REs.
- **Cloud computing is the on-demand delivery of IT resources through the internet with pay-to-use charges.**
- **Instead of buying and maintaining computer products and services, one can pay to use a cloud computing service** saving the time, effort and cost of doing it.
- Sebi noted that while cloud computing offers multiple advantages viz ready to scale, ease of deployment, no overhead of maintaining physical infrastructure etc., the RE should also be aware of the new cyber security risks and challenges which cloud computing introduces.
- According to the regulator, **the cloud framework is a principle-based framework that covers Governance, Risk and Compliance (GRC), selection of Cloud Service Providers (CSPs), data ownership and data localisation, due-diligence by REs, security controls, legal and regulatory obligations, among others.**



3.6 Bhutan graduates from UN list of Least Developed Countries (LDC)

In news- Bhutan will become the seventh nation to graduate from the United Nations' (UN) list of Least Developed Countries (LDC) on December 13, 2023.

What is a Least Developed Country (LDC)?

- The LDCs are developing countries listed by the UN that exhibit **the lowest indicators of socioeconomic development**.
- The **concept first originated in the late 1960s and was codified under UN resolution 2768** passed in November 1971.
- According to the UN, an **LDC is defined as** “a country that exhibits the lowest indicators of socioeconomic development, with low levels of income, human capital and economic diversification, high levels of economic vulnerability, and a **population that is disproportionately reliant on agriculture, natural resources, and primary commodities.**”
- **The UN identifies three criteria for a country to be classified as an LDC:**
 - First, it must have a gross national income (GNI) per capita below the threshold of USD 1,230 over a three-year average.
 - Second, it must perform poorly on a composite human assets index based on indicators including nutrition, health and education.
 - Lastly, the country must demonstrate economic vulnerability such as being prone to natural disasters and possessing structural economic constraints.
- Countries must meet a selection from all three criteria simultaneously and are reviewed on a three-year basis by the UN.
- Currently, the UN lists 46 countries that qualify as LDCs. They are-
 - **Africa (33):** Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Uganda, United Republic of Tanzania and Zambia
 - **Asia (9):** Afghanistan, Bangladesh, Bhutan (now moved), Cambodia, Lao People’s Democratic Republic, Myanmar, Nepal, Timor-Leste and Yemen
 - **Caribbean (1):** Haiti
 - **Pacific (3):** Kiribati, Solomon Islands and Tuvalu

How does a country get off the LDC list?

- At the UN 2021 triennial review of LDC countries, the organisation recommended that Bangladesh, Laos, and Nepal be removed from the list.
- To graduate from the LDC list, a country must meet certain criteria in the three areas stated before namely, income, human assets, and economic vulnerability.
- A nation must have a GNI per capita of at least USD 1,242 for two consecutive triennial reviews in order to meet the income requirement.
- The nation must also show that this level of income can be sustained over the long term.
- By using measures like education, health, and nutrition, a nation must show that it has improved its human capital in order to achieve the human assets requirement.
- A nation also must show that it has improved its ability to withstand external economic shocks like natural catastrophes or shifts in commodity prices in order to pass the economic vulnerability test.
- To achieve these goals, a country might need to implement a combination of policies, including promoting economic growth through investment in infrastructure, improving governance and reducing corruption, diversifying the economy, addressing environmental challenges, and investing in human development.

How did Bhutan get off the LDC list?

Bhutan was included in the first group of LDCs in 1971. However, over the last few decades, it has made remarkable progress on a variety of socio-economic metrics. **Bhutan’s economy increased more than eight times in the last 20 years**, from just under USD 300 million in 2000 to USD 2.53 billion in 2017, with an average annual growth rate of more than 7 per cent. **Bhutan has mostly accomplished this by increasing exports of hydropower to India, which now accounts for 20 percent of its economy.** The nation also established Brand Bhutan in an effort to diversify exports while acknowledging the modest size of its local market.

Note:

- India currently falls under the lower middle income category according to per capita GNI.
- India is currently far behind both the so-called developed countries, as well as some developing countries.
- Often, the discourse is on the absolute level of GDP (gross domestic product). On that metric, India is one of the biggest economies of the world — even though the US and China remain far ahead.
- However, to be classified as a “developed” country, the average income of a country’s people matters more and on per capita income, India is behind even Bangladesh.
- China’s per capita income is 5.5 times that of India, and the UK’s is almost 33 times.

Advantages of being an LDC-

- **LDCs enjoy duty-free and quota-free (DFQF) access to the markets of developed countries.**
- This means that LDCs are not restricted by trade restrictions or tariffs when exporting their goods to wealthier nations.
- However, **a nation can lose access to the DFQF as it transitions from being an LDC to a middle-income developing nation.**
- **LDCs are also eligible for loans with special terms for development**, which include loans with a lower interest rate and a longer repayment time than those given to other nations. The term “**Official Development Assistance**” (ODA) or “**aid**” is frequently used to describe this form of support.

3.7 What is hustle culture?

In news- In recent years, many have embraced hustle culture, believing sustained hard work can turn every dream into reality.

What is hustle culture?

- Hustle culture, also known as burnout culture, centers around the idea that working long hours and sacrificing self-care are required in order to succeed.
- The word hustle comes from the Dutch word husselen, which means “**to shake or toss**”.
- One of the biggest criticisms of modern-day hustle culture is that **it encourages the myth of meritocracy, propagating that success and power can be won by anyone on the basis of merit, not social origins.**
- In 2021, a study published by authors from institutions including the World Health Organization (WHO) and the International Labour Organization (ILO) suggested that each year, three-quarters of a million people are dying from ischaemic heart disease (also known as coronary heart disease) and stroke, due to working long hours, defined as 55 hours or more per week.
- According to the BBC, it means that more people are dying from overwork than from malaria.

3.8 What is the Suspension of Operations (SoO) agreement?

In news- In a surprise move, the Manipur government withdrew from the SoO agreement with two hill-based tribal insurgent groups, alleging that they were “influencing agitation among forest encroachers”.

About SoO agreement-

- The SoO pact was signed on August 22, 2008, with the primary objective of initiating political dialogue.
- Talks are ongoing under AB Mathur, former special secretary of the Research and Analysis Wing (RAW), as the interlocutor.
- The Kuki outfits who were initially demanding a separate Kuki state have come down to a ‘Kukiland territorial council’, which would have financial and administrative powers independent of the Manipur Assembly and government.

- There are nearly 30 Kuki insurgent groups in Manipur, of which 25 are under tripartite Suspension of Operations (SoO) with the Government of India and the state.
- As many as 17 are under the umbrella group Kuki National Organisation (KNO), and eight are under the United People's Front (UPF).

What are the terms of the SoO pact?

- While the **period of the SoO agreement is one year**, it is extendable according to the progress of its implementation.
- To oversee the effective implementation of the SoO pact, **a committee called the Joint Monitoring Group (JMG), with representatives from all the signatories, has been formed.**
- The important terms under the pact are that **security forces, including state and central forces, are not to launch any operations, nor can the underground groups.**
- The **signatories of UPF and KNO shall abide by the Constitution of India**, the laws of the land and the territorial integrity of Manipur.
- They are prohibited from committing all kinds of atrocities, extortion, among others.
- The **militant cadres are to be confined in designated camps identified by the Government.**
- Arms are deposited in a safe room under a double-locking system. The groups are given arms only to guard their camps and protect their leaders.
- As a rehabilitation package, the UG cadres living in the designated camps are given a **monthly stipend of Rs 5000.**
- Financial assistance is also being provided to maintain the designated camps.

The Kuki insurgency-

- While the Naga movement is the country's longest-running insurgency, underground Kuki groups, too, have fought the Indian government for an **'independent Kuki homeland', spread across Manipur.**
- The Kuki insurgency gained momentum after ethnic clashes with the Nagas of Manipur in the early 1990s, with the Kuki arming themselves against Naga aggression.
- While the two tribes have shared a hostile relationship since colonial times, things came to a head in the 1990s when the Naga-Kuki clashes took place.
- **Land that the Kukis claim to be their "homeland" in the Manipur hills overlaps with the imagined Naga homeland of Greater Nagaland or Nagalim.**
- As many as 115 Kuki men, women and children were believed to have been killed by the NSCN-IM in Tengnoupal in 1993 — a day still marked by the Kuki as 'black day'.

3.9 Revamped MSME Competitive (LEAN) scheme

In news- The Union government has recently launched the revamped MSME Competitive (LEAN) scheme to make it more beneficial for enterprises and stakeholders.

Key features of the scheme-

- Under the revamped scheme, the **Centre's contribution will be 90 percent of the implementation cost for hand holding** and consultancy fees as against 80 percent previously.
- There will be an additional contribution of 5 per cent for the MSMEs which are part of SFURTI clusters, owned by Women/SC/ST and located in the NorthEast Region.
- In addition to the above, there will be an **additional contribution of 5% for MSMEs registering through Industry Associations/Overall Equipment Manufacturing (OEM) organizations** after completing all levels.
- There is a unique feature to **encourage Industry Associations and OEMs** for motivate their supply chain vendors to participate in this scheme.
- The government has also **done away with the requirement of setting up a special purpose vehicle in every cluster.**
- Earlier, the implementation period for the scheme was set at 18 months.

- However, under the revamped scheme it has been divided into phases - Basic (2 months), Intermediate (6 months) and Advanced (12 months).
- The revamped scheme is being introduced in two phases, the first phase will cover the manufacturing sector while the services sector will be covered in the second phase.

3.10 IREDA gets 'Infrastructure Finance Company' status from RBI

In news- The Reserve Bank of India (RBI) has granted an 'Infrastructure Finance Company (IFC)' status to Indian Renewable Energy Development Agency (IREDA) Recently.

Advantages of IFC status-

- With the IFC status, IREDA will be able to take higher exposure in renewable energy financing.
- The IFC status will also help the company to access a wider investor base for fund mobilisation, resulting in competitive rates for fundraising.
- The recognition of IREDA as an IFC will increase the investors' confidence, enhance the brand value, and generate a positive outlook in the market.
- With IFC status, IREDA will keep contributing towards Govt. of India's target of 500 GW installed capacity of non-fossil fuels by 2030.
- It was earlier classified as 'Investment and Credit Company (ICC)'.

What is Infrastructure finance, as per RBI?

- Infrastructure loan" means a credit facility extended by NBFCs to a borrower for exposure to the following infrastructure categories: Transport, Energy, Water & Sanitation, Communication, Social and Commercial Infrastructure.

What is an IFC and what are the eligibility or entry point norms for registration of an IFC-NBFC with RBI?

IFC is a non-deposit accepting loan company which complies with the following:

1. A minimum of 75 per cent of the total assets of an IFC-NBFC should be deployed in infrastructure loans.
2. The company should have a minimum net-worth of Rs 300 crore.
3. The CRAR of the company should be at 15% with Tier I capital at 10%.
4. The minimum credit rating of the company should be at 'A' or equivalent of CRISIL, FITCH, CARE, ICRA, BRICKWORK or equivalent rating by any other accrediting rating agencies.

About IREDA-

- **IREDA is a Public Limited Government Company established as a Non-Banking Financial Institution in 1987** engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy and energy efficiency/conservation.
- IREDA has been awarded "**Mini Ratna**" (Category -I) status in 2015 by the Ministry of New and Renewable Energy (MNRE).
- **IREDA's Motto is "Energy for Ever"**.
- It aims to enhance the credit rating of bonds for renewable energy projects, thereby improving their marketability and liquidity, and attracting lower-cost and longer-term funding for project developers.
- The amount raised by credit enhanced bonds shall only serve to repay existing debt partially or fully.
- **It finances all RE technologies and value chains such as solar, wind, hydro, bio-energy, waste to energy, energy efficiency, e-mobility, battery storage, biofuel and new and emerging technologies.**

3.11 Mundra Petrochemical project

In news- The Adani group has suspended work on a Rs 34,900 crore petrochemical project at Mundra in Gujarat recently.

What is the Mundra Petrochemical project?

- Adani group's flagship Adani Enterprises Ltd (AEL) had in 2021 incorporated a wholly owned subsidiary, Mundra Petrochem Ltd, for setting up a **greenfield coal-to-PVC plant** at Adani Ports and Special Economic Zone (APSEZ) land in Kutch district of Gujarat.
- **The plant was to have a poly-vinyl-chloride (PVC) production capacity of 2,000 KTPA** (kilo tonne per annum) requiring 3.1 million tonne per annum (MTPA) of coal that was to be imported from Australia, Russia and other countries.
- The suspension of the Mundra project comes in the aftermath of the damaging Hindenburg report, which alleged accounting fraud, stock manipulations and other corporate governance lapses.

What is poly-vinyl-chloride (PVC)?

- PVC is the world's third-most widely produced synthetic polymer of plastic, after polyethylene and polypropylene.
- It finds wide applications – from flooring, to making sewage pipes and other pipe applications, in insulation on electrical wires, and manufacture of aprons etc.
- PVC comes in two basic forms: rigid and flexible.
- The rigid form of PVC is used in construction for pipe and in profile applications such as doors and windows.
- It is also used in making plastic bottles, non-food packaging, food-covering sheets and plastic cards (such as bank or membership cards).
- The Mundra Petrochemicals project was planned to bridge the gap between domestic production and demand for PVC in India, turning India into a net exporter of PVC instead.

3.12 World Happiness Report 2023

In news- The United Nation Sustainable Development Solutions Network has released the World Happiness Report on 20th March, the International Day of Happiness.

Key highlights of the report-

- It ranks countries on happiness based on three preceding years' data of their average life evaluations.
- The report is a comprehensive study that aims to measure and understand the factors that contribute to human well-being and happiness around the globe.
- It is based on data collected from surveys conducted in various countries, and it covers a range of topics including social connections, trust, and mental health.
- **The 2023 edition of the World Happiness Report focuses on the theme of 'trust and social connections in times of crisis'.**
- The top ten countries in the ranking were all located in Europe, with New Zealand being the only non-European country to make it to the top 10 list.
- **The ranking uses 6 main factors to measure happiness, which includes social support, freedom, generosity, income, health, and absence of corruption.**
- **India stands 126th on the list out of 136 countries**, making it one of the least happy countries around the world.
- Surprisingly, it even lags behind its neighbouring countries like Nepal (78th), China (64th), Bangladesh (118th), Pakistan (108th) and Sri Lanka (112th).
- At the very bottom of the World Happiness Report is Afghanistan at 137th position.

UN Sustainable Development Solutions Network (SDSN)-

- It was set up in 2012 under the auspices of the UN Secretary-General.

- It mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement.
- It works closely with United Nations agencies, multilateral financing institutions, the private sector, and civil society.
- It is guided by a Leadership Council, which brings together global sustainable development leaders from all regions and all sectors, including civil society, public, and private sectors.
- SDSN Secretariat: Until 2016, the SDSN Secretariat was hosted by the Earth Institute at Columbia University. Since July 2016, the SDSN Secretariat and the SDG Academy have been hosted by the SDSN Association, a non-profit organization.
- It has offices in New York, Paris, and Kuala Lumpur.

3.13 Government removed the LTCG tax benefit from debt mutual funds

In news- The government has recently passed amendments to the Finance Bill 2023. One of the major highlights was removing the long-term capital gains (LTCG) tax benefit from debt mutual funds.

What is LTCG?

- LTCG is 10% for gains in stocks and equity mutual funds. It is 20% for gains in real estate, debt funds and other assets along with the benefit of indexation.
- Assets held before the specified holding periods are subject to Short Term Capital Gains Tax (STCG). This is generally imposed at slab rate.
- There was no LTCG on stocks and mutual funds before 2018, however Budget 2018 introduced LTCG of 10% for these assets.

Key amendments-

- According to the amendments announced by Union Minister of Finance, **debt mutual funds having not more than 35 per cent invested in equity shares would be taxed** at the income tax slab level.
- In effect, **they will be treated as short-term capital gain (STCG)**, in much the same way as bank fixed deposits (FDs).
- **At present, debt mutual funds are treated as long-term investments** if held for three years and taxed as long-term capital gains (LTCG) at 20 per cent with indexation benefit.
- If held for less than three years, they are treated as STCG and taxed in accordance with the investor's income tax slab.
- This is in addition to taxation of market linked debenture proposed in the original bill.
- The changes will come into effect from April 1, 2023 onwards.

Effects of these changes-

- According to experts, the change could lead to people shifting to safer bank FDs because of two reasons.
- FDs are safer than debt mutual funds as they offer guaranteed returns unlike the later which are subject to market conditions.
- Second, the similar taxation of debt funds to FDs have now robbed debt funds of the taxation benefit they enjoyed over FDs.
- Pure debt fund will lose its attraction over fixed deposits as far as tax benefits are concerned. Further life insurance products would be superior to debt mutual funds for annual investments up to Rs. 5 lakh.
- The new regulations may impede the development of India's debt capital market to some extent in this way. However, this amendment shall only be applicable in respect of investments made post April 1, 2023 and there shall be no impact on investment made on or before March 31, 2023.

3.14 GST Appellate Tribunal (GSTAT)

In news- The Lok Sabha has recently passed Finance Bill, 2023 with 64 amendments, including one that seeks to set up the much-awaited GST Appellate Tribunal (GSTAT).

About GSTAT-

- It will **deal with tax disputes**, and also **lessen the burden on the higher judiciary**, which has repeatedly sought the institution of such a body.
- The constitution of GSTAT has been pending since the new indirect tax regime was launched on July 1, 2017.
- The **amended Finance Bill, 2023 proposed substitution of section 109 of the Central GST Act in order to facilitate creation of the GSTAT** and its benches.
- **As per the bill, the Government shall, on the recommendations of the Council, by notification, establish** an Appellate Tribunal known as the Goods and Services Tax Appellate Tribunal for hearing appeals against the orders passed by the Appellate Authority or the Revisional Authority.
- According to the legislation, **GSTAT will have a “Principal Bench” in New Delhi**, with the President, a judicial member, a technical member (centre) and a technical member (state). **It will also have state benches .**
- **The Principal Bench and each state Bench would have two judicial members and two technical members each**, with equal representation from the Centre and states in the case of technical members.
- According to the proposed changes, **the cases involving the issue of the place of supply would be heard by the Principal Bench only.**
- The tribunal will help quickly resolve disputes relating to the key indirect tax and boost tax collections, addressing concerns of both industry and tax authorities.
- **A four-member search and selection committee, headed by either the Chief Justice of the Supreme Court or his representative judge from the SC**, will be tasked with the appointment of members (except for technical members from states) to the Benches.
- The panel will include the President of the GSTAT (one of the judicial members of the Principal Bench), a union government secretary and a state chief secretary nominated by the Council. The chairperson will have a casting vote.

Note:

- Chapter XVIII of the CGST Act 2017 provides for the Appeal and Review Mechanism for dispute resolution under the GST Regime.
- Section 109 of this Chapter under CGST Act empowers the Central Government to constitute, on the recommendation of Council, by notification.

3.15 Rubber board's mobile app–CRISP

In news- Rubber Board has launched a mobile app–CRISP to inform growers about rubber cultivation and provides solutions online.

About the app-

- **CRISP (Comprehensive Rubber Information System Platform)** has been **developed by the Rubber Research Institute of India (RRII)** in collaboration with the **Digital University of Kerala**.
- The **RRII established in 1955 is located on a hillock in the eastern suburb of Puthuppally, Kottayam**, eight kilometres from the town.
- With the help of CRISP, the farmers will now be able to receive recommendations of RRII on production and productivity enhancement, reduction of cultivation cost, maintenance of soil fertility, disease control measures, etc.
- Currently, these facilities are reaching the farmers through traditional extension methods.

- Many of these recommendations are location specific and can be linked to geo-information systems and delivered directly to the farmers.

The Rubber Board-

- It is a **statutory body constituted by the Government of India**, under the Rubber Act 1947, for the overall development of the rubber industry in the country.
- **Head Office is in Kottayam, Kerala.**
- **It functions under the Ministry of Commerce & Industry** of the Government of India.
- The Board has a **Chairman appointed by the Central Government.**
- The Board shall, in every year, elect a member to be a Vice Chairman.
- The Central Government may appoint an Executive Director to exercise such powers and perform such duties under the direction of the Board as may be prescribed or as may be delegated to him by the Chairman.
- The Executive Director shall be responsible for the proper functioning of the Board and the implementation of its decisions and discharge of its duties under the Rubber Act, 1947.

Note:

- Commercial cultivation of natural rubber was introduced in India by the British, although the experimental efforts to grow rubber on a commercial scale in India were initiated as early as 1873 at the Botanical Gardens, Calcutta.
- The first commercial Hevea plantations in India were established at Thattekadu in 1902.

3.16 IMF bailout

In news- The International Monetary Fund (IMF) recently confirmed a \$3 billion bailout plan for Sri Lanka's struggling economy.

What is a bailout?

A bailout is the **provision of financial help to a corporation or country** which otherwise would be on the brink of bankruptcy.

About IMF bailout-

- The IMF basically lends money, often in the form of special drawing rights (SDRs), to troubled economies that seek the lender's assistance.
- SDRs simply represent a basket of five currencies, namely the U.S. dollar, the euro, the Chinese yuan, the Japanese yen, and the British pound.
- The IMF carries out its lending to troubled economies through a number of lending programs such as the extended credit facility, the flexible credit line, the stand-by agreement, etc.
- Countries receiving the bailout can use the SDRs for various purposes depending on their individual circumstances.
- The IMF usually imposes conditions on countries before it lends any money to them.
- For example, a country may have to agree to implement certain structural reforms as a condition to receive IMF loans.
- The IMF's conditional lending has been controversial as many believe that these reforms are too tough on the public.

Why countries seek an IMF bailout?

- Countries seek help from the IMF usually when their **economies face a major macroeconomic risk**, mostly in the form of a **currency crisis**.

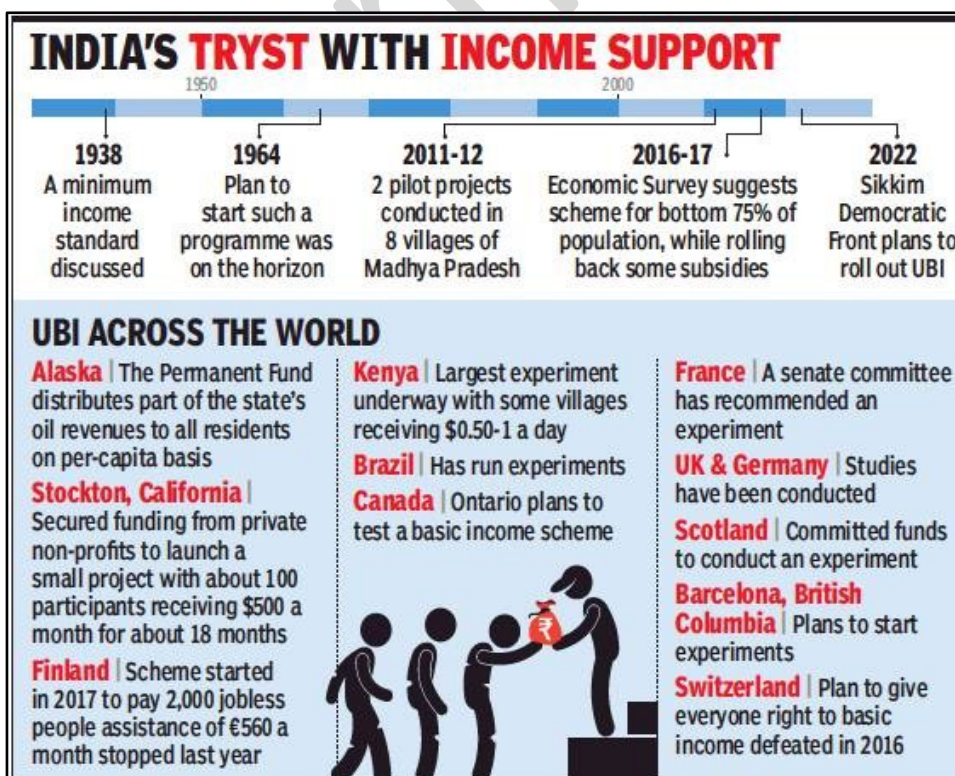
- Such currency crises are **generally the result of gross mismanagement of the nation's currency by its central bank**, often under the covert influence of the ruling government.
- **Central banks may be forced by governments to create fresh money out of thin air to fund populist spending.**
- Such spending eventually results in a rapid rise of the overall money supply, which in turn causes prices to rise across the economy and the exchange value of the currency to drop.
- **A rapid, unpredictable fall in the value of a currency** can destroy confidence in said currency and affect economic activity as people may turn hesitant to accept the currency in exchange for goods and services.
- **Foreigners may also be unwilling to invest in an economy** where the value of its currency gyrates in an unpredictable manner.
- Meanwhile, **a country's domestic economic policies can also have an adverse impact on its currency's exchange rate and foreign exchange reserves.** For example, economic policy that imperils productivity can affect a country's ability to attract the necessary foreign exchange for its survival.

3.17 Tamil Nadu announces Universal Basic Income scheme

In news- State government of Tamil Nadu has announced Universal basic income of ₹1,000 for women beneficiaries.

Key features of the scheme-

- The scheme is named "Magalir Urimai Thogai Thittam" (Women's Right to Income Scheme), which is the government's recognition of women's hard work.
- Two primary objectives of the scheme are to recognise the life-long relentless selfless work of women and to eradicate poverty by complementing their livelihood with an annual aid of ₹12,000 and further to ensure their self-respect and improve their standard of living in the society.
- The Rs 1,000 monthly payout would be directly deposited in the bank accounts of beneficiaries, who shall be the women who need it.
- Beneficiaries of the scheme include: Road-side women vendors, fisherwomen, those into construction work, workers in minor commercial establishments, domestic helps employed in multiple households.
- The scheme would be implemented from September 15, 2023.



What Is Universal Basic Income (UBI)?

- It is a government program in which every adult citizen receives a set amount of money regularly.
- The goals of a basic income system are to alleviate poverty and replace other need-based social programs that potentially require greater bureaucratic involvement.
- The idea of universal basic income has gained momentum in the U.S. as automation increasingly replaces workers in manufacturing and other sectors of the economy.

3.18 New rules on UPI transactions

In news- The National Payments Corporation of India (NPCI) has proposed new rules for UPI transactions.

What are the new rules?

- From April 1, some Unified Payments Interface (UPI) transactions of over ₹ 2,000 will attract an interchange fee of 1.1 per cent.
- According to NPCI, the **interchange fees will only be applicable for the prepaid payment instruments (PPI) merchant transactions** and there is **no charge to customers**.
- **The interchange fee varies for the different categories of merchants.** It ranges from 0.5% to 1.1% and a cap is also applicable in certain categories.
- The **move is reportedly aimed at increasing revenue for banks and payment service providers**, who have been struggling with the high cost of UPI transactions.
- **Interchange will not be applied in the case of peer-to-peer (P2P) and peer-to-peer-merchant (P2PM) transactions.**
- There is also **no charge for the bank account to bank account-based UPI payments** or normal UPI payments.
- The interchange charges introduced are **only applicable for the PPI merchant transactions** and there is no charge to customers, and it is further clarified that there are no charges for the bank account to bank account-based UPI payments (i.e. normal UPI payments).
- After the new rules, customers will have the choice of using any bank account, RuPay Credit card and prepaid wallets on UPI-enabled apps.

What does PPI payment mean?

- PPI payment simply means **transactions through digital wallets**. For instance: any payment made through PayTM wallet or PhonePe wallet will charge merchants some amount. NPCI is calling it an interchange fee.

3.19 What are Multilateral Development Banks?

In news- Under the aegis of India's G20 Presidency, a G20 Expert Group on Strengthening Multilateral Development Banks (MDBs) has been constituted.

The objectives of the Expert Group are:

- A roadmap for an updated MDB ecosystem for the 21st century, with milestones and timelines, touching upon all aspects of MDB evolution so that MDBs are better equipped to finance a wide range of SDG and transboundary challenges such as climate change and health.
- An evaluation of various estimates regarding the scale of funding required by and from MDBs for addressing their and member countries' increased financing needs for SDG and transboundary challenges.
- Mechanisms for coordination among MDBs for them to address and finance global development and other challenges more effectively.

About Multilateral Development Bank (MDB)-

- It is an **international financial institution chartered by two or more countries** for the purpose of encouraging economic development in poorer nations.
- Multilateral development banks **consist of member nations from developed and developing countries**.
- MDBs **provide loans and grants to member nations** to fund projects that support social and economic development, such as the building of new roads or providing clean water to communities.
- Multilateral development banks are subject to international law.
- They and other international financial institutions, **such as the International Monetary Fund (IMF), originated in the waning days of World War II when the United States and its allies established the Bretton Woods institutions** to rebuild war-ravaged nations and stabilize the post-war international financial system.
- **The World Bank**, which has been semi-officially dominated by the U.S. since its founding, is one of these institutions.
- Unlike commercial banks, **MDBs do not seek to maximize profits for their shareholders**. Instead, they prioritize development goals, such as ending extreme poverty and reducing economic inequality.

4. ENVIRONMENT

4.1 IEA's annual Methane Global Tracker report

In news- International Energy Agency's (IEA) has published the annual Methane Global Tracker report recently.

Key findings-

- According to the report, fossil fuel companies emitted 120 million metric tonnes of methane into the atmosphere in 2022, only slightly below the record highs seen in 2019.
- It added that these companies have done almost nothing to curb the emissions despite their pledges to find and fix leaking infrastructure.
- The implementation of such measures would cost less than three per cent of the net income received by the oil and gas industry in 2022, but fossil fuel companies failed to take any substantial action regarding the issue.
- The energy sector accounts for around 40 percent of the total average methane emissions from human activity, as oil and natural gas companies are known to release methane into the atmosphere when natural gas is flared or vented.
- The greenhouse gas is also released through leaks from valves and other equipment during the drilling, extraction and transportation process.
- In the oil and gas sector, emissions can be reduced by over 75 per cent by implementing well-known measures such as leak detection and repair programmes and upgrading leaky equipment.
- Ultimately, reducing 75 per cent of the wastage of natural gas could lower global temperature rise by nearly 0.1 degree Celsius by mid-century.

How are methane emissions driving climate change?

- Methane is a greenhouse gas, which is responsible for 30 per cent of the warming since preindustrial times, second only to carbon dioxide.
- A report by the United Nations Environment Programme observed that over a 20-year period, methane is 80 times more potent at warming than carbon dioxide.

International Energy Agency-

- It is a **Paris-based autonomous intergovernmental organisation, established in 1974**, that provides policy recommendations, analysis and data on the entire global energy sector, with a recent focus on curbing carbon emissions and reaching global climate targets, including the Paris Agreement.
- It **was set up under the framework of the Organisation for Economic Co-operation and Development (OECD)** in the aftermath of the 1973 oil crisis to respond to physical disruptions in global oil supplies.
- In subsequent decades, the IEA's role expanded to cover the entire global energy system, encompassing traditional fuels such as gas, and coal as well as cleaner and fast-growing energy sources and technologies including renewable energy sources.
- **The core activity of the IEA is providing policy advice to its 31 member states**, as well as to its 11 Associated countries, which include Argentina, Brazil, China, India, Indonesia, South Africa, Ukraine, Singapore, Thailand, Egypt and Morocco to support their energy security and advance their transition to clean energy.
- Recently, it has focused in particular on supporting global efforts to accelerate clean energy transition, mitigate climate change, and reach net zero emissions.

4.2 Cultural burns by indigenous Australians

In news- New research by the University of the Sunshine Coast has found that traditional fire burning practices or 'cultural burns' by indigenous Australians can help protect the iconic koala.

About cultural burns-

- The 'cultural burns' were found to be cooler, lower and slower than 'hot fires.'
- Such fire activity encouraged the regeneration of suitable native plants.
- On the other hand, they controlled species like banksias and wattle to reduce the risk of fire reaching the canopy where koalas lived.
- The research results showed that there were no negative impacts on the densities or stress levels of the animals during or after the traditional burning method.
- The United Nations had taken note of burning practices and techniques of indigenous peoples around the world as a method to control wildfire incidents in a report of 2022 on increasing incidences of fires globally.
- It had cited the example of Australian Aborigines' use of fire to create mosaic landscapes for hunting and gathering purposes.
- This practice broke up the continuity of fuels and inhibited the extensive spread of wildfires.

About koala-

- A koala or koala bear is an arboreal herbivorous marsupial native to Australia.
- It is the only extant representative of the family Phascolarctidae and its closest living relatives are the wombats.
- It is easily recognisable by its stout, tailless body and large head with round, fluffy ears and large, spoon-shaped nose.
- Its fur colour ranges from silver grey to chocolate brown.
- According to fossil records, Koala species have inhabited parts of Australia for at least 25 million years. But today, only one species remains i.e., the Phascolarctos cinereus.
- They were classified as "vulnerable" only in 2012 by IUCN.
- They are found in the wild in the southeast and eastern sides of Australia in coastal Queensland, New South Wales, South Australia and Victoria.
- They inhabit open Eucalyptus woodland, the leaves of these trees make up most of their diet.
- They are asocial animals, and bonding exists only between mothers and dependent offspring.
- Because of its small brain, the koala has a limited ability to perform complex, unfamiliar behaviours.
- Its vision is not well developed, and its relatively small eyes are unusual among marsupials in that the pupils have vertical slits.

4.3 World Wildlife Day (WWD) 2023

In news- March 3 is known as World Wildlife Day (WWD), marked annually to draw attention to issues of conservation of flora and fauna.

About the day-

- In 2013, the United Nations General Assembly (UNGA) proclaimed March 3 as the UN World Wildlife Day to celebrate and raise awareness of protecting the world's wild animals and plants.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (**CITES**) **was signed in 1973 on this day.**
- March 3, 2023 marked the 50th anniversary of CITES' establishment.
- CITES is considered a landmark agreement on conservation that focuses on ensuring the sustainability of endangered species.
- **The theme for 2023 is 'Partnerships for Wildlife Conservation'.**

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (or CITES)-

- CITES is an international agreement between governments.
- Its aim is to **ensure that international trade in specimens of wild animals and plants** does not threaten the survival of the species.
- **Currently, there are 184 parties to the convention, including India.**
- **The CITES Secretariat is administered by UNEP** (The United Nations Environment Programme) and is located in **Geneva, Switzerland.**
- The Conference of the Parties to **CITES is the supreme consensus-based decision-making body** of the Convention and comprises all its parties.
- **The species covered under CITES are listed in three Appendices, according to the degree of protection they need.**
 1. Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted rarely, only in "exceptional circumstances", such as gorillas, and lions from India.
 2. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled to ensure their survival. For example, certain kinds of foxes and Hippopotamuses.
 3. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade, like the Bengal fox or the Golden Jackal from India.
- Different procedures are given category-wise to engage in the trade of species in each of the lists.
- In India, apart from the Union Ministry of Environment, Forests and Climate Change, the Wildlife Crime Control Bureau is a statutory body under the Ministry that is especially meant to combat organised wildlife crime in the country.
- It assists and advises the customs authorities in the inspection of the consignments of flora and fauna as per the provisions of the **Wild Life Protection Act of 1972**, CITES and the export and import policy governing items.

4.4 Certification of Forests

- It offers a **multi-layer audit system that seeks to authenticate the origin, legality, and sustainability of forest-based products** such as timber, furniture, handicraft, paper and pulp, rubber, and many more.
- **There are two major international standards** (there are a few other less widely accepted ones as well) for sustainable management of forests and forest-based products.
 - One has been developed by the Forest Stewardship Council, or FSC.
 - The other is the Programme for Endorsement of Forest Certifications, or PEFC.
- FSC certification is more popular and in demand, and also more expensive.
- **Organisations like FSC or PEFC are only the developers and owners of standards** — like, for example, the International Organisation of Standardisation (ISO) or Bureau of International Standards (BIS).

- They are not involved in the evaluation and auditing of the processes being followed by the forest managers or manufacturers or traders of forest-based products.
- The certification bodies often subcontract their work to smaller organisations. PEFC does not insist on the use of its own standards.
- Instead, like its name suggests, **it endorses the 'national' standards of any country if they are aligned with its own.**
- **Two main types of certification are on offer: forest management (FM) and Chain of Custody (CoC).**
- **CoC certification is meant to guarantee the traceability of a forest product** like timber throughout the supply chain from origin to market.

Forest certification in India-

- The forest certification industry has been operating in India for the last 15 years.
- **Currently, forests in only one state i.e., Uttar Pradesh are certified.**
- **These standards have been developed by the New Delhi-based nonprofit Network for Certification and Conservation of Forests (NCCF).**
- Some other states too obtained certification, but subsequently dropped out.
- **The Bhamragad forest division in Maharashtra was the first to obtain FSC certification for forest management.**
- Later, two divisions in Madhya Pradesh and one in Tripura also obtained FSC certification. However, all of these expired over time.
- Many agroforestry projects, such as those run by ITC, and several paper mills too have forest management certification. The forests here are meant for captive use of the industry.

India-specific standards-

- India allows the export of only processed wood, not timber.
- The demand for wood in India is 150-170 million cubic metres annually, including 90-100 million cubic metres of raw wood.
- The rest goes mainly towards meeting the demand for paper and pulp.
- India's forests contribute just about five million cubic metres of wood every year.
- Almost 85 percent of the demand for wood and wood products is met by trees outside forests (ToF). About 10 per cent is imported.
- Since ToF are so important, new certification standards are being developed for their sustainable management.
- PEFC already has certification for TOF and in 2022, FSC came up with India-specific standards that included certification for ToF in June 2022.

4.5 151st anniversary of Yellowstone National Park

In news- Yellowstone National Park in the US has celebrated its 151st anniversary recently.

About Yellowstone National Park-

- It is a national park located in the western United States, largely in the northwest corner of Wyoming and extending into Montana and Idaho.
- **It spans an area of over 9,000 sq. km comprising lakes, canyons, rivers, iconic geothermal features** such as the Old Faithful geyser, and mountain ranges.
- It was established by the U.S. Congress on March 1, 1872.
- **Native Americans were hunting and gathering here for at least 11,000 years.** They were pushed out by the government after the park was established.
- In the lead up to Yellowstone becoming a national park, **three major expeditions** – in 1869, 1870 and 1871 – raised public awareness of the area's natural beauty.
- The last of these, known as the Hayden expedition, was particularly important.

- Yellowstone was the **first national park in the U.S. and is also widely held to be the first national park in the world.**
- The park is **known for many geothermal features, especially Old Faithful geysers.**
- It is **situated in a region that has been volcanically and seismically active for tens of millions of years.**
- **Tectonic movement of the North American Plate** has thinned Earth's crust in the area, forming a hot spot (a place where a dome of magma, or molten rock, comes close to the surface).
- While it represents many types of biomes, **the subalpine forest is the most abundant.**
- **It is part of the South Central Rockies forest ecoregion.**
- **Yellowstone Lake** is **one of the largest high-elevation lakes in North America** and is centered over the Yellowstone Caldera, the largest supervolcano in North America.
- **Over half of the world's geysers and hydrothermal features are in Yellowstone,** fueled by this ongoing volcanism.
- In 1978, Yellowstone was named a **UNESCO World Heritage Site.**
- **The rivers of the Snake-Columbia basin, Green-Colorado basin,** and Missouri River Basin all begin as snow on the Continental Divide as it weaves across Yellowstone's peaks and plateaus.
- Grizzly bears, wolves, and free-ranging herds of bison and elk live in this park.
- The Continental Divide of North America runs diagonally through the southwestern part of the park.
- The **highest point in the park is atop Eagle Peak and the lowest is along Reese Creek.**
- The **most prominent summit on the Yellowstone Plateau is Mount Washburn.**
- **It has one of the world's largest petrified forests,** trees which were long ago buried by ash and soil and transformed from wood to mineral materials.

4.6 Migration of great seahorses

In news- According to a new study, the *Hippocampus kelloggi*, one of 12 species of fish with a horse-like head found in the Indo-Pacific region, could be migrating toward coastal Odisha due to fishing pressures.

Key findings-

- **Extensive fishing off the Coromandel coast** could be forcing the great seahorse to migrate laboriously toward Odisha.
- **Fishing is less intense in the Bay of Bengal off the Odisha coastline.**
- But the shallow coastal ecosystem of the eastern Indian State may not be the new comfort zone for the fish with a horse-like head.
- The study was based on a specimen of a juvenile great seahorse caught in a ring net and collected from the Ariyapalli fish landing centre in Odisha's Ganjam district.
- But the **great seahorse is not migrating in large numbers,** as the Odisha coast does not have coral reefs or seagrass meadows that the species can call home, except within the Chilika region.
- Despite the ban on fishing and trading activities on seahorses from 2001, clandestine fishing and trading still take place in India.

About seahorses-

- A seahorse is any of 46 species of small marine fish in the genus *Hippocampus*.
- **Having a head and neck suggestive of a horse,** seahorses also feature segmented bony armour, an upright posture and a curled prehensile tail.
- **Seahorses are mainly found in shallow tropical and temperate salt water** throughout the world, from about 45°S to 45°N.
- **They live in sheltered areas such as seagrass beds, estuaries, coral reefs, and mangroves.**
- **Seahorses range in size from 1.5 to 35.5 cm.**
- Although **they are bony fish, they do not have scales,** but rather thin skin stretched over a series of bony plates, which are arranged in rings throughout their bodies.
- Each species has a distinct number of rings. **The armor of bony plates also protects them against predators,** and because of this outer skeleton, **they no longer have ribs.**

- **The coastal ecosystems of India house nine out of 12 species found in the Indo-Pacific, one of the hotspots of seahorse populations.**
- **These nine species are distributed along the coasts of eight States and five Union Territories from Gujarat to Odisha, apart from Lakshadweep and the Andaman and Nicobar Islands.**
- **The population of the great seahorse, which is among the eight species tagged ‘vulnerable’, is declining due to its overexploitation for traditional Chinese medicines and as ornamental fish, combined with general destructive fishing and fisheries bycatch.**
- **Seahorses are poor swimmers** but migrate by rafting clinging to floating substrata such as macroalgae or plastic debris for dispersal by ocean currents – to new habitats for successful maintenance of their population.

4.7 Asia Energy Transition Initiative (AETI)

In news- Japan is looking forward to supporting India’s clean energy transition by including the country in the AETI.

About AETI-

- Japan’s AETI, launched in 2021, initially supported the Association of South East Asian Nations (ASEAN) countries towards achieving net zero emissions, including financial assistance of \$10 billion for renewable energy.
- It seeks to achieve both sustainable growth and carbon neutrality in Asia, where energy demand will continue to grow, various and pragmatic energy transitions, that reflect different circumstances of each country, and utilise all energy sources and all technologies, are essential.
- The Government of Japan announced the AETI, which includes a variety of support for realising energy transitions in Asia.
 - Support drawing roadmaps for energy transitions.
 - Asian version of transition finance.
 - US\$10 billion finance support (e.g.) renewable energy, energy efficiency, LNG etc.
 - Technology development and deployment, utilizing the achievement of 2 trillion yen fund (e.g.) Offshore wind power generation, Fuel-ammonia, Hydrogen etc.
 - Capacity building of decarbonisation technologies, and knowledge sharing through Asia CCUS network.

India- Japan Clean Energy Partnership-

- In March 2022, India’s external affairs ministry published the specifications of the Clean Energy Partnership between India and Japan.
- This partnership would work on the agenda covered in the India-Japan Energy Dialogue 2007 and will subsequently expand into areas of mutual benefit.
- India has set an ambitious target of achieving net zero by 2070. Japan has initiated a goal of becoming net zero by 2050.
- The first India-Japan environment week was held in New Delhi from January 12-13, 2023.
- India and Japan have now taken over the presidency of G20 and G7, respectively and for India, Lifestyle for Environment (LiFE) is one of the most important priorities during the G20 presidency.
- The Quadrilateral Security Dialogue, commonly known as the Quad, between Australia, India, Japan and the United States has also announced the Clean-Hydrogen Partnership for technology development,
- Japan has also raised its renewable energy targets with an aim for 36-38 per cent of renewables in its energy mix by 2030 based on the Strategic Energy Plan released in October 2021.
- Japan is the fifth largest energy consumer globally and continues to rely heavily on fossil fuels consisting of 84.8 per cent of the total primary energy supply (TPES) in 2020.
- The Feed-in Premium (FiP) scheme by the government of Japan was implemented in April 2022 and is expected to improve the country’s energy transition and complement the existing FiT scheme, which has been in the market since 2012.

4.8 India to launch International Big Cat Alliance (IBCA)

In news- India has proposed to launch a mega global alliance under its leadership to protect big cats and assured support over five years with guaranteed funding of \$100 million (over Rs 800 crore).

About IBCA-

- Proposed alliance will work towards the **protection and conservation of the seven major big cats** — *tiger, lion, leopard, snow leopard, puma, jaguar and cheetah*.
- Its purpose is to **provide a platform for dissemination of information on benchmarked practices**, capacity building, resources repository, research and development, awareness creation etc.
- **Its major activities will include** advocacy, partnership, knowledge e-portal, capacity building, eco-tourism, partnerships between expert groups and finance tapping.
- The IBCA's governance **structure will comprise a General Assembly consisting of all member countries**, a council of at least seven but not more than 15 member countries elected by the General Assembly for a term of 5 years, and a Secretariat.
- Upon the recommendation of the Council, **the General Assembly will appoint the IBCA Secretary General for a specific term**.
- After the first five years, which will be supported by India's total grant assistance of \$100 million, the IBCA is expected to sustain itself through membership fees, and contributions from bilateral and multilateral institutions and the private sector.
- **Membership to the alliance will be open to 97 range countries**, which contain the natural habitat of these big cats, as well as other interested nations, international organisations, etc.
- **The alliance is inspired by the arrival of cheetahs in 2022 from Namibia.**

4.9 New Global Greenhouse Gas Monitoring Infrastructure

In news- The U.N.'s World Meteorological Organisation has come up with a new Global Greenhouse Gas Monitoring Infrastructure.

About Global Greenhouse Gas Monitoring Infrastructure-

- It aims to provide better ways of measuring planet-warming pollution and help inform policy choices.
- It will integrate space-based and surface-based observing systems, and seek to clarify uncertainties about where greenhouse gas emissions end up.
- It should result in much faster and sharper data on how the planet's atmosphere is changing.
- It will fill critical information gaps and support action to reduce heat-trapping gases which are fuelling temperature increase.
- It seeks to build on WMO's experience in coordinating international collaboration in weather prediction and climate analysis and on long-standing activities in greenhouse gas monitoring, research and provision of related services under the auspices of the Global Atmosphere Watch established in 1989 and its Integrated Global Greenhouse Gas Information System (IG3IS).
- Currently, most GHG monitoring undertaken globally relies heavily on research capabilities and research funding.

What is Global Atmosphere Watch(GAW) programme?

- WMO's GAW programme **focuses on building a single coordinated global understanding of atmospheric composition**, its change, and helps to improve the understanding of interactions between the atmosphere, the oceans and the biosphere.
- It coordinates high-quality atmospheric composition observations across global to local scales to drive high-quality and impact science while co-producing a new generation of research enabled products and services.
- About 100 countries are participating in the GAW Programme.

- Some components of the GAW observational network are recognized as comprehensive and baseline networks of the Global Climate Observing System (GCOS).
- The GAW Programme operates according to the GAW Implementation Plan 2016-2023.
- One major aspect of the GAW mission is to organize, participate in and coordinate assessments of the chemical composition of the atmosphere on a global scale.

4.10 Regulation of synthetic colours & other colours in India

In news- On the occasion of Holi, one should know about organic and synthetic colours & how these colours are regulated in India.

Cause of concern-

- Genuinely natural gulaal or colour is made from dried flower petals, vegetable dyes, starch, leaves, etc.
- However, some manufacturers also use food-grade colours, which, though technically fit for consumption, are synthetic.
- **Not all manufacturers display any accreditation or hallmark to prove that their product is all it claims to be.**
- **While some packets do state they are certified by National Accreditation Board** for Testing and Calibration Laboratories or the International Organization for Standardization (ISO), others simply say they are “lab-tested”.

FSSAI permitted food colours and flavours-

Only the FSSAI permitted food colours and flavours can be used in food items.

- Erythrosine- It imparts the food a red colour,
- β -carotene: It is commonly called C.I. natural yellow 26 and belongs to the class of carotenoids.
- Chlorophyll: Chlorophyll, also known as C. I. Natural green 3, is a plant-based green pigment used as a colouring material for foods.
- Riboflavin: It is yellow to orange-yellow and approved for the use in food products as a colourant.

Why are synthetic colours unsafe?

- Multiple studies over the years have shown that synthetic colours have chemicals that can harm your skin, respiratory tract, and eyes.
- These chemicals also harm the environment, adding particulate matter (PM) to the air and taking years to decompose.
- Some of the popular colors and their ingredients are black (lead oxide), green (copper sulfate and malachite green), silver (aluminum bromide), blue (Prussian blue), and red (mercury sulfate).
- The dry colors, commonly known as ‘gulals’ or ‘abeer’, have two components – a colorant and a base, both of which may cause cutaneous problems.
- Mica dust is often added as a sparkling agent to the dry powders that can lead to multiple microtraumas of skin and predisposition to infections.
- Use of contaminated starch or wheat flour can further increase the chances of skin or ocular infections.
- Particulate matter are basically tiny pieces of solids or liquids suspended in the air that can get into your eyes, nose, throat, and lungs, causing infections and breathing trouble.
- A 2016 study published in the National Library of Medicine, titled ‘Holi colours contain PM10 and can induce pro-inflammatory responses.

About Holi festival-

- Holi, also known as the Festival of Colours, Festival of Spring, and Festival of Love, is one of the most popular and significant festivals in Hinduism.
- It celebrates the eternal and divine love of the god Radha and Krishna.

- The day also signifies the triumph of good over evil, as it commemorates the victory of Vishnu as Narasimha Narayana over Hiranyakashipu.
- The festival is also an invocation for a good spring harvest season.
- It lasts for a night and a day, starting on the evening of the Purnima (Full Moon Day) falling in the Hindu calendar month of Phalgun, which falls around the middle of March in the Gregorian calendar.

National Accreditation Board for Testing and Calibration Laboratories (NABL)-

- It is a Constituent Board of Quality Council of India.
- NABL has been established with the objective to provide Government, Industry Associations and Industry in general with a scheme for third-party assessment of the quality and technical competence of testing and calibration laboratories.
- In order to achieve this objective, NABL provides laboratory accreditation services to laboratories that are performing tests / calibrations in accordance with ISO/IEC 17025:2005 and ISO 15189:2012 for medical laboratories.

4.11 Draft UN High Seas Treaty finalized

In news- Recently, a draft international agreement referred to as the UN High Seas Treaty was finalised to govern the conduct of governments in 'open seas'.

Key highlights of the draft-

- Though this agreement is still in the draft stage, **when it is ratified by countries (requiring them to also pass it in their own Parliaments), it will become legally binding.**
- Also referred to as the '**Paris Agreement for the Ocean**', the treaty to **deal with Biodiversity Beyond National Jurisdiction** has been under discussion for several years and the **talks first began in 2004.**
- The 54-page draft (officially the '**Draft agreement under the United Nations Convention on the Law of the Sea**) seeks to **ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction**" through the Convention and to further international cooperation.
- **Some important aspects mentioned are:**
 - **The polluter-pays principle**, which is an important concept in environmental laws. It means those causing pollution in a particular region are responsible for its reduction, such as a factory owner having to compensate for air pollution.
 - **Building ecosystems' resilience against adverse effects of climate change** and ocean acidification, and also maintaining and restoring ecosystem integrity.
 - **Parties should take legislative, administrative or policy measures** with the aim of ensuring that traditional knowledge associated with marine genetic resources in areas beyond national jurisdiction held by Indigenous Peoples and local communities shall only be accessed with their free, prior and informed consent.
 - **Full recognition of the special circumstances of small island developing States** and of least developed countries; Acknowledgement of the special interests and needs of landlocked developing countries.
 - **Parties are to promote international cooperation in marine scientific research** and in the development and transfer of marine technology.
- Agreements on the actions of parties are to be taken based on consensus.
- "Marine protected area" is a term used to mean a geographically defined marine area that is designated and managed to achieve specific long-term biodiversity conservation. This would limit activities such as fishing, drilling, etc.
- The draft often mentions a clearing-house mechanism that will be a centralised platform to enable parties to access, provide and give information on activities taking place in relation to the agreement.
- A Secretariat and a Global Environment Facility trust fund are other relevant bodies mentioned.

Need for such a treaty-

- **The draft treaty was negotiated under the United Nations Convention on Laws of the Sea (UNCLOS) of 1982** which governs the rights of countries regarding marine resources.
- **As there was no treaty for conserving the health of vast swathes of the earth's oceans, a UN resolution in 2017 set 2022 as the deadline for a new one.**
- **The proposed treaty concerns the ocean existing beyond the Exclusive Economic Zones (EEZ)** that lie from the coast of a country to about 200 nautical miles (or 370 km into the sea), till where it has special rights for exploration. Waters beyond that are known as open seas or high seas.
- Currently, high **or open seas constitute two-thirds of the world's oceans, and only one per cent of them are legally protected.**
- At present, every country has the right to access open seas, resulting in large-scale drilling and trawling operations for catching fish and other animals for commercial purposes.
- A **High Ambition Coalition**, which now has more than 100 countries including India, the US, and the UK, came about and put the focus on **'30x30' goals – protecting 30 percent of the ocean by 2030.**
- Additionally, the **UN Biodiversity Conference, COP15**, which concluded in Montreal, Canadian 2022, saw countries agreeing on the need for **protecting 30 percent of the planet's lands, coastal areas and inland waters by the end of the decade.**
- The Kunming-Montreal Global Biodiversity Framework (GBF) was adopted following a four-year consultation process.

4.12 Rare moth species spotted after a century

In news- Two researchers from Tamil Nadu have spotted a rare moth species for the first time in India in the buffer zone of Kalakkad–Mundanthurai Tiger Reserve (KMTR) after it was last sighted 127 years ago - at Trincomalee in Sri Lanka in 1893.

About the species-

- ***Mimeusemia ceylonica* is a moth species belonging to the subfamily Agaristinae and family Noctuidae.**
- It was first illustrated and described by English entomologist George Hampson in 1893.
- The species was rediscovered during a moth survey conducted on October 11, 2020 at the Agasthyamalai Community-based Conservation Centre (ACCC) situated in the buffer zone of KMTR, Tirunelveli district by Mr. Thalavaipandi and Mr. Prashanth.
- The researchers, Thalavaipandi Subbaiah of Ashoka Trust for Research in Ecology and the Environment (ATREE) and Prashanth Prakhalathan of Tamil Nadu Wetland Mission, are the first in the world to photograph the moth species *Mimeusemia ceylonica*, as only an illustration of the insect existed previously.

Note:

- It is a non-profit organisation founded by Kamaljit S. Bawa based in Bangalore.
- It generates interdisciplinary knowledge to inform policy and practice towards conservation and sustainability.
- ATREE's mission is to generate rigorous interdisciplinary knowledge for achieving environmental conservation and sustainable development in a socially just manner, to enable the use of this knowledge by policy makers and society, and to train the next generation of scholars and leaders.

4.13 International Day of Action for Rivers

In news-The International Day of Action for Rivers (IDAR) is observed every year on March 14 to raise awareness of how crucial rivers are to our daily lives.

About the day-

- The inaugural International Day of Action for Rivers was observed in March 1997.
- In September 1995, several organizations, including International Rivers Network (I.R.N.), India's Save the Narmada Movement (N.B.A.), Chile's Biobio Action Group (GABB), and European Rivers Network (ERN) came together and conducted a preparatory meeting in Brazil.
- As a result, they formed an international Organizing Committee headed by Brazil's Movement of People Affected by Large Dams (MAB).
- In March 1997, in Curitiba, Brazil, participants of the First International Meeting of People Affected by Dams adopted the International Day of Action Against Dams and For Rivers, Water and Life.
- Also, it was agreed to observe the day on March 14 in recognition of Brazil's Day of Action Against Large Dams.
- The theme of the 2023 International Day of Action for Rivers is "Rights of Rivers," which calls for the designation of rivers as a national treasure.
- The day was previously recognised as the International Day against Dams, for Rivers, Water, and Life.

4.14 Global Commission on the Economics of Water

In news- Global Commission on the Economics of Water(GCEW) has recently released a report warning that almost a third of people live in water-stressed countries.

What does the GCEW report say?

- Human activities – from destroying forests to burning gas, oil and coal for energy – are disrupting the rainfall the world depends on, fuelling huge economic, health and social stability threats.
- New tools allow scientists to track and quantify flows of water vapour rising from rainforests like the Amazon and falling in distant places such as Argentina's soybean and wheat fields, which are experiencing worsening drought as the Amazon shrinks.

About GCEW-

- The Commission is **convened by the Government of the Netherlands and facilitated by the Organisation for Economic Co-operation and Development (OECD).**
- **It was launched in May 2022 with a two-year mandate.**
- The GCEW is **executed by an independent and diverse group of eminent policy makers and researchers** in fields that bring novel perspectives to water economics, aligning the planetary economy with sustainable water-resource management.
- Its **purpose** is to make a significant and ambitious contribution to the global effort to spur change in the way societies govern, use and value water.
- The Commission is composed of experts, community leaders and practitioners from a broad range of science, policy and front-line practice expertise from all regions of the globe, bridging disciplines, cultures and worldviews.
- The Commission's first report will be launched on 22 March at the UN 2023 Water Conference and inform the launch of a "Pact for Voluntary Commitments".

4.15 Raccoon dogs linked to coronavirus pandemic

In news- A new analysis of genetic data collected from the Huanan Seafood Market in Wuhan, China, has linked coronavirus to raccoon dogs.

About Raccoon dogs-

- They are neither dogs nor raccoons. They belong to the canid family and are closely related to foxes.

- They are the only canids that hibernate during the winter. There are two species of raccoon dogs:
 1. *Nyctereutes procyonoides*, the **common raccoon dog** (the species that was in the Wuhan market) and
 2. *Nyctereutes p. viverrinus*, the **Japanese raccoon dog**.
- These animals, weighing around 16 pounds on average, are omnivores and relish food sources such as rodents and berries.
- Raccoon dogs are originally from East Asia and are commonly found in parts of China, Korea and Japan, where they are known as tanuki.
- They are also found in Europe, where they were first brought in by fur traders in the 1920s.
- Today, raccoon dogs are considered to be a threat to the local ecosystem in Europe and an EU report declared them “one of the most successful alien carnivores in Europe.”
- For decades, these animals have been farmed for their fur.
- Every year, according to the Humane Society of the United States, millions of them are killed in China, which is a leading producer of raccoon dog pelts.
- This serves as a perfect breeding ground for the spread of different diseases.

4.16 Sika deer

In news- A study has highlighted that 1,400-year religious protection of sika deer in Japan’s Nara have made them genetically unique.

Key highlights of the study-

- They live around Japan's sacred and famous Kasuga Taisha Shrine in the city of Nara, on the main island of Honshu.
- A **ban on their hunting for almost 1,500 years given their status in Shintoism, Japan’s national religion.**
- A team of researchers from Fukushima University found that the deer living near the shrine and the nearby Todaiji Buddhist Temple in Nara city **have unique mitochondrial deoxyribonucleic acid or DNA. MtDNA is only passed from mother to offspring.**
- They are **classified into eight populations spanning the Western, Central, and Eastern Kii regions.**
- **Female sika deer tend to migrate less and prefer to remain in their own natal habitat, Toshihito Takagi.**

Japan’s Nara and its link with sika deer-

- Nara has a long history and connection with sika deer, with classic Japanese poems about the deer being composed there 1,200 years ago.
- **These deer are revered in this area as the messengers of the (Shinto) gods in Kasugataisha Shrine.**
- Deer are **still considered sacred creatures by the people of Nara.**
- The sacred deer of Nara, which are **designated as national natural treasures, date back to the Nara Period of Japanese history**, when the Kasuga Grand Shrine was built in the city of Nara.

4.17 Synthesis Report by IPCC

In news- Intergovernmental Panel on Climate Change (IPCC) has released the final report, known as the Synthesis Report, of its sixth assessment cycle.

Key findings-

- **The world is on track to breach the 1.5 degree Celsius global warming limit by the 2030s**, which would cause irrevocable damage to the planet’s ecosystem and severely impact humans and other living beings.
- **Earth has already warmed an average of 1.1 degrees Celsius since the industrial age** while humans have been responsible for virtually all global heating over the last 200 years.
- The report said that vulnerable communities who have historically contributed the least to climate change are being disproportionately affected.

- **More than three billion people live in areas that are “highly vulnerable” to climate change.**
- India would also face these dire consequences of global warming and needs to take immediate action to curb the temperature.
- Given the present scale, scope and pace of global action, it’s most likely that Earth would overshoot this critical warming threshold somewhere in the following decade.
- The report categorically states that despite some advancements towards curtailing the greenhouse gas emissions into the atmosphere, “adaptation gaps exist, and will continue to grow at current rates of implementation.”
- Some of the barriers to adaptation have been limited resources, lack of private sector and citizen engagement, low climate literacy, lack of political commitment and low sense of urgency.
- The Synthesis Report **underlines the requirement of climate-resilient development, which is finding ways to adapt to climate change** or reduce greenhouse gas emissions that provide wider benefits.
- The **report urges governments and policymakers to increase finance to climate investments**, expand the clean energy infrastructure, reduce nitrogen pollution from agriculture, curtail food waste, adopt measures to make it easier for people to lead low-carbon lifestyles and much more.

4.18 Forest loss- India 2nd highest globally

In news- According to a report by Utility Bidder, a United Kingdom-based comparison site for energy and utility costs, India lost 668,400 ha forests in 5 years, 2nd highest globally.

Key findings-

- **India ranked the second highest for the rate of deforestation** after losing 668,400 hectares of forest cover in the last 30 years.
- **Brazil and Indonesia clocked in at first and third** respectively with Brazil recording 1,695,700 hectares and Indonesia recording 650,000 hectares of deforestation.
- **Zambia recorded the second biggest deforestation increase for the same period**, whereas **India also topped the chart for biggest increase in deforestation** between 1990 and 2020.
- India has had to compensate for the increase in residents — this has come at a cost in the way of deforestation.
- Brazil mostly lost the forests due to climate change.
- Palm oil cultivation in Indonesia led to the destruction.
- The study further revealed that cattle rearing was the leading cause of global deforestation, followed by the cultivation of oil seeds and logging is the third highest factor responsible for deforestation.

4.19 Green Tug Transition Programme (GTTP)

In news- Inaugurating India’s first National Centre of Excellence in Green Port & Shipping (NCoEGPS) in Gurugram, Haryana, the Union Minister of Ports, Shipping & Waterways (MoPSW) said that India aims at becoming ‘Global Hub for Green Ship’ building by 2030 with launch of GTTP.

What is GTTP?

- The programme will start with ‘Green Hybrid Tugs’, which will be powered by Green Hybrid Propulsion systems, and subsequently adopting non-fossil fuel solutions like (Methanol, Ammonia, Hydrogen).
- The target has been set for the initial Green Tugs to start working in all major ports by 2025.
- At least 50% of all the Tugs are likely to be converted into Green Tugs by 2030, which will considerably reduce emission as the country moves towards achieving sustainable development.

Country’s first National Centre of Excellence in Green Port & Shipping (NCoEGPS)-

- NCoEGPS is the result of a collaboration between the Ministry of Ports, Shipping & Waterways, Government of India and the Energy and Resources Institute (TERI).

- It aims to transform ports and shipping turn more Environment friendly.
- The centre is a major attempt by the Ministry towards realizing Prime Minister Shri Narendra Modi's Mission LIFE movement.
- With the NCoEGPS acting as the Nodal entity for the industry, the plan is afoot to make India as the 'Global hub for building Green Ships' by 2030.
- With these initiatives, the Centre is aimed at playing a crucial role towards achievement of UN's Sustainable Development Goal (SDG 14) to sustainably manage and protect marine & coastal ecosystems from pollution, conservation & sustainable use of ocean based resources.
- NCoEGPS will act as a technological arm of MoPSW for providing the needed support on Policy, Research and Cooperation on Green Shipping areas for Ports, DG Shipping, CSL and other institutions under the umbrella of MoPSW.
- It will also work towards identifying a fuel cell technology for long haul shipping as well as developing a regulatory framework for the transportation of hydrogen upto 700 bar pressure.
- It will also prepare detailed project reports on low energy consumption ports, and on an offshore platform for tapping solar energy, production, storage and usage of green hydrogen.

Note-

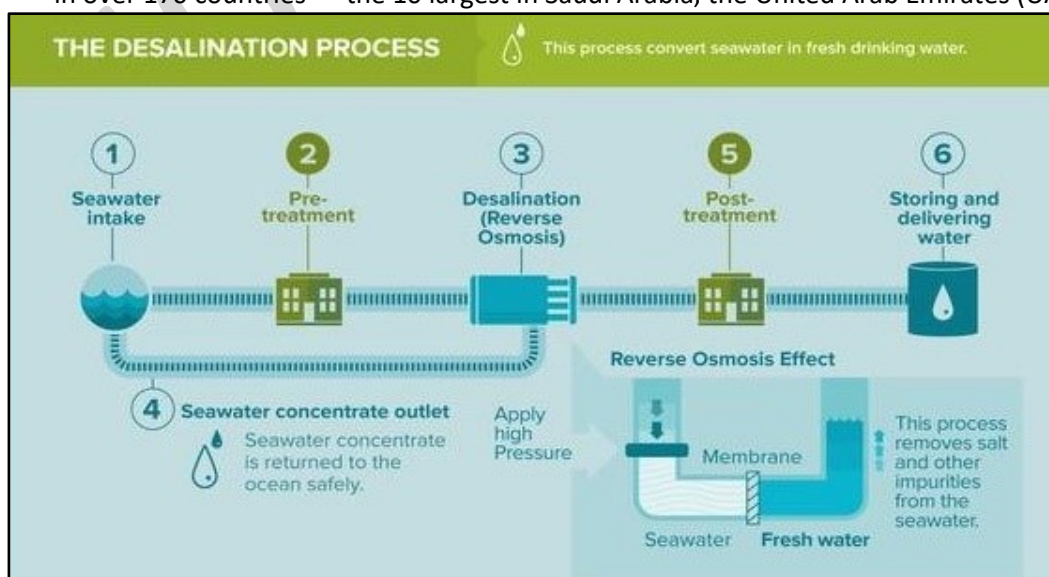
- The PM Gati Shakti - National Master Plan for Multi Modal Connectivity along with the Green Ports initiative has already accelerated the development of the green logistics supply chain in the country.
- The ports have also aimed to reduce Carbon emissions per ton of cargo handled by 30% by 2030.
- The Maritime Vision Document 2030, released by the Prime Minister of India is a 10 Year blueprint on India's vision of a sustainable Maritime sector and vibrant blue economy. India has been selected as the first country under the IMO Green Voyage 2050 project to conduct a pilot project related to Green Shipping.
- **The ministry has already identified Paradip Port, Deendayal Port and V.O. Chidambaram Port to be developed as Hydrogen Hubs - capable of handling, storing and generation of green hydrogen by 2030.**

4.20 Ocean desalination as a solution to water crisis

In news- Amid an 'imminent' global water crisis, the desalination of our oceans into drinking water has emerged as the ultimate means to drought-proof regions suffering water poverty.

About ocean desalination technology-

- The centuries-old concept uses thermal distillation or a reverse osmosis membrane to separate salt from the sea.
- The technique is now being utilized globally, with well over 20,000 desalination plants currently operating in over 170 countries — the 10 largest in Saudi Arabia, the United Arab Emirates (UAE) and Israel.



- **Around 47% of the world's desalinated water is produced in the Middle East and North Africa alone**, Manzoor Qadir, deputy director of the United Nations University Institute for Water, Environment and Health, told DW.
- These arid regions have few other options since they generate less than 500 cubic meters of water per capita through rainfall or river runoff — which is half the upper limit of water scarcity as defined by the UN. The United States, by contrast, produces 1,207 cubic meters of freshwater per person.
- Water poverty is set to worsen as populations increase along with temperatures, with Sub-Saharan Africa predicted to become a hotspot of water scarcity by 2050.
- It is a great option in terms of enhancing water resources & costs have “decreased tremendously” from around \$5 (\$4.69) per cubic meter (1,000 liters) in the 2000s to 50 cents today.
- For countries like Cyprus, there's no other option if they want to maintain this living standard. **The hottest and driest nation in the EU, Cyprus relies on desalination for 80% of its drinking water.**

Impacts of desalination on the marine and climate-

- Firstly, separating salt from water is **highly energy intensive**.
- A 2021 study on the environmental consequences of removing salt from seawater in Cyprus showed that the **four desalination plants in the country generate around 2% of its total greenhouse gas emissions**.
- The report notes that **desalinated water produced around 103 million cubic meters of toxic, high-salinity brine effluent** that impacted the Mediterranean seagrass ecosystem in the region of the discharge pipes.
- Increased salinity, combined with climate-driven temperature rise, **can cause a decrease in the dissolved oxygen content, resulting in conditions called hypoxia**.
- This **hypersaline water can sink to the ocean bed and kill marine microorganisms** that are vital to the entire food chain.
- In addition, **chemical compounds such as copper and chloride are also observable in the desalination pre-treatment process and can be toxic to organisms** in the receiving water, according to the report.

4.21 UN World Water Development Report 2023

In news- UNESCO on behalf of UN-Water released the UN World Water Development Report 2023 at the UN 2023 Water Conference in New York.

About the report-

- The United Nations World Water Development Report (WWDR) is the UN system's principal authoritative report on water, providing decision-makers with the critical knowledge and the tools necessary to formulate and implement sustainable water policies and actions.
- **Launched annually on World Water Day (March 22nd), this year's edition is titled 'Partnerships and cooperation for water'.**
- The production of the report, funded entirely by the Italian government, is coordinated and published by the UNESCO World Water Assessment Programme (WWAP) on behalf of the UN Water members and partners.

Key findings-

- According to the report, globally, 2 billion people (26% of the population) do not have safe drinking water and 3.6 billion (46%) lack access to safely managed sanitation.
- Between two and three billion people experience water shortages for at least one month per year, posing severe risks to livelihoods, notably through food security and access to electricity.
- The global urban population facing water scarcity is projected to double from 930 million in 2016 to 1.7–2.4 billion people in 2050.
- The growing incidence of extreme and prolonged droughts is also stressing ecosystems, with dire consequences for both plant and animal species.

- It said that nearly every water-related intervention involves some kind of cooperation. Cooperation is critical to achieving all water-related goals and targets. Inclusive stakeholder participation promotes buy-in and ownership.

Note:

- The UN held the UN 2023 Water Conference, the first of its kind event in the last 50 years, on March 22-24 in New York.
- It was co-hosted by the Governments of Tajikistan and the Netherlands with the support of UN-Water and the UNDESA secretariat .
- One of the main outcomes of the conference will be the adoption by the international community and stakeholders of Voluntary Commitments – which will be collected on the Water Action Agenda.

World Water Day -

- The United Nations General Assembly adopted World Water Day on December 22, 1992.
- The resolution was adopted, and thereon March 22 was declared to be celebrated as World Water Day. The first World Water Day Was observed on March 22, 1993.
- **The theme for World Water Day 2023 is "Accelerating the change to solve the water and sanitation crisis."**
- The theme emphasizes the requirement for stern action to protect the world from the water crisis.

4.22 State of India's Environment report 2023

In news- The Centre for Science and Environment and Down to Earth recently released the 2023 State of India's Environment report at India Habitat Centre (IHC), Delhi.

Key highlights of the report-

- The report covers an extensive gamut of subject assessments, ranging from climate change, agriculture and industry to water, plastics, forests and biodiversity.
- **Over 30,000 water bodies have been encroached on in the country and India is generating 150,000 tonnes of municipal solid waste every day** more than half of which is either dumped in landfills or remains unattended.
- The report has found that **four years and 11 months is the average duration of life lost to air pollution in India.**
- **Rural India is losing more years due to air pollution-related health issues than the urban belt. In fact, rural India needs 35 per cent more community health centres.**
- Air pollution, in fact, has shortened the lifespan of 43.4 percent of India's population by five years.
- Among the states, **Delhi saw the maximum plunge of 10 years in lifespan in the country.**
- **The lowest life span fall, however, was recorded in Ladakh,** where the life span was shortened by four months.
- In Haryana, the average life span reduction was seven years and five months.
- In Punjab, it was five years and 11 months.
- The edition also reports that **environmental crimes continue unabated,** courts need to decide on 245 cases every day to clear the backlog.
- India's overall global rank in meeting the United Nations-mandated Sustainable Development Goals (SDGs) has also slipped by nine places.
- In 2022, it stood at the 121st position, behind Bhutan, Sri Lanka, Nepal and Bangladesh; Pakistan was lagging close behind at 125.

Center for Science and Environment-

- It is a public interest research and advocacy organization based in New Delhi.

- CSE researches into, lobbies for and communicates the urgency of development that is both sustainable and equitable.
- Its aim is to raise these concerns, participate in seeking answers and more importantly in pushing for answers and transforming these into policy and so, practice.

4.23 Carbon credit trading scheme

In news- The Union Power Ministry has recently issued a draft 'Carbon Credit Trading Scheme(CCTS)' with an aim to set up a framework for the Indian carbon market and sought feedback from stakeholders.

Background-

- The parliament has passed the Energy Conservation (Amendment) Bill, 2022 and a notification for the same was issued in December 2022.
- One of the provisions of this amendment included empowering the central government to "specify carbon trading scheme", in consultation with the Bureau of Energy Efficiency (BEE).

Key features of the scheme-

- **The CCTS provides that an 'Accredited Carbon Verifier'** means an agency accredited by the BEE to carry out validation or verification activities in respect of the CCTS.
- The 'Carbon Credit Certificate' (CCC) means the certificate issued to the registered entity by the central government, or any agency authorised by it, in the CCTS where each certificate issued shall represent reduction or removal of one tonne of CO₂ equivalent (tCO₂e).
- The '**CCTS'** means the scheme for reduction or removal of green house gas (GHG) emissions notified by the central government.
- The scheme provides for **setting up of the Indian Carbon Market Governing Board (ICMGB)**.
 - The governance of the Indian Carbon Market (ICM) and direct oversight of its administrative and regulatory functioning shall vest in the governing board, to be called as ICMGB.
 - The ICMGB will be power and environment secretaries would be the ex-officio co-chairmen of ICMGB. It shall meet at least once in a quarter of every year, or as may be required.
 - It will recommend procedures for institutionalizing the Indian carbon market for the approval of the central government.
 - The board will also recommend to the central government the rules and regulations for the functions of ICM.
 - It will recommend methodologies to be used under a voluntary mechanism for the approval of the central government.
 - It will also recommend guidelines regarding sale of carbon credit certificates to outside India to the central government.
 - It will also approve projects under the voluntary mechanism and recommend the central government or its designated agency for issuance of carbon credit certificates (CCC).
 - It will approve the process/conditions for the crediting period/renewal/ retirement of CCC and have oversight of the administrative and regulatory functions of the Indian carbon market.
 - It will constitute any committee or working group as required in connection with ICM.
- The Bureau of Energy Efficiency shall be the administrator for the Indian carbon market and shall also work as the secretariat for the ICMGB.
- The Grid Controller of India Ltd shall be the registry for the Indian Carbon Market.
- The Central Electricity Regulatory Commission (CERC) shall be the regulator for the trading activities under the Indian carbon market.

5. ETHICS

5.1 What is Compassion Fatigue?

In news- Online depictions of tragic events, offensive news etc. have all contributed to an increase in compassion fatigue cases in recent years.

About compassion fatigue-

- Compassion fatigue is a condition characterized by emotional and physical exhaustion leading to a diminished ability to empathize or feel compassion for others, often described as the negative cost of caring.
- It is sometimes referred to as secondary traumatic stress.
- The phenomenon, known as compassion fatigue, or empathy burnout, causes us to lose our capacity to react and help those in need.
- Compassion is an unstable emotion that needs to be translated into action, or it withers.
- Violence in digital media formats like video games and films can desensitize people's responses to suffering or violence in real life.
- However, compassion fatigue can be reversed.

6. FOREIGN AFFAIRS

6.1 Windsor Framework replaces Northern Ireland Protocol

In news- The UK government under Prime Minister Rishi Sunak recently reached a landmark deal with the European Union (EU) on post-Brexit trade rules that will govern Northern Ireland.

Windsor Framework-

- **The 'Windsor Framework' will replace the Northern Ireland Protocol**, which had proved to be among the thorniest of Brexit fall-outs, creating problems both economic and political.
- **The framework has two crucial aspects –**
 - (a) **The introduction of a green lane and red lane system for goods** that will stay in Northern Ireland and those that will go to the EU respectively.
 - (b) The **'Stormont Brake'**, which allows Northern Ireland lawmakers and London to veto any EU regulation they believe affects the region adversely.
- British goods meant for Northern Ireland will use the green lane at the ports, and will be allowed to pass with minimal paperwork and checks.
- Physical checks will be conducted if the goods are deemed suspicious, in place of the routine checks now.
- Also, people in Northern Ireland can order goods online from Britain easily now.
- The same medicines, in the same packs, with the same labels, will be available across the UK, without the need for barcode scanning requirements under the old Protocol.
- The UK will license all medicines for all UK citizens, including novel medicines like cancer drugs, rather than the European Medicines Agency under the old Protocol.
- Goods destined for Ireland or the rest of the EU will have to take the red lane, with the attendant customs and other checks.

What is Stormont Brake?

The new Stormont Brake means the democratically elected Northern Ireland Assembly can oppose new EU goods rules that would have significant and lasting effects on everyday lives in Northern Ireland. For this, they will need the support of 30 members from at least two parties. The British government can then veto the law.

Background-

- After the UK left the European Union, Northern Ireland remained its only constituent that shared a land border with an EU-member, the Republic of Ireland.
- Since the EU and the UK have different product standards, border checks would be necessary before goods could move from Northern Ireland to Ireland.
- However, the two Irelands have had a long history of conflict, with a hard-fought peace secured only in 1998 under the **Belfast Agreement, also called the Good Friday agreement**.
- It was decided the checks would be conducted between Great Britain (England, Scotland and Wales) and Northern Ireland (which together with Great Britain forms the United Kingdom). **This was called the Northern Ireland Protocol**.
- **Under the protocol, Northern Ireland remained in the EU single market**, and trade-and-customs inspections of goods coming from Great Britain took place at its ports along the Irish Sea.
- The checks made trade between Great Britain and Northern Ireland cumbersome, with food products, especially, losing out on shelf life while they waited for clearance.

6.2 Fab 4 Chip alliance

In news- The "Fab 4" semiconductor alliance of **Taiwan, the United States, Japan and South Korea** held its first video meeting of senior officials recently.

About the alliance-

- The "Fab" in the name refers to a shorthand of an industry term for the fabrication plants where chips are made and used for virtually everything from fridges to fighter jets.
- The countries that are members of the group in the Indo-Pacific region are home to some of the world's largest contract chip makers.
- With the US as a chip design powerhouse and the other three countries having top capabilities in manufacturing and production of critical equipment and materials, the envisioned alliance would cover all major areas of the chips value chain.
- The first meeting of the group was held in September 2022.

What is a semiconductor or a chip?

- A semiconductor is a material product usually composed of silicon, which conducts electricity more than an insulator, such as glass, but less than a pure conductor, such as copper or aluminum.
- Their conductivity and other properties can be altered with the introduction of impurities, called doping, to meet the specific needs of the electronic component in which it resides.
- **Also known as semis**, they can be found in thousands of products such as computers, smartphones, appliances, gaming hardware, and medical equipment.

6.3 H3 N2 Influenza

In news- The Indian Council of Medical Research (ICMR) has said that rising cases of intense cough lasting for over a week coupled with fever, observed in most parts of the country, can be linked to Influenza A H3N2.

What is H3N2?

- Also known as the "Hong Kong flu," H3N2 is a type of influenza virus that can cause respiratory illness in humans.
- It is a subtype of the Influenza A virus and has been responsible for several influenza outbreaks in the past.
- Influenza A H3N2 variant viruses (also known as "H3N2v" viruses) with the matrix (M) gene from the 2009 H1N1 pandemic virus were first detected in people in July 2011.
- The viruses were first identified in U.S. pigs in 2010 and during 2011, 12 human infections with H3N2v were detected.
- Infections with H3N2v have mostly been associated with prolonged exposure to pigs at agricultural fairs.
- Limited human-to-human spread of this virus has been detected in the past as well but no sustained or community spread of H3N2v has been identified at this time.
- H3N2 influenza is highly contagious and can spread from person to person through droplets generated when an infected person talks, coughs, or sneezes.
- It can also spread by touching a surface contaminated with the virus and then touching one's mouth or nose.
- H3N2 symptoms are, Fever, chills, cough, nausea, vomiting, sore throat, muscle and body aches, diarrhoea, runny nose and sneezing.
- Treatment for H3N2 influenza includes rest, drinking plenty of fluids, and taking over-the-counter medications such as acetaminophen or ibuprofen to reduce fever and relieve pain.
- Antiviral medications like oseltamivir and zanamivir may also be prescribed by a doctor for people with severe symptoms or those who are at high risk of complications.

6.4 Australia-India education qualification recognition mechanism

In news- Australian Prime Minister Anthony Albanese has recently announced an 'Australia-India education qualification recognition mechanism'.

What is this mechanism?

- The new mechanism will mean that degrees obtained in Australia will now be recognised in India, and vice-versa, degrees obtained in India will be recognised in Australia.
- This new mechanism was finalised by Australian Education Minister Jason Clare and Union Education Minister Dharmendra Pradhan during the former's visit to Delhi recently.
- India has other agreements with countries like the US.
- What makes this broader than the agreement with the US is it includes online courses also, apart from courses that Australian universities can run in India or at a standalone campus like the one that University of Wollongong is setting up.
- This agreement is expected to make it easier for Indians to go to Australia for both education and work, and vice-versa.
- However, this move will not apply to professional qualifications just yet.
- Geelong's Deakin University will be the first ever foreign university to have an offshore campus in India, to be set up in Gandhinagar's GIFT City.
- The campus is set to offer courses in cyber security and business analytics.

Maitri scholarship-

- A new scholarship was also announced for Indian students studying in Australia.
- The '**Maitri**' scholarships will provide financial assistance to Indian students in Australia for as long as **four years**.
- The scholarships are **part of the wider Maitri (friendship) programme** that seeks to boost cultural, educational and community ties between Australia and India.
- The 'Maitri' scholarship was first mentioned in a joint media statement by Australian ministers on February 14, 2022.

- The \$ 11.2 million Maitri Scholarships Program will attract and support high-achieving Indian students to study at Australian universities.

6.5 US to back India on McMahon Line

In news- United States Senators have introduced a bipartisan resolution in the upper chamber of Congress reiterating that the US recognises the McMahon Line as the international boundary between China and India in Arunachal Pradesh.

What does the resolution say?

- The resolution reaffirms India's well-known and established position that Arunachal Pradesh, which China calls 'South Tibet', is an integral part of India.
- The resolution condemns China's military aggression to change the status quo along the Line of Actual Control, and further enhances the US-India strategic partnership and the Quad in support of the Free and Open Indo-Pacific.

About McMahon Line-

- The McMahon Line serves as the **de facto boundary between China and India** in the Eastern Sector.
- It specifically **represents the boundary between Arunachal Pradesh and Tibet**, from Bhutan in the west to Myanmar in the east.
- China has historically disputed the boundary and claims the state of Arunachal Pradesh as part of the Tibetan Autonomous Region (TAR).
- **The McMahon Line was drawn during the Simla Convention of 1914, officially described as the Convention Between Great Britain, China, and Tibet.**
- China was represented at the convention by the government of the Republic of China, which was in power in the mainland from 1912 to 1949, when its leaders were driven to the island of Taiwan during the civil war that established the communists in Beijing and led to the proclamation of the People's Republic.
- The McMahon Line delimited the respective spheres of influence of Tibet and British India in the eastern Himalayan region in what is today India's Northeast and northern Myanmar.
- The border in this region was undefined prior to the signing of the convention.
- After the first Anglo-Burmese War (1824-26), the British gained almost complete control over the Assam Valley.
- From there, the British expanded their influence outwards in the predominantly tribal lands across the Northeast.
- By the time the 20th century dawned, Chinese influence over Tibet had significantly waned and the British were wary about Tibet falling into the Russian sphere of influence.
- In an effort to preclude Russian influence, the British led an expedition into Tibet and signed the **Convention of Lhasa in 1904.**



How was the border between British India and China decided?

- The 890-km border from the corner of Bhutan to the Isu Razi Pass on the Burma border was drawn largely along the crest of the Himalayas, following the “highest watershed principle”.
- This principle, considered to be the most logical way of drawing borders in mountainous regions by the British, basically drew the border along the highest ridge between two river plains.
- However, exceptions were made. Notably, Tawang, which would have been a part of Tibet had this principle been uniformly implemented, was included in British India due to its proximity to the Assam Valley.
- As the War of 1962 would show, capturing Tawang would give an invading Chinese army easy access to the valley in the south, affirming McMahon’s decision to include Tawang under British jurisdiction.
- This inclusion was contested by Tibet for years, even though the border remained porous, and Lhasa still held some sway in the region.

The status of the McMahon line-

- While there were disputes regarding the McMahon line from the very beginning, after the communists took power in 1949, they pulled China out of all international agreements and the so-called “unequal treaties” that had been imposed on it during its “century of humiliation”, and demanded a renegotiation of all its borders.
- During the 1962 Sino-Indian War, China was able to quickly overpower India and make deep inroads into Indian territory across the McMahon Line.
- However, its forces retreated to pre-war positions after the unilateral ceasefire was announced on November 21.

The Simla Convention of 1913-14-

- The convention attempted to settle the question of Tibet’s sovereignty and avoid further territorial disputes in the region.
- The Tibetan government in Lhasa was represented by its plenipotentiary Paljor Dorje Shatra, and Britain by Sir Arthur Henry McMahon, foreign secretary of British India at Delhi. The Chinese plenipotentiary was Ivan Chen.
- The treaty divided the Buddhist region into “Outer Tibet” and “Inner Tibet” – the former would “remain in the hands of the Tibetan Government at Lhasa under Chinese suzerainty”, though China was not allowed to interfere in its affairs.
- The latter would be under the direct jurisdiction of the newly formed Republic of China. In its annexes, it also determined the border between China proper and Tibet as well as Tibet and British India.
- The latter of these newly decided boundaries would later be called the McMahon Line after McMahon, the chief British negotiator.
- While a draft convention was agreed upon by all three countries on April 27, 1914, China immediately repudiated it.
- The final convention was only signed by McMahon on behalf of the British government and Shatra on behalf of Lhasa and Ivan Chen did not consent to the convention.

6.6 Australia to get nuclear-powered submarines under AUKUS partnership

In news- Australia, the United Kingdom and the United States recently unveiled **plans to provide Australia with conventionally armed, nuclear-powered attack submarines** in the early 2030s to counter China’s ambitions in the Indo-Pacific.

Key updates-

- Under this deal, the United States intends to sell Australia three US Virginia class nuclear-powered submarines built by General Dynamics in the early 2030s, with an option for Australia to buy two more if needed.
- The multi-stage project will culminate with British and Australian production and operation of a new submarine class – SSN-AUKUS – a trilaterally developed vessel with the best technologies and capabilities of all three countries.
- The plan involves a phased approach which will culminate in the production and operation of SSN-AUKUS.
- While Australia will receive nuclear-powered submarines, these will not be equipped with nuclear warheads.
- The newly announced deal includes “clear commitments” to the countries’ respective nuclear non-proliferation obligations.

What is the Australia-United Kingdom-United States (AUKUS)?

- AUKUS is a 2021 defence deal between Australia, the UK and the US, which was struck to help Australia deploy nuclear-powered submarines in the Pacific region.
- The AUKUS partnership was signed to bolster Australia’s naval heft in the region.
- According to the leaders of the three countries, the **new alliance does not and will not supersede or outrank existing arrangements in the Indo-Pacific region** such as the Quad and Asean, and that it will complement these groups and others.
- **The AUKUS enhances their contribution to their growing network of partnerships in the Indo-Pacific region: ANZUS** (Australia, New Zealand and the US); their Asian friends; their bilateral strategic partners, the Quad; Five Eyes (US, UK, Australia, Canada and New Zealand) countries; and, the Pacific family.
- The leaders have clarified that the new pact is not aimed (at) or about any one country but it is about advancing their strategic interests, upholding the international rules-based order, and promoting peace and stability in the Indo-Pacific.

6.7 International Criminal Court

In news- The International Criminal Court has recently issued an arrest warrant for war crimes for President Vladimir Putin and a second Russian official.

What is the International Criminal Court?

- It is an intergovernmental organization and international tribunal seated in The Hague, Netherlands created **under a 1998 treaty known as the Rome Statute**.
- **It investigates and, where warranted, tries individuals charged with the gravest crimes of concern to the international community:** genocide, war crimes, crimes against humanity and the crime of aggression.
- The **ICC lacks universal territorial jurisdiction**, and may only investigate and prosecute crimes committed within member states, crimes committed by nationals of member states, or crimes in situations referred to the Court by the United Nations Security Council.
- It is the first and only permanent international court with jurisdiction to prosecute individuals for the international crimes of genocide, crimes against humanity, war crimes and the crime of aggression.
- It is distinct from the International Court of Justice, an organ of the United Nations that hears disputes between states.
- It is composed of four organs: the Presidency, the Judicial Divisions, the Office of the Prosecutor, and the Registry
- As of November 2019, 123 states are parties to the Statute of the Court, including all the countries of South America, nearly all of Europe, most of Oceania and roughly half of Africa.
- **India, like the US and China, is not a party to the Rome Statute.**

6.8 Vienna Convention on Diplomatic Relations (1961)

In news- Hours after a group of people chanting pro-Khalistan slogans took down the Indian flag at the High Commission in London, the Indian government has summoned the “senior-most” UK diplomat and reminded basic obligations of the UK Government under the Vienna Convention.

What is the Vienna Convention?

- The term “Vienna Convention” can refer to any of a number of treaties signed in Vienna, most of which are related to the harmonisation or formalisation of the procedures of international diplomacy.
- In this instance it is the Vienna Convention on Diplomatic Relations (1961), which provides a complete framework for the establishment, maintenance and termination of diplomatic relations on a basis of consent between independent sovereign States.

About Vienna Convention on Diplomatic Relations (1961)-

- Most notably, the **Convention codifies the longstanding custom of diplomatic immunity, in which diplomatic missions** are granted privileges that enable diplomats to perform their functions without fear of coercion or harassment by the host country.
- It affirms the **concept of “inviolability” of a diplomatic mission**, which has been one of the enduring cornerstones of international diplomacy.
- **It entered into force on April 24, 1964 and is nearly universally ratified, with Palau and South Sudan being the exceptions.**
- **As per the Vienna Convention, a “receiving State” refers to the host nation** where a diplomatic mission is located.
- In this case, the host nation is the UK and as per the Vienna Convention, it has some **basic obligations towards the diplomatic missions it hosts on its sovereign territory.**
- Article 22 of the Convention deals with obligations with regards to the premises of the Mission.
- **Basically, the security of any High Commission or Embassy is the responsibility of the host nation.**
- While diplomatic missions can also employ their own security, ultimately, the host nation is accountable for security.

6.9 Uganda makes it a crime to identify as LGBTQ

In news- Uganda’s parliament passed a Bill recently making it illegal to identify as an LGBTQ person, going several steps ahead of neighbouring countries in the African continent which outlaw same-sex relationships and marriages.

About the bill-

- The new law, if passed, will be the first to outlaw merely identifying as lesbian, gay, bisexual, transgender and queer (LGBTQ).
- In addition to same-sex intercourse, the law bans “promoting and abetting” homosexuality as well as “conspiracy to engage in homosexuality”.
- Violations under the law draw severe penalties, including death for so-called aggravated homosexuality and life in prison for gay sex.
- Aggravated homosexuality involves gay sex with people under the age of 18 or when the perpetrator is HIV positive, among other categories, according to the law.

Status of LGBTQ rights in Africa-

- More than 30 of Africa’s 54 countries, including Uganda, already ban homosexuality.
- Additionally, of the 69 countries that have laws criminalizing homosexuality, nearly half are in Africa.

- Angola in February 2023 brought into effect revised penal code to allow same-sex relationships and banned discrimination on the basis of sexual orientation.

Status of LGBTQ rights in India-

- The Supreme Court recently referred to a five-judge Constitution Bench the petitions seeking legal recognition to same-sex marriages, saying the matter raises questions of “seminal importance”.
- **In 2018, the Supreme Court had repealed Section 377 of the Indian Penal Code (IPC), which criminalises homosexuality.**
- However, **there is no legal approval for adoption of children by same-sex couples and blood donation by LGBTQ people is banned.**

Status of LGBTQ rights in rest of the world-

- According to Pew Research Center, 62 countries criminalise consensual same-sex acts by law, while 129 countries don't criminalise them.
- Only 28 countries in the world recognise same-sex marriages, and 34 others provide for some partnership recognition for same-sex couples, according to International Lesbian, Gay, Bisexual, Trans and Intersex Association (ILGA).
- Death penalty is the legally prescribed punishment for homosexual acts in Brunei, Iran, Mauritania, Saudi Arabia and Yemen.
- Homosexual activity is legal in all 27 member states of the European Union, and in Central America.
- Iraq is one of three Arab-majority countries in the Middle East that doesn't explicitly criminalize same-sex relationships, the others are Jordan and Bahrain.
- A hashtag campaign that originated in Egypt recently that uses “fetrah,” the Arabic word for “instinct,” to insist that there can only be two genders.
- In the Asian subcontinent, Afghanistan is the only country that has a death penalty in force for homosexuality, but strict punishments are awarded in Bangladesh, Maldives, Sri Lanka, Myanmar, Malaysia and Brunei.
- On the brighter side, Singapore repealed a law that criminalised sex between men, while Vietnam declared that conversion therapy would be banned.

7. GEOGRAPHY

7.1 Constitution of Greater Panna Landscape Council (GPLC)

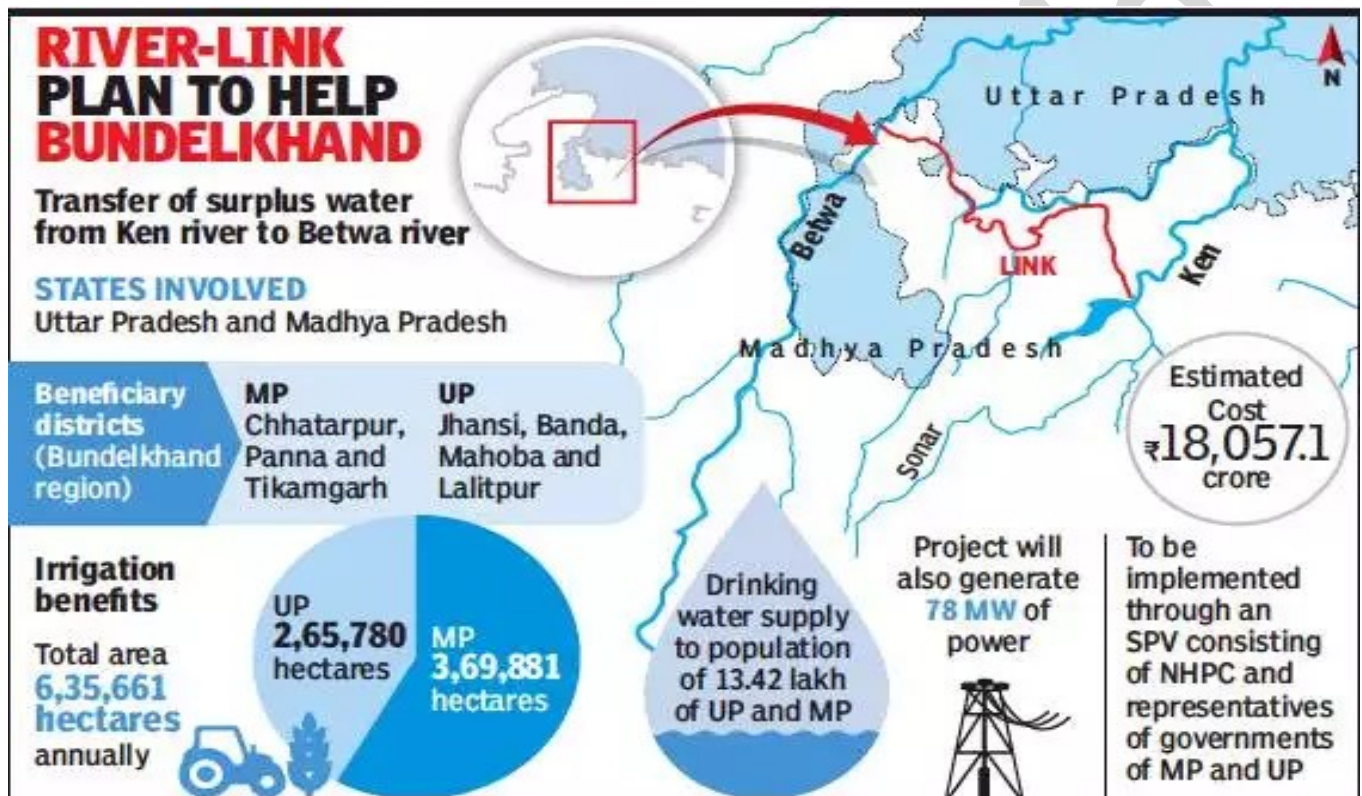
In news- As part of the Ken-Betwa Link Project (KBLP), the GPLC has been constituted under the chairmanship of Chief Secretary, Govt. of Madhya Pradesh with members from all the stakeholders.

About GPLC-

- The goal of the GPL and the council is to ensure a “win-win” situation for conservation through integration with the development process based on a balanced approach and considering the diverse stakes.
- **The broad objectives are-**
 - To enable betterment of habitat, protection, and management for flagship species viz. tiger, vulture, and gharial in the landscape.
 - To consolidate the landscape for overall biodiversity conservation through spatial prioritization and well-being of the forest dependent communities.
 - To provide species-specific and site-specific monitoring strategies under the integrated landscape management in context with feedback loop and adaptive management options.
- Under KBLP, a comprehensive Integrated Landscape Management Plan (ILMP) has been prepared for the conservation of wildlife and biodiversity in Panna Tiger Reserve (PTR) & surrounding areas.

Ken-Betwa Link Project-

- Ken-Betwa Link Project (KBLP), the first interlinking of rivers project under National Perspective Plan (NPP) taken for implementation, would be a game-changer for the socio-economic prosperity of the Bundelkhand region, which faces recurrent drought.
- The project is aimed at not only providing water security in the Bundelkhand but also ensuring the overall conservation of the region and specially for landscape dependent species such as tiger, vulture and gharial.
- The Wildlife Institute of India (WII) has prepared a comprehensive Integrated Landscape Management Plan (ILMP) for the conservation of wildlife and biodiversity not only in Panna Tiger Reserve (PTR) but also in surrounding areas.



7.2 Hot lightning

In news- According to a new study, Climate change might lead to more wildfire-inducing 'hot lightning' strikes.

Key findings of the study-

- The study titled, '**Variation of lightning-ignited wildfire patterns under climate change**', has been done by researchers from Spain and Germany.
- According to the researchers, lightning is a major cause of triggering wildfires and is responsible for producing the largest wildfires in some regions, including the Western United States.
- Lightning-caused wildfires are dangerous as they spread rapidly before a strong response can be implemented and release substantial amounts of carbon, nitrogen oxides and other trace gases into the atmosphere.
- The latest research is the first time that scientists have focused on the relationship between "hot lightning" strikes and rising global temperatures.
- Moreover, they have also examined how this form of lightning might affect the incidents of wildfires across the world.
- Also known as long continuing current (LCC), this type of lightning strike can last from around 40 milliseconds to nearly a third of a second.

- **When lightning with continuing currents attach to ground or vegetation, they produce more Joule heating and higher temperature than typical lightning**, increasing the probability of ignition.
- According to the study, the **areas that might witness a significant increase in wildfires triggered by the LCC strikes are Southeast Asia, South America, Africa, Australia, North America and Europe.**
- However, many northern polar regions might see a decrease in wildfires as rainfall is projected **to increase while “hot lightning” rates remain constant.**

What is lightning and how does it occur?

- Lightning is a rapid and massive electrical discharge that takes place between storm clouds and the ground, or within the clouds themselves.
- Scientists believe that for lightning to occur, positive and negative charges must separate within a cloud. This happens when the water droplets in the bottom part of the cloud are moved upwards, where the much colder atmosphere freezes them into small ice crystals.
- As these small ice crystals continue to go up, they gain more mass and eventually become so heavy that they start to fall down to Earth.
- This causes a system in which ice crystals going down collides with the water vapours coming up, leading to the accumulation of positive charges on the top of the cloud and negative charges gathering at the base, while the atmosphere between them in the cloud acts as an insulator.
- When the positive and negative charges grow large enough, their strength overpowers the insulating properties of the properties.
- As a result, the two kinds of charges meet with each other and produce lightning.
- Although most of the lightning takes place within the clouds, sometimes it is directed towards Earth also.
- With the base of the cloud becoming negatively charged, positive charges start accumulating on tall objects, like trees, poles and buildings.

7.3 ISRO’s Landslide Atlas of India

In news- Rudraprayag and Tehri Garhwal in Uttarakhand are the most landslide-prone districts in the country, according to satellite data by the Indian Space Research Organisation (ISRO). **Hyderabad-based National Remote Sensing Centre created the all-India database.**

About Landslide Atlas-

- This report looked at landslide vulnerable regions in 17 states and two Union Territories of India in the Himalayas and Western Ghats.
- Rajouri, Thrissur, Pulwama, Palakkad, Malappuram, South Sikkim, East Sikkim and Kozhikode in Kerala, Jammu Kashmir and Sikkim are other high-risk districts, found in the Landslide Atlas of India 2023.
- According to it, all 12 districts of Himachal Pradesh are prone to landslides.
- The database includes three types of landslide inventory – seasonal, event-based and route-wise for the 1998-2022 period.
- The risk analysis in the report was based on the density of human and livestock populations, which indicates the impacts on people due to these landslides.
- It says that between 1988 and 2022, the maximum number of landslides 12,385 were recorded in Mizoram.
- Uttarakhand followed it at 11,219, Tripura at 8,070, Arunachal Pradesh at 7,689, Jammu and Kashmir at 7,280. Kerala saw 6,039, Manipur at 5,494 and Maharashtra recorded 5,112 incidents of landslides.
- Globally, landslides rank third in terms of deaths among natural disasters.
- However, deforestation due to unplanned urbanisation and human greed increases the risk of such incidents.
- In 2006, about 4 million people were affected by landslides, including a large number of Indians.
- India is among the four major countries where the risk of landslides is the highest, with 12.6 percent of the total land area of the country prone to landslides.
- However, the figure does not include snow-covered areas.

- Sudden heavy rains due to climate change are also increasing landslides.
- Around 73 per cent of landslides in the Himalayan region are attributed to heavy rains and reduced water-absorbing capacity of the soil.

What is a landslide?

- Landslides, also known as landslips, are several forms of mass wasting that may include a wide range of ground movements, such as rockfalls, deep-seated slope failures, mudflows, and debris flows.
- Gravity is the primary driving force for a landslide to occur, but there are other factors affecting slope stability that produce specific conditions that make a slope prone to failure.
- Landslides occur when the slope (or a portion of it) undergoes some processes that change its condition from stable to unstable.

7.4 Establishing time zone for the moon

In news- The European Space Agency (ESA) said that the current system of time zones for the moon is unsustainable. A universal timekeeping system for the moon is needed.

ESA Time zone for the moon-

- The ESA said that the main objective of establishing a universal timekeeping system for the moon is to streamline contact among the various countries and entities, public and private, that are coordinating trips to and around the moon.
- **Time on Earth is precisely tracked by atomic clocks**, but synchronizing time on the moon is tricky because clocks run faster there, gaining around 56 microseconds, or millionths of a second, per day.
- Once a new lunar time zone is established, the methods used to create it will be useful for future space exploration.
- Astronauts could go to Mars in the next two to three decades, he said, and will face similar logistical hurdles that a Martian time zone could address.

Coordinated Universal Time or UTC-

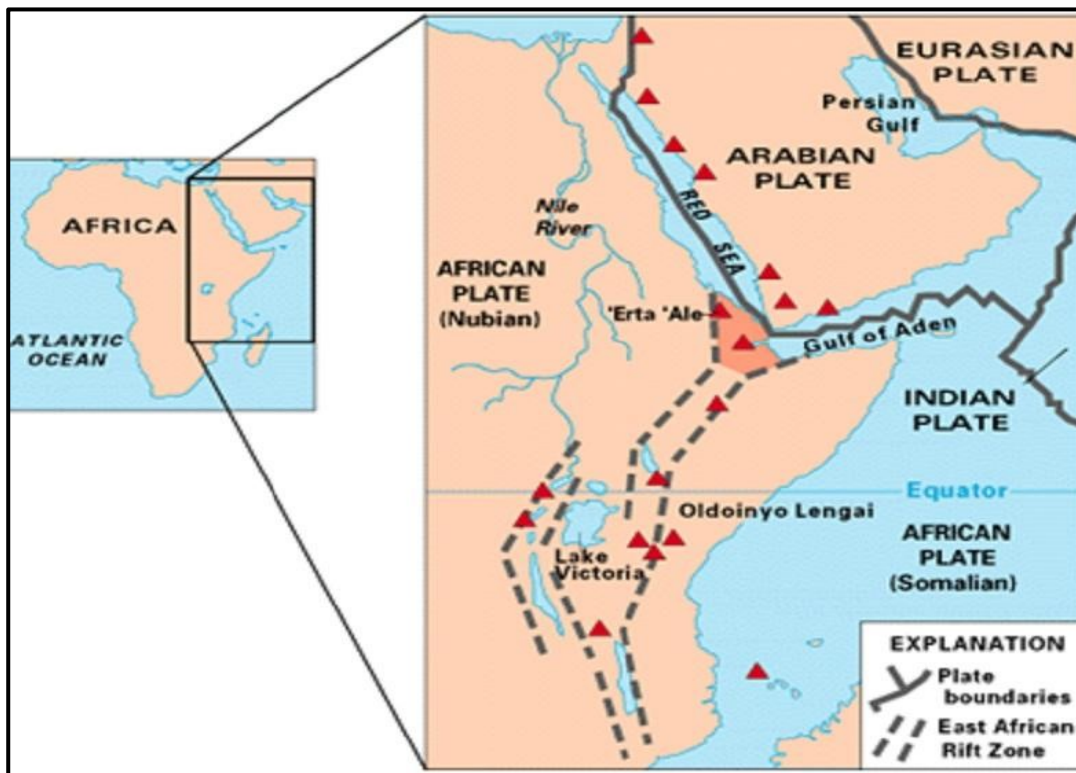
- UTC is the primary time standard by which the world regulates clocks and time.
- It is within about one second of mean solar time at 0° longitude and is not adjusted for daylight saving time.
- It is effectively a successor to Greenwich Mean Time.
- The coordination of time and frequency transmissions around the world began on 1 January 1960.
- UTC was first officially adopted as CCIR Recommendation 374, Standard-Frequency and Time-Signal Emissions, in 1963, but the official abbreviation of UTC and the official English name of Coordinated Universal Time (along with the French equivalent) were not adopted until 1967.

7.5 Africa's rift valley could give birth to a new ocean

In news- Scientists, in 2020, predicted a new ocean would be created as Africa gradually splits into two separate parts.

Key highlights of the study-

- According to the study, the **division of the continent is connected to the East African Rift**, a crack that stretches 56 kilometres and appeared in the desert of Ethiopia in 2005, triggering the formation of a new sea.
- **This geological process will inevitably divide the continent**, resulting in currently landlocked countries, such as Uganda and Zambia, obtaining their own coastlines in due time, which would take five to 10 million years.



- As the Somali and Nubian tectonic plates continue to pull apart from each other, a smaller continent will be created from the rift, which will include present-day Somalia and parts of Kenya, Ethiopia, and Tanzania.
- The Gulf of Aden and the Red Sea will eventually flood into the Afar region in Ethiopia and the East African Rift Valley, leading to the formation of a new ocean.
- This new ocean will result in East Africa becoming a separate small continent with its own unique geographic and ecological characteristics.
- The three plates — the Nubian African Plate, Somalian African Plate and Arabian Plate — are separating at different speeds.
- The Arabian Plate is moving away from Africa at a rate of about an inch per year, while the two African plates are separating even slower, between half an inch to 0.2 inches per year.
- While the process of rifting may often go unnoticed, the separation of the Nubian and Somali plates can result in the formation of new faults, fissures and cracks or the reactivation of pre-existing faults, leading to seismic activity.

What is rifting?

- The Earth's lithosphere, comprising the crust and upper part of the mantle, is divided into several tectonic plates that are not stationary but rather move in relation to each other at varying speeds.
- **Rifting refers to the geological process in which a single tectonic plate is split into two or more plates separated by divergent plate boundaries.**
- **This process leads to the emergence of a lowland region known as a rift valley, which can occur either on land or at the bottom of the ocean. These rift valleys occur due to the movement of Earth's tectonic plates.**

7.6 Active volcano found on Venus

In news- A new analysis of archival radar images taken around three decades ago has found direct geological evidence of recent volcanic activity on the surface of Venus, also known as Earth's twin, for the first time.

Key findings-

- Researchers have observed a volcanic vent changing its shape and getting bigger in size in around eight months.
- For years, scientists have known that numerous volcanoes cover Venus but there wasn't any evidence up till now to show if any one of them is still active.
- Scientists made the new discovery by pouring over images of Venus taken by NASA's Magellan spacecraft between 1990 and 1992.
- During their examination, they looked at the planet's Atla Regio area, where two of the biggest volcanoes of Venus, Oza Mons and Maat Mons, are located.
- They noticed a vent situated on the north side of a domed shield volcano that is part of the larger Maat Mons volcano that changed significantly in shape and size between February and October 1991.
- It indicated an eruption or flow of magma beneath the vent.
- The new findings take scientists a step further to understand the geological conditions of not just Venus but also other exoplanets.
- In the next decade, three new Venus missions would be launched, including the European EnVision orbiter and NASA's DAVINCI and VERITAS missions.

7.7 Jhamarkotra and Zawar: geoheritage sites of India

In news- To draw the attention of local governments, industries, and the public to potential sites, the Society of Earth Scientists (SES) and other stakeholders gathered to scout a fossil park at Jhamarkotra and the metallurgical remains at Zawar.

About Jhamarkotra-

- A short, dusty climb from the Jhameswar Mahadev pond, with no wall, fence or signboard, lies a stromatolite fossil park: **it hosts stromatolites dating back 1.8 billion years, exhibiting a variety of textures and sizes.**
- **A stromatolite is a layered sedimentary rock created by microorganisms.**
- As such, stromatolite fossils preserve records of cyanobacteria, commonly known as blue-green algae – the earliest life on the planet.
- **These organisms developed the ability to photosynthesise and make their own food.**
- By doing so, they **pumped large quantities of oxygen into the atmosphere of primeval earth**, allowing most other life to evolve and flourish.
- **Jhamarkotra's fossils are phosphate-rich because the trapped sediments** were mainly phosphate minerals.
- The phosphate is mined for use as agricultural fertilisers.
- For now, local bodies have cemented these specimens together, in the hopes of preserving them for scientific value and posterity.

About Zawar-

- Another interesting geoheritage site lies some 40 km south of Udaipur: Zawar, the world's oldest known zinc-smelting site.
- It is of archaeological and metallurgic importance.
- The landscape around Zawar bears numerous traces of zinc mining and smelting operations in ancient times, including open slopes, trenches, chambers, galleries, shafts, and open-pit mines.
- The discovery here of earthen retorts – brinjal-shaped, long-necked vessels – is particularly significant: their presence here suggests Zawar had a unique zinc-smelting legacy.
- Zinc has low boiling and melting points, so heating it forms a vapour, which readily oxidized in contact with the atmosphere.
- Zawar's zinc-smelting operations date back 2,000 years. In 1988, the American Society of Metals acknowledged it to be the earliest zinc-smelting site in the archaeological record.

- Written records also trace the use of zinc in ancient medicine and in medieval weapons of war. The people in the region also traded it with their counterparts in China and Japan.

Note: Apart from its World Heritage list, UNESCO also has criteria for 'Global Geoparks': sites with geological heritage of international value. Both Jhamarkotra and Zawar may qualify if they meet a few other conditions as well.

What is geoheritage?

Geodiversity is the **variety of rocks, fossils, minerals, and natural processes that shape our landscapes while geoheritage refers to sites that offer insights into the evolution of the earth** and can be used for research, reference, and awareness. The Geological Survey of India has recognised a number of geoheritage sites around the country, but there are more that deserve the recognition yet haven't.

7.8 Possibility of aliens hiding in special 'terminator zones'

In news- A recent study was conducted by astronomers from the University of California, suggested the possibility of aliens hiding in special 'terminator zones' on distant exoplanets, where the temperature is not too hot or cold.

About terminator zones & planets-

- The astronomers, in their study, found that there is a band around these planets in which there is a possibility that they are harbouring liquid water which is the main ingredient for life.
- This band is called the 'terminator zone' where the terminator acts as the dividing line between the day side and night side of the exoplanet.
- **The terminator zones are the regions that could exist in that sweet spot between too hot and too cold.**
- Such planets are quite common because they exist around stars that make up about 70 percent of the stars seen in the night sky - so-called M-dwarf stars, which are relatively dimmer than our sun.
- The **dark sides of terminator planets would mean a perpetual night and freezing temperatures**, whereas the **side facing the star could be too hot** for water to remain liquid.
- **Only recently have astronomers been able to show that such planets can sustain habitable climates** confined to this terminator region because researchers have mostly studied ocean-covered exoplanets in their search for candidates for habitability.

7.9 Existence of Zealandia confirmed

In news- After 375 years of speculation and exploration, scientists have finally confirmed the existence of a "missing" continent known as *Zealandia*.

About Zealandia-

- *Zealandia*, which is approximately **1.89 million square miles in size**, was **once part of an ancient supercontinent called Gondwana**, which also included Western Antarctica and Eastern Australia over 500 million years ago.
- However, it began to "pull away" from Gondwana for reasons that geologists are still trying to understand roughly 105 million years ago.
- As it did so, **it gradually sank beneath the waves, with over 94% of the landmass remaining underwater** for millennia.
- It is called Te Riu-a-Māui in the Māori language (It is an Eastern Polynesian language spoken by the Māori people, the indigenous population of mainland New Zealand).
- **The existence of Zealandia was first recorded in 1642 by Dutch businessman and sailor Abel Tasman**, who was on a mission to find the "great Southern Continent" or Terra Australis.

- **In 2017, GNS geologists finally confirmed the existence of Zealandia**, which had been hiding in plain sight all along.
- The vast majority of this "new" continent is located underwater, lying beneath 6,560 feet (2km) of water.
- **Zealandia is now recognized as the world's eighth continent, but its unique characteristics make it stand out from the other continents** on the planet.
- Every other continent is home to multiple countries, while Zealandia has only three territories.

7.10 Oumuamua

In news- Oumuamua is the first interstellar object detected passing through the Solar System. A new study has said that 'Oumuamua's speed-up was due to the release of hydrogen gas as the comet warmed up in the sunlight.

About the Oumuamua-

- The first known interstellar object to visit our solar system, 1I/2017 U1 'Oumuamua was discovered by the University of Hawaii's Pan-STARRS1 telescope, funded by NASA's Near-Earth Object Observations (NEOO) Program, which finds and tracks asteroids and comets in Earth's neighborhood.
- **Oumuamua, whose name refers in the native Hawaiian language to a messenger arriving from a great distance.**
- While **originally classified as a comet, observations revealed no signs of cometary activity** after it slingshotted past the Sun on Sept. 9, 2017.
- **It was briefly classified as an asteroid until new measurements** found it was accelerating slightly, a sign it behaves more like a comet.
- 'Oumuamua (pronounced oh-MOO-uh-MOO-uh) lacks the tail of gas and dust characteristic of many comets.
- **It appears that 'Oumuamua was born like many other comets as what is called a planetesimal - a small object** formed in the early stages of planet formation - and was essentially a large, icy space rock.
- After it was somehow ejected from its solar system of origin the comet's chemistry changed as it was bombarded by high-energy radiation while venturing through interstellar space.
- **Researchers said that they** don't know its place of origin but it was probably traveling through interstellar space for less than 100 million years.
- It had a reddish color consistent with the colors of many small bodies in the solar system. It is currently past Neptune on its way out of the solar system.
- A second interstellar object, the comet 2I/Borisov, was discovered visiting our solar system in 2019. This one looked and behaved more like a typical comet.

7.11 Aravalli Green Wall Project

In news- The Union Minister for Environment, Forest and Climate Change, launched the Aravalli Green Wall Project in Haryana.

About the Haryana project-

- In the initial phase, 75 water bodies will be rejuvenated under the project, starting with five water bodies each in every district of Aravalli landscape.
- The project will also include large-scale plantation drives and conservation of water resources in the Aravalli region.
- The project will cover degraded land in Gurgaon, Faridabad, Bhiwani, Mahendergarh and in Rewari districts of Haryana.
- Voluntary organization, Society for Geoinformatics and Sustainable Development and NGO, IMGurgaon are being engaged to mobilize people for Shramdaan for revival of water bodies at Bandhwadi and Ghata Bundh respectively.

About Aravalli Green Wall Project-

- It is a major initiative to green the 5 km buffer area around the Aravalli Hill Range in four states.
- It is **part of the Union Environment Ministry's vision to create green corridors** across the country to **combat land degradation and desertification**.
- The **project covers states of Haryana, Rajasthan, Gujarat and Delhi** - where the Aravalli hills landscape span over 6 million hectares of land.
- The **project involves planting native species of trees and shrubs on scrubland, wasteland and degraded forest land**, along with rejuvenating and restoring surface water bodies such as ponds, lakes and streams.
- The project **also focuses on agroforestry and pasture development** to enhance the livelihoods of local communities.
- The project will be executed by various stakeholders such as central and state governments, forest departments, research institutes, civil society organisations, private sector entities and local communities.
- This green wall will help in carbon sequestration and mitigating climate change to enhance the biodiversity and ecosystem services of the Aravalli range by planting native tree species in the Aravalli region, providing habitat for wildlife, improving water quality and quantity.

The Aravalli Green Wall Project has the following objectives:

- Improving the ecological health of the Aravalli range.
- To **prevent eastward expansion of Thar Desert** and to reduce land degradation by creating green barriers that will prevent soil erosion, desertification and dust storms.
- **Promote sustainable development and livelihood opportunities** by involving local communities in afforestation, agro-forestry and water conservation activities that will generate income, employment, food security and social benefits.
- **Contribute to India's commitments under various international conventions such as UNCCD** (United Nations Convention to Combat Desertification), **CBD** (Convention on Biological Diversity) and **UNFCCC** (United Nations Framework Convention on Climate Change).
- Enhancing India's image as a global leader in environmental protection and green development.

Similar initiatives-

- **Africa's Great Green Wall** was launched by the African Union a decade ago with the support of many partners including UNCCD, World Bank and the European Commission.
- So far, work on nearly 15% of the wall is under way.
- In COP14 of UNCCD held in India, a similar initiative called **Peace Forest Initiative (PFI) to develop forests in conflict areas between South and North Korea** including the demilitarized zone was announced.
- The PFI has been inspired from the Peace Park between Peru and Ecuador.

7.12 NALCO develops India's first Bauxite Certified Reference Material

In news- National Aluminium Company Limited (NALCO) has successfully developed a Bauxite Certified Reference Material (CRM) naming as BARC B1201 in joint collaboration with BARC.

What are CRMs?

- Certified reference materials are '**controls**' or **standards used to check the quality and metrological traceability of products**, to validate analytical measurement methods, or for the calibration of instruments.
- A certified reference material is a particular form of measurement standard.
- **CRMs are blocks of metal that come with certificates indicating the concentration of their various constituent elements** along with their uncertainty levels.
- **Testing laboratories use CRMs to calibrate measuring instruments**, evaluate test procedures and for quality control purposes.

About India's first CRM-

- This is the first of its kind CRM in India and 5th in the World.
- The CRM was certified for nine property values - Al₂O₃, Fe₂O₃, SiO₂, TiO₂, V₂O₅, MnO, Cr₂O₃, MgO and LOI which are traceable to the international system of units.

National Aluminium Company Limited (NALCO)-

- It is a government company (Schedule 'A' Navratna CPSE) having integrated and diversified operations in mining, metal and power under the ownership of the Ministry of Mines, Government of India.
- It was established on 7th January, 1981 having its registered office at Bhubaneswar.
- Presently, the Government of India holds a 51.5% equity in NALCO.
- It is one of the largest integrated bauxite–alumina–aluminium–power complexes in the country, encompassing bauxite mining, alumina refining, aluminium smelting and casting, power generation, rail and port operations.
- NALCO is the first Public Sector Company in the country to venture into the international market in a big way with London Metal Exchange (LME) registration since May, 1989.
- The Company is listed at Bombay Stock Exchange (BSE) since 1992 and National Stock Exchange (NSE) since 1999.

Bhabha Atomic Research Centre (BARC)-

- It is India's premier nuclear research facility, headquartered in Trombay, Mumbai.
- It is a multi-disciplinary research centre with extensive infrastructure for advanced research and development covering the entire spectrum of nuclear science, engineering and related areas.
- Its core mandate is to sustain peaceful applications of nuclear energy, primarily for power generation.

7.13 What are atmospheric rivers?

In news- California has experienced an exceptionally wet winter with 11 atmospheric rivers battering the state recently.

About atmospheric river-

- Atmospheric rivers are **large, narrow sections of the Earth's atmosphere that carry moisture from the Earth's tropics near the equator to the poles.**
- On average, the Earth has four to five active atmospheric rivers at any time.
- Each moves the equivalent of the liquid water that flows through the mouth of the Amazon River.
- When they reach land, atmospheric rivers release this moisture, producing heavy snow and rain.
- **Atmospheric rivers are responsible for 90 percent of the movement of moisture from the tropics toward the poles.**
- Research indicates that they are **responsible for more than half of the rainfall in parts of the coasts of North America, France, Spain, Portugal, the United Kingdom, South America, Southeast Asia, and New Zealand.**
- But atmospheric rivers **can also cause severe flooding due to the massive amounts of precipitation they release.**
- A well-known example is the "**Pineapple Express,**" a strong atmospheric river that is capable of bringing moisture from the tropics near Hawaii over to the U.S. West Coast.

7.14 What is "upward lightning" or "upward flashes"?

In news- Brazilian researchers recently succeeded in taking pictures of positive upward discharges of electricity from lightning conductor rods, travelling to connect with the negative discharge from lightning in the clouds.

What is lightning?

- Lightning is a rapid and massive electrical discharge that takes place between storm clouds and the ground, or within the clouds themselves.
- Scientists believe that for lightning to occur, positive and negative charges must separate within a cloud.
- This happens when the water droplets in the bottom part of the cloud are moved upwards, where the much colder atmosphere freezes them into small ice crystals.
- There are three common types of lightning: cloud to ground, cloud to cloud and cloud to air.

Lightning rods-

- Benjamin Franklin invented lightning rods in the 18th century, and the devices have been protecting buildings and people from the destructive forces of lightning ever since.
- When lightning strikes a building it will preferably pass through the rod, the path of least resistance and then through the wires into the ground, protecting the building and its contents from the extremely high currents and voltages produced by lightning.

About upward lightning-

- The upward lightning primarily occurs when there is a nearby positive cloud-to-ground flash.
- The electric field change caused by the preceding flash causes an upward positive leader to initiate from a tall object such as a building, tower or wind turbine.
- The shape of the tall object and the resulting enhancement in the electrical field makes it possible for an upward leader to form following a nearby flash.
- Upward triggered lightning usually occurs in response to a natural lightning flash, but on rare occasions can be “self-triggered”—usually in winter storms with strong winds.

8. GOVERNANCE

8.1 One Nation One Challan

In news- Gujarat government is setting up virtual courts under One Nation, One Challan initiative.

What is the One Nation, One Challan initiative?

- **One Nation, One Challan is an initiative of the Ministry of Road Transport and Highways** to bring all related agencies, such as the traffic police and the Regional Transport Office (RTO), on one platform, to enable seamless collection of challans as well as data transfer.
- **The integrated system involves detection of traffic violations through the CCTV network** and getting the registration number of the erring vehicle from applications like **VAHAN** (detecting the vehicle’s ownership details) and **SARATHI** (compilation of driving licenses).
- **An e-challan is then generated with the relevant penalty amount**, and sent to the mobile number linked with the vehicle.
- **In Gujarat, the initiative is operational in three commissionerate areas of Ahmedabad, Rajkot and Surat** since January 16, 2023 and implementation at Vadodara is underway.
-

How does it work?

- So far, to penalise someone from a different state using the CCTV network, we were unable to find details of the vehicle ownership, as the database was not integrated.
- **Now, with the integration of all the states’ RTO data and traffic police data with the support of National Informatics Centre (NIC) servers**, if someone coming from other state is captured violating traffic regulations on CCTV, the vehicle’s registration number and its related data can be accessed by the

Ahmedabad police, and the challan will be sent directly to the mobile number mentioned at the time of the vehicle's registration.

- **Also, e-challans so far are delivered through mobile phone SMSes**, or through post when the phone number is not available. But now, the NIC is set to launch its own application for this.
- **If someone doesn't pay the challan amount within 90 days, the challan will be automatically forwarded to a virtual court** and proceedings will be initiated.
- **Summons will be sent on the mobile phone of the offender** and if the fine is still not paid, further legal proceedings will follow.
- **Virtual courts are aimed at eliminating the presence of litigants in the court.** An accused can search their case on the virtual court's website. Upon successful payment of fine, the case will be shown as disposed of.
- For now, one court is in the process of being designated as a virtual court for the whole of Gujarat — court number 16 of Ahmedabad city sessions court and gradually, more jurisdictional courts may be added.

8.2 Linking PAN with Aadhaar is mandatory

In news- The Central Board of Direct Taxes (CBDT) has asked all taxpayers to link their permanent account number (PAN) with their Aadhaar by March 31, 2023.

Key updates-

Why it has been made mandatory?

- The Income-tax Department announced the linking of PAN with Aadhaar after it came across **instances where multiple permanent account numbers (PANs) were allotted to one person**, or where one PAN was allotted to more than one person.
- To have a robust way of de-duplication of the PAN database, **it was made mandatory for a taxpayer who is eligible to obtain Aadhaar**, to quote his Aadhaar in the application form for PAN and return of income.

Who needs to link PAN with Aadhaar?

As per a circular issued by CBDT in March 2022, the Income-tax Act makes it mandatory for every person who has been allotted a PAN as on July 1, 2017, to intimate his/her Aadhaar number so that Aadhaar and PAN can be linked. This is required to be done on or before March 31, 2023, failing which the PAN shall become inoperative.

Who is not required to link PAN with Aadhaar?

There are a few categories of individuals for whom this linkage is not compulsory.

- Any person of age 80 years and above.
- A non-resident as per the Income-tax Act.
- A person who is not a citizen of India.

Implications of not linking PAN with Aadhaar-

- In case the person will not be able to furnish, intimate, or quote his/ her PAN shall be **liable to all the consequences under the Income-tax Act for such failure.**
- **Some of the major implications of non-compliance are:**
 - The person shall not be able to file the income tax return using the inoperative PAN.
 - Pending returns will not be processed.
 - Pending refunds cannot be issued to inoperative PANs.
 - Pending proceedings as in the case of defective returns cannot be completed once the PAN is inoperative.
 - Tax will be required to be deducted at a higher rate if PAN becomes inoperative.

- Besides these consequences, **the person may find difficulties in doing other financial transactions** such as with banks, as PAN is an important KYC criterion for these transactions.

Why has SEBI made it mandatory for investors to link PAN with Aadhaar?

- Apart from CBDT, capital markets regulator Securities and Exchange Board of India (SEBI) directed investors to link their PAN with their Aadhaar by the end of March 2023 to continue doing transactions in the securities market.
- Since PAN is the key identification number and part of KYC requirements for all transactions in the securities market, all SEBI-registered entities and Market Infrastructure Institutions (MIIs) are required to ensure valid KYC for all participants.
- **All existing investors are required to ensure the linking of their PAN with their Aadhaar before March 31, 2023**, for continual and smooth transactions in the securities market and to avoid consequences of **non-compliance with the March 30, 2022, CBDT circular, as such accounts would be considered non-KYC compliant**, and there could be restrictions on securities and other transactions until the PAN and Aadhaar are linked.

Central Board of Direct Taxes(CBDT)-

- It is a statutory authority functioning under the Central Board of Revenue Act, 1963.
- The Central Board of Revenue as the apex body of the Department, charged with the administration of taxes, came into existence as a result of the Central Board of Revenue Act, 1924.
- Initially the Board was in charge of both direct and indirect taxes.
- However, when the administration of taxes became too unwieldy for one Board to handle, the Board was split up into two, namely the Central Board of Direct Taxes and Central Board of Excise and Customs with effect from 1.1.1964 under Central Board of Revenue Act, 1963.
- The CBDT consists of a Chairman and six Members.

8.3 Price Day Ahead Market and Surplus Power Portal (PUSHP)

In news- The Central Government has launched a High Price Day Ahead Market and Surplus Power Portal (PUSHP) – an initiative to ensure greater availability of power during the peak demand season.

The surplus power portal-

- It is a one-of-its-kind initiative, reflecting the ingenuity of the Ministry of Power and the Regulator. Distribution Companies have tied up long term PPAs for power supply.
- They have to pay fixed charges even when they do not schedule the power. Now the DISCOMs will be able to indicate their surplus power in block times / days / months on the portal.
- Those DISCOMs who need power will be able to requisition the surplus power. The new buyer will pay both variable charge (VC) and fixed cost (FC) as determined by Regulators.
- Once power is reassigned, the original beneficiary shall have no right to recall as entire FC liability is also shifted to the new beneficiary.
- Financial liability of the new buyer shall be limited to the quantum of temporary allocated / transferred power. This will reduce the fixed cost burden on the DISCOMs, and will also enable all the available generation capacity to be utilized.

What is Day-Ahead-Market (DAM)?

- It is a physical electricity trading market for deliveries for any/some/all 15 minute time blocks in 24 hours of next day starting from midnight.
- The prices and quantum of electricity to be traded are determined through a double sided closed auction bidding process.

About High Price Day Ahead Market (HP DAM) -

- In 2022, the Ministry of Power after taking note of the fact that on some days the prices in the electricity exchange had gone upto Rs.20, had given directions to the CERC to put a price cap of Rs.12 on the exchange, so that there is no profiteering.
- The cap was imposed from April 2022 in Day Ahead Market & Real Time Market, and further in all segments from May 2022.
- This move rationalized the price for buyers.
- Because of the high prices of gas in the international market; the electricity made by using gas was expensive – more than Rs.12 per unit – and this capacity could not be sold on the market.
- Similarly, the imported coal-based plants and the Renewable Energy stored in battery-energy storage systems could not be brought into operation, as their generation cost was high.
- In 2023 it is expected that the demand will be much higher than last year and hence a **separate segment has been carved out for those generation systems.**

8.4 Data Empowerment and Protection Architecture

In news- India's G-20 presidency has provided an opportunity for the country to showcase its advancements in the digital arena, particularly with regards to data infrastructures and data governance.

What is Data Empowerment and Protection Architecture(DEPA)?

- The NITI Aayog, in August 2020, had released a draft framework on DEPA.
- It is aimed at **empowering people to have a seamless and secure access to their data** and share it with third party institutions.
- It proposes **creation of a new form of Consent Manager Institution** which would ensure that individuals can provide consent for every piece of data shared and would work for protection of data rights.
- DEPA is **aimed at replacing the current mechanism for data access and sharing mechanism** which involves bulk printout notarization and physical submission, screen scraping, username/password sharing etc.
- It is a **joint public-private effort** for an improved data governance approach.
- It creates a digital framework that allows users to share their data on their own terms through a third-party entity, Consent Managers.
- It **went live in the financial sector in 2020 under the joint leadership of the Ministry of Finance, the Reserve Bank of India (RBI), Pension Fund Regulatory and Development Authority (PFRDA), Insurance Regulatory and Development Authority (IRDAI), and Securities and Exchange Board of India (SEBI).**
- DEPA is being tested in the health sector, as well as others.
- 'Aadhar' and Unified Payments Interface (UPI) services, both part of IndiaStack, are primary examples of Application Programming Interface (API)-based products that in the past few years have revolutionized user authentication and real-time digital payments, respectively, in India.

DEPA and related concerns-

- By allowing individuals to easily manage and control their data consents, DEPA could help to build trust in digital technologies and data governance.
- However, there are also risks associated with DEPA, particularly in terms of security and privacy.
- If the consent management tool is not properly implemented or managed, there is a risk that personal information could be misused or misappropriated.

8.5 Smart metering infra

In news- The Cellular Operators Association of India has flagged concerns over the deployment of advanced metering infrastructure using unlicensed spectrum in the 865-868 MHz frequency band.

What is Smart metering ?

- A smart meter is an electronic device that records information such as consumption of electric energy, voltage levels, current, and power factor.
- Smart meters communicate the information to the consumer for greater clarity of consumption behavior, and electricity suppliers for system monitoring and customer billing
- They are part of the Advanced Metering Infrastructure (AMI) solution that measures and records consumers' electricity usage at different times of the day and sends this information to the energy supplier.
- The technology through which such information is transferred is called RF or radio frequency mesh technology which is an over-the-air communication technology and works like Wifi.

What is the concern flagged by COAI?

- As this infrastructure will rely on unlicensed spectrum and equipment with limited or no security, external persons or agencies may get central access to the control centre as well as databases required for operation of the smart grid via security infringement.
- They can severely disrupt the operations of public utility infrastructure with the intent to harm.
- COAI also flagged the issue of quality of services as use of low quality equipment under the unlicensed spectrum for AMI may interfere with the licensed spectrum, thereby leading to service quality issues.

About Cellular Operators Association of India-

- It is an Indian non-governmental trade association and advocacy group focused mainly on the telecommunications industry.
- COAI was constituted in 1995 as a registered, non-governmental society.
- As of 2017, COAI has been (jointly) organizing the India Mobile Congress with the Department of Telecommunications, Government of India.

8.6 World Summit on the Information Society (WSIS) Award 2023

In news- AuditOnline – Facilitating Online audits across Panchayati Raj Institutions awarded the World Summit on the Information Society (WSIS) Prizes 2023 at the International Telecommunication Union (ITU), Geneva.

About WSIS award-

- World Summit on the Information Society (WSIS) is an annual award event coordinated by the International Telecommunication Union (ITU), affiliated with the United Nations (UN), in collaboration with UNESCO, UNDP and UNCTAD to promote ICTs for achieving UN Sustainable Development Goals.
- This event is intended for ICT development initiatives that support Sustainable Development Goals (SDGs).
- The WSIS Forum 2023 theme, 'WSIS Action Lines for Building Back Better and Accelerating the Achievement of the Sustainable Development Goals (SDGs)'.
- The WSIS Prizes 2023 is an exceptional international recognition of WSIS Stakeholders as Winners and Champions for their excellence in supporting the implementation of WSIS outcomes, WSIS Action Lines and the achievement of Sustainable Development Goals (SDGs).
- The Ministry of Panchayati Raj (MoPR) alongwith National Informatics Centre (NIC), functioning as technology partner of the Government, has been recognized for its AuditOnline software programme at the WSIS Forum 2023 at the ITU Headquarters in Geneva under Category 7 — Action Line (AL) C7 ICT Applications: e-Government — for conducting online audit of all Panchayati Raj Institutions (PRIs).
- AuditOnline was developed as part of Panchayat Enterprise Suite under ePanchayat Mission Mode Project initiated by MoPR in virtual mode.
- The prize distribution ceremony was held at the Centre International de Conférence Genève (CICG), also known as International Conference Centre Geneva in Switzerland on 14th March, 2023.

What is AuditOnline ?

- AuditOnline is one of the generic and open source applications developed as a part of Panchayat Enterprise Suite (PES) under e-panchayat Mission Mode Project (MMP) initiated by the Ministry of Panchayati Raj (MoPR).
- It facilitates the financial audit of accounts at all the three levels of Panchayats viz District, Block and Village Panchayats, Urban Local Bodies (ULB) and Line department by Auditors (State AG/LFA).
- The XV Finance Commission in its report laid down a two-point critical reform agenda wherein they emphasized on making available the accounts online, both before and after audit.
- To address this critical institution reform, MoPR launched the AuditOnline application on 15th April 2020, for carrying out online audits of accounts – further strengthening the financial management and transparency of the Panchayats.
- One of the unique aspects of the application is that it is configurable as per every States' Audit Act / Rules.

8.7 Jharniyojan portal of Jharkhand

In news- Moving closer towards its promise to ensure 75 percent employment to local candidates in the state's private sector, the Jharkhand government has recently launched 'Jharniyojan' portal.

About the portal-

- The portal will act as a platform for the employers to share businesses and manpower-related information and for the candidates looking for jobs.
- According to the government, all private establishments have to register themselves.
- The employers who make use of the portal will have to adhere to the 'Jharkhand State Employment of Local Candidates in Private Sector Act, 2021'.
- "Although there is a provision of punishment under the Act, local companies and employers are expected to voluntarily comply with it and provide employment opportunities to local youth/women.
- The 'Jharkhand State Employment of Local Candidates in Private Sector Act, 2021' was passed with the objective to provide employment opportunities to the unemployed youth of the state at the local level.
- As per the Act, 75% of jobs in private sectors with salaries up to Rs 40,000 are to be reserved for "locals" in the state.
- The government has specified that Central or state government undertakings will not be included in the Act.
- However, the provisions of the Act will be applicable to all the organisations outsourcing services to the establishments/undertakings of the central government or the state government.

8.8 Call Before u Dig mobile app

In news- Prime Minister Narendra of India has launched the 'Call Before u Dig' (CBuD) app recently.

About the app-

- It seeks to facilitate coordination between excavation agencies and underground utility owners to prevent damage to utilities due to digging.
- It is an initiative of the Department of Telecommunications, Ministry of Communications.
- It aims to prevent damage to underlying assets like optical fibre cables that occurs because of uncoordinated digging and excavation, leading to losses of about Rs 3,000 crore every year.
- It will save potential business loss and minimise discomfort to the citizens due to reduced disruption in essential services like road, telecom, water, gas and electricity.
- If the utility owner maps the existing assets using GIS coordinates on the PM GatiShakti NMP platform, then excavators will also be able to know the location of the underground assets

- The CBuD app will connect excavators and asset owners through SMS/Email notifications and click-to-call so that there are planned excavations in the country while ensuring the safety of underground assets.
- It aims to give excavating companies a point of contact, where they can inquire about existing subsurface utilities before starting excavation work.
- Utility owners can also find out about impending work at the location.

9. HISTORY

9.1 13th century temple built by Kayasthas unearthed

In news- 13th-century Hindu temple ruins have been recently unearthed amidst a shrub jungle northeast of the Durga temple, atop a hillock in the Pushpagiri Kshetram of Vallur mandal in Kadapa district of **Andhra Pradesh**.

Pushpagiri/Pushpachala-

- The hillock, also known as Pushpachala, is famous for the chain of temples dedicated to the pantheon of Hindu gods such as Chennakesava, Umamaheswara, Rudrapada, Vishnupada, Trikooteswara, Vaidyanatha, Subrahmanya, Vighneswara and Durga Devi.
- With the river Penna flowing southwest, this hilly region has over a hundred small and big temples in its vicinity.
- Pushpagiri is referred to as Hari-Hara Kshetra, as there are a number of temples dedicated to both Shiva and Vishnu.
- The Pushpeswara Swamy shrine is revered as a self-manifested idol, which can be found from Mackenzie local record No. 1211.
- The architectural features of the ruins reveal a style which is contemporary to a temple at Vallur, built by the Kayastha rulers in the 13 th Century AD.
- The structure in ruins came to light when a team guided by Sri Vidyasankara Bharathi, the pontiff of Pushpagiri Peetham, visited the area ahead of launching a 'Giri Pradakshina', a sacred trek perambulating the hill, as a form of fulfilment of a vow.
- According to historians, the images on the stone panel depicting the king and his two queens could also be identified with Kayastha Ambadeva.
- The temple was damaged over time by treasure hunters, as indicated by the pulling out of the consecrated idols.

About Kayasthas-

- The Kayasthas, including the great Ambadeva, were subordinates to the rulers of the Kakatiya dynasty.
- They ruled the region with Vallur as the capital.
- The founder of this dynasty was Gangaya Sahini (1239-1257 AD.)
- He was a subordinate ruler of Kakatiya Ganapatideva.
- His kingdom covered the regions of Palnadu, Kadapa and Panagallu of Nalgonda district.

9.2 Sisupalgarh- a fortified historic city is in danger

In news- Land sharks armed with heavy earth-moving equipment have damaged a portion of the wall of the fortified ancient city of Sisupalgarh in Odisha.

A brief history of Sisupalgarh-

- Sisupalgarh or Sisupalagada is situated in Khurda District in Odisha, India and houses ruined fortifications.
- It used to be the capital of ancient Kalinga.
- It is identified with Kalinganagara of Kharavela and Tosali of Ashoka.

- It is one of the largest and best preserved early historic fortifications in India, with the earliest occupation both inside and outside the latter sites northern rampart around 7th to 6th centuries BCE.
- This is the only fortified site in India having eight gateways.
- Prof B.B. Lal concluded that this fort city flourished between 3rd century BC and 4th century AD.
- On the basis of the new findings, M.L. Smith and R. Mohanty claimed in 2001 that the fortified city flourished from around 5th century BC and probably lasted well after the 4th century.
- Thus, this defensive settlement originated prior to the Mauryan empire.
- The excavation of the Sisupalgarh site was first taken up in 1948, when it was declared a Centrally Protected Monument under the provisions of the Ancient Monuments Preservation Act, 1904.
- The urban centre had an area of 1.2 km by 1 km, and it was surrounded by a moat.
- The water management system of the city was unique.
- The fortification was carried out in the 4th to 3rd century BCE, when King Kharavela took up the repair of the city 2,100 years ago.
- Sisupalgarh is said to be one of very few historical references of the present capital city of Bhubaneswar.

9.3 A hidden corridor discovered near 4,500-year-old Great Pyramid of Giza

In news- A hidden corridor, 9 m long and roughly 2 m wide, has been unearthed by scientists close to the main entrance of the 4,500-year-old Great Pyramid of Giza in Egypt.

The latest discovery and the technology used-

- **The tourists' entrance used today is the passage dug by the Abbasid Caliph al-Ma'mun's men** in the Middle Ages, located at the intersection of the Descending and Ascending Corridors.
- Scientists detected an empty space behind the northern face of the Great Pyramid, about 7 m above this entrance.
- Marked on the outside with a stone slab with a gabled chevron structure, **scientists have now confirmed the presence of a hidden corridor behind it.**
- The initial discovery of a void was made using a imaging technique known as **cosmic-ray muon radiography.**
- This method uses the penetrative power of cosmic subatomic particles called muons to scan large structures.
- **ScanPyramids, initiated in 2015, is an international project** that uses various high-tech instruments employing non-invasive infrared thermography, ultrasound, 3D simulations and cosmic-ray radiography to study the structures.

The Great Pyramid of Giza-

- It is the largest of the three pyramids in Giza, originally standing roughly 147 m above the Giza plateau.
- Construction was started in circa 2550 BC, during the reign of Khufu, often considered the greatest pharaoh of Egypt's old kingdom.
- It is estimated that the pyramid was built using 2.5 million stone blocks, each weighing between 2.5 and 15 tonnes.
- Building the Great Pyramid was a feat of engineering unmatched for thousands of years.
- It was the tallest structure on the planet until the main spire of the Lincoln Cathedral in the United Kingdom overtook it in 1400 AD – but also its symmetry and perfect alignment to the four cardinal directions.
- Greek historian Herodotus wrote about it glowingly in the 5th century BC, Arab travellers in the middle ages described and measured the structure with remarkable accuracy, and Napoleon Bonaparte, during his Nile expedition of 1798, spent days at Giza with a team of scholars and scientists, ostensibly starting the modern field of Egyptology as we know it.
- Its inner secrets – passages and chambers hiding many mysteries, some still untouched, others found and long forgotten, and many currently accessible.

- Khufu's pyramid contains by far the most elaborate system of passages and chambers concealed within any pyramid.
- While there is no consensus on who first entered the tomb after it was sealed in about 2566 BC, accounts as far back as that of Herodotus (445 BC) imply that at least some passages inside the pyramid had already been opened and explored in antiquity itself.
- There are two distinct tunnel systems inside the Great Pyramid – the Descending Passage (described by Greeks like Herodotus) and the Ascending Passage (more hidden, opened by the Arabs as recently as the 9th century).

9.4 1,300-yr-old Buddhist Stupa discovered in Odisha

In news- The Archaeological Survey of India (ASI) stumbled upon a 1,300-year-old stupa right in the middle of a mining site in Odisha's Jajpur district recently.

Key findings-

- A 4.5-metre tall stupa belonging to the 7th or 8th century was discovered.
- It is **from this place that Khondalite stones were supplied for the beautification project around the 12th Century Shree Jagannath Temple in Puri.**
- **The archaeological asset was found at Parabhadi which is situated near Lalitagiri, a major Buddhist complex,** having a large number of stupas and monasteries.
- Lalitagiri is a major Buddhist complex in the Indian state of Odisha.
- Significant finds at this complex include Buddha's relics. Tantric Buddhism was practiced at this site.

Khondalite stones mining-

- Khondalite stones were widely used in ancient temple complexes.
- After discovery of the Buddhist stupa from the mining site, the ASI intervened and asked the Odisha government to stop mining through its Odisha Mining Corporation (OMC).
- The mining has since stopped.
- The State government had come up with an ambitious plan to spend ₹3,208 crore under the Augmentation of Basic Amenities and Development of Heritage and Architecture (ABADHA) scheme in three years to transform Puri into a world heritage city.
- Khondalite stones are proposed to be used widely to maintain aesthetic value of some projects such as heritage security zone, Jagannath Ballav pilgrim centre, Puri lake development project, Atharnala heritage project and Matha Development Initiative.
- Sukhuapada was the biggest of six Khondalite stone blocks reserved for OMC.

Note:

- Khondalite is a foliated metamorphic rock.
- In India, it is also called Bezwada Gneiss and Kailasa Gneiss.
- Khondalite is mainly composed of feldspar, quartz, and mica, and has a distinct pinkish-grey coloration.
- It was named after the Khond tribe of Odisha and Andhra Pradesh because well-formed examples of the rock were found in the inhabited hills of these regions of eastern India.

9.5 Attukal Pongala

In news- Attukal Pongala, considered one of the largest women's gatherings in the world, around 15 lakh women participated in the festival.

About the festival-

- It is a 10-day religious festival celebrated at the Attukal Bhagavathy Temple in Thiruvananthapuram, Kerala.
- On the ninth day there is a huge gathering of millions of women in the temple surroundings.
- These women prepare a divine food made of rice in earthen pots and offer it to the Attukal Amma (Goddess of the Temple).
- The pongala preparation starts with the ritual called '*Aduppuvettu*', the lighting of the pongala hearth (called Pandara Aduppu) placed inside the temple by the chief priest. This is the earliest Pongala festival in Kerala.
- The festival is marked as the largest annual gathering of women by the Guinness World Records in 2009, when it celebrated 2.5 million attendees.
- Attukal Bhagavathy Temple is also known as "women's *Sabarimala*".

Attukal Bhagavathy temple-

- The deity worshipped in the temple is Kannagi, an incarnation of Goddess Parvati, Lord Shiva's consort.
- As we know from the Tamil poem Silappathikaram (the Epic of the Anklet by Ilango), Kannagi's husband Kovalan was sentenced to death by the Madurai king for reportedly stealing the queen's anklet.
- After proving the innocence of her husband, Kannagi leaves Madurai and heads to the Kodungalloor temple.
- On the way, she stops at Attukal and her incarnation is said to be Attukalamma, the Goddess in the temple.
- Attukal is where her rage was said to have subsided and Attukalamma became compassionate and helpful towards those who worshipped her.

Note:

- Silappathikaram or Silappatikaram is the earliest Tamil epic. It is a poem of 5,730 lines in almost entirely akaval meter.
- The epic is a tragic love story of an ordinary couple, Kannaki and her husband Kovalan.
- It was written in the 5th–6th century AD by Prince Ilanko Adikal (Ilango Adigal).

9.6 Indian, International laws on Antiquities

In news- Several countries including the USA, UK and Australia are returning antiquities to India. therefore it is important to know what are Indian and International laws on antiquities.

What is an antiquity?

- The Antiquities and Art Treasures Act, 1972, implemented on April 1, 1976, **defined "antiquity" as "any coin, sculpture, painting, epigraph or other work of art or craftsmanship; any article, object or thing detached from a building or cave; any article, object or thing illustrative of science, art, crafts, literature, religion, customs, morals or politics in bygone ages; any article, object or thing of historical interest" that "has been in existence for not less than one hundred years."**
- For "manuscript, record or other document which is of scientific, historical, literary or aesthetic value", this duration is "not less than seventy-five years."

International conventions Antiquities-

- The UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property defined "cultural property" as the property designated by countries having "importance for archaeology, prehistory, history, literature, art or science."

- In 2000, the General Assembly of the UN and the UN Security Council in 2015 and 2016 also raised concerns on the issue.
- An INTERPOL report in 2019 said that almost 50 years after the UNESCO convention, “the illicit international traffic of cultural items and related offences is sadly increasingly prolific.”

What do Indian laws say?

- In India, Item-67 of the Union List, Item-12 of the State List, and Item-40 of the Concurrent List of the Constitution deal with the country’s heritage.
- Before Independence, an Antiquities (Export Control) Act had been passed in April 1947 to ensure that “no antiquity could be exported without license.”
- In 1958, The Ancient Monuments and Archaeological Sites and Remains Act was enacted. Then in 1971, Parliament saw an uproar over the theft of a bronze idol from Chamba and some important sandstone idols from other places.
- This, along with the UNESCO convention, prompted the government to enact The Antiquities and Art Treasures Act, 1972 (AATA), implemented from April 1, 1976.
- The AATA states, “it shall not be lawful for any person, other than the Central Government or any authority or agency authorised by the Central Government in this behalf, to export any antiquity or art treasure... No person shall, himself or by any other person on his behalf, carry on the business of selling or offering to sell any antiquity except under and in accordance with the terms and conditions of a licence.”
- This licence is granted by the Archaeological Survey of India (ASI). After the AATA was implemented, the Centre asked traders in antiquities and art objects to declare their possessions of antiquities by June 5, 1976, and individual owners by July 5, 1976.

How is ownership proved?

- The UNESCO 1970 declaration stated that, “the requesting Party shall furnish, at its expense, the documentation and other evidence necessary to establish its claim for recovery and return.”
- The first thing in order to prove the ownership is the complaint (FIR) filed with the police.
- In India, the problem with missing antiquities is that in many cases, there is no FIR. But other proof, like details mentioned by reputed scholars in research papers etc., also work.
- **Under section 14(3) of the AATA, “Every person who owns, controls or is in possession of any antiquity” shall register such antiquity before the registering officer “and obtain a certificate in token of such registration.”**

Can India bring back antiquities?

- There are three categories to take note of: antiquities taken out of India pre-independence; those which were taken out since independence until March 1976, i.e. before the implementation of AATA; and antiquities taken out of the country since April 1976.
- For items in the first two categories, requests have to be raised bilaterally or on international fora.
- Antiquities in the second and third categories can be retrieved easily by raising an issue bilaterally with proof of ownership and with the help of the UNESCO convention.

Note: Provenance of antiquity includes the list of all owners from the time the object left its maker’s possession to the time it was acquired by the current owner.

9.7 Bobbili Veena

In news- The famous Bobbili Veena is likely to get global attention as the Andhra Pradesh government is preparing to present its replicas as part of cultural exchange to the delegates of G-20 conference.

About Bobbili Veena-

Bobbili Veena, popularly known as Saraswati Veena, a large plucked string instrument is used in Carnatic music.

- The **making of the veena began in the 17th century during the reign of Pedda Rayudu**, the king of Bobbili Samsthanam who was a great patron of music.
- It was the result of the Vizianagaram-Bobbili rivalry as a craftsman named Musanna Chinayya from Vizianagaram urged and challenged artisans of Bobbili to make veena showing their best craftsmanship.
- The zamindar of Bobbili Raja Ravu Vankata Kumar Krishna Ranga Rao, who was also a musician, accepted the challenge.
- He asked Sarvasiddhi Acchanna (of Viswa Brahmin community) to make an exceptional veena and he did so in a span of two months.
- The Bobbili veena is 54 inches long, with a diameter 14.5 inches and are very durable. Frets in other veenas are made of brass and not bell metal as in the case of Bobbili veena.
- Bobbili Veena **is carved from a single piece of jackwood by Sarvasiddhi community** artisans of Gollapalli under Bobbili Samsthanam.
- Sarvasiddhi hereditary artisans from Gollapalli have made the veenas by using elephant tusks, stag horns and strings to get 'Sapta Swaras' during Bobbili Raja's regime.
- It has **earned a GI tag in 2012** for its unique design and high-quality craftsmanship.
- However, it is gasping for its survival due to lack of artisans.

9.8 Bumchu festival of Sikkim

In news- Bumchu festival is celebrated at Tashiding Monastery, West Sikkim on the 15th day of the first month of the Lunar calendar corresponding to the month of February/March.

About the festival-

- Bumchu, the Tashiding **holy water vase ritual**, is a unique and important occasion that draws travellers from all over the world.
- **Bumchu means "pot of sacred water" in Tibetan.**
- Annual performances of this ancient ceremony are held at the Tashiding Monastery, one of the most sacred Buddhist pilgrimage sites **located** on a hilltop overlooking the **Rangit River in Sikkim**.
- Legend has it that during his journey to Sikkim in the eighth century, **Guru Padmasambhava, better known as Guru Rinpoche**, the great Buddhist guru who brought Buddhism to Tibet, blessed the location of the monastery.
- A Nyingma teacher named **Ngadak Sempa Chempo Phuntshok Rigzing later founded the monastery in the 17th century.**
- The **Bumchu festival commemorates a supernatural occurrence that took place in the 18th century under Chogyal Chakdor Namgyal.**
- At the event, pilgrims travel to Tashiding from all around India as well as from nearby nations like Bhutan, Nepal, and Sri Lanka.
- Sacred rituals are carried out by monks and nuns, who also recite prayers and offer gifts to the gods.

9.9 Matua Maha Mela

In news- The Prime Minister, Shri Narendra Modi urged people to visit Matua Maha Mela in large numbers and paid tribute to Shri Shri Harichand Thakur Ji for showing the path of kindness and service.

About Matua Maha Mela-

- The mela was organised to celebrate the **212th birth anniversary of Sri Sri Harichand Thakur ji**, the founder of the Matua sect.

- **It was organised by the All India Matua Mahasangha and was held at Sridham Thakurnagar, Thakurbari in North 24 Parganas of West Bengal.**

A brief note on Sri Sri Harichand Thakur ji-

- He was born around 1811 to a peasant family of Thakur community in Orakandi, Gopalganj District of Bengal presidency (presently in Bangladesh).
- He dedicated his whole life to bring salvation to the downtrodden.
- The social and religious movement started by him originated in Orakandi (now in Bangladesh) in 1860 and led to the formation of the Matua Dharma or a **sect of Vaishnavite Hinduism called "Matua"**.
- This was adopted by members of the Namasudra community, who were then considered to be untouchables.
- It has subsequently attracted adherents from other caste communities that were marginalized by the upper castes, including the Malis, Telis and Chamars.
- After the death of Sri Sri Harichand Thakur, his son, Guruchand Thakur (born 1846), took the lead of Matua Mahasangha.
- He was the man under whose phenomenal leadership Matua sect came to be associated with the Namasudra social protest movement started in 1872.
- As of now, Matua sect is a leading community working for the upliftment of Bengali Dalits residing in India & Bangladesh.

9.10 Centenary of Vaikom Satyagraha

In news- The State-level inauguration of the Vaikom Satyagraha centenary celebrations will be jointly done by Chief Minister Pinarayi Vijayan and his Tamil Nadu counterpart M.K. Stalin at Vaikom on April 1.

Brief history of Vaikom Satyagraha-

- Vaikom Satyagraha, from 30 March 1924 to 23 November 1925, was a nonviolent agitation for access to the prohibited public environs of the Vaikom Temple in the Kingdom of Travancore.
- The Kingdom of Travancore was known for its rigid and oppressive caste system and hence Swami Vivekananda called Travancore a "lunatic asylum".
- The agitation was conceived by the Ezhava Congress leader and a follower of Sri Narayana Guru, T. K. Madhavan.
- It demanded the right of the Ezhavas and 'untouchables' to use roads around the Vaikom Temple.
- The campaign, led by Congress leaders T. K. Madhavan, K. Kelappan and K. P. Kesava Menon, was noted for the active support and participation offered by different communities and a variety of activists.
- Mahatma Gandhi himself visited Vaikom in March, 1925. The Travancore government eventually constructed new roads near the temple for the use of lower castes but kept the lower castes adequately away from the near environs of the Vaikom Temple and the temple remained closed to the lower castes.
- Regent Sethu Lakshmi Bayi released all those arrested and opened the north, south and west public roads leading to Vaikom Mahadeva Temple to all castes.
- She refused to open the eastern road and the compromise was criticized by E. V. Ramasamy "Periyar" and some others.
- Only in 1936, after the Temple Entry Proclamation, was access to the eastern road and entry into the temple allowed to the lower castes.
- Vaikom Satyagraha markedly brought the method of nonviolent public protest to Kerala.

The Sree Vaikom Mahadeva Temple-

- It is a temple dedicated to the Hindu god Shiva in Vaikom, Kerala, India.
- The temple, along with the Ettumanoor Shiva Temple and the Kaduthuruthy Shiva Temple is considered a powerful place of Shiva.

- The belief is that if a devotee worships all the three temples before the *Ucha puja*, all his/her wishes are fulfilled.
- The temple is one of the few temples which is held in reverence by both Shaivas, the adherents of Shiva and Vaishnavas, the adherents of Vishnu.
- In Vaikom, Shiva is fondly called as *Vaikkathappan*, the lord of Vaikom.
- The lingam here is believed to be from the *Treta Yuga*, the third age of Hinduism and is considered one of the oldest temples in Kerala where puja has not been broken since its inception.

9.11 Sharada Peeth corridor

In news- Recently, the Union Home Minister has said that the government will move forward to open Sharda Peeth on the lines of the Kartarpur corridor.

About Sharda Peeth-

- Sharda Peeth, **a revered site for the Hindu community, is located in Neelum Valley in Pakistan Occupied Kashmir (PoK)** across Teetwal village (in the Neelum Valley) in Kupwara district of Jammu and Kashmir, along the Line of Control (LoC).
- It is situated 1,981 metres (6,499 ft) above sea level, along the Neelum River in the village of Sharda, in the **valley of Mount Harmukh**, believed by Kashmiri Pandits to be the abode of Shiva.
- **It was among the most prominent temple universities in the Indian subcontinent.**
- Known in particular for its library, stories recount scholars travelling long distances to access its texts.
- It played a **key role in the development and popularization of the Sharada script in North India**, causing the script to be named after it, and Kashmir to acquire the moniker "**Sharada Desh**", meaning "**country of Sharada**".
- As **one of the Maha Shakti Peethas**, Hindus believe that it represents the **spiritual location of the goddess Sati's fallen right hand**.
- Sharda Peeth is **one of the three holiest sites of pilgrimage for Kashmiri Pandits**, alongside the Martand Sun Temple and the Amarnath Temple.
- It was probably commissioned by **Lalitaditya Muktapida** (r. 724 CE–760 CE) though no definitive evidence exists in favor.
- **Al-Biruni recorded the place for the first time**, as a revered shrine housing a wooden image of Sharda — however, he had never ventured into Kashmir and based his observations on hearsay.

9.12 Vedic Heritage Portal

In news- The Vedic Heritage Portal of the Indira Gandhi National Centre for the Arts (IGNCA) has been launched recently.

About the portal-

- The portal is a **one-stop solution for common users and researchers** seeking any information regarding 'Vedic' heritage.
- It gives detailed information about oral traditions, textual tradition in the form of published books/manuscripts, or implements.
- The portal aims to communicate messages enshrined in the Vedas and will help common people to have a general understanding about the Vedas.
- This portal has over 18 thousand mantras of the four vedas with a duration of over 550 hours.

About IGNCA-

- The Indira Gandhi National Centre for the Arts, established in memory of Smt. Indira Gandhi, is visualized as a centre encompassing the study and experience of all the arts – each form with its own integrity, yet within a dimension of mutual interdependence, interrelated with nature, social structure and cosmology.

- The IGNC comes under the Ministry of Culture.
- The IGNC was built in the late 1980s after an international jury comprising British architect James Sterling and India's B V Doshi picked American architect Ralph Lerner's design.
- It was inaugurated in November 1985 by then Prime Minister Rajiv Gandhi.

Note: During the same 'Kala Vaibhav', a virtual museum based on 64 arts was also inaugurated, through which, the world would be more familiar with India's architecture, painting, drama, music, and thereby the rich history of the country's glorious culture.

10. LAW AND POLICY

10.1 What are the provisions for summoning the legislative assembly?

In news- Punjab government has moved to Supreme Court over Governor's refusal to give his approval for the Punjab Cabinet's decision to summon a Budget session of Vidhan Sabha from March 3.

What are the constitutional provisions for summoning the assembly by governor?

- The Governor has to act according to the aid and advice of the council of ministers.
- Constitutionally, the office of the Governor has little discretion to not act on the cabinet's advice.
- Under Article 174, a Governor shall summon the House at a time and place, as she or he thinks fit.
- Article 174 (2) (a) says a Governor may from "time to time" prorogue the House and 174 (2) (b) allows her or him to dissolve the Legislative Assembly.
- Article 163(1) of the Constitution says that "there shall be a council of Ministers with the Chief Minister at the head to aid and advise the Governor in the exercise of his functions, except in so far as he is by or under this constitution required to exercise his functions or any of them in his discretion."
- A joint reading of the two provisions leaves the Governor with minimal discretion in summoning the house.
- In 2016, a Constitution Bench of the Supreme Court in *Nabam Rebia and Bamang Felix vs Deputy Speaker, or the Arunachal Pradesh Assembly* case, expressly said that the power to summon the House is not solely vested in the Governor.

On what grounds has the Punjab Governor refused?

- Governor Purohit has cited Article 167 of the Constitution, which relates to the duties of the Chief Minister in furnishing information to the Governor.
- However, there are a few instances when the Governor can act independently on summoning the House. For example, when the chief minister has lost the support of the House and his strength is debatable, then the Governor need not wait for the advice of the council of ministers to hold a floor test.

Can the government summon the House without the Governor's approval?

- Procedure as per Article 174 of the Constitution requires the Governor to summon the House.
- The council of ministers approves the government's decision of convening the House. The government then writes to the Governor about the Cabinet's decision and it is then approved.
- Additionally, Article 175 provides for the right of the Governor to address and send messages to the House.
- The Governor may address the Legislative Assembly and may for that purpose require the attendance of members.
- As per Article 176, the Governor has to address the house at the commencement of the first session after each general election to the Legislative Assembly and at the commencement of the first session of each year.

10.2 Centre suspends FCRA license of the Centre for Policy Research (CPR)

In news- The Union Home Ministry has recently suspended the Foreign Contribution Regulation Act (FCRA) licence of the Centre for Policy Research (CPR).

What is the FCRA?

- **The FCRA was enacted during the Emergency in 1976** amid apprehensions that foreign powers were interfering in India's affairs by pumping money into the country through independent organisations.
- **The law sought to regulate foreign donations to individuals and associations** so that they functioned "in a manner consistent with the values of a sovereign democratic republic".
- **An amended FCRA was enacted under the UPA government in 2010** to "consolidate the law" on utilisation of foreign funds, and "to prohibit" their use for "any activities detrimental to national interest".
- **The law was amended again by the current government in 2020, giving the government tighter control** and scrutiny over the receipt and utilization of foreign funds by NGOs.
- **Broadly, the FCRA requires every person or NGO seeking to receive foreign donations-**
- **To be registered under the Act.**

To open a bank account for the receipt of the foreign funds in **State Bank of India, Delhi.**

To utilise those funds only for the purpose for which they have been received and as stipulated in the Act.

- **They are also required to file annual returns**, and they must not transfer the funds to another NGO.
- **The Act prohibits the receipt of foreign funds by candidates for elections, journalists or newspaper and media broadcast companies, judges and government servants**, members of legislature and political parties or their office-bearers, and organisations of a political nature.
- **In July 2022, the MHA effected changes to FCRA rules** through two gazette notifications and **increased the number of compoundable offences under the Act from 7 to 12.**
- The other key changes were **exemption from intimation to the government for contributions less than Rs 10 lakh (the earlier limit was Rs 1 lakh)** - received from relatives abroad, and increase in time limit for intimation of opening of bank accounts.
- Under the new rules, political parties, legislature members, election candidates, judges, government servants, journalists and media houses among others – all barred from receiving foreign contribution – will no longer be prosecuted if they receive foreign contribution from relatives abroad and fail to intimate the government within 90 days.
- However, the recipient will be required to pay 5% of the foreign contribution received.

How is FCRA registration granted?

- NGOs that want to receive foreign funds must apply online in a prescribed format with the required documentation.
- **FCRA registrations are granted to individuals or associations** that have definite cultural, economic, educational, religious, and social programmes.
- **Following the application by the NGO, the MHA makes inquiries through the Intelligence Bureau** into the antecedents of the applicant, and accordingly processes the application.
- **Under the FCRA, the applicant should not be fictitious or benami; and should not have been prosecuted or convicted** for indulging in activities aimed at conversion through inducement or force, either directly or indirectly, from one religious faith to another.
- **The applicant should also not have been prosecuted for or convicted of creating communal tension or disharmony; should not have been found guilty of diversion or misutilisation of funds; and should not be engaged or likely to be engaged in the propagation of sedition.**
- **The MHA is required to approve or reject the application within 90 days.**
- In case of failure to process the application in the given time, the MHA is expected to inform the NGO of the reasons for the same.
- **Once granted, FCRA registration is valid for five years.**
- **NGOs are expected to apply for renewal** within six months of the date of expiry of registration.

- In case of failure to apply for renewal, the registration is deemed to have expired, and the NGO is no longer entitled to receive foreign funds or utilise its existing funds without permission from the ministry.

On what basis is approval cancelled?

- The government reserves the right to cancel the FCRA registration of any NGO if it finds it to be in violation of the Act.
- Registration can be cancelled if an inquiry finds a false statement in the application;

If the NGO is found to have **violated any of the terms and conditions** of the certificate or renewal;

If it has **not been engaged in any reasonable activity in its chosen field for the benefit of society** for two consecutive years;

Or if it has become **defunct**.

- It can also be cancelled if “in the opinion of the Central Government, it is necessary in the public interest to cancel the certificate”.
- **Registrations are also cancelled when an audit finds irregularities in the finances** of an NGO in terms of misutilisation of foreign funds.
- No order of cancellation of certificate can be made unless the person or NGO concerned has been given a reasonable opportunity of being heard.
- Once the registration of an NGO is cancelled, it is not eligible for re-registration for three years.
- The ministry also has powers to suspend an NGO’s registration for 180 days pending inquiry, and can freeze its funds.
- All orders of the government can be challenged in the High Court.

The Centre for Policy Research (CPR)-

- The Centre for Policy Research is an Indian think tank focusing on public policy.
- CPR is a non-profit, non-partisan, independent institution dedicated to conducting research that contributes to high quality scholarship, better policies, and a more robust public discourse about the issues that impact life in India.
- Established in 1973 and located in New Delhi, it is one of the national social science research institutes recognized by the Indian Council of Social Science Research(ICSSR).
- It is recognised as a not-for-profit society by the Government of India, and its contributions to the Centre are tax exempt.
- CPR works with government departments, autonomous institutions, charitable organisations and universities in India and across the globe and CPR scholars have made pioneering contributions to public policy in India.
- Former Prime Minister Manmohan Singh and late Chief Justice of India Y.V. Chandrachud are the former members of the CPR governing board.
- CPR receives grants from the ICSSR, and is a Department of Science and Technology (DST) recognised institution.
- CPR receives grants from a variety of domestic and international sources, including foundations, corporate philanthropy, governments, and multilateral agencies.

10.3 Supreme Court of India verdict on ECI appointments

In news- A five-judge bench of the Supreme Court recently unanimously ruled that a high-power committee must pick the Chief Election Commissioner (CEC) and Election Commissioners (ECs).

What is the challenge?

- According to **article 324(2)** of the Indian constitution, the Election Commission shall consist of the Chief Election Commissioner and such number of other Election Commissioners, if any, as the President may

from time-to-time fix and the appointment of the Chief Election Commissioner and other Election Commissioners shall, subject to the provisions of any law made in that behalf by Parliament, be made by the President.

- The crux of the challenge is that **since there is no law made by Parliament on this issue, the Court must step in to fill the “constitutional vacuum.”**
- This examination also leads to the larger question of separation of powers and if the judiciary is overstepping its role in filling this gap in the law.
- **Two corollary issues that were also examined by the Court are whether the process of removal of the two Election Commissioners must be the same as the CEC; and regarding the funding of the EC.**
- **As per the current process, the Law Minister suggests a pool of suitable candidates to the Prime Minister for consideration** and the President makes the appointment on the advice of the PM.

What is the court’s verdict?

- The apex court verdict stated that the appointment of the Chief Election Commissioner and the Election Commissioners shall be made by the President on the advice of a Committee consisting of the Prime Minister, the Leader of the Opposition of the Lok Sabha, and in case no leader of Opposition is available, the leader of the largest opposition Party in the Lok Sabha in terms of numerical strength, and the Chief Justice of India.
- The bench made it clear that this will be subject to any law to be made by Parliament.
- This means that Parliament can undo the effect of the SC verdict by bringing in a new law on the issue.
- On the issue of whether the process of removal of Election Commissioners must be the same as it is for the CEC, the Court ruled that it cannot be the same.
- The Constitution states that the CEC can be removed in a process similar to a judge — through a majority in both houses of Parliament on grounds of proven incapacity or misbehaviour.
- The Court said that it may be true that there is equality otherwise, which exists between the Chief Election Commissioner and the Election Commissioners in various matters dealt with under the Act. However, we must bear in mind, in law, Article 324 is inoperable without the Chief Election Commissioner.
- On the issue of funding the EC, the bench said that they would only make an appeal on the basis that there is an urgent need to provide for a permanent Secretariat and also to provide that the expenditure be charged on the Consolidated Fund of India and it is for the Union of India to seriously consider bringing in the much-needed changes.

10.4 Old Pension Scheme vs New Pension Scheme

In news- Government has allowed a one-time option to opt for the OPS to the Central government employees who applied for jobs advertised before December 22, 2003, the day NPS was notified but joined the service on or after January 1, 2004, the day the NPS came into effect.

Key updates-

- The employees have time till August 31 2023 to opt for the OPS.
- The order will be applicable to Central Armed Police Force (CAPF) personnel and other Central government employees who joined the services in 2004 as the recruitment process was delayed due to administrative reasons.
- The employees’ contribution to the NPS will be credited to the General Provident Fund (GPF) of the individual.
- Several states such as Chhattisgarh, Rajasthan, Jharkhand and Himachal Pradesh have announced that they would restore the OPS.
- Till January 31, there were 23,65,693 Central government employees and 60,32,768 State government employees enrolled under the NPS.
- Except West Bengal, all States had implemented the NPS.

OPS vs NPS

- Under the OPS, retired employees received 50% of their last drawn salary as monthly pensions.
- However, NPS is a contributory pension scheme under which employees contribute 10% of their salary (basic + dearness allowance). The government contributes 14% towards the employees' NPS accounts.
- In the OPS, it's predetermined how much pension an employee will get linked to her last drawn salary and length of service.
- NPS, on the other hand, is a market-linked savings product that has a defined contribution.
- NPS allows an individual to invest in three types of funds –
 1. Safe, or conservative (allowing up to 10% investment in equity).
 2. Balanced, or moderate (up to 30% in equity).
 3. Growth, aggressive (up to 50% in equity).
- The balance would be invested in corporate bonds or government securities.
- **Annuity in the NPS allows employees to receive continuous income in later years after retirement.** For example, in the case of OPS, if a government employee's basic monthly salary at the time of retirement was Rs 10,000, she would be assured of a pension of Rs 5,000.
- Additionally, the monthly pension increases with hikes in dearness allowance announced by the government for serving employees.
- **In the case of the NPS, the pension benefit is determined by factors such as the amount of contribution made, the age of joining, the type of investment, and the income drawn from that investment.**
- **Private employees can also choose to contribute to NPS.** For example, if your current age is entered as 35 and the retirement age is 60, then the total investing period will be 25 years. Your monthly contribution towards NPS can be as low as Rs 1,000. The interest earned is on a monthly compounding basis.

Note:

- Dearness allowance is calculated as a percentage of an Indian citizen's basic salary to mitigate the impact of inflation on people.
- Dearness allowances are revised twice a year, effective January 1 and July 1.
- A 4% dearness allowance hike would mean that a retiree with a pension of Rs 5,000 a month would see her monthly income rise to Rs 5,200 a month.

Old vs New

A look at the difference between the old and the new pension schemes

Old Pension Scheme	National Pension Scheme
<ul style="list-style-type: none"> ■ The scheme guarantees a life-long income, post-retirement 	<ul style="list-style-type: none"> ■ It is a participatory scheme, where employees contribute to their pension corpus from their salaries, with matching contribution from the government
<ul style="list-style-type: none"> ■ Government bears the expenditure incurred on the pension 	<ul style="list-style-type: none"> ■ The funds are invested in earmarked investment schemes through Pension Fund Managers
<ul style="list-style-type: none"> ■ Under the scheme, a monthly payment is assured, where the amount is equivalent to 50% of the last drawn salary 	<ul style="list-style-type: none"> ■ On retirement, 60% of the corpus, which is tax-free, is withdrawn while the remaining 40% is invested in annuities, which is taxed



Criteria	New pension scheme	Old pension scheme
Public coverage	Anyone from the age of 18 till 55	Only central government employees
Contribution	All the contributions are included along with dearness allowance	10% of (special pay+basic pay+other allowances)
Fund management	Six fund managers	Managed by Provident fund trust
Regulation	PFRDA	No such body
Charges	Fixed as well as variable charges applicable	No extra charges applicable
Bank account	Same account is only required	Separate account needed

10.5 Supreme Court eases norm for appointment of consumer court presidents, members

In news- Recently, the Supreme Court of India has used its extraordinary powers under **Article 142** to ease the norm for selection of consumer court presidents, members.

What are the eased norms?

- To attract younger talent to preside over consumer courts, the court has reduced the mandatory professional experience from 20 to 10 years.
- The apex court said the Central government and the state governments concerned have to come up with an amendment in the Consumer Protection Rules, 2020 to provide for 10 years' experience to become eligible for appointment as President and member of the state commission and district forums instead of 20 years and 15 years respectively.
- However, it did not want to wait for the law and said its judgment would fill the vacuum until the amendments were made in the 2020 Rules.
- It has directed that in future and hereinafter, a person having bachelor's degree from a recognised university and who is a person of ability, integrity and standing, and having special knowledge and professional experience of not less than 10 years in consumer affairs, law, public affairs, administration, economics, commerce, industry, finance, management, engineering, technology, public health or medicine, shall be treated as qualified for appointment of president and members of the State Commission.
- The judgment noted that appointments to the district consumer commissions would also be made on the same criteria.
- It also introduced written exams and viva voce to check the candidates' performance.
- The written test would have two papers on subjects like current affairs, the Constitution, consumer laws, drafting, etc.

Note: Under Rule 6(9), the Selection Committee is empowered with the uncontrolled discretionary power to determine its procedure to recommend candidates to be appointed as President and Members of the State and District Commission. The transparency and selection criteria are absent under Rule 6(9).

10.6 Muslim Personal Law (Shariat) Application Act, 1937

In news- Nearly three decades after they were first married according to religious laws, a Muslim couple in Kerala's Kasaragod registered their marriage under the secular Special Marriage Act.

Why is the couple registering their marriage again?

The couple says this is to avoid their inheritance being split under the Shariat legal code, and to ensure only their three daughters can be their legal heirs as per civil law.

Muslim Personal Law (Shariat) Application Act, 1937-

- Inheritance for Muslims in India is governed by this Act.
- It is a short statute with five provisions only.
- This law deals with marriage, succession, inheritance and charities among Muslims.
- Previously, this Act was not applicable in the North-West Frontier Province as they had their own legislation with divergent traits by the name of NWFP Muslim Personal Law (Shariat) Application Act, 1935.
- But as of now, the Act of 1937 extends to the whole of India as has been provided under Section 1(2) of the Act.
- This legislation that codifies Shariat recognises two kinds of legal heirs- sharers and residuaries.
- A legal heir who gets a share in the inheritance are twelve categories- (1) Husband, (2) Wife, (3) Daughter, (4) Daughter of a son (or son's son so on), (5) Father, (6) Paternal Grandfather, (7) Mother, (8) Grandmother on the male line, (9) Full sister (10) Consanguine sister (11) Uterine sister, and (12) Uterine brother.
- Residuary heirs can be aunts, uncles, nieces, nephews and other distant relatives. The value of their share depends on several scenarios.
- Daughters cannot inherit more than half of what the sons inherit.
- The estate of a Muslim can only pass to a Muslim, which prejudices the wife or children following another religion.
- Under Shariat law, only 1/3 of the estate can be willed in favour of anyone.
- The remaining will still have to be divided as per the complex religious law. Therefore, a Muslim couple has no way under the religious law to make someone their sole heirs.

10.7 Finance Ministry brings Crypto assets under Prevention of Money Laundering Act

In news- In order to widen the taxation and regulatory net and give teeth to agencies, the government issued a notification bringing transactions involving crypto assets under the Prevention of Money Laundering Act(PMLA).

Key updates-

- The finance ministry notified changes to rules related to maintenance of records under the Prevention of Money Laundering Act.
- As per the changes, the **ownership threshold has been reduced to 10% from 25% earlier.**
- This means that any individual or group having 10% ownership in the client of a 'reporting entity' will now be considered a beneficial owner.
- Under the anti-money laundering law, 'reporting entities' are banks and financial institutions, firms engaged in real estate and jewellery sectors.
- They also include intermediaries in casinos and crypto or virtual digital assets.
- As per the latest change, entities dealing in virtual digital assets will now be considered 'reporting entity' under the PMLA.
- It laid out the nature of transactions to be covered under PMLA. **These are as follows:**
 - Exchange between virtual digital assets and fiat currencies;

- Exchange between one or more forms of virtual digital assets;
- Transfer of virtual digital assets;
- Safekeeping or administration of virtual digital assets or instruments enabling control over virtual digital assets;
- Participation in and provision of financial services related to an issuer's offer and sale of a virtual digital asset.
- The measure is expected to aid investigative agencies in carrying out action against crypto firms.
- The Enforcement Directorate and Income Tax Department have either probed or are probing several cases against companies running cryptocurrency exchanges and transactions.
- ED, for instance, froze the bank balances of the popular WazirX exchange in 2022.

What is virtual digital asset?

According to the Income tax act, 'virtual digital asset' refers to any information, code, number, or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise and can be called by whatever name.

Legal status of crypto in India-

- In the Union Budget of 2022, even though the government brought in a tax for cryptocurrencies, it did not proceed with framing regulations.
- Earlier, the **Reserve Bank of India had proposed a ban that was set aside by a court order.**
- In July 2022, flagging the RBI's concerns, Finance Minister Nirmala Sitharaman told Parliament that "international collaboration" would be needed for any effective regulation or ban on cryptocurrency.
- **From April 2022, India introduced a 30 per cent income tax on gains made from cryptocurrencies.**
- **In July 2022, rules regarding 1 per cent tax deducted at source on cryptocurrency came into effect.**

10.8 Women's Reservation Bill

In news- Bharat Rashtra Samithi (BRS) leader K Kavitha recently took a day-long hunger strike in New Delhi, demanding passage of the Women's Reservation Bill (WRB).

Timeline of the Women's Reservation Bill-

- The Bill seeks to reserve one-third of the total number of seats in state Assemblies and Parliament for women.
- **The WRB was first introduced in 1996 by the HD Deve Gowda government.**
- After the Bill failed to get approval in Lok Sabha, it was referred to a Joint Parliamentary Committee chaired by Geeta Mukherjee, which presented its report in December 1996.
- However, the **Bill lapsed with the dissolution of the Lok Sabha and had to be reintroduced.**
- **Atal Bihari Vajpayee's NDA government reintroduced the Bill in the 12th Lok Sabha in 1998.** Yet again, it failed to get support and lapsed.
- In **1999, the NDA government reintroduced it in the 13th Lok Sabha.** Subsequently, the Bill was introduced twice in Parliament in 2003.
- **In 2004, the UPA government included it in its Common Minimum Programme and finally tabled it,** this time in Rajya Sabha to prevent it from lapsing again, in 2008.
- Five of the seven recommendations made by the 1996 Geeta Mukherjee Committee were included in this version of the Bill. These were-
 - Reservation for a period of 15 years.
 - Including sub-reservation for Anglo Indians.
 - Including reservation in cases where the state has less than three seats in Lok Sabha (or less than three seats for SCs/STs).
 - Including reservation for the Delhi assembly.
 - changing not less than one-third to as nearly as may be, one-third.

- Notably, two of the excluded recommendations (regarding reservation for OBC women as well as reservation for women in the Rajya Sabha and legislative council) became major sticking points.
- On March 9, 2010, the Bill was passed in the Rajya Sabha with 186-1 votes after immense debate, creating history.
- The Bill, then, reached the Lok Sabha and when the House was dissolved in 2014, it lapsed once again.
- It is seen as a logical extension of the 72nd and 73rd constitutional amendments (1992,1993), which reserved one third of all seats and chairperson posts for women in rural and urban local governments.

Opposition to WRB-

- But there has also been more substantive opposition to the WRB and has come from parties such as SP, RJD and JD(U).
- A crucial sticking point for them has been the issue of providing quotas to OBC women within the ambit of the Bill.
- While the 1996 committee recommendations included instituting reservation for OBC women within the one-third reservation for women that the Bill proposed, this demand has never been incorporated.

Women in Parliament: India and the rest of the world-

- Currently, just **14 percent of Lok Sabha MPs are women (78 in total)**. Women make roughly 11 percent of the Rajya Sabha.
- While the number has increased significantly since the **first Lok Sabha, where women made about 5 percent** of the total MPs, it is still far lower than many countries.
- According to data from PRS, **Rwanda (61 per cent), South Africa (43 per cent) and even Bangladesh (21 per cent), are ahead of India** in this matter.
- According to the Inter-Parliamentary Union's latest report, **India ranks 144 out of 193 countries in the representation of women in Parliament.**
- As a study by the American Economic Association showed, countries with a higher share of women in national parliament are more likely to pass and implement gender sensitive laws.
- Moreover, political participation itself is a human right – regardless of the instrumental value of women's representation in legislatures.

10.9 First Edition of Women Icons Leading Swacchata (WINS) Awards 2023

In news- To highlight the impact of women in sanitation and waste management, the Union Minister for Housing and Urban Affairs has announced the WINS Awards 2023 on the eve of International Women's Day.

About WINS awards-

- The WINS Awards 2023 aim to recognize, celebrate and disseminate inspiring and exemplary initiatives in urban sanitation and waste management by women-led organizations and individual women.
- Applications for the Awards are open to Self-Help Groups (SHGs), Micro-enterprises, Non-Government Organisations (NGOs), Startups and Individual Women Leaders/Swachhata champions.
- Thematic areas for considering the applications include-
 - Management of Community/Public Toilets.
 - Septic Tanks Cleaning Services.
 - Treatment Facilities (Used Water/Septage).
 - Municipal Water collection and /or Transportation.
 - Operation of Material Recovery Facilities.
 - Waste to Wealth products.
 - Treatment Facilities (Solid Waste Management).
 - IEC, Training, Capacity Building.

- Technology and Intervention and Others.
- Urban Local Bodies (ULBs) will evaluate entries & nominate up to 5 applicants to the State via the Swachhatam portal.
- ULBs can organize public felicitation of their nominees as city winners.
- ULB wise nominations will be evaluated at the State level. Up to 3 entries in each category will be nominated by the State to the Ministry of Housing and Urban Affairs (MoHUA).
- State can organize public felicitation of nominees as State winners.
- State nominations will be evaluated at the national level on their innovativeness, impact, uniqueness, sustainability & replicability.
- At the national level, the MoHUA team will set up a Jury to evaluate the applications and select winners in each category.
- The Jury shall comprise stakeholders from cities and States, independent experts, brand ambassadors, influencers and industry representatives. Winning entries will be featured in a compendium.

International Women's Day-

- The goal behind Women's Day is to spread the message of gender equality, celebrate the achievements and contributions of women in different spheres, and work towards building a society free of all gender biases, stereotypes, gender parity and discrimination.
- **The theme for International Women's Day 2023 is DigitALL: Innovation and technology for gender equality.**
- The IWD celebration started with women's rights movements in the US, Russia and other European countries where they demanded civil, social, political and religious rights for women.
- In 1910, a second International Conference of Working Women was held in Copenhagen, where a woman named Clara Zetkin (Leader of the 'Women's Office' for the Social Democratic Party in Germany) tabled the idea of an International Women's Day.
- IWD was marked for the first time in March 1911 – and the date was fixed as 8 March in 1913.
- The United Nations celebrated it for the first time in 1975.

Note- India celebrates Sarojini Naidu's birthday as National Women's Day every year on February 13.

10.10 The Union Govt rethinking 'safe harbour' in Digital India Bill

In news- As the government has formally outlined the Digital India Act, 2023, it is reviewing the "safe harbour" clause in the Information and Technology Act, 2000 which provides legal immunity to platforms against content shared by their users.

The safe harbor clause in IT law-

- According to the safe harbour principle, an online platform such as Facebook or Twitter cannot be held accountable for the content posted on them by users.
- In other words, 'intermediaries' on the internet are not responsible for what third parties post on their website.
- The government is debating whether such platforms should continue to have zero liability for what users post on their platform.
- This is the principle that **allows social media platforms to avoid liability for posts made by users.**
- Safe harbour has been reined in in recent years by regulations like the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, which require platforms to take down posts when ordered to do so by the government, or when required by law.
- **The safe harbour provision has been given under Section 79 of the IT Act 2000.**
- **Section 79 states that safe harbour wouldn't be given if the intermediary "fails to expeditiously" take down a post** or remove a particular content even after the government flags that the information is being used to commit something unlawful.
- Experts say safe harbour has often led to a lack of content moderation, inadequate fact-checking, and content violations on platforms.

- In 2022, the government had mandated, through the IT Rules of 2021, that social media platforms must appoint a Chief Compliance Officer (CCO), Resident Grievance Officer (RGO), and Nodal Contact Person.
- The Government formally outlined the Digital India Act, 2023 which is a broad overhaul of the decades-old Information Technology Act, 2000.
- Under the new Digital India law, each intermediary category will be subject to new regulations with a heavy focus on fact-checking to prevent misinformation or misuse of data.
- These platforms will now be held accountable for any content violations or cybercrimes that occur on their websites.

10.11 Compassionate appointments

In news- Recently, the Supreme Court of India has rejected some applications for 'compassionate appointment' that were filed by the dependents of deceased government employees in West Bengal.

What are compassionate appointments?

- The concept of compassionate appointments **can be traced to the Indian Constitution's Article 39**, which is under the Directive Principles of State Policy and talks about the **right to livelihood**.
- It aims to **provide employment on compassionate grounds to the dependent family members of a government servant who dies in harness or retires on medical grounds**, leaving the family without any source of sustenance.
- Multiple factors are looked at while assessing a request for compassionate appointments, such as the financial condition of the family, the presence of earning members, family size, children's ages, and the essential needs of the family.
- According to the DoPT's office memorandum, **these appointments can only be made for Group 'C' posts against the direct recruitment quota**.
- **Compassionate appointments are made by either the Joint Secretary** in charge of administration in the Ministry or Department concerned **or the "Head of the Department** under the Supplementary Rule 2(10) in the case of attached and subordinate offices."
- They can also be made by the Secretary of a Ministry or Department in special cases.

Who can apply for compassionate appointments?

- According to instructions on "Compassionate Appointment under Central Government" given by the DoPT, Ministry of Personnel, Public Grievances & Pensions on August 2, 2022, compassionate appointments can extend to dependent family members of a government servant who:
 - Dies while in service (including death by suicide).
 - Retired on medical grounds under Rule 2 of the CCS (Medical Examination) Rules 1957 or the corresponding provision in the Central Civil Service Regulations before 55 years of age (57 years for erstwhile Group 'D' Government servants).
 - Retired on medical grounds under Rule 38 of the CCS(Pension) Rules, 1972 or the corresponding provision in the Central Civil Service Regulations before attaining the age of 55 years (57 years for erstwhile Group 'D' Government servants).
- The measure can also extend to the family members of an Armed Forces employee who:
 - Dies during service;
 - Is killed in action; or
 - Is medically boarded out and is unfit for civil employment.
- However, the government servant must have been appointed on a "regular basis" and not on a daily wage, casual, apprentice, ad-hoc, contract, or reemployment basis.
- Moreover, the deceased's dependents can only be first-degree relations such as their spouse, son or daughter (including adopted ones), brother or sister in the case of an unmarried Government servant or

member of the Armed Forces, who was wholly dependent on the government servant at the time of their death in harness or retirement on medical grounds.

- To be eligible for this, the deceased's family must be "indigent" or needy and deserving of "immediate assistance for relief from financial destitution".
- The applicant should also be eligible and suitable for the post in all respects under the provisions of the relevant Recruitment Rules.

The Court referred to a slew of its rulings from 1989 and 1994 in 'Sushma Gosain vs. Union of India' and 'Umesh Kumar Nagpal vs. State of Haryana' respectively, to say that there shouldn't be any delay in compassionate appointments and the same should be "provided immediately to redeem the family in distress", provided that the government or public authority examines the financial condition of the deceased's family and is satisfied that "but for the provision of employment, the family will not be able to meet the crisis."

10.12 Guidelines for Blood Donor Selection & Blood Donor Referral

In news- The Union Health Ministry has in the Supreme Court supported its 2017 guidelines, which excludes transgender persons, men having sex with men (MSM) and female sex workers from donating blood.

What is the issue?

- The Centre recently told the Supreme Court, through an affidavit filed by the Union Ministry of Health & Family Welfare, that the exclusion of transgenders, gay people, and female sex workers as blood donors by including them in the "at risk" category for HIV, Hepatitis B, or C infections is based on due consideration of scientific evidence.
- The Central government's response came after Thangjam Singh, a member of the transgender community, moved the Supreme Court seeking to strike down the prohibition on gay and transgender people from donating blood under **clauses 12 and 51 of the 'Guidelines for Blood Donor Selection & Blood Donor Referral, 2017' issued by the National Blood Transfusion Council (NBTC) and the National Aids Control Organisation on October 11, 2017.**
- The present PIL titled 'Thangjam Santa Singh v. Union of India' was filed in 2021 by a Manipur-based transgender rights activist, challenging the constitutional validity of the 2017 Guidelines that bar transgender and gay persons from donating blood.

What do the 2017 Guidelines say?

- The governing body of NBTC, in its 26th meeting on June 1, 2017, approved the Guidelines to bring in a Blood Transfusion Service which offers a "safe, sufficient and timely supply of blood and blood components to those in need."
- **The guidelines were designed to promote best practices in Blood Transfusion Services to ensure donations from the "lowest risk donors possible".**
- In the present case, **clauses 12 and 51 of the Guidelines are being challenged as violative of Articles 14, 15 and 21 of the Constitution of India to the extent they exclude transgender persons, men having sex with men and female sex workers from being blood donors.**
- **Clause 12 of the Guidelines is titled 'Risk Behavior' falls under the "Blood Donor Selection Criteria', and mandates that the donor be free from any determinable disease transmissible by blood transfusion and "not be a person considered at risk for HIV, Hepatitis B or C infections", such as transgender and gay people, female sex workers, injecting drug users, persons with multiple sexual partners or any other high risk, determined by the medical officer deciding their fitness for blood donation.**
- **Further, Clause 15 permanently defers those "at risk for HIV infection", including gay and transgender people, from donating blood.**
- Permanent deferral refers to blood donors who will never be allowed to donate blood.

10.13 PM Vishwakarma Kaushal Samman (PM VIKAS)

In news- The Prime Minister of India addressed a Post Budget Webinar on the subject of 'PM Vishwakarma Kaushal Samman'.

About PM VIKAS scheme-

- The scheme will enable traditional artisans and craftspeople to improve the quality, scale and reach of their products, integrating them with the MSME value chain.
- It was announced by the central government on 1 February 2023.
- It aims to increase the potential of thousands of craftspeople and artists around the nation by providing technology, skills training, and the opening of credit lines.
- The components of the scheme will include not only financial support but also access to advanced skill training, knowledge of modern digital techniques and efficient green technologies, brand promotion, linkage with local and global markets, digital payments and social security.
- It will greatly benefit the Scheduled Castes, Scheduled Tribes, OBCs, women and people belonging to the weaker sections.

10.14 What is pre-arrest bail?

In news- Karnataka Lokayukta has challenged the Karnataka High Court order granting pre-arrest bail to Karnataka BJP MLA Madal Virupakshappa in corruption case.

What is pre-arrest bail?

- Black's Law Dictionary describes 'bail' as procuring "the release of a person from legal custody, by undertaking that he shall appear at the time and place designated and submit himself to the jurisdiction and judgment of the court."
- Although "bail" has not been expressly defined in Indian statutes, the **Code of Criminal Procedure (CrPC) differentiates between "bailable" and "non-bailable" offenses.**
- It also defines **three kinds of bail** that can be granted — regular bail under Sections 437 and 439; interim bail or short-term bail which is given when regular or anticipatory bail application is pending before the court; and anticipatory or pre-arrest bail.
- The provision for "anticipatory bail" was introduced under Section 438 of the CrPC after the 41st Law Commission Report in 1969 recommended the need for a measure that protects against arbitrary violation of one's personal liberty, such as when politicians detain their opponents in false cases.

When can anticipatory bail be granted?

- Anticipatory bail can be granted under Section 438, when "any person has reason to believe that he may be arrested on an accusation of having committed a non-bailable offence".
- It can be granted by the High Court or the Court of Session, under this section, for non-bailable offenses for which one anticipates arrest, even if the actual arrest has not happened or the FIR has not been registered.
- Non-bailable offenses are more serious offenses, punishable with at least three years imprisonment and above.
- Section 438 was amended in 2005, following which it laid down principles for consideration for the grant of anticipatory bail under subsection such as whether the accused is likely to flee, is a habitual offender, or is likely to tamper with evidence along with his antecedents, such as previously being arrested for a cognizable offense.
- However, since state legislatures are empowered to amend certain provisions of the CrPC, Maharashtra, Odisha and West Bengal follow their own, modified versions of Section 438.

- Uttar Pradesh and Uttarakhand did away with anticipatory bail through the CrPC (UP Amendment) Bill, 1976, during Emergency.
- In 2019, however, this was reintroduced after then President Ram Nath Kovind approved the CrPC (Uttar Pradesh Amendment) Bill, 2018.
- Similarly, in 2019, the Uttarakhand Assembly passed an amendment Bill seeking to revive Section 438 of the CrPC.

What are the conditions for granting anticipatory bail?

While granting anticipatory bail, the Sessions Court or High Court can impose the conditions laid down in sub-section (2) like:

- The person shall make himself available for interrogation by a police officer as and when required.
- The person cannot make any inducement, threat, or promise, directly or indirectly, to any person acquainted with the facts of the case to dissuade him from disclosing them to the court or the police.
- The person shall not leave India without the previous permission of the court.
- Such other conditions may be imposed under sub-section (3) of section 437 “as if the bail were granted under that section”.

10.15 New Rules for Registration and Regulation of Foreign Lawyers and Foreign Law Firms in India, 2022

In news- Recently, the Bar Council of India (BCI) has allowed foreign lawyers and law firms to practice in India (notified in the official gazette the Rules).

What is the BCI decision?

- For over a decade, BCI was opposed to allowing foreign law firms in India.
- Now, the BCI has reasoned that its **move will address concerns about the flow of Foreign Direct Investment in the country and making India a hub of International Commercial Arbitration.**
- The rules bring legal clarity to foreign law firms that currently operate in a very limited way in India.
- The BCI said that it resolves to implement these Rules enabling the foreign lawyers and Foreign Law Firms to practise foreign law and diverse international law and international arbitration matters in India on the principle of reciprocity in a well defined, regulated and controlled manner.

What do the new rules allow?

- According to the Advocates Act, advocates enrolled with the Bar Council alone are entitled to practise law in India.
- All others, such as a litigant, can appear only with the permission of the court, authority or person before whom the proceedings are pending.
- The notification essentially allows foreign lawyers and law firms to register with BCI to practise in India if they are entitled to practise law in their home countries. However, they cannot practise Indian law.
- The foreign lawyers or foreign Law Firms shall not be permitted to appear before any courts, tribunals or other statutory or regulatory authorities.
- They shall be allowed to practise on transactional work /corporate work such as joint ventures, mergers and acquisitions, intellectual property matters, drafting of contracts and other related matters on reciprocal basis.
- They shall not be involved or permitted to do any work pertaining to conveyancing of property, Title investigation or other similar works,” the notification states.
- Indian lawyers working with foreign law firms will also be subject to the same restriction of engaging only in “non-litigious practice.”

The Bar Council of India (BCI)-

- BCI is a statutory body established under the section 4 of Advocates Act 1961 that regulates the legal practice and legal education in India. Its members are elected from amongst the lawyers in India and as such represents the Indian bar.
- In March 1953, the 'All India Bar Committee', headed by S. R. Das, submitted a report which proposed the creation of a bar council for each state and an all India bar council as an apex body.
- It prescribes standards of professional conduct, etiquettes and exercises disciplinary jurisdiction over the bar. It also sets standards for legal education and grants recognition to universities whose degree in law will serve as a qualification for students to enroll themselves as advocates upon graduation.
- It consists of members elected from each state bar council, and the Attorney General of India and the Solicitor General of India who are ex officio members.
- The council elects its own chairman and vice-chairman for a period of two years from amongst its members.
- Assisted by the various committees of the council, the chairman acts as the chief executive and director of the council.
- Eligible persons having a recognised law degree are admitted as advocates on the rolls of the state bar Councils.
- The Advocates Act, 1961 empowers state bar councils to frame their own rules regarding enrollment of advocates.

How have foreign law firms operated so far?

- The issue of foreign law firms entering the Indian market came to courts with a challenge before the Bombay High Court in 2009.
- In **Lawyers Collective v Union of India**, the Bombay High Court essentially held that only Indians holding Indian law degrees can practise law in India.
- The HC interpreted **Section 29 of the Advocates Act, which states that only advocates enrolled with BCI can practise law.**
- The HC also held that 'practice' would include both litigious and non-litigious practice, so foreign firms can neither advise their clients in India nor appear in court.
- In 2012, the issue came up before the Madras High Court in **AK Balaji v Union of India.**
- In **2015, the Supreme Court in a decision recognised the practice of foreign law firms in a very narrow sense.**
- In **AK Balaji v Government of India**, the Madras High Court also held that foreign firms cannot practise either on the litigation or non-litigation side unless they meet the requirements and rules laid down by the Advocates Act and the BCI rules.
- Over 32 foreign law firms from UK, US, France and Australia had been implemented as respondents in the case.
- However, the **Madras High Court created an exception. It said that there would be no ban on temporary visits or advising clients on a "fly in and fly out" basis.**
- It had said that moreover, having regard to the **aim and object of the International Commercial Arbitration introduced in the Arbitration and Conciliation Act, 1996, foreign lawyers cannot be debarred to come to India and conduct arbitration proceedings** in respect of disputes arising out of a contract relating to international commercial arbitration.
- By 2012, Business Process Outsourcing (BPOs) had arrived in India on a big scale and did backend work for US-based companies.
- In the legal profession, these firms, Legal Process Outsourcing (LPOs), carried support operations for lawyers.
- They operated in uncertain legal frameworks and the Supreme Court had to intervene to settle the law on the issue.

What was the SC's decision?

- Both the Madras and Bombay High Court judgments were challenged by the BCI and Lawyer's Collective respectively before the Apex Court.

- In 2018, the Supreme Court upheld both the High Court judgments disallowing foreign law firms and lawyers, with some modifications such as holding the expression “fly in and fly out” to cover only “casual visit not amounting to practice.”
- This meant that the “fly in and fly out” route could not mean regular visits. On the issue of LPOs, the SC did not decide on their fate.
- They argued that they were essentially BPOs that managed secretarial support, transcription services, proofreading services, travel desk support services, etc. which technically do not come within the purview of the Advocates Act or the BCI Rules.

10.16 ATL Sarthi

In news- Atal Innovation Mission (AIM) – NITI Aayog launched ATL Sarthi, a comprehensive self-monitoring framework to strengthen the ever-growing ecosystem of Atal Tinkering Labs (ATL).

Background:

- Atal Innovation Mission is establishing Atal Tinkering Laboratories (ATLs) in schools across India to foster curiosity, creativity, and imagination in young minds; and inculcate skills such as design thinking mindset, computational thinking, adaptive learning, physical computing etc.

What is ATL Sarthi?

- As the name suggests, Sarthi is a charioteer and ATL Sarthi will enable the ATLs to be efficient and effective.
- The initiative has four pillars ensuring the performance enhancement of ATLs through regular process improvements like
 1. A self-reporting dashboard known as ‘MyATL Dashboard’ and
 2. Compliance SOPs for schools to ensure financial and non-financial compliances,
 3. On-ground enablement of ATLs in collaboration with relevant local authorities through Cluster-based Approach and
 4. Providing ownership to schools to analyze their performance through Performance-Enablement (PE) Matrix.
- **The ATL Cluster aims at providing a self-sustainable model for enablement and monitoring** wherein the ATLs and local authorities work in tandem with each other on-ground to form clusters of 20-30 ATLs in a particular region.
- These ATLs can learn from each other through training, collaborations, events and best practices.
- **As a pilot, AIM executed ATL Sarthi with different partners in regions like Karnataka, Andhra Pradesh, Gujarat.**
- ATL Sarthi provides a Monitoring and Evaluation framework to enhance the performance of ATLs.

Atal Innovation Mission (AIM)-

- Atal Innovation Mission (AIM) is the Government of India’s flagship initiative to promote a culture of innovation and entrepreneurship in the country.
- Atal Innovation Mission initiative is set up by the NITI Aayog to promote innovation and entrepreneurship.
- AIM’s objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platform and collaboration opportunities for different stakeholders, create awareness and create an umbrella structure to oversee the innovation ecosystem of the country.

Six major initiatives of AIM-

1. **Atal Tinkering Labs**-Creating problem-solving mindset across schools in India.

2. **Atal Incubation Centers**-Fostering world class start-ups and adding a new dimension to the incubator model.
3. **Atal New India Challenges**-Fostering product innovations and aligning them to the needs of various sectors/ministries.
4. **Mentor India Campaign**- A National Mentor network in collaboration with the public sector, corporates and institutions, to support all the initiatives of the mission.
5. **Atal Community Innovation Center**- To stimulate community centric innovation and ideas in the unserved /underserved regions of the country including Tier 2 and Tier 3 cities.
6. **ARISE**-To stimulate innovation and research in the MSME industry.

10.17 Research, Education and Training Outreach (REACHOUT) for capacity building

In news- The Union Minister of Earth Science said that an umbrella scheme Research, Education and Training Outreach (REACHOUT) is being implemented by the Ministry of Earth Sciences for capacity building.

It consists of the following sub-schemes:

- R&D in Earth System Science (RDESS).
- International Training Centre for Operational Oceanography (ITCOcean).
- Program for Development of Skilled manpower in Earth System Sciences (DESK).
- Outreach and awareness.
- Knowledge Resources Center Network (KRCNet).
- BIMSTEC Centre for Weather and Climate (BCWC).

The main objectives of the above sub-schemes are:

- Supporting various R &D activities in the thrust areas of different components of Earth System Sciences that are theme and need based and that would help in attaining the National goals set up for MoES.
- Develop useful collaborations with international organizations for mutual transfer of advanced knowledge in science and technology in Earth Sciences and to provide services to developing countries.
- Develop skilled and trained manpower in Earth Sciences with the support of academic institutions in the country and abroad.

10.18 Unnathi programme launched during silver jubilee of Kudumbashree

In news- The President of India has inaugurated the silver jubilee celebration of 'Kudumbashree' and also launched 'Unnathi', an umbrella programme.

What is 'Kudumbashree' ?

- Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala.
- The name Kudumbashree in Malayalam language means 'prosperity of the family'.
- The name represents 'Kudumbashree Mission' or SPEM as well as the Kudumbashree Community Network.
- It was set up in 1997 following the recommendations of a three member Task Force appointed by the State government.
- Its formation was in the context of the devolution of powers to the Panchayat Raj Institutions (PRIs) in Kerala, and the Peoples' Plan Campaign, which attempted to draw up the Ninth Plan of the local governments from below through the PRIs.

- Kudumbashree has a three-tier structure for its women community network,
 - Neighbourhood Groups (NHGs) at the lowest level.
 - Area Development Societies (ADS) at the middle level, and
 - Community Development Societies (CDS) at the local government level.
- The community structure that Kudumbashree accepted is the one that evolved from the experiments in Alappuzha Municipality and Malappuram in early 1990s.
- **In 2011, the Ministry of Rural Development (MoRD), Government of India recognised Kudumbashree as the State Rural Livelihoods Mission (SRLM) under the National Rural Livelihoods Mission (NRLM).**
- It is arguably one of the largest women's networks in the world.
- The Kudumbashree that began as a poverty alleviation mission had become a women empowerment model known around the world.

Note- 'Unnathi' is an umbrella programme to create opportunities for employment among the youth belonging to SC and ST communities.

10.19 Low-Temperature Thermal Desalination (LTTD) technology

In news- Chennai based National Institute of Ocean Technology(NIOT) is planning to set up a green, self-powered desalination plant in Lakshadweep.

Key updates-

- Stepping up from its ongoing initiative of providing potable water in six islands of Lakshadweep using Low Temperature Thermal Desalination (LTTD) technology, the Chennai-based **NIOT is working at making this process free of emissions.**
- **Currently the desalination plants, each of which provides at least 100,000 litres of potable water everyday, are powered by diesel generator sets** — there being no other source of power in the islands.
- LTTD exploits the difference in temperature (nearly 15°C) in ocean water at the surface and at depths of about 600 feet.
- However, the need for diesel power to reduce the water pressure means that the **process is not fossil-fuel free and also consumes diesel**, a precious commodity in the islands that has to be shipped from the mainland critical for powering the electric grid.
- For the first time in the world, probably, we are setting up a desalination plant that will also supply power to the plant.
- **Currently there were five desalination plants in operation in the Lakshadweep islands.**
- Four more were expected to be functioning in the coming months.
- The proposed self-sustaining plant is the 10th and is expected to be ready by the end of 2023.

About NIOT-

- The NIOT, an institute under the aegis of the Ministry of Earth Sciences (MoES), has worked for years on harnessing energy from the ocean.
- The major aim of starting NIOT was to develop reliable indigenous technologies to solve various engineering problems associated with harvesting of non-living and living resources in India's exclusive economic zone, which is about two-thirds of the land area of India.

10.20 What is double jeopardy?

In news- The concept of double jeopardy has come to light amidst a Delhi Court sentenced two former Delhi Jal Board (DJB) officials in a money laundering case registered by the Enforcement Directorate (ED) in 2009, against which it filed a complaint after a delay of 11 years, in 2021.

What is double jeopardy?

- “Double jeopardy” comes from the Latin maxim “Nemo bis punitur pro eodem delicto”, which means that **no one can be tried for the same offence twice.**
- It has existed since the days of the Greeks and Romans, even finding a mention in the Justinian code, Canon law, Common Law, and the Fifth Amendment.
- **In India, this doctrine existed even before the Constitution came into being.**
- **Section 300 of the Criminal Procedure Code of 1973**, which says that a person once convicted or acquitted cannot be tried for the same offence.
- In its 2022 ruling in *‘T.P. Gopalakrishnan vs. State of Kerala,’* the **Supreme Court** went so far as to say that **Section 300 bars the trial of a person not just for the same offence but also for any other offence on the same facts.**
- **The doctrine of double jeopardy is enshrined in the Indian Constitution under Article 20 (2), which says, “No person shall be prosecuted and punished for the same offence more than once.”**
- **In its 1996 ruling in ‘AA Mulla vs State of Maharashtra’, the apex court held that Article 20(2) does not bar subsequent trials** if the ingredients of the offences in the previous and subsequent trials are distinct.

The conditions for the application of Article 20(2)-

It states:

- There must have been previous proceedings before a court of law or a judicial tribunal of competent jurisdiction.
- The person must have been prosecuted in the previous proceedings.
- The conviction or acquittal in the previous proceeding must be in force at the time of the second trial.
- The offence which is a subject matter of the second proceeding must be the same as that of the first proceeding for which the accused was prosecuted and punished.
- The “offence” must be an offence as defined in Section 3(38) of the General Clauses Act which defines it as any act or omission made punishable by any law for the time being in force. The prosecution must also be valid and not null, void, or abortive.
- The subsequent proceeding must be a fresh proceeding where an accused is being prosecuted for the same offence twice. Hence, this clause does not apply when the later proceedings are a continuation of the previous proceedings, nor does it bar a retrial on appeal with a direction to frame charges, provided the retrial is for the same offence or offence as the original trial.

10.21 Rajasthan Right to Health Bill

In news- The Rajasthan Assembly has recently passed the Right to Health (RTH), even as doctors continued their protest against the Bill, demanding its complete withdrawal.

What are key features of the bill?

- It gives every resident of the state the right to avail free Out Patient Department (OPD) services and In Patient Department (IPD) services at all public health facilities and select private facilities.
- **The free healthcare services, including consultation, drugs, diagnostics, emergency transport,** procedure and emergency care, will be provided subject to conditions specified in the rules, which will be formulated now.
- Also, **all residents will be entitled to emergency treatment and care without prepayment of any fee or charges,** and the hospital can’t delay treatment on grounds of police clearance if it is a medico-legal case.
- The legislation says that after emergency care, stabilisation and transfer of patient, if patient does not pay requisite charges, the healthcare provider shall be entitled to receive requisite fee and charges or proper reimbursement from the state government.
- **The Bill extends a total of 20 Rights to the citizens of the state.**

- As per the Bill, **anyone found in contravention of the Act will be punishable** with a fine of up to Rs 10,000 for the first contravention, and up to Rs 25,000 for the subsequent contraventions. However, many have pointed out that the penalty may be too low for hospitals.

10.22 How are MPs disqualified?

In news- Congress leader Rahul Gandhi has been disqualified from the Lok Sabha, a day after he was convicted in a defamation case by a Surat court in terms of the provisions of Article 102 (1)(e) of the Constitution of India read with Section 8 of the Representation of People Act, 1951.

What is defamation?

- Defamation is a wrong that deals with damage caused to a person's reputation.
- In India, defamation can both be a civil wrong and a criminal offence, depending on the objective they seek to achieve.
- A civil wrong sees a wrong being redressed with monetary compensation, while a criminal law seeks to punish a wrongdoer and send a message to others not to commit such acts, with a jail term.
- In a criminal case, defamation has to be established beyond reasonable doubt but in a civil defamation suit, damages can be awarded based on probabilities.
- Section 499 of the IPC defines what amounts to criminal defamation and subsequent provisions define its punishment.
- Section 500 of IPC stipulates imprisonment of up to two years, with or without a fine, for someone held guilty of criminal defamation.

What is Article 102 of the Indian Constitution?

- Article 102 deals with the disqualification of MPs from either house of the Parliament.
- Part (1) of the article lists the reasons why an MP can be disqualified. These include,
 - a. If he holds any **office of profit** under the Government of India or the Government of any State, other than an office declared by Parliament by law not to disqualify its holder;
 - b. If he is of **unsound mind** and stands so declared by a competent court;
 - c. If he is an **undischarged insolvent**;
 - d. If he is **not a citizen of India**, or has voluntarily acquired the citizenship of a foreign State, or is under any acknowledgment of allegiance or adherence to a foreign State;
 - e. If he is so **disqualified by or under any law made by Parliament**.
- In Rahul Gandhi's case, the last point (if he is so disqualified by or under any law made by Parliament) applies. The law under which he has been disqualified is the Representation of People Act, 1951.

The Representation of People Act, 1951-

- It is an act of Parliament of India to **provide for the conduct of election of the Houses of Parliament and to the House or Houses of the Legislature of each State**, the qualifications and disqualifications for membership of those Houses, the corrupt practices and other offences at or in connection with such elections and the decision of doubts and disputes arising out of or in connection with such elections.
- **It was introduced in Parliament by law minister Dr BR Ambedkar.**
- There are several provisions that deal with disqualification under the RPA.
- **Section 9 deals with disqualification for dismissal for corruption or disloyalty**, and for entering into government contracts while being a lawmaker.
- **Section 10 deals with disqualification for failure to lodge an account of election expenses.** A key provision, **Section 11, deals with disqualification for corrupt practices.**
- Section 8 of the RPA deals with disqualification for conviction of offences. The provision is aimed at "preventing criminalisation of politics" and keeping 'tainted' lawmakers from contesting elections.

- **First, disqualification is triggered for conviction under certain offences** listed in Section 8(1) of The Representation of The People Act. This includes specific offences such as promoting enmity between two groups, bribery, and undue influence or personation at an election. Defamation does not fall in this list.
- **Section 8(2) also lists offences that deal with hoarding or profiteering, adulteration of food or drugs** and for conviction and sentence of at least six months for an **offence under any provisions of the Dowry Prohibition Act.**
- **Section 8(3) states: “A person convicted of any offence and sentenced to imprisonment for not less than two years shall be disqualified from the date of such conviction** and shall continue to be disqualified for a further period of six years since his release.” **This is the provision under which Rahul Gandhi has been disqualified.**

How does the disqualification work?

- The disqualification can be reversed if a higher court grants a stay on the conviction or decides the appeal in favour of the convicted lawmaker.
- Significantly, the stay cannot merely be a suspension of sentence under Section 389 of the Code of Criminal Procedure (CrPC), but a stay of conviction.
- Over the years, the law has changed when it comes to disqualification.
- Under the RPA, Section 8(4) stated that the disqualification takes effect only “after three months have elapsed” from the date of conviction.
- Within that period, lawmakers could file an appeal against the sentence before the High Court.
- However, in the landmark 2013 ruling in ‘Lily Thomas v Union of India’, the Supreme Court struck down Section 8(4) of the RPA as unconstitutional.
- This is what has allowed the Lok Sabha Secretariat to immediately disqualify Rahul Gandhi.
- In a 2018 decision in ‘Lok Prahari v Union of India’, the Supreme Court clarified that the disqualification “will not operate from the date of the stay of conviction by the appellate court.”
- Significantly, the stay cannot merely be a suspension of sentence under Section 389 of the Code of Criminal Procedure (CrPC), but a stay of conviction.
- Under Section 389 of the CrPC, an Appellate Court can suspend the sentence of a convict while the appeal is pending. This is akin to releasing the appellant on bail.

Supreme Court verdict in ‘Lily Thomas v Union of India’ case-

- In 2013, the Court also held that if any sitting member of Parliament or State Legislature is convicted of any offense under sub-section (1), (2), and (3) of Section 8, RPA, then “by virtue of such conviction and/or sentence” they will be disqualified.
- The court added that a convicted parliamentarian or legislator’s membership will no longer be protected by Section 8 (4), as was previously the case.
- The Court on an examination of other provisions in the Constitution that deal with disqualification of a lawmaker held that the Constitution “expressly prohibits” Parliament to defer the date from which a disqualification would come into effect.

10.23 Parliamentary committee recommends to reduce Civil services examination cycle

In news- Recently, a Parliamentary Committee has asked the UPSC to reduce the civil services examination's selection cycle.

What did the panel say?

- It has said that nearly 15 months (**from the date of issue of notification to the date of declaration of the final result**) wastes candidates' prime years besides taking a heavy toll on their physical and mental health.

- It asked the Union Public Service Commission to **examine the reasons for the low turnout of candidates in the civil services examination.**
- **The Committee is of the opinion that the duration of any recruitment examination should not ordinarily exceed six months** as long and protracted recruitment cycles waste prime years of a candidates' life besides taking a heavy toll on their physical and mental health.
- The Committee, accordingly, recommends that UPSC **should take steps to reduce the duration of the recruitment cycle significantly without compromising the quality.**
- It also **asked the UPSC to provide the details of expenditure incurred by it on the conduct of the examinations** for the same period.
- The panel has **recommended forming an expert committee** to assess if the present scheme of recruitment through civil services examination provides an equal opportunity to both English-medium-educated urban candidates and non-English medium-educated rural candidates.
- **The panel said an expert group or committee should be appointed to assess the impact of changes made in the scheme of examination,** pattern and syllabus of civil services examination in the last ten years on the quality of recruitment and administration at large.
- **The Department of Personnel and Training (DoPT) and UPSC should consider making further changes in the scheme and syllabus of civil services examination** in the light of the findings of the impact assessment study.
- The Committee recommended that **UPSC may take steps to publish the answer key right after the preliminary stage of the civil services examination and allow candidates to raise objections.**

10.24 What is an affinity test?

In news- Recently, the Supreme Court of India has held in a judgment that an affinity test cannot be the litmus test to decide a caste claim.

What is the affinity test?

An affinity test mandates the study and preparation of a report by authorities on caste/tribe claims based on the peculiar anthropological and ethnological traits, deities, rituals, customs, mode of marriage, death ceremonies, methods of burial of dead bodies, etc, of the particular caste or tribe and the applicants knowledge of them.

What did the Apex Court bench say?

- A three-judge Bench said that an affinity test is not an essential part of the process of the determination of correctness of a caste or tribe claim in every case.
- But the court said an “affinity test can never be conclusive” to prove a caste/tribe claim.
- The judgment pointed out that an applicant may have “good knowledge” about these traits without belonging to the particular caste or tribe.
- Besides, the bench reasoned that if the “applicant has stayed in bigger urban areas along with his family for decades or if his family has stayed in such urban areas for decades, the applicant may not have knowledge of the facts.
- The court was settling conflicting views on the value of affinity tests to prove caste/tribe claims.
- One view held that if a candidate failed the affinity test at any stage, a caste validity certificate cannot be granted to him.
- The second view was that the affinity test was not the only criterion for deciding a caste claim based on a caste certificate issued by a competent authority.
- It was held that the affinity test could be used only as a means to corroborate the documentary evidence.

10.25 Imported medicines used to treat rare diseases now exempt from basic customs duty

In news- The Central Government has given full exemption from basic customs duty on all drugs and Food for Special Medical Purposes imported for personal use for treatment of all Rare Diseases listed under the National Policy for Rare Diseases 2021.

Key updates-

- In order to avail this exemption, the individual importer has to produce a certificate from Central or State Director Health Services or District Medical Officer/Civil Surgeon of the district.
- Drugs/Medicines generally attract basic customs duty of 10%, while some categories of life saving drugs/vaccines attract concessional rate of 5% or Nil.
- While exemptions have already been provided to specified drugs for treatment of Spinal Muscular Atrophy or Duchenne Muscular Dystrophy, the Government has been receiving many representations seeking customs duty relief for drugs and medicines used in treatment of other Rare Diseases.
- Drugs or Special Foods required for the treatment of these diseases are expensive and need to be imported.
- It is estimated that for a child weighing 10 kg, the annual cost of treatment for some rare diseases, may vary from ₹10 lakh to more than ₹1 crore per year with treatment being lifelong and drug dose and cost, increasing with age and weight.
- This exemption will result in substantial cost savings and provide much needed relief to the patients.
- The Government has also fully exempted Pembrolizumab (Keytruda) used in treatment of various cancers from basic customs duty.

Spinal muscular atrophy (SMA)-

- Spinal muscular atrophy is a genetic disorder characterized by weakness and wasting (atrophy) in muscles used for movement (skeletal muscles). It is caused by a loss of specialized nerve cells, called motor neurons that control muscle movement. The weakness tends to be more severe in the muscles that are close to the center of the body (proximal) compared to muscles away from the body's center (distal).
- Muscle weakness usually worsens with age.
- There are many types of spinal muscular atrophy that are caused by changes in the same genes.
- The types differ in age of onset and severity of muscle weakness.

Pembrolizumab-

- Pembrolizumab, sold under the brand name Keytruda, is a humanized antibody used in cancer immunotherapy that treats melanoma, lung cancer, head and neck cancer, Hodgkin lymphoma, stomach cancer, cervical cancer, and certain types of breast cancer.
- It is given by slow injection into a vein.

10.26 Rule 357 under the Rules of Procedure and Conduct of Business in Lok Sabha

Facing the heat for his recent critical remarks on the state of Indian democracy, Congress MP Rahul Gandhi has once again approached Lok Sabha Speaker Om Birla, seeking permission (under rule 357) to respond to charges against him.

What is Rule 357?

- In the Rules of Procedure and Conduct of Business in Lok Sabha, under the section 'Rules to be observed by the members', there is rule 357 for 'personal explanation'.
- It states, "A member may, with the permission of the Speaker, make a personal explanation although there is no question before the House, but in this case no debatable matter may be brought forward, and no debate shall arise."

11. SCIENCE AND TECHNOLOGY

11.1 Kerala becomes first state in the country to use robotic technology for cleaning manholes

In news- The Kerala government has recently launched robotic scavenger, Bandicoot, to clean sewages, becoming the first state in the country to use robotic technology to clean all its commissioned manholes.

About Bandicoot-

- Bandicoot was launched under the Guruvayur Sewerage Project in Thrissur district by the Kerala Water Authority (KWA), as part of the 100-day action plan of the state government.
- The robotic Tron Unit, which is the major component of Bandicoot, enters the manhole and removes sewage using robotic hands, similar to a man's limbs.
- The machine has waterproof, HD vision cameras and sensors that can detect harmful gases inside the manholes.
- Bandicoot, "the world's first robotic scavenger", developed by Kerala-based Genrobotics, had recently bagged 'Kerala Pride' award at the Huddle Global 2022 conclave organised by Kerala Startup Mission (KSUM).
- Bandicoot robots are currently deployed in a few towns across 17 states in India and three Union Territories.
- In 2018, KWA started using Bandicoot to clean the manholes in Thiruvananthapuram.

Note: The robot has been named after Bandicoot, a terrestrial, largely nocturnal marsupial omnivores. They are endemic to the Australia–New Guinea region, including the Bismarck Archipelago to the east and Seram and Halmahera to the west. With their well-attuned snouts and sharp claws, bandicoot are fossorial diggers.

11.2 Bendable Concrete

In news- Engineers are developing CO₂-infused concrete that locks up the greenhouse gas and can be stronger and even bendable.

What is Bendable Concrete?

- It is a special type of concrete that can take the bending stresses.
- It is filled with small fibers, generally polymer-derived, organized into a microstructure that helps give the material increased ductility in comparison to traditional concrete, which is prone to cracking and failure under strain and long-term use.
- The CO₂-based bendable concrete can be used for general buildings, water and energy infrastructure, as well as transportation infrastructure.
- Its fibrous structure also means it breaks in a safer, slower way, generating many "microcracks" instead of the large cracks seen in traditional concrete.
- This means wear leads to smaller deformations, rather than full-on shattering or structural failure.

11.3 Mad cow disease

In news- Brazil halted beef export to China after a case of mad cow disease was confirmed in the northern state of Para.

What is Mad Cow Disease?

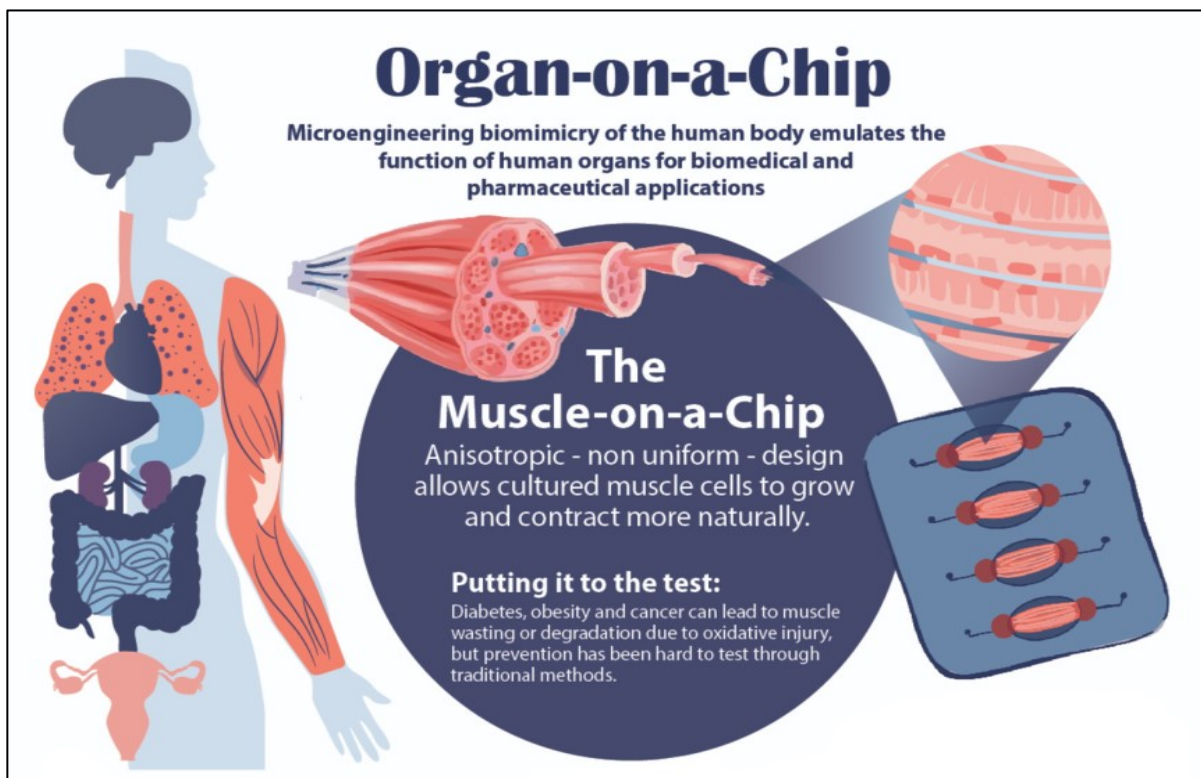
- Mad Cow Disease, also known as Bovine Spongiform Encephalopathy (BSE), is a deadly and slowly progressive infection affecting adult cattle's central nervous system.
- It is degenerative and can be transmitted to humans who consume contaminated meat products.
- It can be contracted by a cow if it eats feed that has been contaminated with parts of another cow that was infected with BSE.
- BSE is a result of an abnormal protein called a prion, which typically exists on the surface of cells.
- This prion transforms into a harmful form that harms the nervous system, including the brain and spinal cord.
- The presence of this altered protein is undetected by the affected cow's body, making it impossible for the cow to fight off the disease.
- One of the most common symptoms of BSE in cows is incoordination, which means the cow has difficulty walking and standing up.
- The cow may also show signs of nervousness or aggression. These symptoms typically appear when the cow is in the final stages of the disease.
- The incubation period of BSE, which is the time from when a cow is infected with the prion to when it shows symptoms, can range from four to six years. During this period, there are no visible signs of the disease.
- Once a cow starts showing symptoms of BSE, it progressively gets worse until it dies. The duration of the disease can range from two weeks to six months.
- There is no cure for BSE, and infected cows are typically euthanized to prevent the spread of the disease to other cows and humans.
- There is no vaccine available to prevent it.

11.4 Organ on a Chip

In news- The U.S. Food and Drug Administration Modernization Act 2.0 has recently approved computer-based and experimental alternatives to animals to test new drugs.

What is Organ on a Chip?

- An organ-on-a-chip is a **multi-channel 3-D microfluidic cell culture, integrated circuit that simulates the activities**, mechanics and physiological response of an entire organ or an organ system.
- **It is a small device containing human cells that are used to mimic the environment in human organs**, including blood flow and breathing movements, serving as synthetic environments in which to test new drugs.
- This technology **allows researchers to replicate the function of tissues and organs, bridging the gap between animals and human systems.**
- In drug development, it's seen as an exciting in vitro alternative to assess not only the safety but efficacy of drugs.
- **In India, a few research groups have been developing organ-on-chip models over the last few years.**
- Scientists at the Institute of Chemical Technology, Mumbai have developed a **skin-on-chip model**, which is currently being tested for studying skin irritation and toxicity.
- They are also developing a **retina-on-chip model** and a placenta-on-chip model.



11.5 AIIMS Facial Toolbox for Emotions Recognition (AFTER)

In news- Doctors of AIIMS Hospital have come up with a tool named AFTER that will detect human emotions.

About AIIMS Facial Toolbox for Emotions Recognition (AFTER)-

- Doctors believe that with the help of this tool, it will be easier to treat patients with autism, schizophrenia and depression.
- People have to look at the human expression range of this device and tell what they are feeling, after which the answers of the people will be measured with the rating system installed inside this device.
- The clinical utility of this tool is that **Emotion Recognition Capability can be detected from people with neuropsychiatric conditions.**
- Being computerised, with the help of this tool, doctors will know about the Emotion Recognition task in the brain.

About AIIMS-

- All India Institute of Medical Sciences, New Delhi, also known as AIIMS Delhi, is a public medical research university and hospital in New Delhi, India.
- The institute is **governed by the AIIMS Act, 1956** and operates autonomously under the Ministry of Health and Family Welfare.
- The idea of AIIMS arose in 1946, after a recommendation by the Health Survey of the Government of India.

11.6 Bisphenol A

In news- A study conducted in Thiruvananthapuram, Kerala, suggests Bisphenol A can indirectly aid in the spread of vector-borne diseases in humans and animals.

What does the study say?

- **It says that Bisphenol A can significantly shorten the breeding time of southern house mosquitoes**, a major carrier of the West Nile virus, Rift Valley fever virus and avian pox in tropical and subtropical countries, and thereby aid in its quick multiplication.
- The finding is unique as till date, **BPA is known to impair reproduction and development in aquatic organisms.**
- BPA exposure delays larval development and pupation time in common fruit fly (*Drosophila melanogaster*).
- In *Drosophila ananasea*, another type of fruit fly, high doses of BPA increases the life cycle duration from seven to nine hours.
- **High doses of BPA also cause several phenotypic abnormalities** in adults that include asymmetrical antennae, miniature arista, absence of arista and others.
- **The life cycle of mosquitoes has four stages:** egg, larva, pupa and adult mosquito. BPA has a significant impact on embryonic and larval development.

What is Bisphenol A?

- Bisphenol A is a chemical compound **& colourless solid which is soluble in most common organic solvents**, but has very poor solubility in water.
- It is **used to manufacture polycarbonate plastics.** This type of plastic is used to make some types of beverage containers, compact disks, plastic dinnerware, impact-resistant safety equipment, automobile parts, and toys.
- When ingested, the chemical that is widely used to soften plastics, paints and other products, disrupts the endocrine system by interfering with the hormones and affects the brain and prostate gland of foetuses, infants and children.
- Several studies establish that the chemical can cause high blood pressure, diabetes and cardiovascular disease in adults.

11.7 Whiskey fungus

In news- A local court in the USA has recently stopped the construction of a new barrel warehouse for Jack Daniel's, the world's biggest-selling brand of American whiskey as whiskey fungus has spread uncontrollably.

What is Whiskey fungus?

- When whiskey or any other spirit is kept inside a cask for maturing, a small amount of it evaporates into the atmosphere through the wood.
- Up to two per cent of the alcohol leaves the cask this way every year.
- This whiskey that evaporates into the air and perfumes the storehouse was dubbed as an offering for the angels in medieval Ireland and Scotland.
- **Whiskey fungus, or Baudoinia compniacensis, feeds on these alcoholic vapours and is velvety or crust-like** — it can reach one or two centimetres in thickness.
- The fungus tends to spread to nearby surfaces, blanketing almost everything that comes in its way.
- **It is found across North America, Europe and Asia and thrives where fermentation occurs, like in bakeries and distilleries.**
- **Baudoinia compniacensis uses the ethanolic vapour to initiate germination and to express proteins in the fungus** that allow the fungus to tolerate high temperatures.
- **It was first discovered in the 1870s**, when Antonin Baudoin, the director of the French Distillers' Association, saw a "plague of soot" around the distilleries in the Cognac region of France.
- Researchers haven't found any instances of health risks from short or long-term exposure to the whiskey fungus yet.
- However, it can destroy trees and damage properties.
- Moreover, removing the fungus from the affected surfaces might prove to be a daunting task.

11.8 Bio computers

In news- Scientists at Johns Hopkins University (JHU) recently outlined a plan for a potentially revolutionary new area of research called “organoid intelligence”, which aims to create “biocomputers.”

What are biocomputers?

- Biological computers use biologically derived molecules such as DNA and/or proteins to perform digital or real computations.
- The development of biocomputers has been made possible by the expanding new science of nanobiotechnology.
- With this the brain cultures grown in the lab are coupled to real-world sensors and input/output devices.
- The scientists expect the technology to harness the processing power of the brain and understand the biological basis of human cognition, learning, and various neurological disorders.

Organoids to biocomputers-

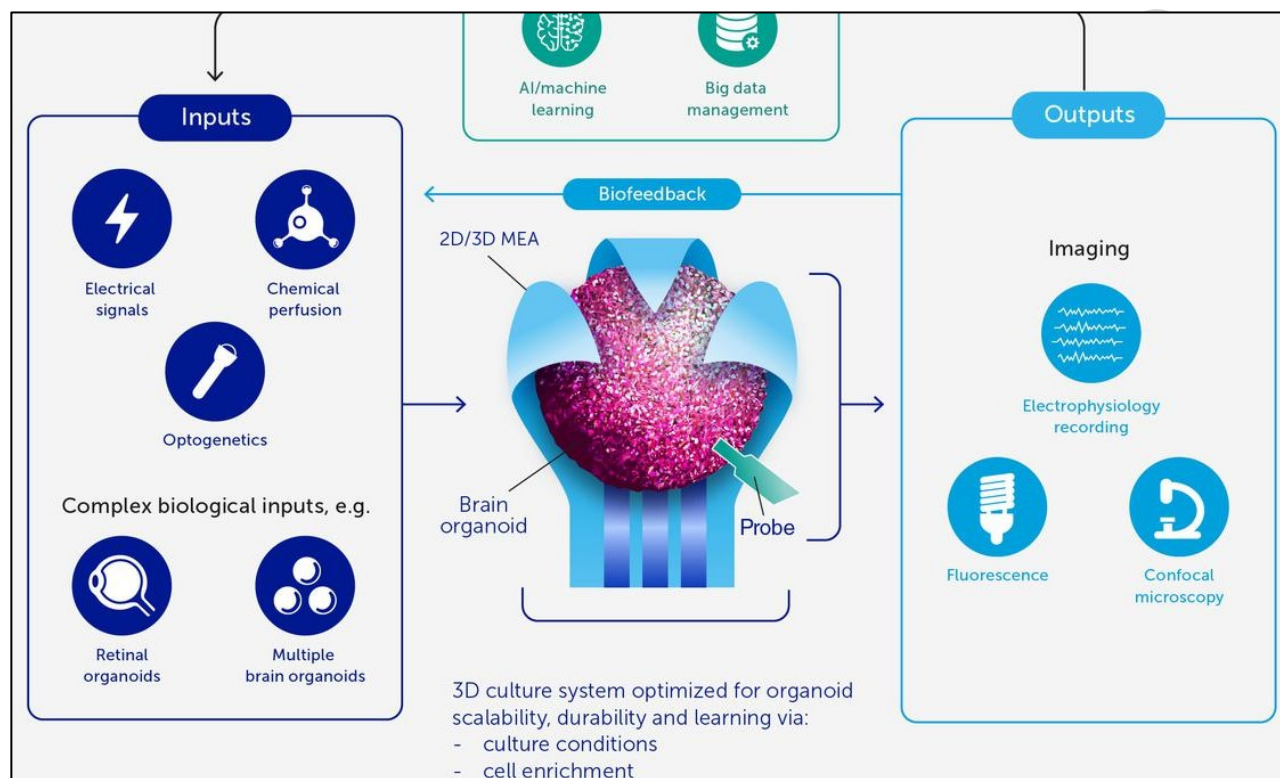
- In a quest to develop systems that are more relevant to humans, scientists are building 3D cultures of brain tissue in the lab, also called brain organoids.
- These “mini-brains” (with a size of up to 4 mm) are built using human stem cells and capture many structural and functional features of a developing human brain.
- Researchers are now using them to study human brain development and test drugs to see how they respond.
- However, the human brain also requires various sensory inputs (touch, smell, vision, etc.) to develop into the complex organ it is, and brain organoids developed in the lab aren’t sophisticated enough.
- The organoids currently also don’t have blood circulation, which limits how they can grow.
- Recently, scientists transplanted these human brain organoid cultures into rat brains, where they formed connections with the rat brain, which in turn provided circulating blood.
- Since the organoids had been transplanted to the visual system, when the scientists showed the experimental rats a light flash, the human neurons were activated, too, indicating that the human brain organoids were also functionally active.
- Scientists have touted such a system as a way to study brain diseases in a human context.
- However, human brain organoids are still nested in the rat-brain microenvironment, including the non-neuronal cells.
- The effects of drugs in this model will also have to be interpreted through various behavioural tests in rats, which could be insufficiently representative.

What is the new ‘bio-computer’?

- The JHU researchers’ scheme will combine brain organoids with modern computing methods to create “bio-computers”.
- They have announced plans to couple the organoids with machine learning by growing the organoids inside flexible structures affixed with multiple electrodes (similar to the ones used to take EEG readings from the brain).
- These structures will be able to record the firing patterns of the neurons and also deliver electrical stimuli, to mimic sensory stimuli.
- The response pattern of the neurons and their effect on human behaviour or biology will then be analysed by machine-learning techniques.
- Recently, scientists were able to grow human neurons on top of a microelectrode array that could both record and stimulate these neurons.
- Using positive or negative electric feedback from the sensors, they were able to train the neurons to generate a pattern of electrical activity that would be generated if the neurons were playing table tennis.

Benefits of bio-computers-

- While human brains are slower than computers at, say, simple arithmetic, they outshine machines at processing complex information.
- Brain organoids can also be developed using stem cells from individuals with neurodegenerative diseases or cognitive disorders.
- Comparing the data on brain structure, connections, and signalling between 'healthy' and 'patient-derived' organoids can **reveal the biological basis of human cognition**, learning, and memory.
- They could also **help decode the pathology of and drug development** for devastating neurodevelopmental and degenerative diseases such as Parkinson's disease and microcephaly.



11.9 What is Lewis super-acid?

In news- Researchers at the Paderborn University, Germany have reported being able to make a unique class of catalysts used in chemistry to accelerate reactions called Lewis super-acids.

About Lewis super acids-

- Named for the chemist, G N Lewis, Lewis super-acids derive from Lewis acids.
- A Lewis acid is any substance, such as a Hydrogen ion (H^+) that can accept a pair of nonbonding electrons.
- In other words, a Lewis acid is an electron-pair acceptor.
- A Lewis base is any substance, such as the OH^- ion, that can donate a pair of nonbonding electrons.
- A Lewis base is therefore an electron-pair donor.
- Because Lewis acids add electron pairs, they are often used to speed up chemical reactions.
- Lewis superacids are stronger than antimony pentafluoride, the strongest Lewis acid and can break even the toughest bonds.
- Because they are so reactive, they are hard to manufacture.
- Being able to make these super acids, enables non-biodegradable fluorinated hydrocarbons, similar to Teflon, and possibly even climate-damaging greenhouse gases, such as sulphur hexafluoride, to be converted back into sustainable chemicals.

11.10 Kodaikanal Solar Observatory (KoSO)

In news- For well over a century, the KoSO has been observing the Sun, capturing images of sunspots, and recording changes in its behaviour.

A brief history of Kodaikanal Solar Observatory-

- KoSO, which is owned and operated by Indian Institute of Astrophysics (IIA), is one of the world's oldest observatories studying the Sun.
- The idea of taking pictures of the Sun using a 20-inch telescope, preferably from a location on a hill in Southern India, was first proposed by the astronomer Norman Pogson, who was appointed Government Astronomer of the Madras Observatory in 1861.
- The Madras Observatory was set up as the private effort of an official of the British East India Company in 1786, and came to be managed subsequently by the company.
- The decision to establish a solar observatory was finally taken in 1893, and Kodaikanal in present-day Tamil Nadu was chosen for its high altitude and dust-free environment.
- Experts and equipment from the existing Madras Observatory were relocated to Kodaikanal.
- The Solar Physics Observatory opened on April 1, 1899, and was later named KoSO.
- During the early decades of its operation, the Bhavnagar Telescope, named after the Maharaja of Bhavnagar, was one of the more famous instruments at KoSO. This 16-inch Newtonian (later Cassegrain) mobile telescope remained India's largest from 1888 to 1968.
- Imported from Dublin, Ireland, it was first established at the Maharaja Takhtasinghji Observatory in Poona (now Pune) around 1888.
- But after the observatory in Pune was shut, it was sent to KoSO in 1912 and is no longer in use.
- KoSO is the only observatory which provides high-resolution digitised images for such a long period (with coverage of more than 75 per cent).

Studying the Sun's historical past to predict the future-

- The Sun is the primary source of energy and the reason for the existence of most life on Earth.
- Even minor changes on the solar surface or its periphery can significantly affect the Earth's atmosphere and influence the space weather. For instance, powerful solar storms, solar flares, are potentially harmful for satellite-based operations, power grids, and navigational networks.
- In this context, historical data on the Sun help solar physicists understand and predict its future, and its impact on life on Earth.

11.11 NISAR observation satellite

In news- Recently, NASA has handed over the Earth observation satellite 'NISAR' to ISRO at its Bengaluru headquarters.

About NISAR-

- The word 'NISAR' finds its origin in NASA-ISRO-SAR.
- It is an **SUV-sized satellite that is dedicatedly developed by the space agencies of the U.S and India** for studying hazards and global environmental change.
- **India and the US had agreed upon this mission** during then-President Barack Obama's visit to India in **2015**.
- **The major scientific objectives of the NISAR mission are** to improve understanding of the impact of climate change on Earth's dynamic ecosystem, land, and coastal processes, land deformations, and cryosphere.
- **It will observe Earth's land with 12-day regularity on ascending and descending passes**, sampling Earth on average every 6 days for a baseline 3-year mission.

- The mission that is **equipped with the largest reflector antenna ever launched by NASA, will measure Earth's changing ecosystems and dynamic surfaces**, spotting warning signs of imminent volcanic eruptions on one hand, and ice masses on the other, providing information about biomass, natural hazards, sea-level rise, earthquakes, landslides, tsunamis and aid in monitoring groundwater supplies.
- Areas where NISAR's findings would prove to be beneficial – Agricultural monitoring and characterization, landslide studies, Himalayan glacier studies, soil moisture, coastal processes, coastal winds, among others that are crucial for India.
- **NISAR will be the first satellite mission to use two different radar frequencies (L-band and S-band) to measure changes in our planet's surface less than a centimetre across.**
- Apart from S-band radar, ISRO is providing the spacecraft bus and the launch vehicle.

What is SAR?

- **SAR stands for 'Synthetic Aperture Radar' technique**, responsible for producing high-resolution images from a resolution-limited radar system that NASA has used to measure changes in Earth's surface.
- Because of the utter precision, **the radar can penetrate clouds and darkness**, which means that it is capable of collecting data in any weather and at any time in the day and in the night.
- **The NISAR spacecraft accommodates two different, fully capable synthetic aperture radar (SAR) frequencies namely – L-band and S-band.**
- The 24 cm wavelength **L-band Synthetic Aperture Radar (L-SAR) is by NASA**, while a 10 cm wavelength **S-band (S-SAR) is provided by ISRO.**
- **The SAR will measure the changes in our planet's surface less than a centimeter across.** In this way, SAR beats the resolution limits of what can physically be put in space to provide images.

11.12 ISRO brings down the Megha Tropiques satellite

In news- The Indian Space Research Organisation brought down a satellite in a controlled manner after its end of life, for the first time recently.

About Megha Tropiques satellite-

- The weather satellite Megha Tropiques-1, which was developed as a joint mission by Indian and French space agencies, entered the atmosphere after the final two manoeuvres recently and burnt up over the Pacific Ocean.
- It was launched aboard a PSLV by the space agency in 2011. And, although the planned mission life of the satellite was only three years, it continued providing data on water cycle and energy exchanges in the tropics for nearly a decade.
- With the progress made by GEWEX (Global Energy and Water Cycle Experiment), Megha-Tropiques was designed to understand tropical meteorological and climatic processes, by obtaining reliable statistics on the water and energy budget of the tropical atmosphere.
- It complemented other data in regional monsoon projects such as MAHASRI and the completed GAME project.
- It also sought to describe the evolution of major tropical weather systems. The focus was the repetitive measurement of the tropics.

Controlled re-entry-

- This was the first time that the space agency attempted such a manoeuvre to clear out space debris despite the satellite not being built to do so.
- Usually, satellites are left in their orbit and because of the gravitational pull of the earth, they come down to the atmosphere over years and years.
- When the satellites re-enter the atmosphere, the friction causes it to heat up to extreme high temperatures of thousands of degrees Celsius.

- Without a heat shield, 99% of a satellite gets burnt up whether in a controlled re-entry or an uncontrolled one.
- A controlled re-entry like the one attempted by Isro recently is possible only for satellites in the low-earth orbit – at about 1,000 kms over the surface of the earth.
- These manoeuvres, however, are not usually attempted because fuel reserves have to be maintained in the satellite after mission life is over.
- And, this is impossible for satellites placed in geo-stationary or geosynchronous orbit – where time taken by the satellite to orbit the earth matches Earth’s rotation – because they are at altitudes of nearly 36,000 kms.

Note-

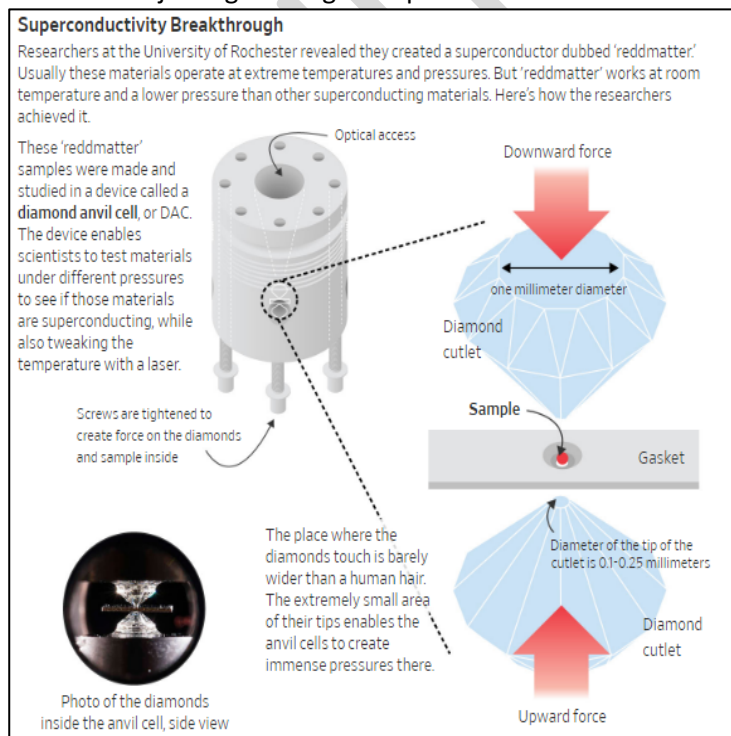
Kessler syndrome – a scenario where the amount of space debris reaches a point where they just create more with one collision triggering others. This is the reason space debris are monitored and sometimes satellites have to be moved from their way. Isro carried out 21 such collision course manoeuvres in 2022 and set up a department in 2022 to monitor the space debris and mitigate the risks posed. ISRO **was also following the guidelines of UN and the Inter-Agency Space Debris Coordination Committee (IADC)** that say satellites should be deorbited after mission life.

11.13 Reddmatter

In news- Scientists have discovered a new superconducting material called Reddmatter that could revolutionize the world.

About superconducting material-

- It can transmit electricity without resistance and pass magnetic fields around it, making it a breakthrough discovery that scientists have been pursuing for more than a century.
- The **material works at both a low temperature and low pressure**, which could allow it to be used in practical applications, such as power grids and nuclear fusion.
- **The discovery of this material could save up to 200 million megawatt hours that are currently lost due to resistance in power grids.**
- It could also be **used in high-speed**, hovering trains and new types of medical equipment.
- **The material was created by mixing a rare earth metal named lutetium with hydrogen and nitrogen** and then subjecting it to high temperatures for two to three days.



11.14 Effective treatment for severe scrub typhus identified


In news- A team of Indian scientists has identified a significantly more effective treatment for severe scrub typhus.

Key findings-

- The study, published in the New England Journal of Medicine (NEJM), shows that treating patients with a combination of intravenous antibiotics doxycycline and azithromycin is more effective than the current monotherapy of using either drug alone.
- Using data from the Intravenous Treatment for Scrub Typhus (INTREST) clinical trial, researchers from several Indian institutes compared the efficacy and safety of three 7-day intravenous antibiotic treatments (doxycycline, azithromycin, or a combination of both) in patients with severe scrub typhus.
- They found that combination therapy was superior to therapy with intravenous doxycycline or azithromycin alone.
- INTREST is the largest-ever randomized controlled trial on the treatment of scrub typhus, and the only one on the treatment of severe scrub typhus.
- Researchers do not know for certain why a combination of doxycycline and azithromycin should be more clinically effective in the treatment of severe scrub typhus than either of the drugs alone.
- The study found that when both azithromycin and doxycycline were administered together to patients with severe scrub typhus, the bacteria were cleared away quicker and patients improved faster.

What is severe scrub typhus?

- Scrub typhus, also known as bush typhus, is a disease **caused by a bacteria called Orientia tsutsugamushi**.
- It is **transmitted to humans by bites from tiny infected mites**.
- Scrub typhus is a major public health threat in India, other South Asian countries, and around the tropics and kills an estimated 10 percent of the approximately one million people infected by it every year.

DISEASE OVERVIEW		
WHAT IS SCRUB TYPHUS? O. tsutsugamushi is transmitted by chiggers (mite larvae), which feed on rodents such as rats, voles, and field mice. Human infection follows a chigger bite. These mites are vectors and a natural reservoir of O. tsutsugamushi	SYMPTOMS TO LOOK OUT FOR <ul style="list-style-type: none">> Fever, chills, headache and swollen lymph nodes> With onset of fever, the bite mark is visible> Some patients may exhibit rashes on the back, arms and legs> Some may have cough that may lead to pneumonitis if unattended	
	IF LEFT UNATTENDED  <ul style="list-style-type: none">> Pulse rate increases, blood pressure drops> Patients develop delirium and organ failure	TREATMENT Largely antibiotics

- It typically presents as a fever that may be associated with headaches, coughs, shortness of breath, and brain symptoms, such as confusion and disorientation.
- One-third of patients develop a severe disease that affects multiple organs in the body and leads to lethally low blood pressures.
- Death rates in severe diseases can reach up to 70% without treatment and 24% with treatment.

11.15 Glow scope

In news- Recently, a design for a Glow Scope, a Fluorescence Microscope, has been developed by scientists at Winona State University in Minnesota.

What is fluorescence microscopy?

- An optical microscope views an object by studying how it absorbs, reflects or scatters visible light.
- A fluorescence microscope views an object by studying how it reemits light that it has absorbed, i.e. how it fluoresces. This is its basic principle.
- The object is illuminated with light of a specific wavelength. Particles in the object absorb this light and reemit it at a higher wavelength (i.e. different colour).
- These particles are called fluorophores; the object is infused with them before being placed under the microscope.
- There are versions of fluorescent microscopes with more sophisticated abilities, such as epifluorescence and confocal laser-scanning microscopes.
- When the fluorophores fluoresce, a fluorescent microscope can track them as they move inside the object, revealing the object's internal shape and other characteristics.
- When the sample is illuminated by ultraviolet light, the stain absorbs the light and re emits it at a higher wavelength.
- The microscope will point out where this is happening in the nuclei of cells, where DNA is located. This way, the nuclei in the tissue can be labelled for further study.
- Scientists have developed different fluorophores to identify and study different entities, from specific parts of DNA to protein complexes.
- On the flip side, fluorescence microscopes cost at least a lakh rupees, but often up to crores.

11.16 What is GPT-4 ?

In news- AI powerhouse **OpenAI has recently announced GPT-4**, the next big update to the technology that powers ChatGPT and Microsoft Bing, the search engine using the tech.

About GPT-4-

- GPT-4 is a large multimodal model created by OpenAI and announced on March 14, 2023.
- GPT-4 is supposedly bigger, faster, and more accurate than ChatGPT, so much so that it even clears several top examinations with flying colours, like the Uniform Bar Exam for those wanting to practice as lawyers in the US.
- Where GPT-3.5-powered ChatGPT only accepted text inputs, GPT-4 can also use images to generate captions and analyses.
- GPT-3 and GPT-3.5 only operated in one modality, text, meaning users could only ask questions by typing them out.
- Aside from the fresh ability to process images, OpenAI says that GPT-4 also “exhibits human-level performance on various professional and academic benchmarks.”
- The language model can pass a simulated bar exam with a score around the top 10 percent of test takers and can solve difficult problems with greater accuracy thanks to its broader general knowledge and problem-solving abilities.
- GPT-4 is also capable of handling over 25,000 words of text, opening up a greater number of use cases that now also include long-form content creation, document search and analysis, and extended conversations.

Difference between GPT-4 and GPT-3-

GPT-4 can 'see' images now:

- The most noticeable change to GPT-4 is that it's multimodal, allowing it to understand more than one modality of information.

- GPT-3 and ChatGPT's GPT-3.5 were limited to textual input and output, meaning they could only read and write.
- However, GPT-4 can be fed images and asked to output information accordingly.
- Google **Lens only searches for information related to an image but** GPT-4 is a lot more advanced in that it understands an image and analyses it.

GPT-4 is harder to trick:

- One of the biggest drawbacks of generative models like ChatGPT and Bing is their propensity to occasionally go off the rails, generating prompts that raise eyebrows, or worse, downright alarm people.
- They can also get facts mixed up and produce misinformation.
- OpenAI says that it spent 6 months training GPT-4 using lessons from its "adversarial testing program" as well as ChatGPT, resulting in the company's best-ever results on factuality, steerability, and refusing to go outside of guardrails.

GPT-4 can process a lot more information at a time:

- **Large Language Models (LLMs)** may have been trained on billions of parameters, which means **countless amounts of data**, but there are limits to how much information they can process in a conversation.
- **ChatGPT's GPT-3.5 model could handle 4,096 tokens or around 8,000 words** but GPT-4 pumps those numbers up to 32,768 tokens or around 64,000 words.
- This increase means that where ChatGPT could process 8,000 words at a time before it started to lose track of things, GPT-4 can maintain its integrity over way lengthier conversations.
- **It can also process lengthy documents and generate long-form content** – something that was a lot more limited on GPT-3.5.

GPT-4 has an improved accuracy:

- OpenAI admits that GPT-4 has similar limitations as previous versions – it's still not fully reliable and makes reasoning errors.
- However, GPT-4 significantly **reduces hallucinations relative to previous models** and scores 40 per cent higher than GPT-3.5 on factuality evaluations.
- It will be a lot harder to trick GPT-4 into producing undesirable outputs such as hate speech and misinformation.

GPT-4 is better at understanding languages that are not English:

- **GPT-4 is more multilingual** and it outperforms GPT-3.5 and other LLMs by accurately answering thousands of multiple-choice across 26 languages.
- Users will be able to use chatbots based on GPT-4 to produce outputs with greater clarity and higher accuracy in their native languages.

11.17 Personal Genomic Mapping (PGM)

In news- Reliance may soon offer affordable personal genomic mapping (PGM) to Indians.

Genomic mapping by Reliance-

- Reliance acquired Strand Life Sciences in 2021, which developed the genome sequencing kit that is priced at 12,000.
- Currently, in the pilot phase, the kit will be marketed across Reliance's e-commerce platforms.
- Testing will be done through blood samples collected at home.

What is PGM?

- All the genetic information of an organism is called its genome.
- Its genomic sequence is the complete list of the nucleotides (which together make DNA) present in its haploid set of chromosomes - humans, most commonly, have 46 chromosomes (22 pairs of autosomes, or non-sex chromosomes) and two sex chromosomes (XY in males and XX in females).
- The set comprising one chromosome from each of the 22 autosomal pairs along with XX/XY is called the haploid set.
- Most nucleotide sequences within a species are identical, but it is the variance that gives rise to genomic diversity.
- The Human Genome Project gave us a 'reference' human genome, but with developments in sequencing technology, and falling costs, it is now possible to map every individual's genome—opening the doors to personal genomic mapping.
- PGM will help an individual identify and assess the genes that are implicated in a disease that she currently suffers from as well as diseases that she is predisposed to because of her genes.
- This can play a big role in healthcare choices, especially relating to precision medicine, which is basically tailoring treatment of a condition in view of how your genetic make-up influences the efficacy of treatment options—for instance, reaction to a specific drug.
- It will also allow those intending to have children to make informed plans about their child's health.
- It can help detect risks of multifactorial diseases, such as diabetes, heart disease, even cancer - a woman carrying the BRCA1 breast cancer gene can have control over preempting the disease, like how actress Angelina Jolie did.

Concerns-

- While there are many beneficial use cases, there is much potential for abuse as well. Combined with the progress in gene-editing technologies, **PGM can very well lead to an industry of “designer” babies.**
- Also, PGM means the biological data can't be anonymised, as **it is mapped against an individual. This fosters chances of abuse if there are no strong measures to keep the data secure.**
- Another issue is the **vastness of the ‘unknowns’ in the field and how future knowledge can impact** the value of decisions made in the present. E.g. The case of the Chinese researcher who edited the genes of a pair of twins at the in-vitro stage to block HIV can help illustrate this. He likely defeated HIV, but his move could have made the twins more vulnerable to certain other diseases.

11.18 INDIAai ecosystem

In news- The Ministry of Electronics and IT has recently set up a task force for framing a draft roadmap for the INDIAai ecosystem.

About INDIAai ecosystem-

- INDIAai (The National AI Portal of India), a joint venture by MEITY, NEGD and NASSCOM, has been set up to prepare the nation for an AI future.
- It is the single central knowledge hub on artificial intelligence and allied fields for aspiring entrepreneurs, students, professionals, academics, and everyone else.
- The portal focuses on creating and nurturing a unified AI ecosystem for driving excellence and leadership in India's AI journey, to foster economic growth and improve lives through it.
- It focuses on boosting research and facilitating tools required for the start-up community for growth.
- IndiaAI will work for the benefit of Indians to deliver better governance, development and create an innovation ecosystem that will contribute to the digital economy.
- According to estimates, AI is expected to add USD 967 billion to the Indian economy by 2035 and USD 450500 billion to India's GDP by 2025, accounting for 10 percent of the country's USD 5 trillion GDP target.

What is AI?

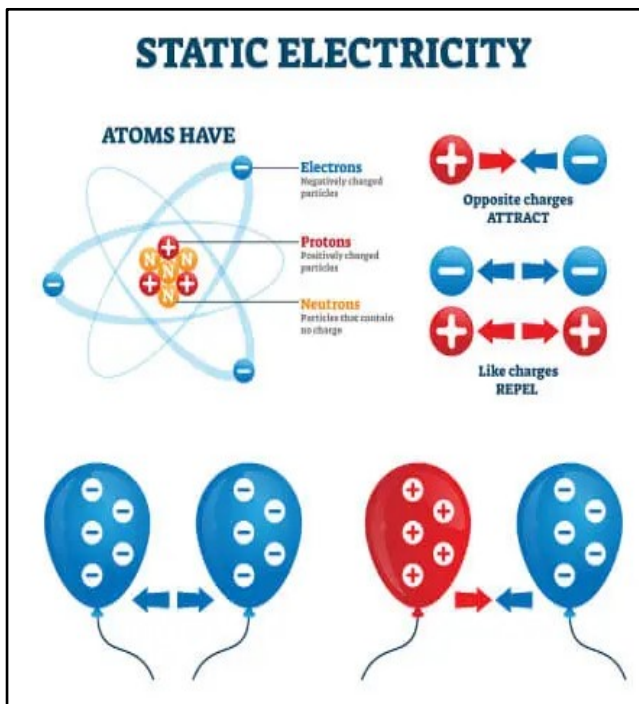
- AI is the ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity.
- AI enables technical systems to perceive their environment, deal with what they perceive, solve problems and act to achieve a specific goal.

11.19 What is static shock?

In news- Recently, many Bengalureans have reported static shocks - while brushing hair, opening car doors, using a gas lighter or a metal tap or while simply rolling a plastic mat.

What is static shock?

- Static electricity discharge occurs when two materials with different electrical permittivity, such as the skin and a piece of clothing or a blanket, come into contact and an exchange of electrons (charges) takes place.
- It is the build-up of charge caused by the body collecting electrons from the objects and surfaces around.
- The charge continues to accumulate until it gets the opportunity to flow into another object with a weaker or opposite charge.
- It is a result of an imbalance between positive and negative charges.
- In tropical regions, due to high moisture levels, static discharges are not common. The moisture on the surface conducts the charges. Only during dry seasons this is experienced.



How to avoid such static shocks?

One needs to avoid synthetic fabric and wear cotton clothes. Synthetic fabric like nylon and polyester increases static. Also, one should discharge oneself with a key or pin before touching any metallic object.

11.20 NASA's new space suit

In news- Recently, NASA has unveiled a new spacesuit for its upcoming moon missions.

About the new spacesuit-

- For the upcoming Artemis missions, NASA's first attempt at landing astronauts on the moon since 1972, the spacesuit used will see a significant upgrade.
- Unlike the bulky and iconic suits in which Neil Armstrong and Buzz Aldrin skipped around on the lunar surface, **the new suit will be "more nimble, comfortable** and designed to fit a broader array of body types.
- **The suit comes from Axiom Space**, a private company based out of Houston, Texas, though it incorporates design elements used in previous suits by NASA.
- **It will be worn during the Artemis III mission, the program's first moon landing**, which is scheduled for 2025.
- It is called the **AxEMU (Axiom Extravehicular Mobility Unit)**.
- Furthermore, the **large clear bubble around the head provides a much wider range of visibility as well as lighting**, which will be important when astronauts step into shadowed craters near the lunar south pole, where NASA hopes to study water ice.
- **The headpiece also has a mount for a high-definition camera.**
- The AxEMU has been specifically designed to better deal with lunar dust.

11.21 India's first indigenous quadruped (four-legged) robot

In news- As part of the Atmanirbhar Bharat initiative, Hyderabad-based Svaya Robotics has developed India's first indigenous quadruped (four-legged) robot and exoskeleton for the defence sector.

About quadruped (four-legged) robot-

- Quadruped robots are four-legged robots which can walk or run in uneven and rough terrains.
- These are also useful in recognising terrorist activities and other unsafe locations and capturing the visuals which can be monitored from any part of the country.
- The robots can carry 25 kg in payload and walk along with the soldier, and added that these robots can be used in nuclear plants and other industries as well.
- These active exoskeletons, when worn by soldiers, can carry such heavy loads without expending much effort. Even if they are carrying 25 kg, soldiers feel as if they are carrying six or seven kg, thus they are not fatigued easily.
- Both are dual-use robots and have multiple use cases in industry and healthcare as well.
- The indigenous robots and wearable exoskeletons were developed in collaboration with the DRDO Labs, Research and Development Establishment (R&DE), Pune, and the Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru, as technology demonstrators with their design inputs.
- India currently imports these robots from the US and Switzerland to help strengthen the country's defence capabilities.

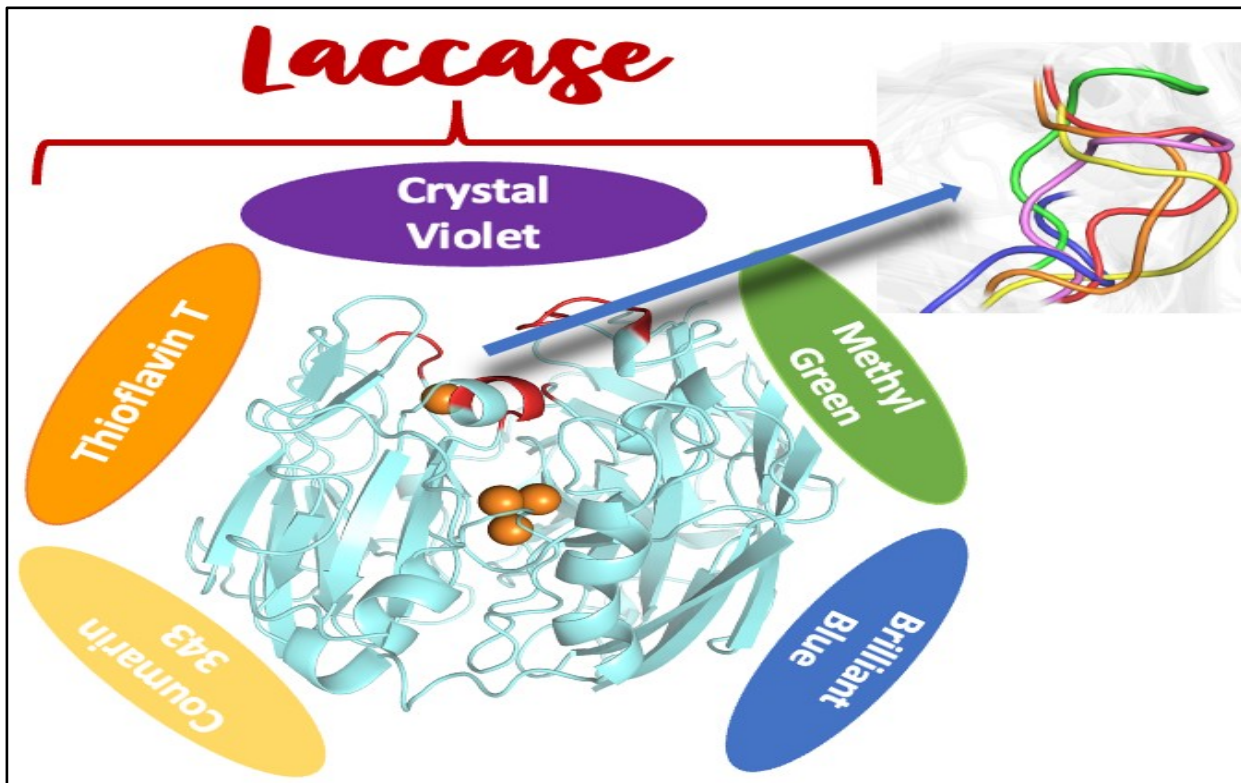
11.22 Laccase enzyme to degrade variety of hazardous organic dye molecules

In news- An enzyme called laccase generated by a group of fungi has been found capable of degrading a variety of hazardous organic dye molecules that are regularly drained into water bodies after dyeing clothes in the textile industry.

Key findings-

- Laccase was known for its capacity to degrade various organic molecules.

- This observed characteristic which the **scientists termed substrate promiscuity** can have **deep implication in designing enzyme-coated cassettes for treating heavily dye-polluted water** through a natural solution to make the environment greener.
- **Laccase, generated by a group of fungi, contains 4 copper atoms in two different oxidation states**, and degrades substrates through redox reactions, producing only water and simplest non-virulent or less virulent oxides of carbon, nitrogen and sulphur.



11.23 Vision document for rollout of 6G network in India

In news- The Prime Minister unveiled the Bharat 6G Vision Document and launched the 6G R&D Test Bed recently.

About the vision document-

- **Bharat 6G vision document is prepared by the Technology Innovation Group on 6G (TIG-6G)** that was **constituted in November 2021** with members from various Ministries/Departments, research and development institutions, academia, standardization bodies, Telecom Service Providers and industry to develop a roadmap and action plans for 6G in India.
- **As per the document, India's 6G project will be implemented in two phases**, and the government has also appointed an **apex council to oversee the project** and focus on issues such as standardisation, identification of the spectrum for 6G usage, create an ecosystem for devices and systems, and figure out finances for research and development, among other things.
- While, technically, 6G does not exist today, it has been conceived as a far superior technology promising internet speeds up to 100 times faster than 5G.
- **The apex council will facilitate and finance research and development**, design and development of 6G technologies by Indian start-ups, companies, research bodies and universities.
- **A key focus of the council will be on new technologies such as Terahertz communication, radio interfaces, tactile internet**, artificial intelligence for connected intelligence, new encoding methods and waveforms chipsets for 6G devices.
- As per the vision document, **6G use cases will include remote-controlled factories, constantly communicating self-driven cars** and smart wearables taking inputs directly from human senses.

- The 6G project is proposed to be implemented in two phases: the first one from 2023 to 2025 and the second one from 2025 to 2030.
- To fund research and innovation on 6G, the document recommended the creation of a corpus of Rs 10,000 crore to facilitate various funding instruments such as grants, loans, VC fund, fund of funds, etc. for the next 10 years.
- Two tiers of grants are proposed i.e. up to Rs 20 crore to service funding requirements ranging from small to medium and grants above Rs 20 crore for high impact projects.

Note:

- The PM formally launched 5G services in October 2022 and said at the time that India should be ready to launch 6G services in the next 10 years.
- As opposed to 5G, which at its peak can offer internet speeds up to 10 Gbps, 6G promises to offer ultra-low latency with speeds up to 1 Tbps.

ITU Area office in India-

- During the same event, the PM also inaugurated the new International Telecommunication Union (ITU) Area office & Innovation Centre in India.
- **ITU is the United Nations' specialized agency for information and communication technologies (ICTs).**
- Headquartered in Geneva, ITU has a network of field offices, regional Offices and area offices.
- **India signed a Host Country Agreement in March 2022 with ITU for the establishment of Area Office.**
- **The Area Office, which is fully funded by India,** is located on the second floor of the Centre for Development of Telematics (C-DoT) building at Mehrauli New Delhi.
- **It will serve India, Nepal, Bhutan, Bangladesh, Sri Lanka, Maldives, Afghanistan and Iran, enhancing coordination among nations and fostering mutually beneficial economic cooperation in the region**

11.24 C-Veda project

In news- Study is going on to find out how the brain develops as we grow under the 'Consortium on Vulnerability to Externalizing Disorders and Addictions' (C-Veda) project.

About the new study-

- It is one of the largest studies of its kind, spanning nearly 9,000 children and young adults from India.
- It aims to follow up those tested over decades, evaluate the effect of biological and environmental risk on cognitive development, and also compare these effects across people in industrialising (India) and industrialised (U.K.) societies.
- The C-Veda project expects to map the brains of those participating in the study and thereby evaluate and compare neurological development.

What is C-Veda project?

- C-VEDA is jointly funded by the Indian Council for Medical Research (ICMR) and the Newton Grant from the Medical Research Council (MRC), United Kingdom.
- It seeks to investigate if environmental and genetic risk factors in industrialised countries and emerging societies shape brain function and behaviour in distinct ways, thus leading to different risk constellations and neurobehavioural trajectories for substance misuse and externalising disorders.

11.25 Asia's largest four meter International Liquid Mirror Telescope

In news- The Union Minister of State (Independent Charge) Science & Technology has recently inaugurated Asia's largest 4-meter International Liquid Mirror Telescope(ILMT) at Devasthal in Uttarakhand.

About the telescope-

- It is the first liquid mirror telescope designed exclusively for astronomical observations and this is the largest aperture telescope available in the country at present and is also the first optical survey telescope in India.
- Aryabhata Research Institute of Observational Sciences (ARIES) announced that the world-class 4 meter ILMT is now ready to explore the deep celestial sky.
- The telescope is located at an altitude of 2450 metre at the Devasthal Observatory campus of ARIES, an autonomous institute under the Department of Science and Technology (DST), Government of India in Nainital district, Uttarakhand.
- The ILMT collaboration includes researchers from ARIES in India, Belgium, Poland, Uzbekistan, British Columbia, the University of Montreal, the University of Toronto, York University and the University of Victoria in Canada.
- The telescope was designed and built by the Advanced Mechanical and Optical Systems (AMOS) Corporation and the Centre Spatial de Liège in Belgium.
- The ILMT employs a 4-metre-diameter rotating mirror made up of a thin layer of liquid mercury, to collect and focus light.
- The metal mercury is in liquid form at room temperature and at the same time highly reflective.
- The ILMT is designed to survey the strip of the sky passing overhead each night, allowing it to detect transient or variable celestial objects such as supernovae, gravitational lenses, space debris, and asteroids.
- The data collected from the ILMT, over an operational time of 5 years, will be ideally suited to perform a deep photometric and astrometric variability survey.
- There are primarily three components in the liquid mirror telescope:
 1. A bowl containing a reflecting liquid metal (essentially mercury).
 2. An air bearing (or motor) on which the liquid mirror sits.
 3. A drive system.
- Liquid mirror telescopes take advantage of the fact that the surface of a rotating liquid naturally takes on a parabolic shape, which is ideal for focusing light.

11.26 Ceramic radomes

In news- Recently, Carborundum Universal Limited (CUMI) has signed a Licensing Agreement for Transfer of Technology with the DRDO for manufacturing ceramic radomes used in aerospace and missile systems.

What is Ceramic radome technology?

- Ceramic radome is regarded as an essential, state-of-the-art technology for ballistic and tactical missiles and high-performance aircraft.
- Missiles undergo extremely high surface temperatures while travelling through the atmosphere, and while re-entering it from space.
- To withstand those temperatures, radomes located at the tip of a missile are made of ceramic.
- The ceramic radomes have been developed indigenously by Research Centre Imarat (RCI), one of the premier DRDO labs in the Dr APJ Abdul Kalam Missile Complex, which has developed India's missile arsenal. RCI spearheads R&D in a diverse range of avionics systems for missile and aerospace applications.
- RCI is India's premier laboratory for carrying out R&D in the technologies of control engineering, inertial navigation, imaging infrared seekers, radio frequency seekers and systems, on-board computers and mission software.

Carborundum Universal(CUMI) Ltd-

- Carborundum Universal Ltd, a part of Murugappa Group, is **one of the largest and oldest conglomerates in India.**

- **It is the leading manufacturer and developer of abrasives, ceramics, refractories, aluminium oxide grains,** machine tools, polymers, adhesives and electro minerals in India.
- It has extensive experience in engineering lightweight ceramic ballistic solutions, such as bulletproof vests, using zirconia-toughened alumina and silicon carbide.
- **It is one of India's first companies to produce the wonder material graphene for aerospace** and defence applications. Its cutting-edge composite technology is also used for building unmanned aerial vehicles.
- CUMI, **established as a tripartite joint venture in 1954,** is a leading materials sciences engineering solutions provider.

11.27 Candida auris

In news- Recently, the Centers for Disease Control and Prevention (CDC) have warned about an **emerging fungus** Candida auris in the US, adding that it poses a "serious global health threat".

What is Candida auris?

- Candida auris (C. auris) is a **yeast, a family of fungus** which contains species pretty helpful to humans in activities such as bread-making and beer-brewing, but which also features species that cause infections in humans.
- **First reported in 2016,** cases and transmission rate of Candida auris, also termed C. auris, have only risen in recent years, with a dramatic increase in 2021.
- **The fungus is considered an urgent antimicrobial resistance (AR) threat,** spreading at an alarming rate in US healthcare facilities in 2020-2021.
- **Transmission of this fungus is mainly through contaminated surfaces in hospitals.** It sticks to intravenous lines and blood pressure cuffs. It's really hard to clean of.

Why is it a concern?

- The World Health Organization (WHO) notes that fungal pathogens are a major threat to public health as they are becoming **increasingly common and resistant to treatment** with only four classes of antifungal medicines currently available, and few candidates in the clinical pipeline.
- **Most fungal pathogens lack rapid and sensitive diagnostics** and those that exist are not widely available or affordable globally.
- It is often **multidrug-resistant, meaning that it is resistant to multiple antifungal drugs** commonly used to treat Candida infections. Some strains are resistant to all three available classes of antifungals.
- It is **difficult to identify with standard laboratory methods** and can be misidentified in labs without specific technology. Misidentification may lead to inappropriate management.
- It has caused outbreaks in healthcare settings.
- **WHO released the first-ever list of health-threatening fungi report in October 2022.**

While common candidiasis causes white discharge, which is easily treatable with antifungals, C. auris presents a completely different picture whose symptoms may not be noticeable because patients with C. auris infection are often those who are already sick and are in the hospital with another serious illness.

Symptoms-

- Symptoms of C. auris infection depend on the part of the body affected.
- It can cause many different types of infections, such as bloodstream infection, wound infection, and ear infection.
- Special preventive measures are taken by doctors to prevent its spread in case a patient having this infection is undergoing any surgery.

11.28 ISRO's LVM-3 launch

In news- Recently, the second commercial launch of the Indian Space Research Organisation's (ISRO) LVM-3 saw 36 OneWeb satellites placed in orbit.

LVM3-M3/OneWeb India-2 mission-

- This was the second mission for Network Access Associates Limited, United Kingdom (OneWeb Group Company) under a commercial agreement with NewSpace India Limited (NSIL) to launch 72 satellites to Low-Earth Orbits.
- One web is supported by the UK government and India's Bharti Enterprises.
- In this mission, LVM3 would place 36 OneWeb Gen-1 satellites totalling about 5,805 kg into a 450 km circular orbit with an inclination of 87.4 degrees.
- It was the **sixth launch for India's heaviest rocket LVM-3** – which includes the **launch of Chandrayaan-2** in 2019 and the second one where it demonstrated the **capability of launching multiple satellites in low earth orbit (LEO)**.
- The eighteenth launch of OneWeb satellites brought the constellation's total number of satellites to 618.
- **OneWeb's high-speed, low-latency solutions will assist in connecting communities, businesses, and governments** worldwide, demonstrating the unparalleled potential of LEO connectivity.

India's plans to increase commercial launches-

- India has been concentrating on increasing its share of the global commercial space market ever since the country decided to open the space sector to private players in 2020.
- **The government plans to increase India's 2% share in the commercial market to 10% by 2030** through commercial launches by ISRO and launches offered by private companies like Skyroot and Agnikul, which are in the process of developing their own launch vehicles.
- Keeping the commercial sector in mind, **ISRO has also developed the Small Satellite Launch Vehicle (SSLV)**, which is meant to provide on-demand launch services commercially.
- Two development flights of the SSLV have been completed – one successful, one partially successful – and it has been inducted into the ISRO fleet.
- Till date, ISRO has launched 384 foreign satellites from at least 36 countries, with at least 10 dedicated commercial missions and several other Indian missions where they were carried as co-passenger satellites.
- The highest number of these commercial launches have been by companies from the United States.

11.29 What is depleted uranium?

In news- The U.K has said that it would provide Ukraine with armour-piercing rounds containing depleted uranium.

About Depleted uranium-

- It is a **byproduct of the process of creating enriched uranium**, which is used in nuclear reactors and nuclear weapons.
- In comparison to enriched uranium, **depleted uranium is much less radioactive and is incapable of generating a nuclear reaction.**
- However, **due to its high density, it's more dense than lead.**
- It is widely used in weapons as it can easily penetrate armour plating.
- It's so dense and it's got so much momentum that it just keeps going through the armour and it heats it up so much that it catches on fire.
- The US began manufacturing armour-piercing rounds with depleted uranium in the 1970s and has since added it to composite tank armour to strengthen it.
- Apart from the US, Britain, Russia, China, France and Pakistan produce uranium weapons, which are not classified as nuclear weapons, as per the International Coalition to Ban Uranium Weapons.

The risks of using such weapons-

- Even though depleted uranium munitions aren't considered nuclear weapons, experts suggest that such weapons must be used with caution because they emit low levels of radiation and can cause severe diseases.
- **Ingesting or inhaling quantities of depleted uranium is dangerous** as it depresses renal function and raises the risk of developing a range of cancers
- Moreover, according to the International Coalition to Ban Uranium Weapons, **depleted uranium munitions which miss their target can poison groundwater and soil.**

Where have depleted uranium munitions been used?

- Depleted uranium munitions were used in the 1991 Gulf War to destroy T-72 tanks in Iraq.
- These weapons were again used in the 1999 NATO bombing of Yugoslavia and then during the 2003 invasion of Iraq.
- According to the Royal Society, a London-based fellowship of scientists, about 340 tons of depleted uranium were used in munitions during the 1991 Gulf War, and an estimated 11 tons in the Balkans in the late 1990s.

11.30 Biotransformation technology

In news- A UK-based startup now claims to develop Biotransformation technology that can transform the state of plastics.

What is Biotransformation technology?

- The Biotransformation Technology presents a new and innovative strategy for effectively and efficiently processing plastics that evade refusing streams resulting in their decomposition.
- The term 'refuses stream' refers to the flow of solid waste materials that are generated from various sources.
- Imperial College in London, UK, and a Britain-based startup, Polymateria have co-developed the technology.
- It claims the technology would digest the plastic packaging waste naturally with the help of microbes and biodegrade the waste without leaving behind any microplastics.
- The technology produces plastics that have a predetermined lifespan in which they maintain the appearance and quality of traditional plastics.
- However, once this lifespan expires and they are exposed to the surrounding environment, they undergo a self-destructive process and biotransform into wax that is bioavailable.
- Microorganisms then consume this wax, leading to the conversion of waste into water, carbon dioxide, and biomass.
- This biotransformation technology is the world's first that ensures polyolefins fully biodegrade in an open environment causing no microplastics.

Its usage-

- The technology can be used in many industries but will be particularly beneficial for the food and healthcare industry as they generate a significant proportion of plastic waste.
- Some well-known Indian firms in the food and packaging industries deploy such technologies.
- Within the healthcare and pharma industries, this technology provides biodegradable solutions for non-woven hygiene products like diapers, sanitary napkins, facial pads, etc.

Plastic waste in India-

- The country is generating 3.5 billion kgs of plastic waste annually and the per capita plastic waste generation has also doubled in the past five years. Of this, a third comes from packaging waste.

India's initiatives-

- The Indian government introduced a **plastic waste management gazette** to help tackle the ever-growing plastic pollution caused by single-use plastics.
- In 2022, the Indian government imposed a **ban on single-use plastics** to bring a stop to its use in the country.
- The **National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management** brings all stakeholders together to track the progress made in eliminating single-use plastic and effectively managing such waste.
- **An Extended Producer Responsibility (EPR) portal** helps in improving accountability, traceability, and facilitating ease of compliance reporting in relation to EPR obligations of the producers, importers and brand-owners.
- India has also developed a **mobile app to report single use plastics grievances** to check sale, usage or manufacturing of single use plastics in their area.
- Amazon India has now eliminated the single-use plastics across its fulfilment centers. Flipkart has also done the same in 2021 across its supply chain.

11.31 Government launches National Rabies Control Programme (NRCP)

In news- The Central Government has launched the National Rabies Control Programme (NRCP) for prevention and control of Rabies.

The Strategies of the National Rabies Control Program are as follows:

- Provision of rabies vaccine & rabies immunoglobulin through national free drug initiatives.
- Training on appropriate animal bite management, prevention and control of rabies, surveillance and intersectoral coordination.
- Strengthening surveillance of animal bites and rabies deaths reporting.
- Creating awareness about rabies prevention.

About Rabies-

- Rabies is a **vaccine-preventable, zoonotic, viral disease**.
- It is one of the **Neglected Tropical Diseases (NTD)** that predominantly affects poor and vulnerable populations who live in remote rural locations.
- **It is present on all continents, except Antarctica**, with over 95% of human deaths occurring in the Asia and Africa regions.
- Initial **symptoms of rabies include a fever with pain and unusual or unexplained tingling, pricking, or burning sensation (paraesthesia)** at the wound site.
- As the virus spreads to the central nervous system, progressive and fatal inflammation of the brain and spinal cord develops.
- Transmission can also occur if saliva of infected animals comes into direct contact with human mucosa or fresh skin wounds.
- **It is spread to people and animals through bites or scratches, usually via saliva.**
- Once clinical symptoms appear, rabies is virtually 100% fatal.
- In up to 99% of cases, domestic dogs are responsible for rabies virus transmission to humans.
- Rabies can affect both domestic and wild animals.
- Interrupting transmission is feasible through vaccination of dogs and prevention of dog bites.
- 40% of people bitten by suspect rabid animals are children under 15 years of age.

- Immediate, thorough wound washing with soap and water after contact with a suspect rabid animal is crucial and can save lives.
- WHO leads the collective “United Against Rabies” to drive progress towards “Zero human deaths from dog-mediated rabies by 2030”.

11.32 Plastiglomerate

In news- A Plastic-rock hybrid has been discovered in Andaman’s Aves island recently.

About the rock-

- Known as Plastiglomerate, the rock is composed of sand, rock fragments, shells and other materials held together by plastic, resulting in a plastic-rock hybrid.
- It is a new form of plastic pollution described by scientists in 2014.
- The rock which was discovered on a beach on Aves Island is the first such find from India.
- Laboratory analysis showed that it has two very commonly used plastic polymers– polyethene and polyvinyl chloride– which hold the smaller rock and sand particles to form a rock, approximately the size of ones found along railway tracks.
- These man-made aggregates were initially discovered at Kamilo Beach, Hawaii, and have since been reported in Indonesia, the United States, Portugal, Canada, Peru, and now in India.
- Other newly discovered forms of marine plastic pollution include plastic crust (a layer of plastic encrusted onto ocean rocks and Pyroclastic– burnt plastic that looks like pebbles).

11.33 The mammoth meatball

In news- Recently the mammoth meatball, sized slightly smaller than a volleyball, was unveiled at a museum in Amsterdam by Australian startup Vow.

About meatball-

- This meatball is made of lab-grown cultured meat using the genetic sequence from the long-extinct woolly mammoth.
- Cultivated meat — also called cultured or cell-based meat is made from animal cells. Livestock doesn’t need to be killed to produce it, which advocates say is better not just for the animals but also for the environment.
- Vow used publicly available genetic information from the mammoth, filled missing parts with genetic data from its closest living relative, the African elephant, and inserted it into a sheep cell.
- Given the right conditions in a lab, the cells multiplied until there were enough to roll up into the meatball.
- Experts say that if the technology is widely adopted, it could vastly reduce the environmental impact of global meat production in the future.
- Currently, billions of acres of land are used for agriculture worldwide.
- So far, tiny Singapore is the only country to have approved cell-based meat for consumption.
- Vow is hoping to sell its first product there — a cultivated Japanese quail meat.
- The mammoth meatball is a one-off and has not been tasted, even by its creators, nor is it planned to be put into commercial production.

About the woolly mammoth-

- It is an extinct species of mammoth that lived during the Pleistocene until its extinction in the Holocene epoch.
- It was one of the last in a line of mammoth species, beginning with the African Mammuthus subplanifrons in the early Pliocene.
- The woolly mammoth began to diverge from the steppe mammoth about 800,000 years ago in East Asia.

- Its closest extant relative is the Asian elephant.
- The Columbian mammoth (*Mammuthus columbi*) lived alongside the woolly mammoth in North America, and DNA studies show that the two hybridised with each other.
- The appearance and behaviour of this species are among the best studied of any prehistoric animal because of the discovery of frozen carcasses in Siberia and North America, as well as skeletons, teeth, stomach contents, dung, and depiction from life in prehistoric cave paintings.
- It was identified as an extinct species of elephant by Georges Cuvier in 1796 and it was roughly the same size as modern African elephants.

11.34 Brightest gamma-ray radiation recorded

In news- The brightest gamma-ray radiation of all time was recorded by astronomers around the world in October 2022.

Key updates-

- The data from the radiation pulse may help overturn a decades-long theory of gamma ray burst (GRB) jets.
- The 5-minute-long radiation recorded on October 9, 2022 was the most intense ever, causing disruptions in radio signals on earth and cutting across our solar system.
- Astronomers, including ones from the home of radio astronomy in India, National Centre for Radio Astrophysics (NCRA), Pune, concluded such signals were a birth cry of a black hole.
- The new study appeared and observations of the radiation named GRB 221009A throw a fresh light on the long quest to fathom the origin of the noted extreme cosmic explosions.
- The observation was conducted jointly by Center for Astrophysics, Harvard and Smithsonian's Submillimeter Array (SMA) in Hawaii, the MeerKAT Array in South Africa, the US National Science Foundation's Karl G Jansky Very Large Array (VLA) in New Mexico (USA), the Atacama Large Millimetre Array (ALMA) in Chile and NCRA's Giant Metrewave Radio Telescope, India.

What are GRBs?

- In gamma-ray astronomy, **gamma-ray bursts (GRBs)** are immensely energetic explosions that have been observed in distant galaxies.
- **They are the most energetic and luminous electromagnetic events since the Big Bang.** Bursts can last from ten milliseconds to several hours.
- After an initial flash of gamma rays, a longer-lived "afterglow" is usually emitted at longer wavelengths (X-ray, ultraviolet, optical, infrared, microwave and radio).
- **The intense radiation of most observed GRBs** is thought to be released during a supernova or superluminous supernova as a high-mass star implodes to form a neutron star or a black hole.
- **The sources of most GRBs are billions of light years away from Earth**, implying that the explosions are both extremely energetic (a typical burst releases as much energy in a few seconds as the Sun will in its entire 10-billion-year lifetime) and extremely rare (a few per galaxy per million years).

12. SECURITY

12.1 Country Reports on Terrorism 2021: India

In news- The US Bureau of Counterterrorism published Country Reports on Terrorism 2021: India recently.

Key findings-

- According to this report, India has made significant efforts to detect, disrupt, and degrade operations of terrorist organisations.

- As per this report, Lashkar-e-Taiba, Jaish-e-Muhammad, Hizbul Mujahideen, ISIS, al-Qaeda, Jamaat-ul-Mujahideen and Jamaat-ul-Mujahideen Bangladesh, are the terrorist groups active in India.
- The report said that a shift was observed in terrorists' tactics in 2021 with attacks on civilians and greater reliance on IEDs (improvised explosive devices), including an explosive attack using drones on an air force base.
- The report said India responds promptly to US requests for information related to terrorism investigations and makes efforts to mitigate threats in response to US information.
- It noted that India implemented the UNSCR 2396 (United Nations Security Council resolution 2396 to contain international terrorism) by using watch lists, implementing biographic and biometric screening at ports of entry, and prioritising information sharing.
- India is a member of global money laundering and terrorist financing watchdog FATF (Financial Action Task Force), the Asia/Pacific Group on Money Laundering, and the Eurasian Group.
- The country's Financial Intelligence Unit-India is part of the Egmont Group, an international organisation facilitating intelligence sharing between national financial intelligence units to check money laundering and terrorist financing).
- The report says that Pakistan has made meagre progress in its pledge to dismantle all terrorist organisations without delay or discrimination.
- Pakistan experienced significant terrorist activity in 2021, resulting in a higher number of attacks and casualties compared to 2020.
- Major terrorist groups that focused on conducting attacks in Pak include Tehreek-e-Taliban Pakistan, Balochistan Liberation Army and ISIS-K.
- In 2021, members of religious minorities in Pakistan faced significant threats from terrorist groups.

Note: UNSCR 2396 required states to have systems to develop watchlists of known or suspected terrorists, to require airlines to provide advance passenger information (API) to the appropriate national authorities, and to develop the capacity to use passenger name records (PNR).

12.2 Kinzhal & Zircon hypersonic missiles

In news- Russia has recently unleashed its biggest aerial strike against Ukraine using six hypersonic missiles, known as Kinzhals, or Daggers.

Kinzhal missile-

- Unveiled in 2018, Kinzhal, according to the Russians, is capable of reaching speeds of Mach 10 and greater, with a range of about 1,250 miles.
- The missile is also believed to be **nuclear-capable** and usually launched by MiG-31 warplanes.
- It was first used against Ukraine in 2022.
- Apart from Kinzal, Moscow reportedly has two other types of hypersonic missile systems.
- One is the **Avangard hypersonic glide vehicle**, which can fly at speeds as high as Mach 27
- And the **other is the Zircon anti-ship missile**.
- However, there have been no reports of Zircon or Avangard being used in a war.

About Zircon missile-

- It is a **scramjet powered maneuvering anti-ship hypersonic cruise missile**.
- It can travel more than five times the speed of sound and manoeuvre in mid-flight, making them much harder to track and intercept than traditional projectiles.
- It could hit targets at sea and on land with a range of 1,000 kilometres (620 miles).
- The Zircon looks set to join Avangard hypersonic glide vehicles that were put into service in 2019 and the air-launched Kinzhal (Dagger) missiles in Russia's arsenal.
- Russia had placed into service its first Avangard hypersonic missile in December 2019, making it the first country to claim an operable hypersonic weapon.

What is a hypersonic missile?

- A hypersonic missile, such as Kinzhal, is capable of flying at least at the **speed of Mach 5, i.e. five times the speed of sound, and is manoeuvrable.**
- The **manoeuvrability of the hypersonic missile is what differentiates it from a ballistic missile**, as the latter follows a set course or a ballistic trajectory.
- Thus, **unlike ballistic missiles, hypersonic missiles do not follow a ballistic trajectory and can be manoeuvred to the intended target.**
- This makes them extremely lethal because by the time they are detected by ground-based radars, they are already quite near to their target.
- **There are two types of hypersonic weapons systems:**
 1. Hypersonic Glide Vehicles (HGV) and
 2. Hypersonic Cruise Missiles.
- The HGVs are fired from a rocket before gliding to the intended target while the hypersonic cruise missile is powered by air-breathing high-speed engines or 'scramjets' after acquiring their target.
- Hypersonic weapons can enable responsive, long-range strike options against distant, defended or time-critical threats (such as road mobile missiles) when other forces are unavailable, denied access or not preferred.
- Conventional hypersonic weapons use only kinetic energy i.e. energy derived from motion, to destroy unhardened targets or even underground facilities.
- These systems are one of the more recent warfare technologies being developed by China, North Korea, Russia and the United States.

Hypersonic technology in India-

- India has also developed Hypersonic Technology as the DRDO successfully launched the **Hypersonic Technology Demonstrator Vehicle (HSTDV)** in its maiden test.
- The HSTDV was an unmanned scramjet demonstration aircraft for hypersonic speed flight, that could cruise at a speed of Mach 6 and move up to an altitude of 32.5 km in 20 seconds.
- According to DRDO, besides its utility for long-range cruise missiles of the future, the dual-use technology will have multiple civilian applications also.
- It can be used for launching satellites at a low cost too.

12.3 What is Vayulink?

In news- India has developed Vayu Link, an Indigenous Tactical Data-Link, which will help commanders identify friendly forces in a joint battlespace.

About Vayu Link-

- Vayulink is effectively a data link system which connects all entities, combat and non-combat, through a single link.
- It has been **developed by Wing Commander Vishal Mishra, a helicopter pilot with the Indian Air Force (IAF).**
- It will not only **help enhance battlefield transparency through identification of friendly forces in a combat situation — whether airborne or on the ground — through secure, jammer-proof communication**, but will also arm pilots with accurate weather data before they fly.
- The Vayulink system was **showcased by the IAF at the Aero India 2023** show in Bengaluru recently.
- With more emphasis on future joint battles and the military opting for more indigenous weapon systems, this homegrown solution is expected to **benefit all users in a joint battlespace by providing real-time combat identification.**
- It will improve mission execution capabilities and reduce weather-linked accidents.

- It integrates inputs available from multiple sources in a joint battlefield and provides near real-time data to operators, thereby vastly improving their situational awareness and consequently aiding in effective decision making.
- The IAF has already deployed the system on a trial basis at forward locations in the Western and Northern sectors.
- **It has also been inducted into the Army under the name Trishul link.**
- After the Balakot air strikes in 2019, the IAF had shot down its Mi-17 V5 helicopter at Budgam by mistake, killing six personnel on board.
- The helicopter's IFF (Identification of Friend or Foe) system was also switched off, which had led to gaps in communication between the helicopter crew and the ground forces.
- The existing IFF systems is only applicable to an aircraft and requires radars to function.
- On the other hand, the Vayulink system can be carried by an aircraft, individual troops or armoured vehicles on ground, distinguishing them from their enemy counterparts.
- Secondly, the IFF system has limitations with respect to the line of sight.
- The Vayulink system can also arm the pilot with real-time weather details before flying, thereby preventing accidents.

12.4 Global Terrorism Index (GTI)

In news- Sydney-headquartered think-tank Institute for Economics & Peace (IEP) has published GTI using data from TerrorismTracker and other sources recently.

Key highlights-

- TerrorismTracker provides event records on terrorist attacks since 1 January 2007.
- According to the tenth Global Terrorism Index (GTI) report **Afghanistan remains the country most impacted by terrorism for the fourth consecutive year**, despite attacks and deaths falling by 75 per cent and 58 per cent, respectively.
- GTI reported that the Islamic State-Khorasan (Daesh) has emerged as "the most active terrorist group" in Afghanistan.
- **Globally, deaths from terrorism fell by nine per cent.**
- **South Asia remains the region with the worst average GTI score.**
- **Pakistan saw a significant increase in terror-related deaths**, logging a 120 per cent increase from the previous year.
- Afghanistan and Pakistan remain amongst the ten countries most affected by terrorism in 2022.
- The **Balochistan Liberation Army (BLA) were responsible for a third of these deaths in Pakistan**, a ninefold increase from the prior year, making it the fastest growing terrorist group in the world.
- The deadliest terrorist groups in the world in 2022 were Islamic State (IS) and its affiliates, followed by al-Shabaab, Balochistan Liberation Army (BLA) and Jamaat Nusrat Al-Islam wal Muslimeen (JNIM).
- **It added that IS remained the deadliest terror group globally for the eighth consecutive year**, recording the most attacks and deaths of any group in 2022.

India's ranking-

- India ranked 13th on the index, marking only a marginal decrease from the previous year.
- In spite of being among the 25 worst-hit nations on the index, Indian respondents desisted from selecting war and terrorism as the biggest threat to their daily safety.

Note- The Institute for Economics and Peace (IEP) has corrected the report related to GTI 2023 after the Communist Party of India (CPI) was wrongly included in the list of deadliest terror groups of 2022.

The Institute for Economics and Peace-

- It is a global think tank headquartered in Sydney, Australia with branches in New York City, Mexico City and Oxford.

- IEP studies the relationship between peace, business, and prosperity, and seeks to promote understanding of the cultural, economic, and political factors that drive peacefulness.

13. SOCIETY

13.1 World Bank's Women, Business and the Law report 2023

In news- The World Bank has recently released report titled *Women, Business and the Law* on life cycle of working women.

About the report-

- It is the ninth in a series of annual studies measuring the laws that affect women's economic opportunity in 190 economies.
- **It presents eight indicators structured around women's interactions with the law** as they progress through their lives and careers: Mobility, Workplace, Pay, Marriage, Parenthood, Entrepreneurship, Assets, and Pension.
- The index is divided into three categories:
 1. Starting a job.
 2. During employment.
 3. After employment.
- It identifies barriers to women's economic participation and encourages the reform of discriminatory laws.
- In 2023, the study also includes new research, a literature review, and analysis of 53 years of reforms for women's right.
- It also provides the first comprehensive assessment of annual data gathered over more than five decades—from 1970 through 2022.

Key highlights-

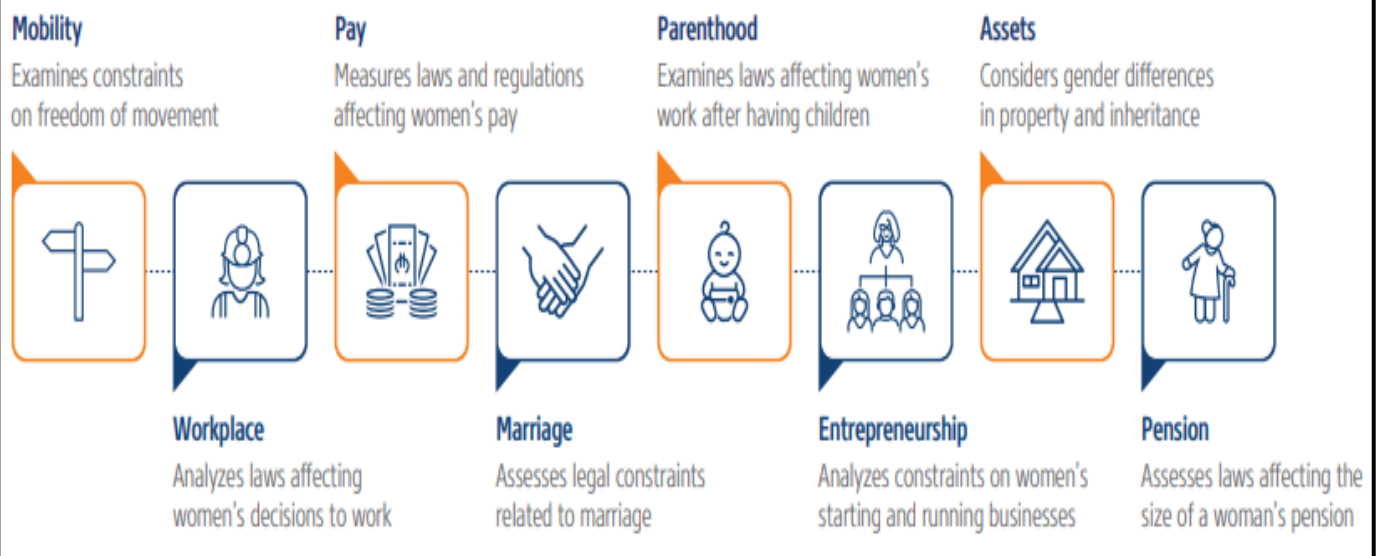
- A score of 100 on the Index means that women are on an equal standing with men on all the eight indicators being measured.
- Out of the 190 economies covered in the Index, only 14 scored a perfect 100: Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Latvia, Luxemburg, The Netherlands, Portugal, Spain and Sweden.
- Globally, on average, women enjoy only 77 percent of the legal rights that men do; and nearly 2.4 billion women of working age around the world live in economies that do not grant them the same rights as men.
- Moreover, in 2022, the global pace of reforms toward equal treatment of women under the law has slumped to a 20-year low.

India's performance-

- India scored 74.4 out of a possible 100 in the World Bank index on life cycle of working women.
- India scored higher than the 63.7 average for the South Asian region, though lower than Nepal which had the region's highest score of 80.6.
- For India, the Index used data on the laws and regulations applicable in Mumbai, viewed as the country's main business city.
- However, India lags behind when it comes to laws affecting women's pay, laws affecting women's work after having children, constraints on women starting and running a business, gender differences in property and inheritance, and laws affecting the size of a woman's pension.

- Recommending that India consider reforms to improve legal equality for women, the report noted that one of the lowest scores for India comes from the indicator assessing laws affecting women's pay.

FIGURE ES.1 | EIGHT WOMEN, BUSINESS AND THE LAW INDICATORS MEASURE LEGAL DIFFERENCES BETWEEN MEN AND WOMEN AT DIFFERENT STAGES OF THEIR WORKING LIFE



14. SPORTS

14.1 World Athletics bans Transgender women from competing in the female category

In news- Transgender women have been barred from competing in the female category by World Athletics (WA), the international governing body for track and field, following a vote recently.

Key Updates-

- Athletics' global governing body has voted to ban transgender women who have gone through male puberty from competing in women's events, citing a "need to protect the female category".
- WA has followed the path of FINA (World Aquatics, formerly known as FINA), the international swimming federation, which enforced a similar ban in June, 2022.
- The decision was made after consulting 40 member federations, coaches, athletes, transgender groups, United Nations experts and the IOC.
- While some argue that going through male puberty gives transgender women physical advantages, supporters of transgender participation in sports say not enough research has been done into whether transgender women have any advantage.

Who are transgender women?

- A trans woman or a transgender woman is a woman who was assigned male at birth.
- Trans women have a female gender identity and may experience gender dysphoria, distress brought upon by the discrepancy between their gender identity and sex assigned at birth.
- Gender dysphoria may be treated with gender-affirming care.

About World Athletics (WA)-

- World Athletics, formerly known as the International Amateur Athletic Federation and International Association of Athletics Federations is the international governing body for the sport of athletics, covering track and field, cross country running, road running, race walking, mountain running, and ultra running.
- It was **founded in 1912, Stockholm, Sweden.**
- World Athletics is headed by a president.
- The World Athletics Council has a total of 26 elected members, comprising one president, four vice-presidents (one senior), the presidents of the six area associations, two members of the Athletes' Commission and 13 Council members.
- Each member of the Council is elected for a four-year period by the World Athletics Congress, a biennial gathering of athletics officials.

14.2 IBA World Women Boxing Championship 2023

In news- India bagged four gold medals in the 13th edition of the championships, held in New Delhi, India from 15 to 26 March 2023.

About IBA World Boxing Championship-

- The International Boxing Association (IBA) World Boxing Championships, and the IBA Women's World Boxing Championships (previously known as AIBA), are **biennial amateur boxing competitions** organised by the International Boxing Association (IBA).
- Alongside the Olympic boxing programme, they are the highest level of competition for the sport.
- The championships were first held for men in 1974 and the first women's championships were held over 25 years later in 2001.
- Both championships are held separately on biennial schedules.
- Since 1989 the men's championships are held every odd year; the women's championships were held in even years between 2006 and 2018 and switched to a nominal odd-year schedule in 2019.
- The 13th edition of the World Women Boxing Championship was boycotted by multiple nations due to participation of athletes from Russia and Belarus.

India's performance-

- **Nitu Ghanghas** bagged gold by defeating Lutsaikhan Altansetseg of Mongolia in the 48kg final at the IBA.
- Nitu became only the sixth Indian boxer, male or female, to become a world champion.
- Three-time Asian medallist **Saweety Boora** defeated Wang Lina of China in the 81kg final via a split verdict.
- **Nikhath Zareen** won her second Women's World Boxing Championships Gold medal by defeating Thi Tham Nguyen of Vietnam in the 50kg final.
- Nikhat has become only the 2nd Indian female boxer after Mary Kom to win multiple gold medals at the IBA Women's World Championships.
- India's **Lovlina Borgohain** won her maiden World Championships gold medal by defeating Australia's Caitlin Parker.

International Boxing Association (IBA)-

- The IBA, previously known as the Association Internationale de Boxe Amateur (AIBA), is an independent sport organization that sanctions amateur (Olympic-style) boxing matches and awards world and subordinate championships.
- IBA **consists of five continental confederations** — AFBC, AMBC, ASBC, EUBC, OCBC.
- The association includes 203 national boxing federations.
- The IBA was recognised by the International Olympic Committee (IOC) as the international governing body for the sport of boxing until 2019, when the IOC suspended its recognition of the federation.

15. PEOPLE IN NEWS

15.1 Porter Prize 2023

In news- The Union Ministry of Health & Family Welfare has been bestowed with the Porter Prize 2023 by the Institute for Competitiveness (IFC) and Stanford University.

Why was India awarded?

- The prize recognizes the strategy followed by the Government of India in managing COVID-19, the approach, and involvement of various stakeholders, especially the involvement of ASHA workers in the industry to create PPE Kits.
- According to experts, the strategies followed by India in its COVID management has been very successful, which were based on three cornerstones– containment, relief package, and vaccine administration.

About the prize-

- It has been named after Michael E. Porter, an economist, researcher, author, advisor, speaker and teacher.
- He has brought economic theory and strategy concepts to bear on many of the most challenging problems facing corporations, economies and societies, including market competition and company strategy, economic development, environment and healthcare.
- The prize was announced at The India Dialog, organized by Institute for Competitiveness (IFC) and US Asia Technology Management Center (USATMC) at Stanford University.
- The theme of the conference was “The Indian Economy 2023: Innovation, Competitiveness and Social Progress”.

15.2 DC-3 ‘Dakota’ aircraft of Biju Patnaik

In news- Odisha Chief Minister Naveen Patnaik unveiled former Chief Minister Biju Patnaik’s renovated Douglas DC-3 ‘Dakota’ aircraft for public viewing at the Bhubaneswar airport on his 107th birth anniversary.

DC-3 ‘Dakota’ aircraft & Biju Patnaik-

- **The Douglas DC-3 is a propeller-driven airliner manufactured by Douglas Aircraft Company**, which had a lasting effect on the airline industry in the 1930s to 1940s and World War II. It was developed as a larger, improved 14-bed sleeper version of the Douglas DC-2.
- **It is said that Biju Patnaik had flown this aircraft to rescue former Indonesian vice-president Mohammad Hatta and former Prime Minister Sutan Sjahrir** in one of his most famous feats as a pilot.
- **Biju Patnaik joined the Royal Indian Air Force in 1936**, mostly flying supply and transport planes such as the ‘Dakota’.
- In the early 1940s, as Imperial Japan started moving eastwards and annexing Western colonies in southeast Asia, Biju flew many sorties rescuing British officials and families from the Japanese advance.
- **He was integral in the evacuation of British officials from Rangoon.**
- **Patnaik also flew supply missions to assist China’s Chiang Kai-Shek** and during the Battle of Stalingrad (1942-43), he would undertake a risky supply run to the besieged city – an effort for which he was **honoured by the Russians on the 50th anniversary of the war’s end.**
- While flying British planes over Indian troops, he would sometimes **drop ‘seditious’ pamphlets, supporting the Quit India Movement.**
- Even as the Head of RIAF’s Air Transport Command, he would secretly ferry freedom fighters like Ram Manohar Lohia to meetings across the country.
- However, in 1943, Biju Patnaik’s surreptitious activities were discovered and he was imprisoned for two years for his role in the Quit India Movement.

- **A year after being released from prison in 1945, Patnaik got elected to the Orissa Assembly** and began his long career in politics.
- **In 1947, he started the Kalinga Airlines with a fleet of old Dakotas.**
- In 1950, after Indonesia gained independence, once and for all, Biju Patnaik was heavily felicitated by the new government.
- **He was offered honorary Indonesian citizenship as well as a property, both of which he refused.**
- **He was also given the title of Bhoomi Putra (“son of the souk”), an honour seldom given to non-natives.**
- In 1996, when Indonesia celebrated its 50th Independence Day, Biju Patnaik was **awarded its highest national award, the ‘Bintang Jasa Utama’.**

15.3 Pritzker Prize 2023

In news- British architect and urban planner **Sir David Chipperfield** is the 2023 Laureate of The Pritzker Architecture Prize.

About the prize-

- It is the highest international honour for architects whose built work demonstrates a combination of those qualities of talent, vision and commitment, which has produced consistent and significant contributions to humanity and the built environment through the art of architecture.
- It is considered to be one of the world’s premier architecture prizes, and is often referred to as the **Nobel Prize of architecture.**
- The award was founded in 1979 by Jay A. Pritzker and his wife Cindy.
- The award is funded by the Pritzker family and sponsored by the Hyatt Foundation
- The Pritzker Architecture Prize is said to be **awarded “irrespective of nationality, race, creed, or ideology”.**
- The recipients receive US\$100,000, a citation certificate, and, since 1987, a bronze medallion.

Contributions of sir David-

- With over 100 works from museums and civic buildings to offices and residences, his studio, David Chipperfield Architects (DCA), has been re-imagining buildings and working on renovations and restorations with climate and site context at the forefront.
- His most famous reconstruction is The Neues Museum (Berlin, 2009), the mid-19th century structure which was in disrepair after World War II.
- The outdoor spaces were made so generous that it acts today as a social connector in the German capital.
- Much of Chipperfield’s design sensibilities owe to his early years spent in Japan, where he worked on fashion designer Issey Miyake’s retail outlets.
- In 2022, the DCA completed restoration of the Procuratie Vecchie in Venice’s iconic St Mark’s Square.
- Chipperfield’s other significant works include the BBC’s Scotland headquarters (Glasgow, 2007); Campus Saint Louis Art Museum (Missouri, 2013); Museo Jumex (Mexico City, 2013); One Pancras Square (London, 2013), Royal Academy of Arts masterplan (London, 2018) and Kunsthau Zürich (Zurich, 2020).

Note:

DCA has been collaborating with Sourabh Gupta of the Noida-based architecture studio Archohm on the Mughal Museum (now Chhatrapati Shivaji Maharaj Museum) in Agra, on a site close to the Taj Mahal.

15.4 Abel prize 2023

In news- Luis Caffarelli, 74, has won the 2023 Abel Prize for his seminal contributions to regularity theory for nonlinear partial differential equations including free-boundary problems and the Monge-Ampère equation.

About the prize-

- First awarded in 2003, the Abel prize “recognises pioneering scientific achievements in mathematics”.
- It is named after Norwegian mathematician Niels Henrik Abel (1802-29), who in his short life made pioneering contributions in a multitude of fields.
- It is often considered to be an equivalent of the Nobel prize which does not have a category for mathematics and has been modelled as such.
- The prize was established by the Norwegian Parliament (Stortinget) in 2002, marking the 200th anniversary of Niels Henrik Abel’s birth.
- The Abel Prize is awarded and administered by the Norwegian Academy of Science and Letters on behalf of the Norwegian government.
- It is financed by the Norwegian government which also does not tax the prize money.
- The recipients are chosen by the Abel Committee, which comprises expert mathematicians, all appointed by the Norwegian Academy of Science and Letters, under the advice of the International Mathematical Union (IMU) and the European Mathematical Society (EMS).
- The prize includes a monetary award of 7.5 million kroner (roughly \$ 720,000) and a glass plaque designed by Norwegian artist Henrik Haugan.

Luis Caffarelli & his contributions-

- Caffarelli was born and raised in Buenos Aires, Argentina, making him the **first Abel laureate from South America**.
- Currently, he is a professor at the University of Texas, Austin.
- Caffarelli has been one of the **leading figures in the study of partial differential equations** for over five decades.
- **Partial differential equations arise naturally as laws of nature**, whether to describe the flow of water or the growth of populations.
- **These equations have been a constant source of intense study** since the days of Newton and Leibniz.

Who was Niels Henrik Abel?

- Niels Henrik Abel (1802-1829) was a **Norwegian mathematician** who left a big impact on a number of fields in his rather short life.
- His most **famous single result is the first complete proof demonstrating the impossibility of solving the general quintic equation in radicals**.
- This question was one of the outstanding open problems of his day, and had been unresolved for over 250 years.
- He was also an **innovator in the field of elliptic functions**, discoverer of what would later be known as **Abelian functions**.
- He made all his discoveries while living in crippling poverty and died of tuberculosis at the age of 26.

16. PLACES IN NEWS

16.1 Protected forests of Buxwaha

In news- More than two lakh trees need to be felled for an open-cast diamond mine (proposed Bunder diamond block) to operate in Buxwaha, and the people of Buxwaha have been protesting to prevent the felling of trees.

Bunder diamond project-

- The proposed project will be spread across an area of 364 hectares in the Buxwaha forests that is about 225 km northeast of Bhopal, Madhya Pradesh’s capital.
- The block is estimated to have 34 million carats of rough diamonds.

- The National Mineral Development Corporation's existing diamond mine is about 175 kilometres from Bunder.
- Environmentalists believe that the huge water requirement for diamond mining would add to the water woes of the Bundelkhand region.
- The project, once operational, has the potential to become one of the largest diamond mines in the Asian region.
- However, the project is facing stiff opposition, including social media campaigns.
- Already, a Public Interest Litigation has been filed in the Supreme Court of India, seeking a stay on the project that had been secured by the Essel Mining & Industries Limited in 2019.

About Buxwaha-

- Buxwaha forest which extends over a vast area of 3 lakh hectares is in the Chhatarpur district, Bundelkhand region, Madhya Pradesh.
- This forest is home to some rare species of animals like **Indian Gazelles, Chowsingha, Sloth Bears, Leopard, Tiger, Monitor Lizards, Indian Rumped Vultures, and Peacock.**
- It also sustains trees with medicinal benefits like Teak, Ken, Behda, Banyan, Jamun Tendu, Khair, Bel, Dhava, Seja, Ghoat, Renjha, Amltas, Saugon, etc.

16.2 Iran claims to have unearthed massive lithium deposit

In news- Iranian Ministry of Industry, Mine and Trade has said that a lithium deposit located in the western province of Hamedan contains some 8.5 million metric tons of lithium ore.

Key updates-

- This is Iran's first lithium find.
- However, it will take about four years to prepare the lithium mines discovered in Qahavand Plain, Hamadan, for operation, with the deposits stretching across a five-six square kilometer area.
- According to the US Geological Survey, the world's largest identified lithium resources (not counting Iran) are as follows: Bolivia, 21 million tons; Argentina, 20 million tons; Chile, 11 million tons; Australia, 7.9 million tons; China, 6.8 million tons.
- India recently established inferred lithium resources of 5.9 million tons in the Reasi district of Jammu and Kashmir.
- According to the United Nations Framework for Classification for Reserves and Resources of Solid Fuels and Mineral Commodities (UNFC 1997), resources are categorized using the three essential criteria affecting their recoverability:
 - Economic and commercial viability (E).
 - Field project status and feasibility (F).
 - Geological knowledge (G).
- **India's recent discovery was classified as G4:** implying that they are a product of a reconnaissance study, rather than more advanced feasibility and commercial viability studies.
- **According to the UNFC, "Reconnaissance study identifies areas of enhanced mineral potential on a regional scale** based primarily on results of regional geological studies, regional geological mapping, airborne and indirect methods, preliminary field inspection, as well as geological inference and extrapolation."
- **It is likely that Iran's discovery is also at this stage of categorisation.**

The importance of lithium in today's world-

- *Lithium is ubiquitous in modern life, found in all kinds of electronic devices, from mobile phones to EVs – basically, anything that requires a rechargeable battery.*
- A battery is made up of an anode, cathode, separator, electrolyte, and two current collectors (positive and negative).

- **Lithium-ion batteries use aqueous electrolyte solutions**, where ions transfer to and fro between the anode (negative electrode generally made of graphite) and cathode (positive electrode made of lithium), triggering the recharge and discharge of electrons.
- Even promising alternatives to the lithium-ion batteries, such as QuantumScape Corp's solid-state lithium-metal battery, continue to use lithium.
- This is primarily due to Lithium's low weight as compared to other metals (such as nickel, used in traditional batteries) as well as its superior electrochemical potential.
- Lithium has become especially valuable in the context of increasing climate concerns with the internal combustion engine and the rise of electric vehicles (EV) as an alternative.
- **Currently, all EVs use lithium in their battery packs with demand set to rise exponentially over the coming decades.**

16.3 What is the Hasdeo movement?

In news- Centre for Policy Research (CPR) was recently in news for the suspension of its FCRA registration. Among the ineligible activities listed by the I-T Department is the CPR being involved in the Hasdeo movement.

About the movement-

- It is a movement launched by activists against coal mining in the Hasdeo forests of Chhattisgarh.
- For months in 2022, tribals and activists had protested against the operation of three coal mines in the region: the Parsa East Kente Basan (PEKB), Parsa, and Kente extension.

Hasdeo forests-

- A sprawling forest in the **northern part of Chhattisgarh**, Hasdeo Aranya is known for its biodiversity.
- The **forest falls under Korba, Sijapur and Sarguja districts**, with a sizable tribal population.
- The **Hasdeo river, a tributary of Mahanadi, flows through it.**
- **It is home to Adivasis from Gond, Lohar, Oraon**, and other parts of India, who live on 1,70,000 hectares of land rich in biodiversity.
- The Hasdeo forests are also the **catchment area for the Hasdeo Bango Dam** built across the Hasdeo river which irrigates six lakh acres of land, crucial to a State with paddy as its main crop.
- Besides, the forests are ecologically sensitive due to the rich biodiversity they offer and due to the presence of a large migratory corridor for elephants.
- **Hasdeo represents one of the largest coal reserves in India, having estimated reserves of 5.18 billion tonnes of coal.**
- After a joint study in 2010, the Ministry of Coal and the Ministry of Forest and Environment deemed the Hasdeo reserve a 'No Go Area,' prohibiting any sort of mining due to its rich biodiversity and exceptional ecology.
- In 2021, a report on the region by the Indian Council of Forestry Research and Education (ICFRE), an autonomous organisation under the Ministry of Environment, Forest & Climate Change, termed Hasdeo Aranya the "largest un-fragmented forests in Central India consisting of pristine Sal (*Shorea robusta*) and teak forests."
- The Hasdeo Aranya Coal Field (HACF), meanwhile, is spread over nearly 1,880 sqkm and comprises 23 coal blocks.

16.4 The first cable-stayed railway bridge of India

In news- India's first cable-stayed railway bridge, the Anji Khad Bridge, is set to be operational by May 2023.

About the bridge-

- This new bridge is being dubbed as an engineering marvel as it is one of the biggest railway projects on top of a mountain.

- **The 725m bridge is held approximately 331m above the Anji River** by a total of 96 cables.
- Anji Khad Bridge is the 2nd important bridge after Chenab Bridge on the prestigious Udhampur- Srinagar- Baramulla Rail Project.
- Anji bridge is situated over the Anji river and it will **connect the Katra-Reasi section of the Udhampur- Srinagar-Baramulla route.**
- The bridge is **supported by a single pylon, a large vertical tower-like structure** soaring 1,086 feet from the river bed, similar to the height of a 77-storey building.
- It is located approximately 80 kms from the Union Territory of Jammu.
- The bridge has been designed in such a way that it will be able to **withstand all kinds of high-altitude weather conditions.**
- The inspiration, design and the technology for this **bridge has been taken from the very famous Bandra-Worli Sea Link in Mumbai, Maharashtra.**
- The bridge is a part of a 326-km rail line connecting Udhampur to Baramulla via Srinagar, a crucial rail link between the Kashmir Valley and the rest of India.
- The project was commissioned by the Northern Railways and is being **executed by Konkan Railway Corporation Limited (KRCL)** and Hindustan Construction Company.